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THE CANADIAN MANUFACTURER AND INDUSTRIAL WORLD

DEVOTED TO HOME INDUSTRIES, COMMERCE, FINANCE, INSURANCE, RAILWAYS & MINING.

Vol. 2.

TORONTO, FEBRUARY 23, 1883.

No. 5.

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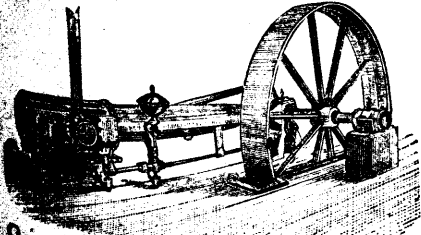
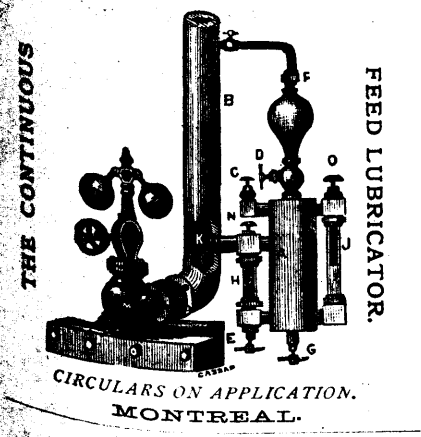
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Vol. II.

TORONTO, ONT., FEB. 23, 1883.

No. 5.

STATISTICS OF ONTARIO MANUFACTURES.

Our friends will doubtless be glad to find placed before them, at the earliest opportunity, statistics of the Manufactures of Ontario, taken from the Report just issued by Mr. Archibald Blue, head of the Provincial Bureau of Industries.

The report says that in aiming to collect statistics of the manufacturing industries of this Province, it was deemed advisable to limit the work to what may be termed *the factory industries*. The addresses of manufacturers were procured from Bradstreet's Report, and early in December a circular was issued explaining the objects of the Bureau, and the method upon which it was proposed to tabulate the returns. The form of schedule adopted was similar to the one used in taking the Dominion census, saving that it asked only for the total number of employees instead of a classification by sexes and ages.

The returns, as far as made, were carefully filled; only a few required to be sent back for addition or correction. But the

number was not so satisfactory, for, out of a total of 5,838 establishments to which circulars were addressed, less than a sixth have made responses. With such a small proportion of the whole, it would obviously be unsafe to make estimates of aggregate capital, wages, or products for the whole Province.

It is doubtless true, also, that many small establishments in the several classes of factory industries have been missed—such, especially, as are located in hamlets, or in the rural districts. At any rate the numbers in a majority of classes are less than they were in 1871, as shown by the census for that year, while the presumption is that they have not diminished, but increased.

But fragmentary as are the statistics of manufacturing industries furnished to the Bureau, they afford evidence of great progress having been made during the past twelve years. In the following statement a few of the principal industries are selected for comparison—those for 1871 being taken from the complete returns of the census for that year, and those for 1882 from Table No. XIV. of this report.

INDUSTRIES.	1882.				1871			
	No. of Industries.	Hands.	Wages.	Product.	No. of Industries.	Hands.	Wages.	Product.
Agricultural Implement Works	44	2,397	\$ 954,586	\$ 3,833,018	173	2,143	\$ 745,693	\$ 2,291,989
Brick and Tile Yards	39	425	105,177	239,110	309	1,939	239,842	577,904
Breweries and Malting Houses	16	192	79,510	526,475	105	536	174,708	1,198,918
Cabinet and Furniture Factories	38	1,045	378,682	974,932	536	2,769	799,695	2,306,070
Carriage and Waggon Shops	96	672	214,402	627,238	1,421	4,780	1,258,799	3,078,841
Cotton Factories	3	1,139	256,960	683,400	5	495	87,400	492,200
Edge Tool Works	3	171	76,900	203,000	22	223	82,671	204,405
Engine and Boiler Works	11	496	216,700	570,000	17	687	257,638	945,150
Flour and Grist Mills	76	477	182,271	4,994,461	951	2,759	833,959	27,115,766
Foundries and Machine Works	27	1,150	476,100	1,439,425	258	4,686	1,587,018	4,631,850
Hosiery Factories	13	801	196,850	792,400	10	244	39,113	198,642
Musical Instrument Factories	3	270	130,000	380,500	26	387	165,539	406,012
Paper and Pulp Mills	4	168	58,000	284,000	12	344	99,270	487,500
Salt Works	6	100	30,000	108,000	16	175	60,990	119,999
Sash, Door, and Blind Factories	30	440	163,753	586,900	156	1,548	485,069	1,546,898
Saw Mills	72	3,466	1,155,373	3,160,705	1,837	13,851	2,675,390	12,733,741
Tanneries	34	269	100,116	675,950	426	1,584	449,043	3,420,218
Woollen Factories	34	2,000	491,436	2,445,060	233	3,696	761,934	4,589,119
Totals	549	15,678	5,266,816	22,524,574	6,513	42,846	10,794,971	66,435,258

This statement shows a large increase of manufactured products, as well as of hands employed and wages paid, during the interval of eleven years. For example, the forty-four agricultural implement works giving returns for 1882, make a better exhibit than the 173 giving returns for 1871. Another noticeable fact is that the average production of manufac-

tures per hand employed is, in almost every class of industry, larger in 1882 than in 1871—a result, doubtless, of the more general use of improved machinery. It will also be noticed that there has been a general rise in the average of wages paid for labor.

Table No. XIII. gives the statistics of manufactures by

counties, and Table No. XIV. the same by industries. Table XIV, however, gives in addition the average of yearly wages for each industry, the per centage of raw material in the manufactured article, the value of the net product (being the value of finished article less raw material), and the average annual value of the net product per hand employed. Under the two heads last named are included, besides the cost of labor, such items as rent, insurance, commission, taxes, fuel, the cost of

management, and the profits of the manufacturers. A study of this table will make clear the fact that the importance of an industry is not measured by the value of the products. Take flour and grist mills as an instance: the gross product is very large, but 88 per cent. of the value lies in the raw material alone.

The following are tables Nos. XIII. and XIV. already mentioned:—

TABLE No. XIII.—Showing by Counties and Cities the amount of capital, the number of employees, the amount of yearly wages the value of raw material and the value of products of Manufacturing Establishments in Ontario making returns to the Bureau, for 1882; also the total number of Manufacturing Establishments in each County and City of the Province in 1882.

COUNTIES.	Establishments.		Capital invested.	No. of Em- ployees.	Amount of yearly wages.	Value of raw material.	Value of pro- ducts.
	Total number.	Number making re- turns.					
Essex	124	14	252,500	223	83,050	128,455	253,284
Kent	150	23	121,300	242	76,154	160,300	303,300
Elgin	124	12	88,300	90	23,026	102,048	168,325
Norfolk	119	25	210,200	286	104,640	222,300	404,300
Haldimand	78	10	43,588	34	9,842	52,829	71,248
Welland	75	10	171,467	122	36,350	409,300	486,051
Lambton... .. .	145	17	165,100	196	68,008	222,200	369,340
Huron... .. .	230	60	725,040	618	176,635	521,805	820,324
Bruce	198	23	164,000	148	39,010	257,230	365,400
Grey	208	40	261,500	260	92,890	371,334	550,500
Simcoe	292	59	1,246,550	1,099	349,160	429,676	1,079,962
Middlesex	168	20	203,500	243	57,500	205,425	310,030
Oxford	195	29	474,500	522	142,057	437,593	797,880
Brant	90	19	273,500	325	107,800	486,525	658,306
Perth	182	27	383,077	513	154,033	325,820	582,360
Wellington... .. .	172	27	222,000	284	76,350	219,850	365,050
Waterloo	233	38	1,145,988	1,157	336,070	1,627,589	2,287,561
Dufferin	45	11	35,300	34	10,914	29,102	57,060
Lincoln	63	13	218,000	214	96,075	207,210	343,700
Wentworth... .. .	95	11	571,100	596	149,222	246,400	555,350
Halton	82	16	314,800	211	68,075	248,365	384,200
Peel	97	7	184,990	184	74,650	230,362	428,005
York	231	30	480,500	498	145,993	479,453	806,515
Ontario	177	25	898,000	882	329,894	734,722	1,333,615
Durham... .. .	120	24	269,900	104	33,560	305,825	391,100
Northumberland	101	16	173,900	214	55,050	296,120	414,800
Prince Edward	57	16	98,800	153	28,600	113,450	164,000
Lennox and Addington	96	10	110,500	169	45,140	57,400	123,000
Frontenac	46	7	76,400	49	15,500	54,900	82,100
Leeds and Grenville... .. .	201	27	508,400	533	206,000	352,325	707,775
Dundas	71	16	201,500	149	46,954	415,160	552,870
Stormont	59	8	334,400	275	81,220	204,644	393,100
Glengarry	57	2	7,000	10	2,500	4,000	9,450
Prescott	24						
Russell	23	5	508,500	259	37,550	212,300	307,100
Carleton	61	2	156,000	82	25,500	101,750	143,000
Renfrew	74	17	126,500	101	30,648	127,500	196,200
Lanark	140	24	973,700	983	262,280	611,130	1,119,636
Victoria	92	23	1,010,500	697	215,074	427,070	796,000
Peterboro'	81	16	279,800	283	86,350	236,000	407,300
Haliburton	3						
Hastings	77	8	75,000	38	13,120	56,994	90,158
Muskoka	41	17	1,486,600	812	309,092	244,443	843,851
Algoma	11	1	100,000	50	30,000	15,000	55,000
Parry Sound	12	3	1,157,000	652	225,750	91,000	513,400
Bellefleur	44	6	66,700	100	27,447	34,710	88,797
Brantford	33	3	215,000	295	102,000	231,000	485,000
Guelph	53	11	352,950	483	169,690	376,559	681,108
Hamilton	135	15	1,171,200	1,442	482,563	856,069	1,554,580
Kingston	33	9	516,950	552	102,865	259,884	478,791
London	103	11	1,149,000	739	275,324	800,148	1,480,781
Ottawa	55	7	139,000	114	48,585	247,780	333,669
St. Catharines	37	10	515,000	359	160,413	211,295	501,399
St. Thomas	34	8	301,000	207	79,680	183,600	380,100
Toronto	282	31	3,010,927	2,045	736,116	2,152,739	4,099,987
Totals	5,829	919	23,947,427	20,930	6,741,969	17,636,688	31,175,716

TABLE No. XIV,

Showing by Industries the amount of capital, the number of employees, the amount and average of yearly wages, the value of raw material and the value of products of Manufacturing Establishments in Ontario making returns to the Bureau for 1882; also the total number of Manufacturing Establishments of each class in the Province in 1882.

INDUSTRIES.	ESTABLISHMENTS.		Capital Invested.	No. of Employees.	Amount of Yearly Wages.	Average of Yearly Wages.	Value of Raw Material.	Value of Products.	Percentage of Raw Products.	Value of Net Product.	Value of Net Product per Hand.	INDUSTRIES.
	Total Number.	Number making returns.										
Agricultural implement works.....	122	44	3,203,800	2,397	954,586	898	1,340,897	3,833,018	35	2,492,121	1,040	Agricultural implement works.
Bent stuff and handle factories.....	36	6	30,500	111	32,746	205	28,000	81,400	34	53,400	481	Bent stuff and handle factories.
Boot and shoe factories.....	16	6	77,600	332	102,660	309	150,346	308,696	48	158,250	446	Boot and shoe factories.
Breweries and making houses.....	91	16	572,000	192	79,510	414	334,735	626,475	63	101,740	999	Breweries and making houses.
Brick and tile yards.....	117	39	213,100	425	106,177	247	45,870	239,110	19	193,240	454	Brick and tile yards.
Broom and brush works.....	35	3	55,800	108	22,835	211	37,084	68,891	55	29,807	276	Broom and brush works.
Button factories.....	8	2	16,000	145	25,000	172	15,660	55,000	28	39,400	272	Button factories.
Cabinet and furniture shops.....	463	38	889,300	1,045	378,082	362	371,420	974,932	38	603,612	578	Cabinet and furniture shops.
Carding and fulling mills.....	52	4	14,500	23	5,575	242	18,550	32,350	57	13,800	600	Carding and fulling mills.
Carriage and waggon shops.....	1,238	96	433,738	672	214,402	319	246,224	627,288	39	331,014	567	Carriage and waggon shops.
Cigar and tobacco factories.....	61	6	189,500	355	106,600	300	234,327	386,565	61	152,238	429	Cigar and tobacco factories.
Cotton factories.....	14	3	1,217,950	1,139	256,960	225	286,400	883,400	42	397,000	348	Cotton factories.
Edge tool works.....	31	3	117,000	171	76,000	450	103,500	203,000	61	99,500	582	Edge tool works.
Engine and boiler works.....	26	11	431,000	496	216,700	437	201,300	570,000	35	368,700	743	Engine and boiler works.
Flour and grist mills.....	661	76	1,123,488	477	182,271	382	4,408,705	4,994,261	88	685,556	1,238	Flour and grist mills.
Foundries and machine shops.....	256	27	1,236,650	1,150	476,100	414	644,493	1,439,425	46	794,932	691	Foundries and machine shops.
Gas works.....	15	5	528,000	175	83,850	479	94,001	350,812	27	236,811	1,467	Gas works.
Hosiery factories.....	35	13	81,600	801	199,850	228	505,500	792,400	64	286,900	332	Hosiery factories.
Meat curing and packing houses.....	27	3	130,000	54	22,000	407	653,200	769,000	85	115,800	2,144	Meat curing and packing houses.
Musical instrument factories.....	20	3	140,000	270	130,000	481	145,000	380,500	52	235,500	872	Musical instrument factories.
Nail and rivet works.....	10	3	560,000	293	110,150	396	300,150	478,406	63	178,256	608	Nail and rivet works.
Oil refineries.....	27	3	560,000	221	72,800	330	505,000	680,000	74	175,000	792	Oil refineries.
Paper and pulp mills.....	31	4	285,000	168	58,000	343	147,000	284,000	52	137,000	811	Paper and pulp mills.
Pot and pearl fisheries.....	36	3	9,140	17	6,080	337	2,095	14,434	14	12,349	726	Pot and pearl fisheries.
Preserved meats and fruit factories.....	23	6	78,000	214	29,745	139	40,315	92,400	53	43,085	291	Preserved meats & fruits factories.
Pump factories.....	130	21	85,000	260	73,993	284	64,410	176,410	37	112,000	403	Pump factories.
Salt works.....	17	6	250,000	100	30,000	300	66,000	108,000	61	42,000	420	Salt works.
Sash, door and blind factories.....	222	20	209,700	440	163,753	372	304,452	586,900	52	282,448	642	Sash, door and blind factories.
Saw mills.....	706	72	5,171,300	3,466	1,155,373	333	1,162,357	3,160,701	37	1,998,378	576	Saw mills.
Scutching mills.....	26	4	44,000	105	20,700	197	18,900	49,000	39	30,100	287	Scutching mills.
Shingle factories.....	135	9	35,000	103	35,120	341	28,226	87,162	32	58,936	572	Shingle factories.
Tanneries.....	248	34	392,400	269	100,116	372	460,354	675,950	68	215,596	801	Tanneries.
Trunk and box factories.....	31	4	70,000	209	64,500	308	114,000	232,700	49	118,700	568	Trunk and box factories.
Vinegar works.....	16	2	23,000	16	2,700	169	6,200	12,700	49	6,500	406	Vinegar works.
Woodenware factories.....	77	7	37,500	84	24,276	289	19,549	59,010	33	39,461	470	Woodenware factories.
Woollen factories.....	229	84	1,633,277	2,000	491,425	246	1,377,785	2,445,060	50	1,067,275	533	Woollen factories.
Miscellaneous.....	442	274	2,893,894	2,427	627,823	255	3,145,783	4,718,506	67	1,572,723	648	Miscellaneous.
Total.....	5,820	910	23,947,427	20,930	6,741,369	322	17,636,688	91,176,716	57	13,539,028	647	Total.

The industries classed under the head of *Miscellaneous* are largely composed of the specified ones, but as the returns for them were made in bulk form they could not be separated. A manufacturer having a saw mill and a planing mill, or a flouring mill and a tannery, for example, would fill out his schedule with the totals for both ; and as its contents could not be tabulated with either they had to be placed under the general head of *Miscellaneous*. Some of the largest returns received were of necessity entered in this way. In other cases only one establishment of a kind reported, and these were placed in the miscellaneous class also.

The returns of agricultural implement works, to which reference has already been made, give a good indication of the progress of the Province agriculturally, even had we no other evidence of it. The total number of these establishments, as appears by the table, is 122 ; but there is a large number of foundries, doing a mixed business, which might properly be included in the same class. An idea of the extent to which improved implements of husbandry are used by the farmers of the Province may be obtained from comparison of the figures given in a few of the complete returns :—

In fifteen establishments 8,786 single reapers were made last year ; in sixteen, 6,979 single mowers ; in four, 425 combined reapers and mowers ; in three, 800 self-binding harvesters ; in five, 2,880 seed drills ; in six, 8,140 sulky rakes ; in one, 120 threshing machines ; and in four, 8,000 ploughs. The total number of those implements made for last year's market must consequently be large.

It may give some idea of the extent of manufactures in the Province to take the 919 establishments making returns, and classify them according to the number of hands employed, showing the following result :—

Employing over 300 hands each.....	10
“ from 200 to 300.....	11
“ “ 150 “ 200.....	12
“ “ 100 “ 150.....	21
“ “ 75 “ 100.....	14
“ “ 50 “ 75.....	33
“ “ 25 “ 50.....	76
“ under 25.....	742

Total.....919

It is not deemed necessary to enlarge in the Report on the importance to the Province of full returns of its varied industries : no other information is so likely to attract to us a goodly share of the capital and labor awaiting opportunities for employment in the over-crowded countries of Europe.

THE "MARSKELL" STEEL COMPANY.

