

A DIAGRAM.

A MILL diagram is often worth a good deal more than an extra wheat-cleaning machine, a pair of rolls, a reel or a purifier, or more than all of these together. The diagram represents a milling idea, either as a detail or as an entirety. The man who is on the road, the traveling salesman, makes it his business to sell machinery. If a miller lays his trouble before one of these gentlemen the remedy offered is a new machine. If he is selling wheat-cleaning machinery, it is said a new cleaner will do the business. If he is selling rolls, it is rolls that are wanted. Centrifugal reels are used to cover more milling sins than all other machines combined. It used to be a purifier which was the panacea, but now it is a centrifugal. A miller says his flour is muddy. "Rebolt it on a centrifugal," says the salesman. "If that does not do the work, buy another, and so on." Still there is trouble. "Build a complete centrifugal mill!" vociferates the salesman again. This is a regular game that is going on all the time. No one is more guilty than another. Those who build machinery make it their business to sell it. If the milling system is essentially wrong, additional wheat-cleaning machinery, rolls, reels or purifiers will not materially help that mill. The principle of reduction and separation must be correct. Then if there is anything wrong in the machinery, in its amount, it is time to correct it. How can one get a diagram? By paying some one who knows how to make it. That some one had better not be interested in the sale of machinery. His mind will not be warped in favor of additional centrifugals, rolls, reels, etc. A diagram will save a great deal of money in time. It may save a miller from the purchase of additional machinery. Very few mills are systematically arranged, or planned, and for that reason the miller does better by getting a good floor sheet than he does by getting more machinery.—*The Millstone.*

MACHINE FOUNDATIONS.

In a German paper, devoted to recent discoveries and experiments, we find the following upon improvement in foundations, for machinery: "Machine foundations, if built of hewn stone or beton, are said to have the disadvantage of being too rigid; this applies more especially to those for steam engines. The movements and vibrations of the machines occasion a reaction from the immovable layers of stone on the solid cement, which is injurious to the quiet and steady working of machinery. To overcome this difficulty, it is proposed to use an asphaltum-beton, consisting of asphalt, gravel and broken stone. Experiments made therewith in Europe for many years, have given most satisfactory results; and it has been shown that an asphalt-beton foundation for a 60-horse-power engine, after twenty years continuous working of the latter, had not undergone the slightest change or deterioration, although the weather at certain seasons of the year caused sudden and great changes in temperature of the surrounding atmosphere. Besides an inherent solidity, such asphalt-beton possesses a certain elasticity whereby the shocks from machines in action are entirely absorbed or dissipated, and any injury to ground or foundations is entirely prevented. These advantages, proved by experience, seem to recommend this material, not only for foundations of steam engines, but also for all descriptions of heavy machinery, especially steam hammers and centrifugal whizzers. An important consideration besides smooth working is, that a considerable amount would be saved annually through fewer repairs being needed by the machines.

COMBUSTION.

Considering the cost of the fuel consumed in making steam in this country, the following facts should interest all parties using steam power:

- 1st. That coal is distilled into gas before it can be properly burned.
- 2nd. That to burn this gas, a sufficient supply of hot air must be introduced at a temperature not low enough to cool the gases below their igniting point.
- 3rd. Every time a lot of fresh coal is thrown on the fire a great production of gas occurs, and if it is to burn to a flame it must have a corresponding supply of hot air. After a time, when the mass of fuel has become red hot, the supply of gas is greatly diminished, but at first the evolution of gas actually checks the draught; but bear in mind that, although no smoke may be visible from the fire, it by no means follows that its combustion is perfect; if you diminish the supply of hot air, or reduce the air space of your grate bars, you will be merely distilling carbonic oxide gas up the chimney.
- 4th. In ordinary boiler furnaces there is an insufficient supply of air; fresh coal is put on the grates, and the firing doors are closed; gas is being distilled from this coal. Now, if you do not furnish air above the fire (and

it must be hot enough to ignite the gas), how can you expect to get combustion? Whether it is expected or not, it does not burn properly, and your boiler furnace is nothing more than a gas retort in a gas works, making crude gas, and wasting it up the chimney; in other words, a first-class soot and smoke factory.