In response to an invitation from the Secretary we were present at a test of the new process by which the above-named Company proposed to convert wrought or malleable cast-iron into a quality of steel equal in every way to the highest grade of crucible or true steel.

So confident were the promoters of this company in the success of their process that they had invited a number of experts and also representatives of the Toronto, Hamilton, St. Catharines and Buffalo press, and the test took place before a critical audience on Thursday of last week, at the old car works, at Niagara, which were purchased by the President, Mr. Wm. Bell, the

well-known organ manufacturer of Guelph, for the purpose of giving the inventor the requisite facilities for pursuing his experiments to a practical end. The process itself is the invention of Mr. George Marskell, formerly of Hamilton, and at one time foreman for Mr. J. H. Killey, of the Mona Iron Works in that city. Mr. Marskell is an Englishman by birth, and previous to his coming to Canada was, for ten years, engaged under Sir Thomas Baker in the Engineers' department at Chatham dockyard, his duties being the testing and inspecting of the steel that entered the Works. It is now two years since he first commenced experimenting with his process at Hamilton ; the final test that has resulted so satisfactorily taking place last Thursday in the presence of the visitors. The process itself consists of the application of certain chemicals (in a retort specially constructed for the purpose) to the materials to be converted, which are first embedded in powdered charcoal and heated to a dull red. There are, we should mention, two separate lots of chemicals used, one mixture being in a tower outside the building, and from thence are brought through a 1 inch pipe and fed into one end of the retort. The other lot of chemicals are placed in a flue above the retort and are fed into the opposite end through a 2 1/2 inch pipe. The heat immediately transforms the chemicals into gases, combustion taking place directly they commingle.

The furnace is also of peculiar construction, built from plans devised by Mr. Marskell, the principal aim being to get a perfect uniformity of heat, which is secured in the following manner, as nearly as we are able to describe. The furnace has a partition in the centre, and two flues on one side run the entire length of the fire box and back along the top, finally entering a chimney at one end. Two flues on the other side run in opposite direction to the others and enter a second chimney at the further end, thus creating a draft in opposite directions. A gentle blast is produced by a rotary blower, worked with weights connected to a wire cable, wound round a drum to which a fan is attached. The weights slowly descending form the motive power.

The test we witnessed consisted of placing in the retort, which has a capacity of three tons, a quantity of wrought iron and malleable castings, in the shape of files, adzes, axes, cleavers, shafting, railroad iron etc., which was subjected to the process for about six hours ; at the end of that time the specimens experimented upon were removed from the retort, and came out converted into steel, and moreover steel that was conceded by the experts present to be of a most superior quality. A malleable cast iron axe, after being subjected to the process was sharpened and tempered, put on a handle, and its durability tested by the muscular members of the party exercising their skill in trying to demolish a block of apple tree wood, full of knots. The apple tree suffered considerably but the axe was not injured in the slightest. Another test witnessed was the conversion of a piece of thin wrought iron hoop into steel, and then forging and grinding it into a razor blade, which was presented to the representative of a daily paper, who expressed his intention of trying to shave the proprietors of his journal on his return, in what manner was not stated. Several other specimens were selected, such as lathing hatchets, files, etc. ; and each and every one proved on trial to be most durable after being subjected to the most severe tests the combined brains of the party could devise. Amongst the

materials treated were specimens sent by the following well-known firms. Piece of safe plate from Messrs. J. & J. Taylor, Toronto; connecting links, coupling pins, sections of rails, etc., from Northern Railway; edge tools, augers, etc., from Mr. Beebe, Toronto; iron forgings, etc., from Morrison Bros., Toronto; and sundry specimens from Messrs. A. S. Whiting Mfg. Co., Oshawa; Messrs. T. Pepper & Co., and Guelph Carriage Goods Co., of Guelph; Messrs. Goldie & McCulloch, Galt, and several others. We might here mention that a feature of the Marskell process is that materials treated can be "steeled" to any required depth, leaving a core of soft iron in certain goods that are the better for the elasticity thus secured, or they can be converted entirely into steel at will.

The promoters have applied for a charter to form a joint stock company with a capital of \$250,000, and purpose manufacturing steel rails and all kinds of railway material for which steel or steel with a soft iron centre is preferable, edge tools, files, mould-boards for ploughs, safe plates, horse shoes, hammer of all kinds and several other lines.

The cost of producing steel by this process is estimated by those interested to be not more than one half the cost of crucible steel, which it will be fully equal to, and already testimonials have been received from Messrs. Reid & Barr, and Charles James, machinists, of Hamilton, who testify as to the superior cutting and wearing qualities of the files.

The provisional officers of the company are as follows:— Wm. Bell, Esq., Guelph, President; W. R. Carmichael, Esq., Belleville, Vice-President; W. J. Bell, Esq., Treasurer; A. W. Wright, Esq., Secretary, and Mr. George Marskell, Mechanical Superintendent.

We await with much interest the development of this company, as from what we witnessed and from the opinions of disinterested experts present we should judge that there is a successful future before them, and that this will prove a valuable addition to the existing industries of Ontario, and a boon of inestimable value to the citizens of Niagara.

THE JANUARY BANK STATEMENT.

Twice within a few months has the Finance Department issued the monthly bank statement as an extra of the official *Gazette*, without waiting for the regular publication day; which seems to show a determination to get the returns before the public at the earliest possible moment. With this agrees the expectation that among the amendments to the existing law will be one compelling the banks to come to time more promptly than some of them have been in the habit of doing, in the matter of sending in their returns.

The January statement shows some \$800,000 decrease in Dominion Government deposits, along with about \$1,000,000 increase in Provincial Government deposits, caused by payment of subsidies by the former to the latter. The most noteworthy change of all is, however, in the circulation, thus:—

December	\$36,501,694
January	33,722,447
Decrease	\$ 2,779,147

Should the grain market keep on improving, and should farmers in consequence sell more freely, much of this decrease

would soon be recovered. That there is a great deal of last year's crop still held back waiting for better prices is certain.

Deposits by the general public show a very slight falling off:—

December	\$96,879,544
January	96,865,151
Decrease	\$ 14,393
Discounts, December	\$144,414,168
January	144,600,508
Increase	\$ 186,400

The *Montreal Gazette* says:—"The position of the foreign exchanges has not improved. The net balance due from the United States decreased \$184,572, while that due from Great Britain decreased \$308,030, making a total decrease in the balance due from abroad of \$492,600. The specie reserve was reduced \$484,000, and Dominion note reserve, \$211,000. The total assets on January 31st were \$228,082,996, a reduction during the month of \$2,592,000. Altogether the statement indicates a growing firmness in the money market as a result of an expansion of credits, concurrent with a decrease in the cash reserves and the foreign balances."

SPECIAL NOTICES.

We would call the attention of our readers to the advertisement of the "Remington" Type-Writer, which appears on another page.

The "Remington" is a simple machine, not liable to get out of order, and can be operated at sight by anyone; the degree of speed being only a question of practice. The work of two or three expert penmen can be done on one machine, and thus much valuable time is saved, besides having the work much more legible and neat. Clear and permanent press-copies of the writing can be taken in the same manner as of pen work, and several impressions may be made at once by using "carbon paper." An office in which much correspondence is carried on is not complete without one.

We acknowledge the receipt of a pamphlet from the Canada Land Plaster Co., of Paris, Ont., who are owners of the principal mines of gypsum in Ontario, and manufacturers of *land plaster*, for the excellency of which they have been awarded the Dominion Medal, eleven diplomas, and seven first prizes during the past two years. This firm also manufactures super-phosphate of lime, and New Brunswick stucco or calcined plaster.

Senator Plumb, of Kansas, recently stated to a Boston *Herald* correspondent that an Indian agent lately contracted with Commissioner Price to deliver 2,000 bushels of flour at the Los Pinos, Col., Agency for \$8 per barrel. Before the time for delivery came, he was ordered to deliver it at Salt Lake City, for which he added the cost of transportation, making it \$12, while he could purchase all he wanted there at \$5 per barrel. He was next ordered to deliver it to the White River Utes, 200 miles to the South, where the valley is productive and flour can be purchased at \$2.50 per barrel. The agent added on again the transportation cost and charged \$14 per barrel for what cost him not over \$3. The Government thus paid \$28,000 for flour at that agency which could have been put down there for \$6,000.

Mechanics and Engineering.

[In connection with this Department of the CANADIAN MANUFACTURER, we would take it as a favor from subscribers if they would bring it to the notice of friends wishing to study Mechanics and Engineering. Manufacturers will easily see that the greater the proficiency in such study and practice attained by their employees, the greater will be the aggregate of mechanical ability in the country—"right here at home"—and the better equipped will Canada be for meeting outside competition.]

ELEMENTARY PAPERS FOR YOUNG MECHANICS.

It is proposed to give a series of papers under the above heading, treating of some of the first principles of Mechanics. They are intended to be elementary, and specially designed to be of benefit to young mechanics. There is no royal road to learning, and he who would understand and master the many deep and seemingly mysterious problems involved in practical mechanics must begin with the elements, and, step by step, patiently travel on the road which leads uphill all the way, to a point from which great and glorious things may be seen and understood.

NO. I.—GRAVITATION.

One of the first things we learn in our childhood is that things have weight or a tendency to fall to the ground, and one of the first lessons to be learned in studying mechanics relates to this same subject.

Every-day experience teaches that all the things we see and handle have weight, but that all do not possess it in the same degree. We know that iron is heavier or weighs more than wood, and that wood is lighter than water, and so we compare one substance with another, and often without considering why they have any weight at all. GRAVITATION is the name given to the force existing in nature, by which all the particles of matter in the universe attract each other.

The sun attracts the earth and the earth returns the complement, and were it not for the intervention of other influences they would rush towards each other with ever increasing velocity until collision took place.

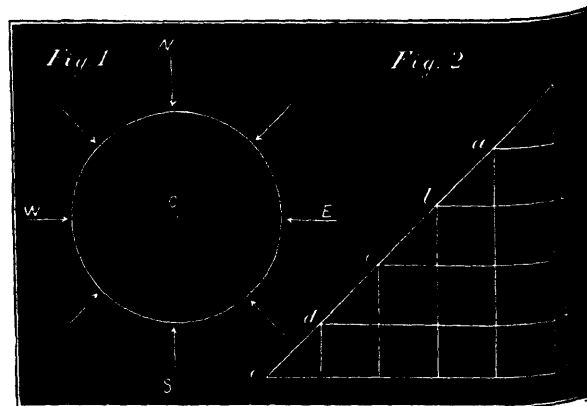
The attractive force of the earth radiates in all directions from it, and extends, so far as we know, into infinite space. It affects everything upon its surface, and it is with this view of it that we have more immediately to do.

The influence of the earth's attraction is made apparent to us by all things trying to get as near the ground, or as low down as possible. It is a constantly and seemingly inexhaustible force.

If we could stand off from the earth far enough to take a general view, we should observe that all things in falling freely to the earth fall in a straight line, and that line produced would pass through the centre of the earth, or rather its centre of gravity. These objects do not fall in parallel lines, but in lines radiating from the centre as shown by the arrows in figure 1. Hence it will be seen that a line which at E is perpendicu-

lar, is really level or horizontal when compared with a perpendicular line at N or S, one quarter round the circle from E. From this we see that two plumb lines cannot be exactly parallel, because both lines point to the same centre.

The direction of the force of gravity affecting things on the surface of our earth may always be taken as pointing towards the centre of the earth.



The amount of the force varies in different parts of the earth, and is dependent upon the distance from the centre of the earth. It is measured by its effect upon falling bodies and by the length of the pendulum beating seconds.

It is of the utmost importance in mechanics to get a clear understanding of the action of gravity in producing velocity in falling bodies.

Experiments have proved that, when the disturbing influence of the air is left out of the count, or removed, the time occupied by a body in falling to the surface of the earth from a height above it is independent of the mass of the body as well as of the materials composing it.

A pound of iron falling 10 feet will move as fast as 10 pounds of iron, and no faster than a grain of sand or even a feather.

A simple experiment will prove this. Lay a small piece of paper on a cent held horizontally. Then let the cent fall, and it will be followed by the piece of paper, which will remain in contact with the cent all the way. In this case the cent protects the thin paper from the resistance of the air to which it would otherwise have been exposed; it is thus seen that the two objects fall the same distance in the same time.

Suppose a body is let fall from a height and occupies five seconds in reaching the surface of the earth, what was the height from which it fell, and at what velocity does it move during its fall?

It has been proved that a body falling freely falls about 16 feet in one second at the Equator, and would fall a little over 16 feet in one second at the North or South Pole. For all mechanical questions the distance may be taken as 16.1 feet. At the end of the first second it has fallen 16.1 feet, but has by the constant attraction of the force of gravity, acquired a velocity equal to 32.2 feet per second. At the commencement of the 2nd second it is already in motion at the velocity which, if not increased, would carry it through 32.2 feet, but the action of gravity does increase it.

In the first second the force of gravity was sufficient to make it fall 16.1 feet, and this is produced by a constant force:

must be added to the 32.2 feet, making 48.3 feet passed over in the 2nd second, or a distance of 64.4 feet in the two seconds.

At the end of the 2nd second the body is moving at a velocity of 64.4 per second. And as the same influence continues to act upon it during the 3rd second as before, it will during the 3rd second fall 64.4 feet and 16.1 feet, making 80.5 feet during that second, and 144.9 feet in the three seconds.

Figure 2 illustrates the principle. Suppose the body to fall from 0 to 1 in the first second, the distance passed over is represented by the area of the small triangle. In falling from 1 to 2 in the 2nd second, the distance passed over is shown by the area of a small triangle plus the small square, making three times as much as during the first second. (See same cut.)

The distance travelled during the 3rd second is represented by the area of the figure c b 2 3, equal to five times as much as during the first second.

During the fourth second seven times the distance is travelled, and during the fifth second nine times the distance is travelled.

The whole distance travelled is also shown by the figure to be in five seconds equal to area of triangle o e 5, which is 25 times as much as during the first second.

We will return to this subject in our next paper, and meantime ask our readers to consider the two following questions and try to solve them :

1. Suppose a cage in a shaft in a mine is 16.1 feet from the roof to the floor of it, and is descending the mine at the rate of 16.1 feet per second, when a stone is let fall from the roof of the cage to its floor. What time will it take to fall that distance ?

2. Suppose all dimensions the same as above, but that the cage is ascending instead of descending, then find how long time will be occupied by the stone in falling from the roof to the floor of the cage ?

THE EDUCATED ENGINEER.

There is not a professional engineer to-day of advanced years who does not deplore the lack of educational facilities when he was young as compared with those of to-day. There are those who went through college, graduated with honors, and then selected the profession for after life. There are those who on graduating from the regular old-time colleges then commenced to learn the trade and perfect themselves in the special technicalities appropriate to the profession. All will agree that their probation might have been shortened considerably could they have had the facilities for educating themselves in accordance with the requirements of their intended and later profession. Can it be that there is a single individual who will claim that the rising generation if well taught can be taught too much, that they can start into the world too well posted, or that it would be better to postpone the acquisition of knowledge until it is actually needed for business purposes ? * * * * If the great Stephenson were suddenly to come to life again, doubtless he would find much that would puzzle him, and we do not question that he would not be able to appreciate at once the system of interlocking signals, etc., in the Fourth avenue tunnel, and therefore he would not be qualified to take charge of such a line, nor would he so desire, until he had become acquainted with the intricacies of the system. But the probability is that were he returned to us with the capacity of mind that was his during his period of activity, he would soon grasp the intricacies of the signal system, and after he had mastered these and other

facts of railroading unfamiliar to him, he would be in position to take charge. The educated engineer, with a store of knowledge at his command, has the facility of acquiring new facts of engineering with a rapidity far exceeding that of the uneducated man. But can we imagine an engineer, purely with a special faculty of mind, and devoid of the knowledge of engineering facts ? Such a man, without a fair knowledge of the experiences of others, would be constantly falling into error, and undertake costly structures and appliances, involving principles and practices long condemned and found useless by his great predecessors. To our inquiry, "What constitutes an educated engineer?" we would distinctly reply that it is *not* a man who is lacking in knowledge of engineering facts.—*Chicago Railway Review.*

EFFICIENT WORKMEN.

There is a large number of men striving to obtain salaried positions who would not listen to anything less than a thousand dollars a year, who, in fact, would not be worth to their employer half that sum, because of their lack of an accurate knowledge of their business. Such men should be taught the value of skill and proficiency in their calling.

A workman who has to spend a third of his time in undoing his errors and in correcting his mistakes, who, through ignorance of his trade, is constantly spoiling material, or delaying the work of other men, or who is not able to turn out a fair production for the wages he gets, is far more ornamental than useful in the shop. It is this kind of labor that creates the greatest trouble between the employer and the rest of his help. It is these men who are always talking of the wrongs of the laboring men, and who occupy the most exalted places in the trade and labor associations.

The man who tries to make his services invaluable, who seeks to give his best labor, and to make his work profitable to his employer, will be looked after and cared for in times of trouble. Such men are always known. They do not require to be labelled. Their work speaks for them, and heralds their praise.—*Chicago Industrial World.*

A POINT ABOUT BELTS.

"Bracebit," in the *St. Louis Age of Steel*, says:—"Talking the other day with one of the most prominent leather belt makers in the country, he informed me that it is a great mistake to suppose that the best belts are those which have all the 'stretch' taken out of them at the factory of the maker. In order to take all or nearly all of the stretch out of his belts the manufacturer must subject the leather to a stretching process so violent and severe that all of the life is taken out of it and the belts are robbed of what ought to be a leading feature—durability. If people, he said, would have more patience with their belts, and would buy fewer which have no "stretch," or practically none, they would discover an economy that would surprise them. The belt when driving machinery is stretched gradually, not suddenly and violently, and for this reason the stretching is less injurious to it than the belt maker's process. It would be a little more troublesome to do the stretching in this way, but the economy which would result from it would more than offset this objection. The mistake, however, is common—almost universal—and the best belt it supposed to be the one which has been 'stretched to death.'"

To which let us add that it might be an interesting study for young engineers, and even old ones, for that matter, whether the same idea does not apply to boilers, and in various other ways that will readily suggest themselves to practical men.

The Bungay Manufacturing Co., Norwich, Ont., are into the work at a lively rate, and will soon have 30 names on their pay roll.

THE
Canadian Manufacturer
 AND INDUSTRIAL WORLD.

Published fortnightly by the CANADIAN MANUFACTURER PUBLISHING Co., (Limited).

MECHANICS' INSTITUTE (corner Church & Adelaide Streets), TORONTO.

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FREDERIC NICHOLLS,
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All communications to be addressed CANADIAN MANUFACTURER, Toronto, Ont.

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ANSWERS TO CORRESPONDENTS.

In our issue of Feb. 9 we copied a brief paragraph from the *Brick, Tile, and Metal Review*, relative to glass shingles. It was stated that fifteen of these, 8x12 inches, would cover 100 square feet of roof, whereas it would require 300 slates of the same size to cover the same surface. A correspondent asks us to explain how this can be. The explanation is simply this, that in copying somebody has made the mistake of putting 15 or 150, leaving out the cipher. Slates have to overlap so much that it requires 300 feet surface of them to cover 150 square feet of roof. But the glass shingles, making close joints without overlapping, or overlapping only very little, cover foot for foot. This is what is claimed for them, but of course we gave the paragraph only for what it was worth. We should say, however, that roofing with glass, which is already adopted for green houses, is in these days of new applications by no means unlikely to have its use greatly extended, for other special purposes.

Editorial Notes.

The office of the CANADIAN MANUFACTURER has been removed to Room No. 5, Mechanics' Institute, corner of Church and Adelaide streets. One stair up, turn to the right.

Having completed arrangements with the publishers of the "CONSULTING ENGINEER OF CANADA" for incorporating that journal with the CANADIAN MANUFACTURER, we now devote a portion of our space to a department of Mechanics and Engineering, which will from time to time be improved and enlarged according to the support received from the class of readers specially interested in the subjects indicated. The articles which we begin with in this department will be chiefly of an elementary but at the same time of a progressive character.

In connection with and forming one of the series of technical hand-books now in course of publication by Messrs. George Bell & Sons, York Street, Covent Garden, London, the firm will shortly publish a volume on Cotton Spinning, by Mr. Richard Marsden, one of the editors of the Manchester

Textile Manufacturer, and a contributor to the columns of the CANADIAN MANUFACTURER.

We propose to make the CANADIAN MANUFACTURER worthy of preservation for future reference, in a general way within its sphere. But just at present we would direct particular attention to those tables of wages paid in European mills and factories, which have appeared in our last two numbers and are still being continued. The facts and figures furnished are from the very best authorities, and may be depended upon. In this country both manufacturers and employees will find them useful whenever protection to home labor is called in question.

Rather a remarkable new departure, now being made in Montreal, is thus referred to by the *Journal of Commerce*: Two of the larger manufacturers in the city, Messrs. J. W. Mackenzie & Co., in clothing, and Messrs. Ames, Holden & Co., in boots and shoes, have chartered a train from this city to Manitoba, each firm taking so many cars, the whole to be in charge of a competent employee of the firms. Other firms will probably follow their example in this respect as affording the readiest means of supplying customers' orders in Manitoba and the North-West.

The *Globe* has the following cable despatch from its London correspondent, under date of the 19th. inst.:—The exhibition at Amsterdam engages much attention among English manufacturers, and a large exhibit will represent England. I have been authorized by Mr. Simmonds, the British Commissioner to the Exhibition, to state that should any Canadian manufacturer wish to be represented he will endeavor to obtain space in the British section for his exhibit, provided he receives credible advice, stating the quantity of space required, before March 10th. Messages to be addressed to Mr. Simmonds, at 35 Queen Victoria-street, London.

The importance of many small industries in making up a large aggregate is a topic to which we have frequently referred, and in connection with it we quote the following from the *Scientific American*:—"Speaking in Congress the other day of the need of encouraging certain relatively small industries, Senator Miller referred to the city of New York, the greatest manufacturing city in America—he might have said in the world—and 'yet she has not a cotton mill, a blast furnace, or a rolling mill within her borders. Her manufactories are small,' he said, 'but they employ more than a quarter of a million people.'

"It is worthy of notice in this connection that while recent patents have much to do with the means and methods of the great staple industries, such as steel and iron production, iron mill-ing, cotton, and woollen manufactures, and the like, the smaller yet in the aggregate immensely important industries are almost wholly based upon and due to the development of recently patented inventions."

The Winnipeg *Commercial* confirms previous reports of extensive damage to last year's wheat crop in the North-west by wet weather after cutting. The season was an exceptionally

To Mill Owners and Manufacturers.

USE

F. E. DIXON & CO.'S

PURE BARK-TANNED

Star Rivet Leather Belting!

FIRST PRIZE FOR LEATHER BELTING

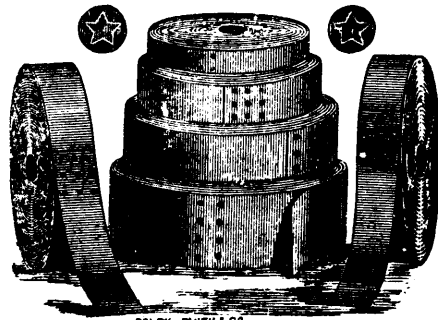
-AT-

- Provincial Exhibition, Ottawa, - 1875.
- " " Hamilton, 1876.
- " " London, - 1877.
- Industrial Exhibition, Toronto. - 1879.
- " " Toronto 1880

EXTRA PRIZE FOR Genuine Oak Tanned Belting.

-AT THE-

- Provincial Exhibition, Hamilt, 1876.



INTERNATIONAL MEDAL

-AT THE-

Centennial Exhibition, PHILADELPHIA, 1876.

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BELTING LEATHER

AT THE

Industrial Exhibition, Toronto, 1879. " " " 1880.

Our Belting is Short Lap, and is warranted to run straight and even on the pulleys, and certainly cannot be surpassed in quality by any other Belting in the market at the same prices.

Our Leather is of Pure Bark Tannage, and consequently is much more durable than the chemical tanned leather of which most of the American Belting imported into Canada is made, though sold under the name of Oak Belting.

To accommodate those who desire to have a really genuine article of Oak Belting, we beg to say that we keep in stock a quantity of

Oak Leather of the Celebrated Tannage of J. B. HOYT & Co., of New York,

and as the duties on imported rough Leather are much less than on the manufactured Belting, we are thus enabled to sell the Belting made from this quality of Leather much cheaper than it can be imported.

LARGE DOUBLE BELTS A SPECIALTY.

Please note that our Price List averages Twenty to Twenty-five per cent. lower than the American Price List at which all American Belting is sold in Canada.

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GEO. F. HAWORTH,

SOLE AGENT FOR DOMINION OF CANADA,

WAREHOUSE, 65 YONGE STREET, TORONTO.

wet one for Manitoba, but, says our contemporary, all the rain that fell could not have damaged the wheat one per cent. had the most ordinary care been taken of it. As it is, one-fourth of the crop is more or less damaged by rain, half of that proportion so much as to be only fit for feeding to animals, and rather indifferent feed at that. To get barns to hold the crops of the North-west is impossible now; but what the people there want is the help of a goodly number of old country stack-builders, thousands of whom are now working for miserable wages.

A serious feature in the situation over the border at present is the stoppage of many large iron and steel works, throwing several thousands of men out of employment. These great disasters are partly, but not wholly, accounted for by the prevailing uncertainty with regard to the tariff. The bottom fact is that Protection has developed the production of iron, steel, and rails up to the point of having overtaken consumption. In the heavy iron and steel lines there is now competition sufficient to do justice to the most exacting "consumer." Protection has done what its advocates said it would—it has made iron cheap in the United States.

The rumors current for some time back of an alliance between Vanderbilt and the Canadian Pacific Railway Company appear to be pretty well confirmed at last. It is stated by New York papers, on the authority of Mr. Duncan McIntyre, of the C. P. R., that the Grand Trunk is to be paralleled all the way from Chicago to Montreal. The scheme will not be complete until the Quebec and Ontario line has been finished, but this, it is said, will be a fact accomplished ere another twelve months have passed. On the same authority it is stated that Mr. Vanderbilt has taken a heavy interest in the Canadian Pacific. A gigantic railway contest between the Grand Trunk and the two allied powers named is already begun in good earnest.

The course of the tariff discussion in Washington has been marked by two important events this week. In the House, an attempt to suspend the rules, for the purpose of taking up a Bill cutting off internal revenue taxation to the amount of some forty five millions, was lost for want of the necessary two-thirds vote. The whole excise system of the United States employs four thousand officials, and involves a distribution of some five millions annually to run it, and to get Congress to abolish or even materially reduce this vast amount of patronage seems all but impossible. There are other reasons, but this is the main one, why all attempts so far to cut off excise duties have failed. In the Senate a Tariff Bill has been passed, but whether it can be got through the House in the short interval remaining between now and the 4th of March is doubtful. The Bill makes greater reductions than the Protectionists are inclined to accept, especially in the iron and steel schedule, but still some Protectionists are of opinion that it would be far better than the discouragement and uncertainty at present prevailing. The time left for action is now very short, as to-morrow week will be the last working day in the lifetime of this Congress.

We find in the *Northwestern Miller* the following, which may have its application in other departments of manufacture besides the one referred to:—Why do the manufacturers of oat meal, pearl barley, and hominy machinery keep so awfully silent as to the merits of their machinery? Inquiries like the following from Mr. Frank Van Dyk, of Hickman, Neb., are frequent, and we are obliged to answer, "we don't know," though such an answer is one we dislike very much to give:

"I would be very much obliged if you could advise me where I can get machinery to make barley, that is, to pearl it. We call it in German *gruetze* or *graufen*, and we make it from barley, buckwheat, and oats. I have about eight horse power for the purpose.

"Hickman, Lancaster Co., Neb., Feb. 7."

If any manufacturer of such machinery is enterprising enough to read, which we almost doubt, we trust he will still further exert himself by telling Mr. Van Dyk what his machinery will do and what it costs. There is considerable demand for such machinery, and if the makers of it will only advertise it somewhere—it doesn't make any difference where; the *Southern Miller* would undoubtedly be useful—they will confer a favor on every mill furnisher and editor of a milling paper, we are confident. We have received at least a dozen inquiries for hominy mills in the past six months, and for aught we know those who made them are still looking for the machine, because we could give them no information."

TAPPING SUBTERRANEAN HEAT.

Several schemes have been proposed for utilizing the internal heat of the earth; and seeing that, as we descend, the temperature decreases at the rate of 1° Fahr. for every sixty feet or thereabout (this rate varies greatly at different places), the possibility of doing so is evident enough. The practical question is, whether it is cheaper to bring this into our houses from our feet, or obtain our supply by disinterring and liberating the fossil sunbeams entombed in deposits of coal. "What I have read," remarks a writer in the *Gentlemen's Magazine*, "concerning these projects, leads me to the conclusion that the cost of sinking deep enough to boil water, and then to convey the steam, or otherwise the directly heated air, to our houses, will cost far more than the same amount of heat from coal; but as our thickest, best and most accessible coal seams proceed further towards exhaustion, and coal becomes constantly much dearer, the case may be different. The Americans generally take the lead in these very tall and extremely novel schemes, but in this particular effort they are likely to be forestalled by the Japanese, who are seriously contemplating the availability of the hot springs around Tokio as a source of heat and power, and also of using the heat obtainable by sinking. The subject was introduced at a meeting of the Seismological Society of Japan—a society which in its own department (earthquake study) is doing good scientific service. Mr. Milne, who read the paper, proposes to convert some of the heat into an electric current, and transmit the energy to the town. This, in a region where the hot springs and earthquake disturbances indicate a much more rapid increase of heat than that above named, is, of course, more likely to be within practical reach. Besides this, the tapping of subterranean heat in districts liable to earthquakes will probably have some slight effect in moderating these convulsions."

Textiles.

THE BERLIN KNITTING FACTORIES.

The Berlin *News* has the following with regard to the knitting factories of that lively little manufacturing town:—"We are pleased to be able to state that our town is getting quite largely into the business of manufacturing hosiery and all kinds of knitted goods. We have three concerns here that are engaged in this branch of manufacturing. In referring to this department of our manufacturing industries, we must give credit to Mr. Herman Eby, of the Berlin Knitting Works, as the pioneer in making knitted goods. He has for many years been engaged in supplying wholesale firms with stockings and socks, of both cotton and woollen yarns, and we believe has the reputation of turning out the very best goods of the kind in the market. Mr. Eby several years ago had the contract from the Government to supply the Mounted Police in the North-West with stockings, and we are assured gave the very best satisfaction. He has lately received orders from some wholesale houses to work up a large quantity of yarn.

Next in the order of time comes the Eureka Knitting Works, which were several years ago started and carried on largely by Mr. P. Boehmer. Mr. E. A. Snider bought out Mr. Boehmer a year ago and carried on a good business till about the beginning of the year when he sold out to Messrs. James Rittenhouse and Isaac L. Bowman, who are now putting an amount of energy and capital into this business which it has never before had. Mr. Rittenhouse is a young man of most excellent character, and very hard working and pushing, while Mr. Bowman is possessed of all necessary capital to carry on a large establishment. We look for this to grow into a large concern.

Then we have still a younger firm, Messrs. Henry Carr and Moses Betzner, who have secured the premises previously occupied by the Glove Factory, and will carry on a very large business. Mr. Carr has been for a year or more engaged in manufacturing Cardigan jackets, scarfs, clouds, &c., and has made a splendid class of goods; and now with the almost unlimited capital which Mr. Betzner brings into the business, we have no doubt whatever but Messrs. Carr & Co. will soon have one of the largest knitting concerns in the Province. From these facts it will be seen that while Berlin makes nearly all the buttons used in the Dominion, and many in the States, and while it has the most successful tanneries, furniture factories, toy works, &c., it bids fair to take an A 1 position in the manufacture of knitted goods."

FOREIGN TEXTILE FABRICS IN CHINA.

The total importation of China in 1881 amounted to 544,000,000 marks, or 55,000,000 marks more than in 1880. The greater portion of this increase was due to the importation of opium, which altogether constitutes over one third of the total importation. The importation of textile fabrics amounted to,—

	1880	1881
	Marks	Marks
Cotton	129,580,000	144,340,000
Woollen	32,200,000	32,240,000

The importation of woollen goods is, therefore, proportionately very limited, and shows a very slow increase, and there is only a slim prospect of increasing the exportation to China, at least not until foreign goods are effectually introduced among the masses of the population, which, according to the latest consular reports, is by no means the case as yet. The consul at Tientsin, however, says that the so-called Russian cloth, but which is made in Germany and exported *via* Ham-

burg, has gained great popularity within his district; in 1881 there were 3,320 pieces imported, against 1,920 pieces in the preceding year. The importation of cotton goods increased considerably as compared with that of the preceding year, but it has at the same time over-stocked the Chinese markets, causing a perceptible depression in the China trade. England's exportation of cotton cloth during the first nine months of 1882 is behind the last year by 80,000,000 yards, or £923,000. Some consuls, however, report that the decrease is caused by the inferiority of the fabrics, which were found to be of English origin, and the consul at Foochow says in plain words, that the Chinese nankeens are, on account of their greater solidity and warmth, preferred by the population to the "flimsy" Manchester manufactures. In regard to American competition, the consular reports, referring, of course, to their particular districts, do not agree. From some districts the consuls report that American fabrics have lost all their popularity because during the past years they were not of their usual superior quality. In 1880, the importation into China of ready dyed American muslins was tried with 32,000,000 yards; but the Chinese did not like the color which, besides, was not fast. Of this class of goods very little was sold, and American statistics show a considerable falling off of this article of export to China.—*Wool and Textile Fabrics.*

A BLANKET FACTORY FOR KINGSTON.

The *News* says that Kingston is likely to have a blanket factory soon. A movement for the establishment of such a manufactory has been started by Dr. Hickey, he being of the opinion that it would prove a paying speculation. He consulted Mr. J. Hewton and from that gentleman learned that a blanket factory could be carried on most successfully in Kingston and with a good profit to those who might invest their money in it. An available site was then looked for, and after a thorough examination of the city had been made it was finally proposed to secure the old Morton Brewery, just this side of the Grove Inn, and convert it into a factory. It would require to be enlarged about one-third its present size, and several alterations made in the interior. It is said that the buildings can be secured at a low figure, and with a comparatively small outlay, can be made commodious and especially adapted for the business referred to. There is plenty of room and the site is an excellent one—near the lake, from which a supply of good water can be secured. Subscriptions for stock in the new enterprise are coming in. If the factory is constructed as proposed, it will give employment to about 45 hands, and its capacity will be about 1,200 pounds of goods, or 100 pairs of blankets, per day. Of course if everything goes on as successfully as anticipated, the capacity may be increased, even doubled. If the establishment is undertaken immediately, the mill should be in full operation by next July. It is stated on good authority that there is a great demand for blankets, and that there would be no difficulty in disposing of the product of the Kingston factory. Mr. Hewton says that the factory would consume a large quantity of the coarse wool grown in the vicinity of Kingston, and for which there is not ready sale. Dr. Hickey is now in correspondence about the machinery.

GROWING IMPORTANCE OF THE AUSTRALIAN WOOL SALES.

For the past year or two, says the *New York Dry Goods Bulletin*, an important change has been going on in the wool trade between Australia and England. The Australians are trying to become independent of London in point of wool sales by selling the bulk of their wool at auction at home, and

as this movement suits Continental wool consumers very well, now that steamship lines begin to run direct from Continental ports to Australia, the Londoners do not much admire this new feature. They are indeed quite jealous of it.