As most boiler furnaces are constructed they are nothing else than gas producers, that is, all gas producers are extra bad stoves or boiler furnaces. Consider how ordinary gas is made; there is a red-hot retort or cylinder, into which you shovel a quantity of coal, which flames and smokes vigorously as long as the door is open; when it is full of coal you shut the door, cutting off the supply of air and extinguishing the flame. Gas is now simply distilled and passes along pipes to be purified and stored. You perceive at once that the difference between a gas retort and an ordinary boiler furnace with closed doors and half-choked grate bars is not very great.—*Upton.*



Rapid City woolen mills are now ready for operation. The Government is being petitioned to increase the duty on axes. The Galt Felt Works were seriously damaged by fire a week or two ago. The Canada Screw Company of Hamilton are erecting a new establishment 300 feet in length. St. Thomas will not grant Essex & Company, brass founders, of London, a bonus to locate there. Thirteen men were injured by an explosion of molten metal in the Victoria foundry at Kingston. The Gibson Cotton Mills at Marysville is to have an addition to its machinery of 200 sheeting looms.

The erection of the new G. T. Railway locomotive shops at Stratford will be commenced at once.

The Orangeville woolen mills, owned by Classy & Robinson, were destroyed by fire on June 2nd.

A new paper mill factory is being built by Mr. E. B. Eddy, of Hull, at an estimated cost of \$20,000.

The New Glasgow, N. B., Steel Works purpose enlarging their works and engaging an extra number of men.

V. L. Rice purchased the works of the Pray Manufacturing Co., of Minneapolis, who lately assigned, for \$28,000.

Fire damaged the premises of the Toronto Parlor Frame Co., Toronto to the extent of \$2,000 on the 7th of June.

The French Canadian Board of Trade declared themselves in favor of the admission of all raw materials free of duty.

A company to manufacture whips from featherbones, with a capital of \$100,000, has been organized in St. Thomas.

David Darvill & Co., iron founders and manufacturers, London, Ont., have failed, with liabilities amounting to \$80,000.

A boiler explosion in a cotton mill at Natchez a short time ago caused the death of five men and wounded many others.

Mr. Wm. Smith, of Beaverton, has added a new planer and matcher to the wood-working department of his business.

Negotiations are in progress for starting a woolen tweed factory in the town of Mitchell, which will employ 60 or 70 hands.

Mr. B. Williams, Georgetown, has sold to Mr. Sykes the site of the woolen mills, where a new cloth manufactory will be erected.

The town of Sealforth will loan Messrs. Broadfoot & Box, furniture manufacturers, \$10,000 to aid them in enlarging their factory.

Seventy boiler-makers in the Kingston locomotive works are on strike because laborers were placed at the work vacated by strikers. The strikers asked for an advance in wages.

Mr. E. Kamper was in Ottawa a few weeks ago carrying on negotiations with the Government for the purchase of the Intercolonial railway and the erection of immense iron works at Picou, N. S.

Four years ago Graff, Bennett & Co., Pittsburg, iron manufacturers, got an extension of time to pay off their debt of a million dollars. That indebtedness is now paid off and an argument is furnished for the belief that there is still a profit in the iron business.

It was found by experiment some time since that a sheet of iron could be rolled to about the thickness of writing paper, 150 sheets of which would be required to constitute an inch of substance.

The large steam hammer lately manufactured for the Central Iron Works, Peterboro', by Messrs. Bertram & Sons, Dundas, has been tested and found to give the most satisfactory results.

The largest brickmaking establishment in the world is being constructed at Rantan Bay, New Jersey, by the Horilards of New York. The capacity of the plant will be 500,000 bricks every 10 hours.

The Courtland Cart and Wagon Company, of New York, are carrying on negotiations with Brantford, with a view to locating a branch establishment in that city. They promise to employ about 200 hands.

A telegraph wire is being manufactured in England in which the steel is made to completely surround the copper. The wire is drawn from compound metal consisting of a hollow ingot of steel filled with copper.

The firm of Clark, Harris & Co., furniture manufacturers, of Toronto, are negotiating with Ingersoll with a view to removing to that town. They desire a bonus of \$16,000 and exemption from taxes for ten years.

Simcoe has granted \$5000 to the Simcoe Woolen Co. to assist them in rebuilding their mill which was recently destroyed by fire.

Messrs. McClymont & Co.'s woolen factory at New Edinburgh was attacked by fire on the morning of the 10th of June, but was saved by the timely efforts of the fire brigade.

It is estimated that the steam power of Great Britain is able to perform the work of more than 40,000,000 strong men, which must nearly represent the labor capacity of the entire human race without the aid of machinery.

Berlin claims to have the largest button factory in America, the largest shirt factory, the largest corset factory, the largest felt boot factory in Canada. It has the largest tannery, and one of the largest furniture factories in Ontario.