	Clip 1880-81. Bales.	Clip 1881-82. Bales.
AUCTION WOOL SALES IN AUSTRALIA.		
At Melbourne	122,272	157,974
At Sydney	50,000	75,000
At Adelaide	25,000	40,000
	197,272	272,974

Increase last clip 75,702 or 38 per cent. The change is just as welcome to the American consumers of Australian wool as it is to the Continental; hence it is important even on this side, and it is to be hoped that it may assume greater proportion year after year, thus stimulating a direct trade instead of an indirect one, in which we are tributary to London.

Messrs. Belding, Paul & Co., Montreal, who purchased the premises of the Canada Silk Co. some time since, are carrying on their manufacture of silk thread, machine twist, ribbons, etc., in that establishment in connection with the business of their extensive manufactory on St. George street.

At the matting factory, Cobourg, they are turning out a new kind of matting, made of Mexican fibre. The samples we saw there were very superior, both as to texture and workmanship. It will last almost forever, being hard and smooth. A very large cocoa mat, for the Risch Organ Works, Toronto, has just been shipped. It had the name of the factory worked in red on the surface.

The Nova Scotia Cotton Manufacturing Company of Halifax, N. S., will soon have their goods in the market, their machinery is nearly all in position. The Engine has been started, it is a 30x60, Harris-Coriass, from Providence, R. I.

The boilers are steel tubulars, and have been set with the Jarvis Furnace. Miller Bros. and Mitchell, of Montreal, are putting in one of their power elevators.

The annual general meeting of the Montreal Cotton Company was held recently at the offices of the Company, No. 5 Place d'Armes, Montreal. The report for the past year was read and adopted. The following gentlemen were then elected officers for the ensuing year:—Mr. A. F. Gault, President; Hon. J. R. Thibaudau, Vice-President; Messrs. Charles Garth, E. K. Greene, J. Grenier, M. H. Gault, M.P., and David Morrice. The meeting then adjourned.

The contract for supplies for the North-West Mounted Police have been awarded to the following tenderers For blankets—A. French, of New Edinburgh. For woolen undershirts—E. Turnbull, of Galt. For woollen drawers, stockings and socks—Duncan Bell, of Montreal. For moccasins and fur caps—R. J. Devlin of Ottawa. For gauntlets and mitts—M. Malone, of Montreal. For water-proof sheets, blanket straps and kit bags—S. & H. Borbridge of this city. For boots—Cassels, Stinson & Co., of Montreal. In all cases the lowest tender, it is said, was accepted.

Mr. Thos McCosh of the Paris Manufacturing Co. (engaged in the knitted goods trade), has sold out his stock in the company, 154 shares, to Mr. Banfield Capron. Mr. McCosh will shortly sever his connection as secretary and treasurer of the company, and it is reported he intends to go into the wholesale grocery business. As an index to the prosperity of the company, we may mention that when Mr. Reith took his investment of \$1,500 out of the concern it had increased to \$3,000. Mr. McCosh invested about \$7,000, and took out \$16,400 after an investment of 10 years. and this in spite of the fire, which entailed a loss of about \$50,000. A new secretary has not yet been appointed.—*Brant Review*.

Recently the Clark Thread Company, whose works are at Newark, N.J., and who, we believe, are a branch of Clark & Co., of Paisley, Scotland, wrote to the New York *Tribune*, as follows: To the Editor of The New York Tribune.

SIR,—Referring to the letter from Mr. Porter which appeared in last Sunday's *Tribune*, we would be obliged by your publishing the following table, received from Clark & Co. by cable to-day, showing the actual average wages paid by them in Paisley, Scotland, with which table we unite the wages we pay for the same work in Newark, N.J. These facts require no comment;

Weekly Wages in Newark.	Weekly Wages in Paisley,
Cop-winders	\$8.00
Finishers	5.50
Reelers	8.00
Spoolers	8.00
Foremen	20.00
Pickers	7.00
Hank-winders	7.00
Cop-winders	14s. or \$3.50
Finishers	10s. or 2.50
Reelers	17s. or 4.25
Spoolers	13s. or 3.25
Foremen	28s. or 7.00
Pickers	16s.6d. or 4.12
Hank-winders	15s. or 3.75

CLARK THREAD COMPANY,
By William Clark, Treasurer.

THE POOR AND THE THREAD MILLS.—The Hartford *Courant* says that a contemporary, which is accustomed to attack the Willimantic Linen Company, publishes a letter from Prof. Sumner regarding this company, which is nominally an explanation of the remarks that he recently made about it. The upshot of it is that it is a bad thing for the country to have prosperous mills, clean buildings and well paid help. He says the poor sewing women toiling at piece work in the cellars and garrets pay for these mills when they buy their thread out of their scanty earnings. One difficulty here, a frequent difficulty in free-trade arguments, is that the professor's "facts" are wrong. The sewing women of the garrets, engaged on piece work, are regularly supplied with thread by their employers. It is immaterial to them whether thread is three, five or ten cents a spool. They do not have to pay for it. Thus these already unfortunate women are relieved from the responsibility of having reared these iniquitous mills. But even if they had helped build them it would be nothing to be ashamed of. It is just as well to build thread mills in this country as to pay for those in England.

Furniture and Woodwork.

A Coffin Factory is projected at Moncton, N. B.

The Napanee Paper Mill Co. have one hundred and fifty teams employed in getting out wood, besides those owned by the company.

Mr. Herring stated at a recent public meeting in Napanee that he purposes asking soon to have a bonus by-law submitted to aid the enlargement of the glass factory.

The *Intelligencer* says that the furniture manufacturers of Belleville are very busy. One day recently Mr. Frost sent two very large loads to a dealer in Napanee, and Mr. Tickell filled a large order for Toronto.

A Winnipeg paper announces the arrival of Mr. F.F. McArthur, mayor of Bowmanville, Ont., the large manufacturer of furniture, who intends making arrangements for starting a branch of the well known Upper Canada Furniture Company. They will probably employ 200 men the first year.

On a farm a short distance north of London East it is said a fine white clay has been found in large quantities, which, at a distance, could not be distinguished from snow. It has been found to burnish metal to the brightest hue. Gentlemen in London are considering whether this clay could not be turned to valuable account in the manufacture of crockery and other wares.

An Uxbridge paper says:—The Bristol Piano Co., *alias* the Union Organ Co., are sending circulars to parties in that village, offering to send a Parlor Cabinet Organ for \$11 cash and the names of twenty-five families having no organ or piano. Have nothing to do with them as they are frauds. Dr. John C. Raymond, 164 Washington Street, Brooklyn, N. Y., is also a huge fraud.—*Oshawa Vindicator*.

Iron and Machinery.

INDUSTRIAL ENGLAND.

NAIL-MAKING IN THE BLACK COUNTRY—HARD WORK AND A MISERABLE LIFE.

We continue Mr. Porter's description of "Industrial England," as given in his letters to the *New York Tribune* :—

NAIL-MAKING IN THE BLACK COUNTRY.

I have in mind some sad facts illustrative of the present condition of the laborer in some parts of Great Britain, which have not as yet come under my immediate observation, but which bear so directly on the inquiry I am attempting, and are likely to be of such unusual interest during the present tariff discussion, that I have taken this opportunity to present them. The most startling account of the degradation of a branch of English labor comes from the Black Country, a region which I shall not reach for three or four weeks. The facts, however, which I shall present in advance of going there are from the most trustworthy source and were actually witnessed a few days ago. It takes one back to the days before Parliamentary interference compelled the white slave-drivers of the manufacturing districts of England to stop using women as beasts of burden in the coal-pits of this same region. I had expected to find poverty and distress and squalid misery in these great centres of industry, for we have that at home in a land where the laborer is not obliged to work for 10 or 12 shillings a week. I did not expect to read such a recital of man's greed as one that has just been made public as "a simple narrative of truth" from the Black Country.

It appears that to-day, in spite of "Factory Act," and "School Board," thousands of females, old and young, mothers and daughters, with their little children by their sides, toil by day and by night, in a locality about seven miles from the great Free Trade city of Birmingham—the home of Bright and Chamberlain. In this gloomy district about 24,000 people are engaged in making nails and rivets. If they were men and boys the lowness of the wages would not seem so bad. But this account brings out the fact that sixteen thousand females are engaged day after day in the occupation. They are not all mature women; daughters work by the side of mothers—daughters who, in their tender years, ought to be at home, if they have any home, or in bed, instead of working their weary arms in shaping, in the still small hours of the morning, molten iron into the form of nails. Here is the picture drawn by a writer in *The London Standard* who actually witnessed it two or three nights ago :—

"In the middle of a shed which adjoins a squalid-looking house there is a whole family at work in the production of these nails; father, mother, sons and daughters—daughters, too, very young in years, but with that sad look of premature age which is always to be noticed in the faces of child-workers. The gayety of youth, its freshness and its gentleness, seem to be crushed out of them. In the centre of the shed, with its raftered ceiling—a bleak and wretched building through the walls of which the wind readily finds its way—there is a 'hearth,' fed by 'glades' or 'breezes.' Probably there is a girl or woman blowing at the bellows, while the strips of iron from which the nails are made become molten."

To make this still more forcible, here is an actual case :

"In one of these forges was a mother and several children. The mother was a woman probably forty years of age; her youngest daughter—a flaxen-haired girl with a sweet and winsome face—was certainly not more than twelve years of age. By the side of the hearth there was what is technically called the 'Oliver'—a barrel-like construction on the top of which is fixed the stamp of the particular pattern and size of the nail required to be made. The workmen and workwomen, by means of a wooden treadle—an industrial treadmill it ought

more strictly to be called—shoot out the nails from the slot in which they are fixed. They have previously hammered the top of the incandescent metal with masculine firmness, so as to form the top of the nail."

So inured do these poor girls and women become to this work that it is said they seem to work with more vigor than the men—very often, indeed, they support their husbands and their fathers, who may have fallen into drunken habits. But the first question that will naturally be asked, by those that demand cheap goods even at this fearful degradation of woman, is, How much can they earn? Again I quote from the man who has witnessed the spectacle :—

"The remuneration they receive is incredibly small. It is no unusual thing—on the contrary, it is rather the usual custom—for a family of three or four persons, after working something like fourteen hours a day, to earn £1 (\$5) in a week. But out of this money there has to be deducted 1s. 3d. for carriage to convey the nails to the 'gaffers,' as they are termed in the district: then there is allowance to be made for fuel and the repairing of the machinery, which reduces the £1 to about 16s. 9d. (\$4.18) for three people—for three people who have commenced to work every morning at half-past 7 or 8, and who have worked on through all the weary day, with no substantial food, until late at night.

These poor laborers rarely or ever taste meat from one week's end to the other. In the expressive but simple language of one workman, this is how they fare: "When the bread comes hot from the bakehouse oven on Saturday we eat it like ravenous wolves." The scenes of misery—misery so deep and dreadful that the most graphic pen can only faintly convey its depth of sorrow—that are witnessed in this region would hardly be believed in the United States, and were I not quoting from English authority of the highest character I should be fearful of laying myself open to the charge of prejudice, so frequently made against those who would rather elevate than degrade labor, and who do not want cheapness at such a fearful cost. Women, it is said (and in a few weeks I shall go through this entire region and verify the words of my informants), within a few days of their confinement have been known to work in the agony of exhaustion, in order to earn a few pence, at the "hearth"—not the "hearth" of home, which England especially at this season of the year so fondly boasts of, but the "hearth" of the forge. They have been known to return to work in a day or two after childbirth, "emaciated in constitution, weak and weary for the want of simple nourishment." Their children, ragged and ill-fed, have had to lead miserable and wretched lives, with no hope before them but a life of wickedness and vice. What more dismal picture can be drawn than the following description of the cheerless homes of these poor creatures.

"The houses, if they deserve to be dignified with the word, are wretched in construction; in many instances they are more like hovels than human dwelling places; they seem to be devoid of all those ordinary conveniences which are to be seen in houses occupied by a better class of workpeople; they certainly shelter, and that is all, the toilers who for a few short hours rest within their ricketty walls. That many of these residences accommodate the families who have to live in them is only the simple truth. In nine cases out of ten there is only one room below and two above; and in ninety nine cases out of a hundred they are inhabited by large families. How they manage to exist at all in some of these houses is a problem which may well exercise the ingenuity of some social philosophers to solve. This is a gloomy picture by day, but it is far worse by night. Nearly the whole district is literally, as well as socially, in the dark. Occasionally lurid bands of light tinge the distant horizon with a purple glow (they come in fitful flashes from some distant iron works), except, perhaps, in the liquor vaults and in the shops in the few leading thoroughfares where the competitive exigencies of business demand the luxury of gas. In all other parts of the district, the Old

World system of tallow candle and oil lamp artificial light has not been superseded."

This is rather a gloomy subject for Christmas Day, but after all it is important that those who may soon be called upon to legislate in our own country should understand what competing with a Nation that thus permits woman to slave means. Can the parallel of this be found in the United States? With such a black and yet such a truthful picture of to-day in the Black Country can America afford to take a leap in the dark?

WHAT BECOMES OF THE OLD CASTINGS?

Experimenting in the manufacture of machinery is a prolific source of disused and abandoned castings. The scrap men find this a valuable field. Several of our largest manufacturers of reapers and mowers could give some interesting history bearing on this branch of the subject. If we mistake not, the reapers first turned out at Massillon, Ohio, and also by Wood, had all to be called in, and replaced. We presume the skeletons of some of these primitive reapers could still be found in the fields or barns of the original purchasers. The sewing-machine men could also give some interesting information touching old castings. It has been for a long time their practice to make sales of new machines by allowing a liberal price for the purchaser's old machine, and exacting a sufficient difference in money to pay them liberally for the new machine. They do not take these old machines home and repair them to resell, as many suppose, but they knock them down, saving the castings for scrap. As in the trade, they get the old machines for nothing, what trifling sum they realize from the scrap is so much gain.

There are thousands of articles of new invention that are produced for sale upon the market, that never get nearer to the consumer than the store or warehouse. The castings in these are valueless unless remelted. The army of old churns, washing machines, fence posts, and hay rakes, that are annually produced and distributed through the country for sale, and which never sell, consume in their construction a vast amount of castings. As these castings are never worn out, where do they go? No one knows. They are scattered, like the bones of the western emigrants, all along their journey, from the foundry to the store, shop, or farm.

Castings must from necessity sooner or later wear out, or oftener, like ladies' bonnets, go out of fashion. But where all the old castings, when abandoned, go, is, as we have said, hard to tell. Some, no doubt, are left to wear out by rusting, others find burial in the ground, others still are hid away in safe quarters in the barn, cellar, or garret. Some lie by the roadside, or on the shores of our lakes or rivers. One sees a piece of gearing here, a wheel there, or a piece of stove casting elsewhere. Much of the old castings in the country is bought by the local dealers in the towns and by them resold in the foundries. But untold thousands of dollars' worth of this refuse material has escaped the vigilant eye of the scrap dealer, and is now a dead loss to the world. —*Industrial World.*

James Harris, James C. Robertson, W. H. Thorne, A. L. Palmer, Charles A. Palmer and D. Breze, have filed a memorandum of association for the incorporation of a company to be styled the "Harris Manufacturing Company." The object of the company is the manufacture of all kinds of railway cars and carriages, and all other things as are incident to the attainment of those objects, with power to borrow money and give promissory notes, bills of exchange, or other written obligations therefor, for the purpose of carrying on such business; with a capital of three hundred thousand dollars, to be divided into three thousand shares of one hundred dollars each; and that the office or principal place of business is to be in the town of Portland.—*St. John, N. B., Sun.*

Factory Fires and Accidents.

Hastings, Ont., January 27.—Peters' woollen factory took fire this morning and burnt down, with machinery and stock; also Fowler's cotton factory, not in operation. Insurance about \$8,000; amount of loss not known.

The foundry of Messrs. Griffin & Grundy, Guelph, was on the 7th inst. destroyed by fire, at a loss of between four and five thousand dollars. Insured for only \$1,000—in the Standard, Hamilton.—*Berlin News.*

Mr. Isaac Patten's fanning mills factory, about a mile east of Deseronto, was destroyed by fire on Saturday, 14th January, about 9 p.m., and the building, machinery, including fifty fanning mills, etc., were completely destroyed. Mr. Patten had insurance of \$1,000 in the Phoenix on the contents, and \$1,000 on boiler and engine and buildings. Mr. Patten will rebuild in the summer; in the meantime he will continue business in another building, and parties wishing to avail themselves of his services and experience can be promptly accommodated.

At Paris, on the afternoon of Monday, Jan. 22, Mr. D. Mitchell, miller, and Joseph Brown, millwright, were repairing the shafting in Whitlaw, Baird & Co.'s mills, when Mr. Mitchell's coat caught the shaft from the water wheel and he was almost instantly killed. He was swung round at the rate of 150 times per minute and was dashed against an old wheel lying close by, his body being fearfully mangled. Mr. B. tried to reach him and was slightly injured in doing so. Mr. Mitchell was one of the oldest and most respected residents. He had worked for Mr. Whitlaw in the mill for twenty-five years.—*Berlin News.*

A terrible accident occurred at Messrs. J. & E. Wissler's mill, Salem, near Elora, Ont., the night of Thursday, Jan. 25th. The water-wheel being frozen most of the hands went below to get it started, and left a full force of water on. After they had succeeded in starting it and come upstairs, a young man named Austin Crowley tried to adjust the chopping stone, but could not and called on Mr. Buckley to do so. Mr. Buckley ran to stop the water wheel, and was just doing so when the chopping stone burst in pieces, killing Austin Crowley and dangerously injuring Mr. Buckley. About one-third of the stone was lying partly on Mr. Buckley when he was found.

The *Peterborough Review* says that at an early hour on the morning of Saturday, Jan. 7th, the woollen mill and cotton mill at the village of Hastings, on the south side of the bridge, took fire and were totally consumed. The alarm was given by the blowing of whistles at 5.45 o'clock, and the villagers quickly answered the summons, but the fire had gained such headway that all their efforts were futile. The large stone buildings, with all the machinery and stock which they contained, except a few pieces of cloth which were in the office of the woollen mill, were totally consumed. . . . This fire will be a heavy loss to the village. The mills were the largest industry in Hastings, and Mr. Peters had had the woollen mill fitted up in first-class style. He had expended a large amount of money in it, and was just beginning to get some return for the outlay. He had enough orders ahead for goods to keep the mill running for six months, and had \$2,500 worth of stock ready to be finished. His loss will amount to about \$3,500 on machinery and \$4,500 on stock, on which he had an insurance of \$2,000 in the Gore Mutual. The buildings were owned by the Fowlds Brothers, and were valued at between \$12,000 and \$15,000, and insured for \$5,500 in the Royal. Fowlds Brothers also had about \$2,000 worth of machinery in the mills, on which there was an insurance of \$500. The total loss will therefore amount to about \$25,000, and this is met by only \$8,000 of insurance. This fire is another evidence of the urgent necessity for every village having adequate fire protections, and with the experience that Hastings has had it is surprising that it has not before this made some provision for protecting the property in the village from the flames.

February, according to the *Daily Indicator*, promises to be a month of railway changes and new combinations that will surpass even the imagination of many of the usually well-informed of the street.

Railways and Shipping.

A new pamphlet has been issued by the Canadian Pacific railway, giving a full description of the Canadian North-West and its resources.

Railroad experts declare that over ninety per cent. of train delays are caused by hot journals. This could easily be remedied by the use of hollow axles. This, together with a car coupler, should occupy the attention of inventors.

There is probably no section of the United States that is so covered by a net work of railroads as North Dakota, taking into consideration the time the country has commenced to boom. It will be surprising to those who understand the situation to be assured that over 1,000 miles of rails will be laid in North Dakota and the Red River valley during the year.

Work on the Northern Pacific highway is being pushed on, in spite of the winter, by an army of some thirteen thousand men, and only three hundred miles of the transcontinental line remain to be completed. Through trains are expected to be running by October 1. The branch to the Yellowstone Park is to be finished by June 1, and will induce a rush of summer travel to that wonderful region.

The report of the Commissioner of Public Works gives the mileage of completed railway lines in Ontario at 3,744.63 miles. Of these 1,464 miles were completed prior to, and 2,280.63 since, Confederation. In addition, there are at present under construction or contract lines aggregating in all 809 miles, the principal of which are the Ontario and Quebec, 215 miles, and the Ontario and Ottawa, the main line of which is 182 miles in length.

A contractor thoroughly versed in railroad building says:—"A common prairie track costs \$12,000 per mile to construct, \$3,150 for grading, \$3,922.50 for 56-pound steel rails, leaving less than \$5,000 for bridging, ties, track-laying, etc. This does not include right of way. But a road equipped with depots, round-houses, etc., should not cost over \$20,000 per mile, and on most roads between the Mississippi and the Rocky Mountains the cost per mile was less."

Every other member of the Minnesota Legislature seems this winter to have a Bill in his pocket for the disciplining of the railroad companies. Five Bills have already been introduced in the House for the regulation of passenger and freight charges and the prevention of discrimination, besides two or three more making employees criminally liable for injuries caused by accidents and for damage to freight or personal baggage resulting from neglect or carelessness. One of the most remarkable of these minor Bills makes baggage-smashing a misdemeanor punishable by fine.

The Elgin County Council have passed the following resolution;—"That this Council co-operate with the other counties of the province in petitioning the Dominion Government for the following purposes, viz.:—To create a Railway Commission, with power to settle all disputes between individuals, corporations, or companies, and all railways doing business or who may hereafter do business in the Dominion; also to compel such railway companies to so arrange their tariff as to do justice to all parties, and abolish all discriminations in favor of individuals, and to so arrange their trains as to give all possible accommodation to the public."

The direct line of the Canadian Pacific Railway, by a new arrangement, has been divided into three sections. The three new offices necessarily created will be known as train superintendencies. The division between Montreal and Ottawa will be managed by Mr. Thos. Hay, late of the Grand Trunk at Brockville; between Ottawa and Brockville by Mr. B. Boyne, late outside agent at Brockville; and between Carleton Place and Mattawa by Mr. Albert Chapman, late express conductor, also of Brockville. The duties of the position consist of running all trains properly.—*Almonte Gazette.*

We have been informed that at the Perth car shops the men struck work because their pay had not arrived as promptly as they

thought it ought to, but it had actually arrived when they struck, though of course they were ignorant of it. After receiving their pay they went to the shops next morning to resume work, but were told they had gone out for their own pleasure and now they could stay out for the company's pleasure. We got our information from an employee of the Company, and if the facts are as above the men acted precipitately, and the Company are just a little vindictive. Better wipe out old scores now and begin afresh with a clean slate.—*Almonte Gazette.*

The National Exposition of Railway Appliances, to be held at Chicago from May 24th to June 23rd of the present year, will contain, among its other special features, as full a collection of old articles pertaining to railway building and operation as it is possible to obtain, which will represent, by contrast with their modern successors, the improvements of the past fifty years. Such of the early roads as have any old tools, rolling stock or other appliances, will confer a favor upon the Exposition Committee by notifying the Secretary, Mr. E. H. Talbot, Grand Pacific Hotel, Chicago, who will make arrangements for the transportation of all articles to Chicago and for their return.

The Chicago trunk lines are drawing the reins about on passenger train men especially, and train-men generally. Drinking intoxicating liquors, or visiting places where they are sold, is forbidden, and on some of the roads smoking while on duty is prohibited. The other day John Whitney, a popular engineer on the Chicago, Burlington, & Quincy, stood in his cab at Creston waiting to take the express train on his run. A well-dressed stranger approached him, and, after a desultory conversation, asked him his name, which John very politely surrendered. A few days after John was somewhat surprised by the reception of a notice from H. B. Stone, Superintendent of the road, of suspension from service for ten days, because of smoking while on duty, in violation of the rules of the road.

In the course of a conversation, recently, a large ship owner of King's, N. S., who had in our harbor a month ago a vessel of some 2200 tons, of which he is the principal owner, stated that a ship which had been running about one and a half years paid him last year 40 per cent. of her cost. This was corroborated by the statement of another shareholder in the same vessel that she had paid him 32 per cent. and interest. The same owners are now laying the keel of a ship of about 1600 tons in Kingsport, N. S., being perfectly satisfied that, unless some unforeseen changes occur in the next twenty years, no property will pay them better than large wooden ships. In this connexion it may be noted that one of St. John's practical builders, after a personal tour of the chief yards of Maine, is satisfied that we can build for two-thirds of the cost of building in that State. He went to Maine also to pick up points as to building, but returned feeling St. John had nothing to learn from American builders.—*St. John, N. B., Sun.*

A DRAIN OF EMIGRANTS, AND OF HARD CASH TOO.

The London *Times*, quoting from German authorities, says that the number of emigrants that have left Germany during the last 60 years is over 3,500,000, of whom the greater part have taken their departure within the last thirty years, the United States having absorbed in 1881 no less than 248,323. Dr. Friederich Kappe estimates the amount taken away by each emigrant as not less than 450 marks, or £22 10s. so that the capital transferred to the United States during last year (1881) amounted directly £5,587,267. And this, it should be remembered, is not returnable to Germany in the ordinary ways of trade or commerce, as, in point of fact, the German emigrants to the United States become Americans, and, consequently, competitors with Germany in agricultural and industrial pursuits. Dr. Engel considers that the cost of bringing up a young person of the lower or middle classes to the fifteenth year is about £200, and he estimates the loss to Germany during the emigration of the last sixty years, in cash and valuables taken by each emigrant, at over nine milliards of marks—nearly twice the amount of the war indemnity paid by France in 1871.

Legal.

Attachment.

A creditor in his action to recover his debt, served a writ of attachment on an insurance company, which had insured the stock of goods of defendant. The goods were burned, but the insured had not made his proof of loss, and there was no ascertainment of the amount due by the company. In this case the court said: The creditor could only recover what the debtor could against the company, and it is clear that he could not maintain an action for his loss before he had complied with the requirements of the statute and the policy.—*Katz v. Sorsby*, Supreme Court of Louisiana.

Book Accounts.

Where a book of accounts contains only a lumping charge without items, it is not admissible as evidence. The charges must be reasonably specific and particular. This is the more necessary inasmuch as when received the books are *prima facie* evidence both of the item charged and the price or value carried out. A general charge for work and labor of a mechanic, without any specification but that of time, cannot be supported by evidence of an entry on the book.—*Corr v. Sellers & Co.*, Supreme Court of Pennsylvania.

Broker and Principal.

A. & Co., brokers, bought bonds for B., who gave them a margin. They sold the bonds before the time agreed upon, and after this sale, but in ignorance of it, B. paid them \$10,000 on account of the debt. Then the brokers, pretending that they still held the bonds, called upon B. for further security, which was not given, and they reported to him that they had sold his bonds at a loss. B. recovered judgment against them for damages for the unauthorized sale of the bonds, and learning in the suit that they had made the sale of the bonds before he had paid the \$10,000, he sued for that. The court held that he could recover it and said: Looking at the transaction in the light most favorable to the defendants, they stood in the position of vendors. Where the vendor of property, who has received a portion of the purchase price on an agreement to hold and deliver the property to the vendee on the payment of the balance, without notice to the vendee disposes of the same, he may be treated as wrongfully rescinding the contract on his part, and the vendee may maintain an action to recover the money paid in part performance of such contract.—*Livy v. Loeb*, New York Court of Appeals.

Right to Inspect a Company's Books.

Hon. Mr. Justice Rainville has rendered judgment in the case of Ernest Anders *vs.* Charles Hagar, President of the Pioneer Beet Root Sugar Company, of Coaticook, maintaining the *mandamus* and enjoining defendant to file within 48 hours within service of judgment, a written declaration stating the street and number of said company's chief office in Montreal and to give communication to plaintiff of the books of said company, as required by law. The particulars of the case are as follows: At the end of December last, Ernest Anders, engineer, formerly in the employment of the Pioneer Beet Root Sugar Company, wishing to take legal proceedings against the Company, wanted to inspect their books and made a petition before Hon. Mr. Justice Loranger for a *mandamus* to force the President, Mr. Charles Hagar, to produce said documents, alleging that the inspection of the same was refused him, and that the company had no office in Montreal as required by their charter. The petition was granted, but opposition being made to it by the defendant, the case was argued before Hon. Mr. Justice Rainville, defendant contending that the petitioner was not entitled to inspect the minute book of the company, and that access to other books was never refused. The Hon. Judge, however, rendered judgment in the terms above stated, dwelling especially on the fact that the by-laws of the company

required them to have an office in Montreal; that the books are to be open to stock holders and creditors. Messrs. Laflamme, Huntington & Laflamme appeared for petitioner, and Messrs. Wotherspoon, Lafleur & Heneker for defendant. This decision of the court is said to be an opening for a number of very important actions to follow, in the course of which many interesting facts are to be elicited.—*Montreal Star*.

Books of Account.

A party's books, kept for the purpose of charging goods sold and delivered, in which the entries were made contemporaneously with the delivery of the goods, and by the person whose duty it was for the time being to make them, are admissible as evidence of the delivery of the goods therein charged. If the goods were charged before the contract for the sale was complete, the book is not competent evidence. The entry must be made at the delivery of the goods, or immediately after, at or about the time when there is a transmutation of the property from the vendor to the vendee. The plaintiff's open order book was not evidence. When the order was entered therein, no property in any specific goods had passed. The book containing the entries made at or about the time the goods were delivered is good evidence.—*Laird vs. Campbell*, Supreme Court of Pennsylvania.

Milling.

THE ERA OF BIG MILLS.

Certainly one of the most remarkable facts concerning the milling industry in this country during the last five or six years, is the number of large flour mills that have been constructed and put in operation. It is not so very long ago that a run of burrs was expected to make from fifty to a hundred barrels of alleged flour per day, and yet in those days we never heard of mills of mammoth capacity. It seems that the more complicated our milling machinery becomes, and the smaller the capacity of the mill, compared with its area of floor space, the larger the mills become. A list of the mills of a thousand barrels daily capacity, and upward, that have been erected in the United States during the last five years, or refitted with increased capacity, would include more names than the uninitiated would suppose. In fact, the present time may well be called the Era of Big Mills. As a sample, we may take the proposed new mill of Kehlor Bros. at East St. Louis, which, when completed, will have a capacity of over 5,000 barrels per day, rivalling in size the great Pillsbury "A" at Minneapolis. But the greatest mill building enterprise that has yet been chronicled comes to us from California, where Starr & Co. at South Vallejo are building a mill with a contemplated capacity of 6,000 barrels per day. This caps the climax of big mills in the United States. We cannot help reflecting that the building of so many mammoth mills in this country plainly points to an era of exportation of flour such as has never been witnessed. In fact, the vast improvement in milling processes and machinery, and the amount of capital which has been invested in flour mills, have changed the phase of our milling interest, and made it a national instead of a local industry.—*American Miller*.

This story comes straight from Iowa: "It would seem that the last thing to be adulterated is oatmeal, the product of the cheapest grain grown; yet such is the fact, and I have a good authority to say that a very large proportion of oatmeal retailed in Chicago is not pure, and that in Iowa mills are turning out meal adulterated with barley. To be sure, barley is not hurtful, but it will not produce oatmeal. At the present price of suitable oats there is little profit in making pure oatmeal. By the addition of barley, which is heavier than oatmeal, one cent per pound profit can be added which is considered a good profit."

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N.B.—Watch this page, as the different works will appear every month.

Mining.

The Winnipeg Consolidated Gold Mining Co. has moved into spacious offices, on the corner of Notre Dame street and Portage avenue. The Argyle Mining Company shares the ground floor.

It is said that Mr. O. Balski, mining engineer of the Quebec Government, has made a favorable report upon an alleged discovery of petroleum on the farm of one Bertrand, at Point aux Trembles, Pontneuf County, P. Que.

The Sherbrooke *Gazette* says:—"We are informed that parties in Ohio have applied for the delivery on cars of six thousand tons per week of iron ore from the Belvidere Iron Mines in Ascot, adjacent to this city, and that so soon as it can be transported by the Waterloo and Magog Railway, the contract will be forthwith entered into. We also learn the enterprising proprietor of the Belvidere Iron Mines with others are making arrangements for the erection of blast furnaces, coal kilns, retorts, etc., for the manufacture of charcoal, pig iron and car wheels early in spring.

F. J. Baldwin, of Somerville, F. J. Lewis and George F. French of Boston, and Thomas Elston of Somerville, all of the State of Massachusetts, and Alfred K. Stockton and Robert O. Stockton of St. John, have filed a Memorandum of Association for the incorporation of a company to be styled the "Quispamsis Mining Company." The object of the company is the purchase and leasing of Mining Lands, prospecting for minerals, the mining, raising and selling of ores and minerals, and such other things as are incident to the attainments of those objects; with a capital of three hundred thousand dollars, to be divided into sixty thousand shares of five dollars each; the office to be at the City of St. John.—*St. Johns, N. B., Sun.*

VANDERBILT'S OPINION OF ANTHRACITE.—"What is your view of the future of the Anthracite coal business?" "There is just so much Anthracite coal, and three or four companies have all of it. Mr. Gowan says his company has more than any of the others. If this is true he ought to be able to enforce his views about the price of coal and the rates of freight. All of the other companies are making money, and their stock is selling away up above par. If they can make money, the Reading can. If the management of the Reading is not such that money is being made, it is only a question of time when it will be changed so that money will be made. Why, this year Mr. Gowan sends several thousand cars of coal West, and he will be enabled to ship coal to Albany and to New England, something he has never been able to do before by rail. This he will be able to do as cheaply as any one. I have gone into these ventures, not only to spend money, but to make some for the roads which I control."—*Saward's Coal Trade Journal.*

SOME CANADIAN MINES.

The Kingston *News* takes the following from the Report of the Ontario Crown Lands Commissioner for the year 1882.

Iron.—The undermentioned quantities of iron have been sent to the United States during the year:—From the Caldwell mine in Levant, by K. & P. RR., 1,235 tons; Bethlehem Iron Company's mine, in Levant, by K. & P. RR., 16,589 tons; Mississippi mine, in Palmerston, by K. & P. RR., 15,754 tons; Glendower mine, in Bedford, by K. & P. RR., 291 tons; making a total shipment from these mines during the year of 33,869.

PHOSPHATES.—The high prices obtained for phosphates last summer induced several parties to engage in phosphate mining, and the consequence is an increased production. The undermentioned quantities have been sent forward and shipped at the ports of Kingston and Brockville during the year: From Lough Lake, Bedford, by teams, to Kingston, 2,116 tons; Bole's Lake, Bedford, by K. & P., 790 tons; Renfrew mines, by C. P. R., 216 tons; North Burgess, by C. P. R., 120 tons; North Burgess, by Rideau Canal, 1,460 tons; Opinecon Lake, by Rideau Canal, 515 tons, making the total quantity shipped 5,227 tons. In addition to the above, the following quantities have been mined and are ready for shipment in the spring: In North Burgess, 1,500 tons; in Gao, at Irwin & Hopper's mine, 500 tons; in a mine opened by the late G. Gould, near Cobden, 10 tons; total quantity mined and ready for shipment, 2,010 tons.

MICA.—Mica of a very superior quality has been discovered on the line between the townships of Clarendon and Palmerston, in the County of Frontenac, and is now being worked by an American Company.

LOCATION OF MINES.—Abinger and Clarendon in Addington Canonto (south and north), Denbigh, Miller and Palmerston in Frontenac.