A proposition for the re-opening of the London Steel Works, and the employment of 150 to 200 workmen, has been made to the corporation of that city by a wealthy firm of Cleveland, Ohio, on certain conditions, as a result of the increased duties on iron.

The Northwest town of Calgary boasts of a 75 horse power saw mill, with a capacity of 100,000 feet per day, a 25 horse power planing, sash and door factory, the largest in Manitoba or the Northwest, and a smaller planing, sawing and grinding mill.

A Scotch firm of locomotive manufacturers are said to have entered into correspondence with the Dominion Government, offering to remove their headquarters to Canada, provided the Government will buy fifty locomotives from them to give them a start.

Mr. H. W. Petrie, of Brantford, recently shipped a large quantity of wood working machinery to Liverpool, N. S., via Halifax, where they are to be used in a large shipbuilding establishment. Mr. Petrie's business is extending itself over the whole continent.

An English firm has lately completed a powerful hydraulic press to be used in compressing wood for the manufacture of loom-shuttles. Box wood which has hitherto been used in the manufacturing of shuttles has become so expensive that recourse has been had to the cheaper woods, powerfully compressed.

Five great branches of manufacturing employ together 85 per cent. of all the water power that is used. Flouring and grist mills use 38.4 per cent.; saw mills, 22.7 per cent.; cotton mills, 12.1 per cent.; paper mills, 7.2 per cent., and woolen mills, 4.4 per cent. The iron industry now uses scarcely any water.

According to a tabulated statement recently made by Mr. James M. Swank, manager of the American Iron and Steel Association, the production of steel of all sorts in Great Britain in 1886 amounted to 2,354,670 tons, and in the United States to 2,562,502 tons. While in crucible steel Great Britain surpassed the United States by 475,177 tons, and in tool steel by less than 30,000 tons, in Bessemer steel the United States surpassed Great Britain by 698,670 tons, or 44.5 per cent., and in the aggregate of all kinds of steel, 197,832 tons.

In commenting upon "Proctor's" article in these columns last month relative to the waste of valuable water power at Peterboro', Ont., the *Review* says: "When the adoption of the National Policy gave an impetus to manufacturing in Canada, Peterborough was not prepared to take advantage of the opportunity, because its means of carriage were so inadequate, compared with other localities, which thus secured the preference. Now, however, in addition to unsurpassed water power, we have railway connections which will compare favorably with those of most towns or cities. There is therefore no longer a sufficient reason for the waste of which "Proctor" speaks.

Heat in contact with the shell or flues of boilers is very rapidly dissipated; for instance, if the extra-hot air and the products of combustion in the fire box is assumed to be 2,500° Fah., and the temperature in the chimney of a 20-foot boiler 600° Fah., and the rate of motion taken at 22½ feet a second, it would follow that in passing under and through the boiler in about one and two-thirds seconds they would have parted with 2,500°—600°=1,900° of heat; so that it will be readily seen that perfect combustion can take place but little if any distance back of the bridge wall. The assumption of 2,500° in the fire box is a very generous one, comparatively few furnaces showing any such results. But a large majority of those who have charge of steam boilers delight in a long blaze, while really there is no better evidence of imperfect combustion.

The charter of \$5,000,000 to the Dominion Oil Pipe Line & Mfg Co., of which T. G. Hall, Judge Laird, G. D. Lane, A. R. Wilbur and F. C. Mills are the promoters, passed the Ottawa Senate on Wednesday without change, and thus becomes a dead certainty. It is one of the largest charters ever granted in the country for such purposes and means business. Quite a number of prominent parties from the States and Canada have been here within the last ten days looking over the plant of the Alpha Co., and more particularly seeing the liquid fuel of the company, its gas, etc. A great many say that it is but a question of a short time when the liquid fuel will be introduced into manufacturing concerns on a large scale and that the gas will revolutionize the lighting problem. The exchange building is lighted with gas right along and gives a clear, brilliant light, at such a low cost that it astonishes every visitor who sees it.—*Sarnia Sun.*

CATARRH, CATARRHAL DEAFNESS, AND HAY FEVER.

[From *Scientific American.*]

Sufferers are not generally aware that these diseases are contagious, or that they are due to the presence of living parasites in the lining membrane of the nose and eustachian tubes. Microscopic research, however, has proved this to be a fact, and the result is that a simple remedy has been formulated whereby catarrh, catarrhal deafness, and hay fever are cured in from one to three simple applications made at home. A pamphlet explaining this new treatment is sent free on receipt of stamp, by A. H. Dixon & Son, 305 King Street West, Toronto, Canada.