MISPLACED CONFIDENCE.—The Isabella Silver Mining Company seems to have been successful, and to have made money from the Methodists, simply because all the financial wisdom in the world was not exhausted by the ladies who invested in the Woman's Savings Bank. It offered to pay five per cent. a month, and the leading brethren believed it, and, in the hope of receiving \$200,000 from it for Athens University, they gave an adventurer \$10,000, and urged the church members to invest their money with him, and now the funds have gone precisely where they might have been expected to go, and the leading brethren are the objects of some very severe and unkind criticism. Innocence is a beautiful attribute, but when allied with presumption it is intolerable. A man is excusable for knowing nothing about business, he may even be admirable because of his power of rising above worldly considerations, but he sins when he enters into transactions in which knowledge of the world is required. A man who has never learned that enterprises paying sixty per cent. a year do not need to canvass for investors, should put his money in the hands of trustees and not allow himself to leave the house with more than twenty-five cents in his pocket.—*Boston Manufacturers' Gazette.*

Agricultural Machinery.

Says the Port Dover *Maple Leaf*:—"Mr. John Challen, business manager of the Cockshutt Plow Co'., Brantford, was in town yesterday on matters connected with his firm. This Co'y is now doing an enormous business, to a great extent with Manitoba and the North-West, and an instance of the popularity of their manufactures may be found in the fact that the D. and R. Reesor Farming Company this week gave an order for thirty of their "Brantford Breakers," a sulky gang plow which is especially suitable for prairie farming.

There appears to be a "boom" in sewing machine motors at the present time. A company for the manufacture of hydraulic motors is getting under way in Boston, a spring motor company has just been organized in this city, a spring motor possessing some good features is already being introduced by a gentlemen from Washington, and two new small motors were patented last week. If out of this "boom" at least one sewing machine motor for family use does not take a permanent place in the market, the outlook in that line will be discouraging.—*N. Y. Sewing Machine Journal.*

If the population of the United States continues to increase at the present rate, in fifty years it will have reached the enormous number of two hundred million. Allowing one sewing machine for every ten persons, which is a fair estimate, there will be twenty million sewing machines in use in the year of our Lord 1933. Still it is not well to anticipate the future demand by present manufacture, and organize new companies right and left. Those in the field at present, if they work with a proper amount of energy, will have no difficulty in keeping the supply fully up to the demand.—*N. Y. Sewing Machine Journal.*

The Windsor Mills correspondent of the Montreal *Star* appears to be wide awake and enterprising in his remarks in regard to the manufacture of agricultural machinery and farming implements in this Province. It is desirable that his suggestion should be followed up, as it is time that all agricultural implements required for the use of the farming community in this Province should be manufactured at home and the money retained in the province. What we require is a few large works similar to Frost and Woods at Smith's Falls, Ont., where all kinds of agricultural implements are manufactured. If some enterprising company would start this enterprise they would find it a financial success far ahead of cotton mills. Now is the time and Windsor Mills is the place to start one.—*Sherbrooke Gazette.*

Financial and Commercial.

TORONTO, Thursday, Feb. 22, 1882.

The past fortnight has been a dull one on the Stock Exchange, in both Toronto and Montreal. There appears to be a good deal of timidity on the part of operators, while the general public show no disposition to take a hand in. One reason for this state of things is undoubtedly the intimation of intended changes in the Banking Act, which was made at the opening of Parliament. No changes of a revolutionary character are anticipated, or any departure from the spirit of the existing law, but merely such amendments of details as will more fully carry out what everybody knows to have been its original intention. Of course no very decided movement is likely to be ventured upon until it is known what precisely the impending changes are to be. Another cause of inaction is the continued and even increasing difficulty of obtaining loans on stocks. For this kind of business the banks will not advance much, though they have plenty of money to spare, and all the demands of legitimate business are freely met. The market would have been featureless but for something like a raid on insurance stocks which has been going on, and which apparently is not yet over. While some hold that lower prices for these stocks are fairly justified by last year's losses, others think that the mere want of anything else to make a movement upon has been the principal cause of the attack.

The following are the closing quotations on the Toronto Stock Exchange for Wednesday, February 21, compared with those for the same day two weeks before:—

	Feb. 7.		Feb. 21.	
	Asked.	Bid.	Asked.	Bid.
BANKS				
Montreal	206½	206½	206½	206½
Ontario	113½	112½	112½	112
Molsons	130	130	130	130
Toronto	186	185	183½	183½
Merchants'	126½	126	125½	125½
Commerce	135	134½	134	133
Imperial	143½	143	140½	140
Federal	156½	156	155½	155½
Dominion	201	200½	199	198½
Standard	116½	116	115	114½
Hamilton	116	114	115	115
MISCELLANEOUS.				
British America	130	130	119½	119½
Western Assurance	157	156½	142½	142½
Canada Life	180	180	180	180
Confederation Life Association	149½	148½	149½	149½
Consumers' Gas	91	91	89½	87½
Dominion Telegraph	61s. 6d.	61s.	57s.	55s.
Montreal Telegraph	180	180	180	180
Globe Printing Co'y	180	180	180	180
N. W. L. Co.	180	180	180	180
Ontario and Qu'Appelle	180	180	180	180

Montreal quotations for the same days respectively:—

	Feb. 7.		Feb. 21.	
	Asked.	Bid.	Asked.	Bid.
BANKS.				
Montreal	207	206½	206½	206½
Ontario	113½	112½	112	111½
People's	87½	87	90	85
Molsons	133	130	132	130
Toronto	186	185	183½	183
Jacques Cartier	112½	110	115	110
Merchants'	126½	126½	125½	124½
Quebec	163	163	160	160
Exchange	95	90½	134	133½
Union	135½	135	157	154
Commerce	157½	156	157	154
Federal	157½	156	157	154

	Feb. 7.		Feb. 21.	
	Asked.	Bid.	Asked.	Bid.
MISCELLANEOUS.				
Montreal Telegraph	124	123½	122½	122
Dominion Telegraph	66½	65½	68	67
Richelieu and Ontario Nav.	143	142	142	140
City Passenger Railway	186½	186	187	186
Montreal Gas	120	110	110	108
Canada Cotton	114	110	107	107
Dundas Cotton	131	129	133	133
Ontario Investment	142	140½	134	133
St. Paul M. & M. xd.	62s 6d	61s	57s	54s 6d
North-West Land Co	62½	62½	60	60
Canadian Pacific	62½	62½	60	60

In general commercial business a contraction is apparent, which is attributed partly to the delay and partial blockade of traffic by the heavy snows. The dry goods houses appear to be taking in sail, and both reduction of importations and curtailment of credits are talked of. Should such a policy be actually carried out to a considerable extent there would be nothing to regret in it, for it would be most emphatically for the country's good—just the thing wanted to keep business healthy and prevent trouble by and by. One favorable feature in the situation is to be seen in the advancing prices of grain which will have the double effect of inducing farmers to sell and putting more money in their hands when they do sell.

The following are Toronto wholesale quotations for Wednesday, Feb. 21:—

FLOUR—f. o. c.			
Superior Extra, per 196 lbs.	4 60	—	4 70
Extra	4 50	—	4 55
Fancy and Strong Bakers'	none.		
Spring Wheat, extra	none.		
Superfine	none.		
Oatmeal, per 136 lbs.	4 80	—	4 90
Cornmeal, small lots	4 25	—	0 00
BAG FLOUR, by car lots, f. o. c.			
Extra, per bag	2 20	—	0 00
Spring Wheat, extra, per bag	none.		
GRAIN—f. o. c.			
Fall Wheat, No. 1, per 60 lbs.	1 07	—	0 00
" No. 2, "	1 05	—	1 06
" No. 3, "	1 01	—	1 02
Red Winter	none.		
Spring Wheat, No. 1	1 08	—	1 00
" No. 2	1 06	—	1 07
" No. 3	1 01	—	1 02
Oats (Canadian), per 34 lbs.	0 43	—	0 44
Barley, No. 1, per 48 lbs.	0 77	—	0 78
" No. 2, "	0 73	—	0 74
" Extra No. 3	0 66	—	0 67
" No. 3	0 53	—	0 56
Peas, No. 1, per 60 lbs.	0 00	—	0 00
" No. 2, "	0 76	—	0 77
Rye	0 60	—	0 60

The Amsterdam Coffee and Sulphur Co. of Dillonton, Que., has gone into liquidation.

The estate of Joseph Chretien, tailor, etc., Montreal, is being advertised for sale by trustees.

The Dominion Brick and Terracotta Company, of Ingersoll, has applied to Parliament for an Act of Incorporation.

The stock of D. D. McDonald and Co. of Campbellford is in the hands of the sheriff at the instance of a Toronto house.

The partners in the drug firm of Herod and Co. are disagreeing and are engaged in litigation. A receiver has been appointed.

E. Marchand, general dealer, Maskinonge, after a short business life, has assigned in trust. His liabilities are about \$4,000.

John Delaney, victualier, of Halifax, N. S., has left the country. Assets nominally \$2,000; actual value \$500. Total liabilities \$1,500.

L. Le Clear, cigar manufacturer, Barrie, has the sheriff in possession of his stock at the instance of Goldstein, Isaacs and Co., of Montreal.

The Counter Check Book manufacturing firm of H. B. Butterfield and Co., of this city, is no more. Butterfield has left the city and the bailiff has disposed of his effects.

W. Elliott, an old established grocer, of Montreal, has assigned in trust. Lee & Newport, coal and wood dealers, and John A. Miller, grocer, of the same city, have also assigned.

H. B. Coates and Co., jewellers, Stratford, are in difficulties after a few months' experience in business. Their predecessor in the business has a confession of judgment against them.

Senecal, Cadieux & Co., wholesale grocers, of Montreal, are offering 50c. on the dollar on liabilities of \$50,000. Losses by bad debts are the principal cause of the failure of this firm.

Thomas & Somersall, general dealers, of Milford, Manitoba, started business together last fall in a tent store. They had very little capital, but managed to get credit to the extent of \$12,000 and have now assigned in trust.

Winter and O'Neill, general dealers, of Brandon, Manitoba, are involved through the real estate speculations of the senior partner, who has, however, assigned all interest in the firm to his partner, and creditors expect the estate to pay in full.

John Twansley, grocer and liquor merchant, of Port Wood, N. S., has given a bill of sale and is in financial difficulties. He has been in business about five years, and it has been a constant struggle to make a living. His present difficulties were expected.

On Jan. 30 the steamer *Worcester* sailed for Boston. There were then seventeen vessels laden with potatoes frozen in at Wolfville, and nearly one hundred others at various points in the bay with potatoes, which are not expected to get out before spring.—*Halifax Paper*.

Ewen McQuien, who is one of the oldest merchants in Petrolia, has again failed. This is the third time in his business career, and the creditors are determined apparently not to give him another chance, as the stock is now advertised for sale. The liabilities are about \$3,000.

Johnson and Malcolmson, who started a general store at Cartwright, Man., a few weeks ago, are trying to effect a settlement with their creditors. They started with a cash capital of \$2,000, and the opinion of the trade was favorable to their prospects, but has been disappointed. Their liabilities are about \$7,000.

Wm. Hood and Co., gents' furnishings, Montreal, who have been in business since 1880, are offering their creditors 40c. on the dollar. Liabilities are \$6,700; assets nominally \$6,200, but in poor shape. The firm has always been regarded weak, and conservative houses wonder how so much credit has been obtained.

At a meeting of the creditors of the Canada Manufacturing Co. (limited), Montreal, held on the 16th inst., it was arranged that the liabilities be paid in full at 9, 21 and 33 months without interest. The creditors having agreed to take J. C. MacLachlan's personal note. In the meantime the company has assigned to P. S. Ross.

A Kingston despatch says that the charcoal works have been shut down until the stock of charcoal on hand has been shipped to Montreal. There is about 15,000 bushels stored at the works. The company have had two cars made at the car works, and arrangements are now being effected to run them over the Grand Trunk railway. The works can turn out about 700 bushels per day.

Such is the quantity of orders which Mr. John G. Frost has recently been favored with, that he is now compelled to keep the machinery of his factory in motion at night, in order to satisfy the demands of his customers. This state of things is attributed to the N. P., but as Mr. Frost is a prominent member of the Reform Association, it is a query how it strikes him.—*Belleville Intelligencer*.

On account of the Dominion Government declining to advance the \$1,000 voted to encourage the sending of exhibits from the province to the Dominion Exhibition, the Manitoba Board of Agriculture has decided not to send exhibits this year. This Board, as well as the department of the Provincial Government, is sadly hampered by the insufficiency of the money at its disposal.—*Winnipeg Commercial*.

Barrie has met with a surprise in the absconding of Joseph Anderton, of the firms of Anderton Bros., brewers, and of Sullivan, Maypole and Co., contractors on the C. P. R. Anderton has enjoyed excellent credit here for many years, as witnessed by the large number of local creditors he leaves behind. The extent of his liabilities have not transpired, they are, however, heavy, and with little prospect of being satisfied.

John Grant, who has been carrying on the wholesale boot and shoe business in Quebec, under the style of "Grant & Co.," offers his creditors 25c. on the dollar. In November, 1882, he sustained a heavy loss by fire, which, together with poor management, has resulted in his failure. The liabilities are \$78,000, \$60,000 of which is to a relative, J. G. Ross, of Ross & Co., lumber dealers, of Quebec, who assisted Grant in starting.

The estate of W. G. Laton's Sons, dealers in dry goods, of St. John, N. B., has turned out very unsatisfactory for unsecured creditors. The preferred creditors represent about \$21,000 and consist of the mother of the members of the firm, who figures for \$13,000, and the father-in-law of one of the firm represents nearly all the balance. These creditors have been paid 70 per cent., and may possibly obtain 12 per cent. more.

Conley & Cermican commenced dealing in boots and shoes about two years ago. They opened a store in Ingersoll and a few months after started a branch in Winnipeg, where subsequently the Ingersoll stock was removed to. The firm did not bear a first-class reputation, but appeared to be energetic, and the wholesale trade credited them freely—one house (J. H. McLean & Co. of Toronto) being interested to the extent of \$7,000. Several creditors have been pressing them and they have assigned in consequence.

The old established dry goods firm of H. & H. Merrill, of Montreal, are reported in difficulties. Their creditors have been pressing them lately, and they are considerably behind in payments, and will call a meeting in a few days. In May, 1876, they obtained an extension of time, which they were unable to carry out, and assigned in March, 1878, with liabilities of \$100,000, assets \$40,000 in excess. They compromised and met the notes, but have been looked upon as struggling for some time, which has at last culminated in their suspension.

The following Manitoba changes are announced:—Jackson & McFarlane, hardware, &c., Nelson, are offering their creditors 55c. on the dollar. H. F. Despais, general dealer, West Lynne; N. D. Gagnier, grocer, of St. Boniface, have both assigned in trust. B. C. Kenway, builder, Winnipeg; J. E. Woodworth, brick maker, are both in trouble, and a number of small dealers are unable to meet their liabilities. Wholesale houses report very small remittances from the North-west, and there appears a disposition to hold fresh orders until after the fourth of March, when considerable paper held by dry goods houses matures.

The suspension of the Mahon Banking Company of London, Ont., is announced. The proprietors (Jas. A. & John F. Mahon), are large stockholders in the Globe Manufacturing Company, having, it is said, \$60,000 invested in that concern. A year ago the firm showed a surplus of \$150,000, and the local feeling has been that they were gradually adding to capital. The failure will

bo seriously felt by a number of business men and private depositors, and, furthermore, will no doubt create an uneasy feeling in the country as to the safety of the many private banking institutions. The Globe Manufacturing Company will, it is thought, be embarrassed by the suspension of the Mahons.

WINNIPEG'S WHOLESALE TRADE.—A year ago the wholesale houses of Winnipeg, including every branch, numbered twenty-six, and a large proportion of that number have grown during the year to double their proportions then. The number now is nearly sixty, and includes institutions that would do credit to the largest cities of the Dominion. A year ago the grocery and provision trade was represented by four houses, the value of whose combined stocks did not exceed \$300,000. At present there are nine exclusively wholesale houses in this line, and their stocks are valued for over \$750,000, at certain seasons of the year they will foot up to close upon \$1,000,000. Wholesale dry-goods and its auxiliary branches were represented a year ago by four houses, whose combined stocks ranged in value from \$250,000 to \$400,000, according to the season. Eleven houses are now engaged in this business, and their stocks at certain seasons of the year will represent an aggregate value of nearly \$1,125,000. Wholesale hardware has also received great additions, and the stocks in the city now are at least double what they were a year ago, and all other branches then represented now show more or less of a marked increase.—*Winnipeg Commercial.*

Miscellaneous Notes.

It is said that fifty new glass factories are being built in the different States.

Green oak is selling at \$3 a cord in Nelson. So cordwood cannot be very high in Southern Manitoba.

Montana is not self-sustaining in the matter of flour, and Dakota brands sell there at \$5 per hundred-weight. Home made flour sells at from \$3.50 to \$4.50 per hundred-weight.

The Abell Manufacturing Company's new buildings on King-street West, Toronto, are slowly approaching completion. The change, however, from Woodbridge will not take place until next autumn, and after the present season's orders are filled.

Drake Brothers, New Glasgow, N.S., manufacturers of Lobster & Baker's shooks, are making at the rate of 600 per week of glass ware boxes for the N.S. glass works of New Glasgow, and among other orders on hand, 10,000 baker's shooks for Hamilton's bakery, Picton.

Messrs. Small & Co. are rapidly building up a large trade in all portions of the Dominion. An order was received yesterday from New Brunswick for a carload of the celebrated Diamond Tooth Harrows, and on Friday next a carload will be shipped to Manitoba.—*St. Thomas Journal.*

The Board of Trade, of Paris, Ont., has elected the following officers:—President, Mr. R. Montgomery; Vice President, W. J. Robinson; Secretary, John H. Fisher. Council:—Messrs. Baird, O'Neil, Jennings, W. E. Adams, W. W. Clay, J. McMillan, C. M. Foley, Ahrens, C. H. Roberts and D. Brown.

The Union File Co., of Baltimore, have been offered 4,000 pounds of ivory in exchange for files, by a resident of Cape Coast, on the west coast of Africa, and he agrees to furnish all the ivory they can dispose of, in trade for their product. It is probable a large trade will be established on the dark continent.

On Wednesday, Jan. 10, the annual meeting of the shareholders of the Portage Milling Co was held, F. Ogletree presiding. The report showed that with the exception of about a few thousand dollars all the calls upon stock had been promptly paid up, and even that small balance was expected to be secured very shortly. Considering the short time the institution has been in running order, the prospect of a liberal return on the capital invested is exceptionally good.

Notice is given in the *Royal Gazette* that Acalus Lockwood Palmer, Philip Palmer, Thomas D. Henderson, Charles A. Palmer, of St. John, Joseph Lyman, of Mispec, and James Harris of Portland, have filed a memorandum of association for the incorporation of a company to be styled the "Mispec Mill Company." Capital, eighty thousand dollars, to be divided into eight thousand shares of ten dollars each; the office to be at Mispec.—*St. John N.B., Sun.*

A new branch of industry has sprung up in Sweden lately—the fabrication of paper from moss, not from the living plant, but from the bleached and blanched remains of mosses that lived centuries ago, and of which enormous masses have accumulated in most parts of Sweden. A manufactory of paper from this material has begun operations near Joenkæping, and is turning out paper in all degrees of excellence, from tissue to sheets three-quarters of an inch in thickness.

The Dominion Organ Co., of Bowmanville, Ont., are manufacturing at the rate of two hundred organs and fifty pianos a month, and orders away ahead. They are opening a thriving trade in these lines with England, the Indies, Australia, Germany and South America. Besides the main building, 310 x 40, there is a necessary adjunct to all first-class factories of this description, a drying kiln, and near to the main building a neat engine house in which is a boiler and engine of 75 horse power, which runs machinery of the value of upwards of \$15,000, arranged on the three flats. Steampipes for heating and elevators complete the make-up of one of the best factories in the Dominion.

The *Lindsay Post* says that manufacturing has been going on steadily at the paper mill, the machines turning out a fine quality of straw-board. Two sets of hands are employed, the machinery running day and night. We understand it is the intention of the proprietors to shortly commence the manufacture of paper boxes in connection with the mill. There is a large and increasing demand for boxes in all classes of light business, particularly the confectionery, envelope, stationery and fancy goods trades. This new industry would give employment to a large number of hands and become the means of putting in circulation a large amount of money in town.

SANITARY INSPECTION OF FACTORIES IN TORONTO.—Some time ago the Health Commissioner and his assistant inspected 113 factories and workshops in the city with a view to ascertain their sanitary condition, the number of males and females employed, the closet accommodation, and whether that accommodation was of a satisfactory nature, and separate for the males and females. In these factories there were employed in all about 1,819 males and 1,675 females. The numbers, including both sexes, varied in the different places from 4 to 400. Of the 113 factories 80 were found to be satisfactory both as to sanitary condition and closet accommodation. The remaining 33 were unsatisfactory on various grounds. The closet accommodation was insufficient for the number employed; the male and female closets were contiguous; the females had to pass the male employees in going to and from the closets; the closets were too small, and wanting in cleanliness. A re-inspection of the unsatisfactory places will be commenced at an early date, and the municipal authority to compel manufacturers to provide suitable accommodation for their employees will be put in force.—*Globe.*

Discussing the lurore for black walnut furniture and the consequent high price of black walnut lumber, the *New Orleans Lumberman* says: The fashions come and go, and in most respects they are as unreliable as the wind. Black walnut was first used as a cheap substitute for mahogany. It soon became its successful rival. It does not follow, however, that it will remain so. Indeed, it is very likely that mahogany may soon occupy the place it long filled, and that it will not soon be displaced. It is also likely that woods of light color will become fashionable, to the partial and complete exclusion of those that are dark. They "take their way," and perhaps may have it again. It is likely that in no very distant period, improvements in "stuffing" porous woods may result in making much material valuable that is now regarded as entirely useless in the arts.

MILL AND FACTORY BUILDING.

BY LOUIS H. GIBSON.

The following able article on the construction of mills and factories was written for the *Northwestern Miller* by Mr. Louis H. Gibson, of Indianapolis, a gentleman of large experience both in the construction and use of such buildings. The article applies equally well to all classes of manufacturing buildings, and will be found useful by many readers of the CANADIAN MANUFACTURER, for whose consideration we reproduce it here. The aim of the writer was two-fold: First, to provide better and stronger buildings for manufacturing purposes, and second, to materially reduce the risks from fire, and therefore the insurance rates:

The first objectionable features noticed in the construction and arrangement of buildings was in regard to their height, which renders them difficult of access in case of fire, isolates the various parts, and complicates the work of inspection and protection. Five, six, and seven story mills are quite common, and the total destruction by fire of such mills is also quite common. The remedy for high mills with a large number of stories, is low mills with a smaller number. I have had it in mind for some time that a building with a basement, three stories, and a lantern or monitor at the top, was sufficient for a mill building, and with a view of satisfying myself on this point I first made a diagram of a mill of 500 barrels' capacity, as complete in equipment as I knew how to make it. It developed forty sets of 9x18 double roller machines, 4 sieve graders and aspirators, and 12 sieve purifiers, of the common form, and eighteen purifiers of the Seck, Woerner or Gray pattern, with four legs each, and in addition to this was the cleaning and grading machinery. Based on this diagram, I finished a complete set of plans, showing the arrangement and construction of the building, the floor plan of which accompanies this article, and the disposition of the machinery and appliances, keeping uppermost in mind all possible conveniences for operating such a mill, providing passage-ways, and ample means of inspecting and lighting the various parts. I found that such a building afforded all the room desired. The wheat cleaning, grading and flour packing machinery, together with

the stock and bran bins, were placed in the 40'x60' division at the end of the building, and the reduction and separating machinery in the front division. The 4' space around each room, and the third 8 bay from the right hand side were kept clear for passage and protective purposes. The only machinery in the basement was the shafting, pulleys, etc., for running the upstairs machinery, the conveyers under the rolls, and the elevator boots and legs. The rolls are situated on the first floor, the purifiers on the second, the graders on the third, and the bolts on the second and third.

To go a little further into this matter, I have inspected our two mills, one of which is six stories and a basement, 40'x82' inside, and the other five stories and a basement, 48'x72' inside, with a view of determining how much less space would be required for the machinery now running than is used. I found that in each mill I could get all the reels and purifiers on one floor, and the storage bins and cleaning machinery on another, or the reels and purifiers on two floors, and the storage bins and cleaning machinery at one end. The arrangement that I speak of would put the mills in more convenient shape for operating than they are at this time. A two-storey mill, with basement and monitor top, is entirely within the range of possibility. Such a mill could be more thoroughly and economically attended than when built higher.

In the *American Architect* of Sept. 30, 1882, Mr. Atkinson says of one-story factories: "It may be considered conclusively proved that a factory building consisting of a basement sufficiently high to secure a free circulation of air, and of one story or main floor devoted wholly to machinery, lighted and ventilated mainly from above by monitors or lanterns, can be kept more uniformly warm in winter without the use of any excess of fuel; more uniformly cool in summer, if the roof is constructed in the right manner, and can be furnished with a more adequate supply of pure air all the time, than any other description of building suited to factory uses of two or more stories in height. It may also be considered conclusively proved that when a given amount of floor surface is required on a considerable scale, it can be provided in a thoroughly substantial way at as low a cost, per square foot of floor, of available floor surface, as can be provided in any other form of building of two to seven stories in height.

(To be continued.)

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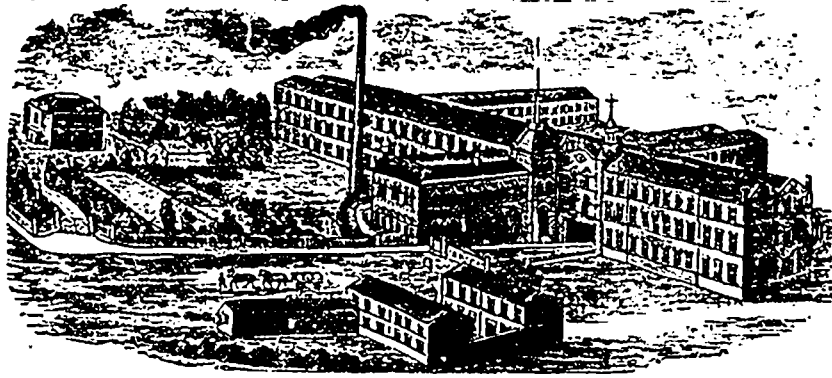
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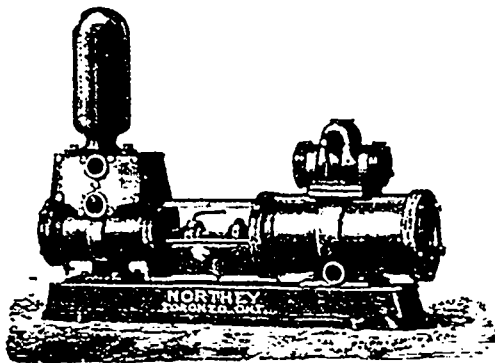
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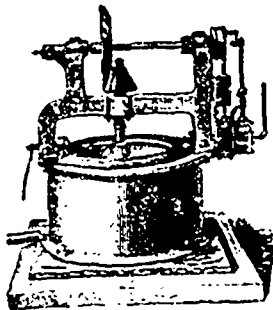
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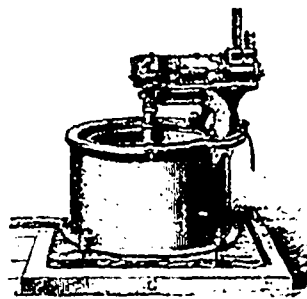
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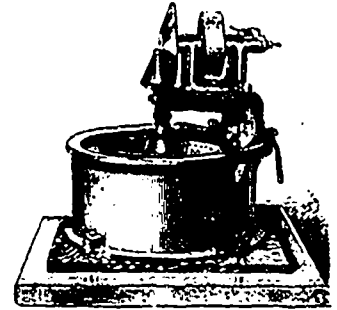
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MACHINE B



For Wool and Cotton Dyers, with direct acting steam engine.

MACHINE C



Runs by Belt and Friction Cone suitable for water-power.

THREE SIZES OF EACH KIND BUILT BY

W. P. UHLINGER, Nos. 38 to 48 East Canal-st., PHILADELPHIA, Pa.

East of Front-st., between Laurel and Richmond-sts.

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LEITCH & TURNBULL'S

PATENT SAFETY HAND AND POWER

ELEVATORS.

CORNER REBECCA & HUGHSON STREETS,

HAMILTON, - - - ONT.

THE ROYAL HOTEL FIRE.

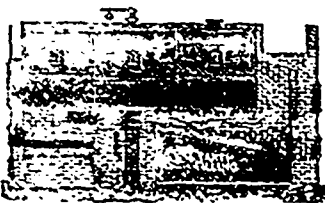
MESSRS. HOWARD & SONS write:—"The safe lay among the blazing timbers of the Royal Hotel, exposed to full fury of the conflagration, intensified by a quantity of pork stored in cellar. Speculation was rife as to how it would stand the severe test. After the fire we were rejoiced to find the contents uninjured, the varnish inside being as stainless as when it left your factory. A reliable safe being the most essential article of a business man's outfit we are doing the public good service in thus bearing testimony to the merits of your safes.

To MESSRS. GOLDIE & McCULLOCH.

ALFRED BENN, Sole Agent and Manager,

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JARVIS PATENT FURNACE FOR SETTING STEAM BOILERS.



Economy of Fuel, with increased capacity of steam power.

The same principle as the SIEMENS' PROCESS OF MAKING STEEL, utilizes the waste gases with hot air on top of the fire.

Will burn all kinds of Waste Fuel without a blast, including screenings, wet peat, wet lops, sawdust, logwood chips, slack coal, &c.

Over 1,500 boilers set this way in the United States and Canada.

See Card for Circular.

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W. & F. P. CURRIE & CO. 100 GREY NUN STREET, MONTREAL.

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SOFA, CHAIR & BED SPRINGS.

Always a large Stock always on hand

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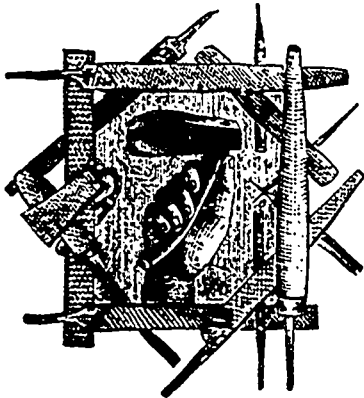
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ALL HAND-CUT FILES made from the Best Sheffield Cast Steel. Warranted equal to the Best Imported Brands. Send for Price Lists and Discounts. FILES RE-CUT.

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Of Every Description
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In every possible variety.

New designs in Cooking Stoves, High Art and Low-feed and Parlor Stoves for the approaching season.

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Forge and Ships' Iron
KNEE MANUFACTORY.

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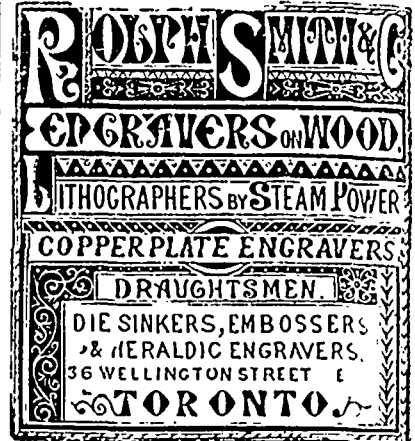
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New Home.

Rapidly taking the place of
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MACHINISTS,

HARTFORD WORKS, OLDHAM, LANCASHIRE,

Beq to call the attention of Worsted Spinners and Manufacturers to their Improved Machinery for

**Carding, Combing, Preparing, Spinning and Weaving Worsted
ON THE FRENCH SYSTEM.**

PLATT BROTHERS & CO., Limited, are also makers of the following Machinery :

New Patent Cleaning Machines for Cotton.
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Machinery for Carding and Spinning Silk Waste.
Power Looms for all Descriptions of Plain and Fancy Cloths
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Hydraulic and Cam Bundling Presses for Yarn and Cloth.

Also, Makers of Patent Macarthy Cotton Gins, Hand or Power, for long or short stapled Cottons.

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—Cotton, Woollen and Worsted Reels,—

With improved counting motion for the accurate reeling of any size of skeins, or any given number of turns or yards. Reels for Carpet Yarns, reeling and twisting at the same time two or more ply yarns. Balmoral Reels, etc. Utley's patent stop motion for two or more ply yarns, preventing making single yarns when doubling and twisting or spooling two or more ply yarns. Utley's patent stop motion applied to Twisters. Spoolers (either plain or) with Utley's patent stop motion. Ball-winders for Noble's Comb Warp Balling Machines for Mills and Dye Houses. Self-acting Mules (Cotton, Woollen or Worsted.) Twisters, Stubbers, Intermediate and roving frames, lengthened out and repaired in the most improved manner.

MACHINERY OF ALL KINDS, HOME OR FOREIGN,

Set up in working order, removed, repaired, reset on the most reasonable terms. Practical and experienced workmen sent to all parts of the country. Keep in Stock

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Findings for Platt Bros. & Co.s (Lim.) Machinery, Oldham, Eng., always on hand.

Hangers, Shafting, Pulleys, Etc., Supplied. Gear Cutting of every description.

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Capital. - - - - \$100,000.

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WHITEWOOD, BALM, BASSWOOD,
AND ALL KINDS OF HARDWOOD
LUMBER AND WHITE OAK SHIP PLANK.

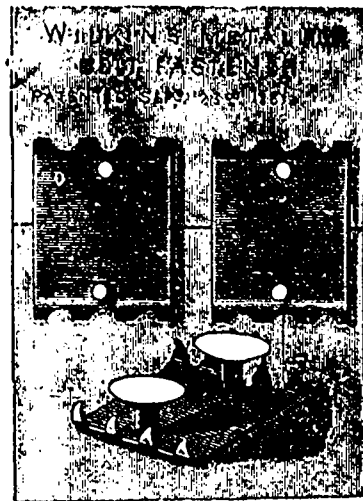
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Wagons, Carts & Sleighs, and Wagon Stock
In the Dominion of Canada.

Having ample capacity for turning out from 3,000 to 5,000 Wagons annually.

Wilkins' Metallic Belt Fastener.

IMPORTANT TO MANUFACTURERS,
MILL OWNERS,
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A MOST PRACTICAL INVENTION,
SIMPLE, CHEAP,
EFFECTIVE AND DURABLE.

Lately Patented in the U.S.

A New Device for Joining together the Ends of Machinery Belting both Leather and Rubber of all Widths and Thicknesses.

Wilkins' Metallic Belt Fastener is made of fine tempered steel with small V shaped teeth projecting from the plate at right angles. Being applied as shown in the foregoing cut with the teeth inserted into the material of the belt, and secured by copper or other rivets, it makes the strongest possible joint.

It has been thoroughly tested and is approved of, in preference to lace leather, belt hooks, and all other fastenings now in use. Send for Circular and Price List or sample package, nearest size, which is suitable for most belts.

Manufactured in three sizes, by the Inventor, W. F. WILKINS, Adamsville, P.Q., to whom orders may be sent.

ALL ONTARIO orders should be addressed to

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47 Wellington St. East, Toronto.

MORRISON BROS.,

"Soho Machine Works,"
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Esplanade, near Union Station,

DEALERS IN

Iron and Wood Tools,

Mill Machinery,

Foundry Supplies,

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MANUFACTURERS OF

Iron Tools,

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Machinery,

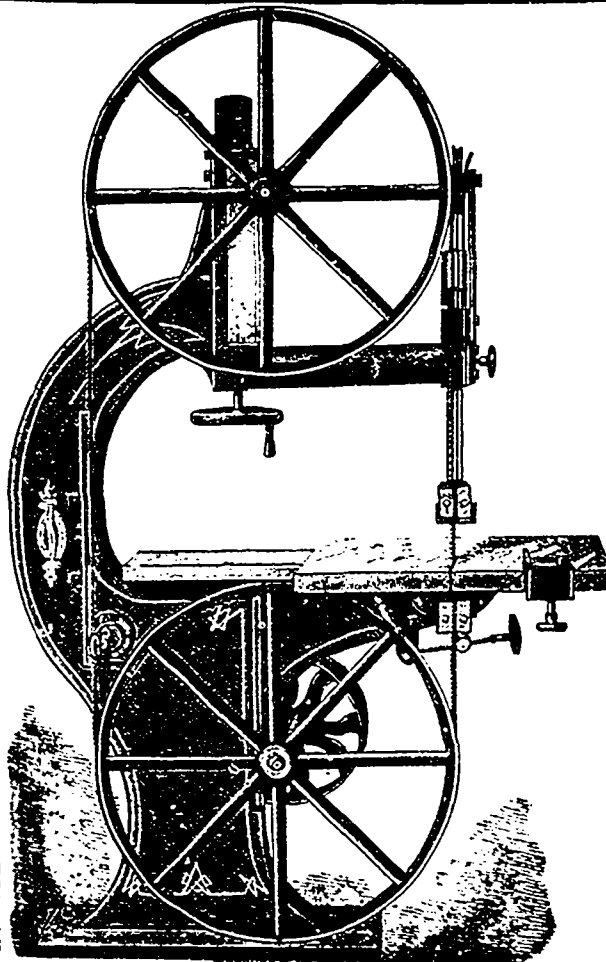
Saw Mill Machinery,

Mill Work, &

Architectural Iron Work.

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(Mention this advertisement when writing.)



Machinery in Stock

- 16 Iron Lathes, various sizes,
new and second hand.
- 5 Iron Planers, do.
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- 2 Band Saws.
- 8 Scroll Saws.
- 5 Shapers.
- 4 Planers and Matchers
- 4 Surface Planers.
- 1 Dimension Planer.
- 2 Daniel's Planers.
- 2 Buzz Planers.
- 7 Moulding Machines.
- 3 Tenoning Machines.
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Give particulars and price of any Machinery you have for sale

J. McLAUGHLIN'S SONS, GROWERS,

Merchants and Exporters of Assorted and Sized

American Teasels,

SKANEATELES, N. Y.

We respectfully call the attention of woollen manufacturers to an important addition we have made to our method of preparing Teasels for use. We have succeeded in perfecting a machine which automatically performs the work of grading Teasels into *perfect exact diameters*, making, instead of the *six* sizes of the old way of assorting, *thirty six* perfect grades, beginning with the smallest, which is 61-64 of an inch in diameter, and is numbered 61, and so on in consecutive order, each number or grade increasing 1-64 of an inch in diameter, to number 96, which is 96-64 or 1 1-2 inches in thickness and is the thickest grade.

We have had our attention repeatedly called to this subject, and it has been suggested by practical manufacturers, that having teasels agreeing as to thickness, while saving labor in placing upon the "gig," will require less experience in the "gigging" to avoid *streaked cloths*, and assure more uniform work generally.

The "gig" makers have, to some extent, obviated this difficulty, by making the "gig" cylinder "vibrate," which prevents teasels of uneven thickness striking the cloth every turn of the cylinder at the same point; but this has only been a makeshift, as zig-zag streaks are often traced upon the surface of faced goods finished upon a vibrating cylinder gig.

As teasels were assorted, viz: 1 to 1 1-2 inches, 1 1-4 to 1 3-4 inches, 1 1-2 to 2 inches, 1 3-4 to 2 1-4 inches, 2 to 2 1-2 inches, 2 1-2 to 3 inches, sized as to *length only*, streaks in goods more or less could not be prevented.

In the above classification teasels will be found of the *same diameter* in each of the six sizes, although differing in length. Such assorting is very faulty, as the *diameter* of the teasel should regulate its grade, and this is what our invention does. In some of the best regulated mills skilled labor is employed in selecting from such a diversity of sizes, those that will answer for the work to be performed, *accuracy* being out of the question, and more or less imperfections in the finishing are sure to follow even with the best of help and with the greatest care.

The saving made by using gauged teasels, both from rejected teasels on account of some being uncommonly thick or thin, and in the labor of selecting these suitable to set, is fully equal to their first cost, and an equal gain is made in the perfection of cloths, thus saving twice the cost of the teasels, besides having the satisfaction of making perfect goods, and no claims for damages or tender cloths.

Our teasels are neatly clipped, and the quality well graded, carefully hand packed with stems only 3 inches long. We shall sell them strictly gauged an exact diameter at the very lowest price in the market for the quality with 2 1-2 cents per pound additional to pay for extra labor in gauging them, and we trust you will appreciate our efforts in your behalf.

The great demand made upon us for our teasels sorted per an exact diameter, having rendered it necessary to meet a much larger demand than we could have reasonably anticipated, we have just completed an extension of our works, and secured an abundant water power to drive our sorting machinery, which doubles our capacity for business.

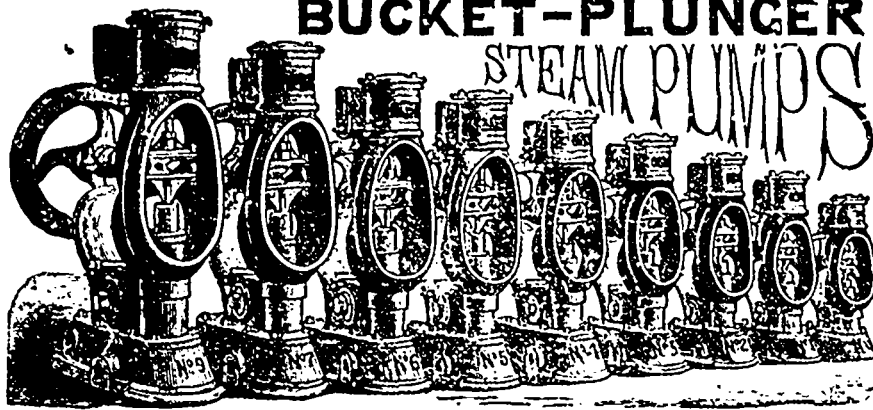
Parties desiring to order from us may therefore depend on having their orders executed with the same care as heretofore, and within reasonable time.

Reference to all the leading Canadian users.

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Nine Regular Sizes Always on Hand!

BUCKET-PLUNGER

STEAM PUMPS

PUMPS!

Suitable for all kinds of work, such as
 Pumping Hot Liquids,
 Coal Tar, Acids,
 Beer, Mash, Etc.

PERFECT PULLEYS

The Medart Patent

WROUGHT RIM PULLEYS,

The Lightest, the Strongest, the Best Balanced, the Smoothest, and the Most Durable Pulley

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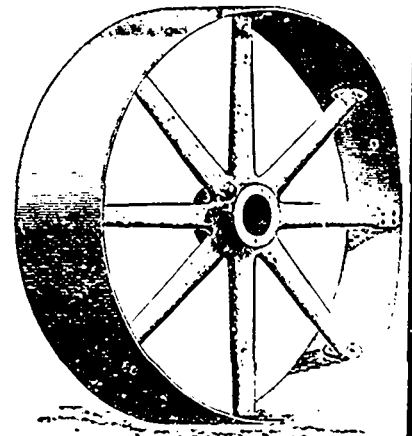
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**NEW BRUNSWICK
 COTTON MILLS,
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**WM. PARKS & SON,
 Cotton Spinners, Bleachers and Dyers,**

Have been awarded "PRIZE MEDALS" for 1882—

At the TORONTO INDUSTRIAL EXHIBITION—
 Four Silver Medals and Three Bronze.

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 Silver Medal for "Best Exhibit."

At the KINGSTON PROVINCIAL EXHIBITION—
 Silver Medal for Best Exhibit, and First Prize,

For their celebrated Beam Warps, Cotton Yarns, Carpet Warps,
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The smoothness and even finish of the goods, and brilliancy of colour,
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BEAM WARPS of every variety.

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CARPET WARPS

First Prize, Silver Medals, for Beam Warps and Denims
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Agents for Beam Warps,—

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Cast Steel Table Cutlery!
 BEST CAST STEEL, Warranted.
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 WORKS,
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 Awarded Diploma and Medal by the New Brunswick Government in 1873

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Electrotype Foundry
 The Only Complete Foundry in
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 ESTABLISHED 1870.
 Merchants and Manufacturers wishing Business
 Cuts will find it to their advantage to give
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Sawn & Planed Lumber,
 SHINGLES, LATH,
 And all kinds of
DIMENSION TIMBER
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RICHMOND ROAD, NEPEAN,
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Woollen & Cotton Picker
 PROPRIETORS WOOLLEN AND COTTON
 MILLS:—
 Having put up a Woollen and Cotton
 Picker on the Corner of Mary and Can-
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 Custom Work that may be entrusted to me
 in a first-class manner, (samples of work
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 Yours respectfully,
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 HOHELAGA
 Brown Cottons,
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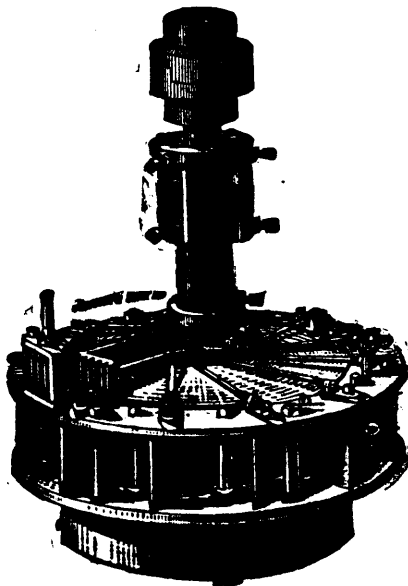
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 Manufacturers of all kinds of
BOILERS!
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THE GRAHAM FILE WORKS,
 ESTABLISHED 1874.
 THOMAS GRAHAM, Proprietor.
HAND CUT FILES
 Made from the best Refined English Cast Steel, War-
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 Orders Solicited from Importers and
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 OFFICE & FACTORY, 150 FRONT STREET EAST, - TORONTO
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 File No-act. Send for Price Lists and Descriptions.

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Manufacture the celebrated
**James Leffel's Double Turbine
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All sizes of Stationary and Portable En-
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The Stearns' Circular Saw Mills with Frac-
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and cheaper Head Blocks for Small Mill. Saw
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Joseph Hall Manufacturing Co.,
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G. E. HEMING,

(SUCCESSOR TO S. BEECH & CO.)

Files Re-cut and Warranted
Equal to New.

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Metal Punching done to Order.

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Dealer in

COTTON & WOOLLEN

MILL SUPPLIES,

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SPECIALTIES,

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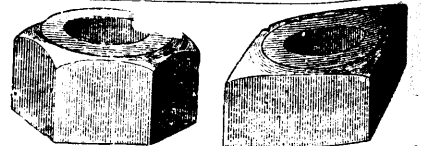
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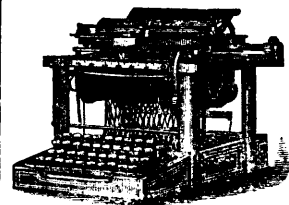
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The only Machine which will success-
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Factory---DANVILLE, QUE.

Others have their specialty—we have none.
With the best possible appliances, we are de-
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ALL OUR BELTING

The Best in the market, including our Driving
Belts—both Double and Ribbed—which are
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Orders promptly filled.

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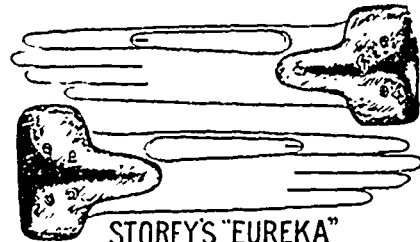
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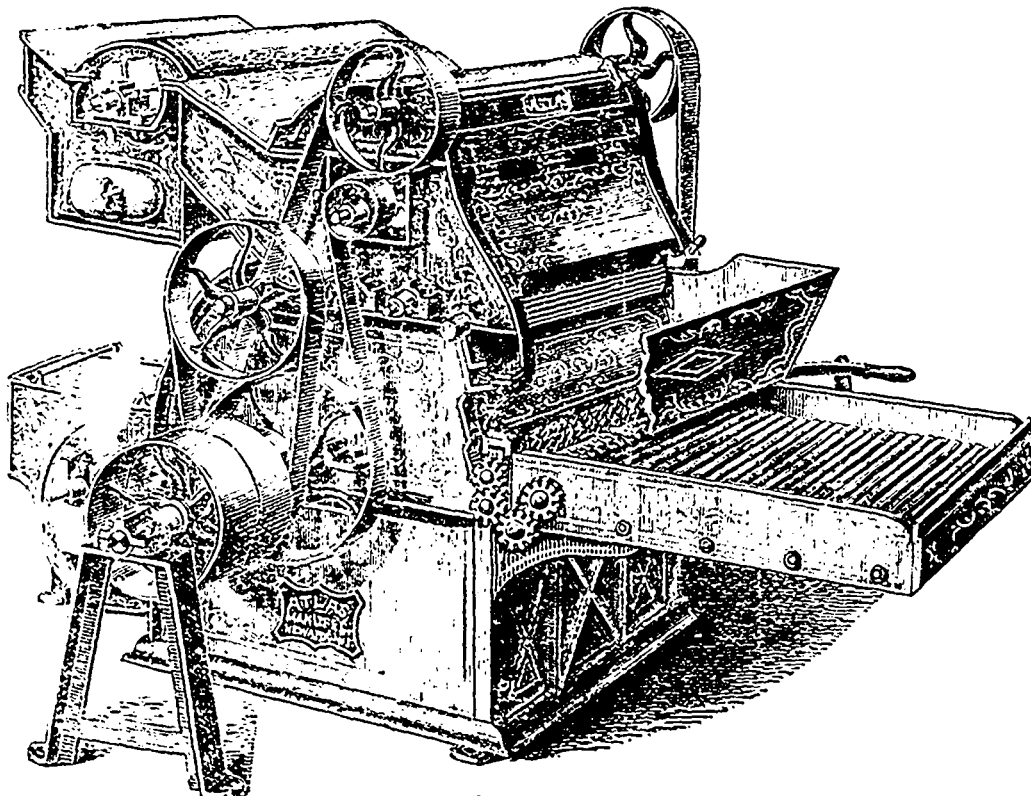
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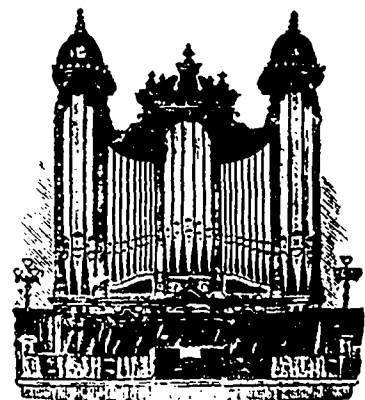
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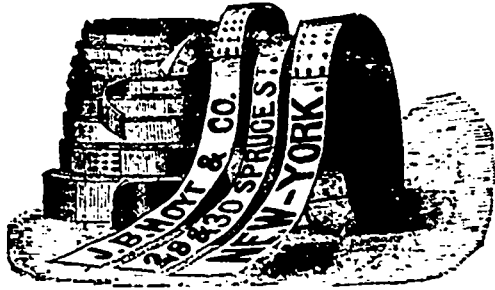
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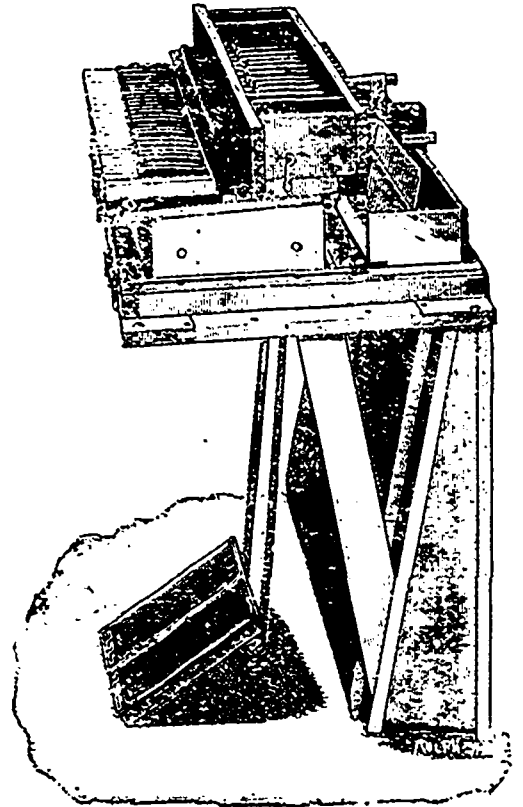
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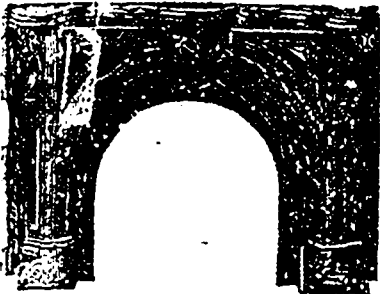
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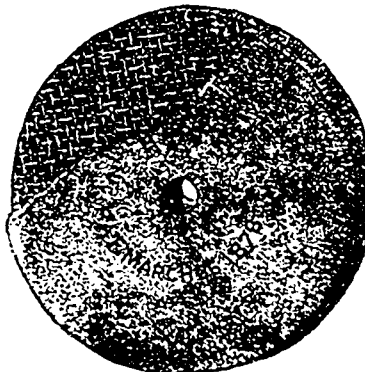
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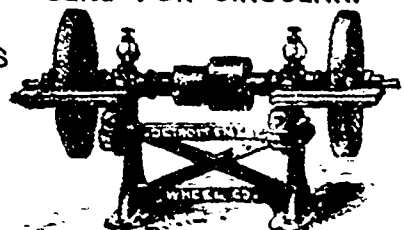
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