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COMBINED SAW TABLE.

THE accompanying illustration represents a new iron frame and iron top saw table which has just made its appearance on the Canadian market, and a brief description of its features may prove interesting to wood-workers. The machine has a steel mandrel 1¼ in. dia., and having cone bushing to take saws having eye from 1 in. to 1½ in. Pulley on mandrel is 4 in. dia. by 5½ in. face. The frame which carries the mandrel is raised and lowered by the hand wheel in front, so as to regulate the depth of the cut to suit the work and can be adjusted with the saw in operation. For use as a rip-saw table it has an adjustable fence that can be set at an angle either way from the perpendicular. As a cut-off saw table it is fitted with adjustable cut-off fences on both sides of the saw, independent of each other, and which may be set at an angle to suit the operator. The cut-off fences run in parallel guides which can be drawn out so as to make room for cutting off table tops or other wide boards. The cut-off fences have clamping bolts in them for holding patterns, etc., forms, or backs for mouldings, when cutting to mitre, or any other angle in picture frame making. Counter-shaft has tight and loose pulleys 12 in. dia., 6 in. face, and should make 450 revolutions per minute. The machine weighs 1340 pounds.

This machine is being handled by Mr. A. R. Williams, of the Soho Machine Works, this city, to whom any enquiries concerning it should be addressed.

COMBINED SAW TABLE.

THE CONSTRUCTION OF FLOUR MILLS.

Concerning the construction of roller flour mills of from 50 to 150 barrels daily capacity, the *American Millwright* says: In selecting a site for a mill one must be governed by the source of wheat supply, market for products and motive power. If water is to furnish the power then the location of the mill must be with a view to the most advantageous application of that power. Having determined the capacity of the mill and its location, go for a foundation and don't stop till you get it. If you can't find it with pick and shovel, send piles down one on top of the other if necessary until they stop. Now commence and build; put in good solid stone foundation wall from 3 to 6 feet in thickness according to size of the building, well grouted to above high water and better if throughout. If you build of brick, start your walls sufficiently heavy, gradually tapering off as approaching the top, yet retaining a sufficient strength to resist the constant tremor of the machinery. Set posts on secure foundations; use good cast iron corbels and beams strong enough to support the weight to be placed on them. Do not build beams into the wall, rather set them in a recess, saving your walls intact in case of fire; frame posts to give the floors a little camber, like the deck of a vessel; and if joists are used, place them all one way from cellar to garret with centres perpendicularly in line. Flooring may be of pine, except on roller and packing floors where we would advise the use of ash or maple. Place windows to well light each floor, and have one or more outside doors on every floor.

Mill stairs are open for a great improvement. They may be made winding, straight, or with a turn, to suit the arrangement of the mill; but never make them less than 8 inches rise and 9 inches tread. Have enclosed stairways with a door on each floor. The style of roof will be subject to the location of the mill, the extent of your bank account and your natural desire for display. However built, it should be with a view of resisting fire and weather, staying up under heavy snows, and down under hard winds, and be the most serviceable generally. If you build in a crowded locality, provide uncovered shutters for all windows; also cover all outside doors with tin, then paint well. To make a good mill door, use two thicknesses of ⅞ stuff, matched and laid at an angle of 45 degrees; use wrought nails or 1½-inch No. 14 screws; let each door be in two sections, upper and lower, and provide durable locks and hinges therefor. Having completed the building with due reference to the nature of its proposed contents, we will now consider the grade or class of machinery to be used; and in this matter we will endeavor to pursue a system, leaving the milling system for others to discuss.

In selecting machinery, be it a set of rolls or a lot of pulleys and hangers, be guided in your choice—not by flaring advertisements nor gaudily painted machines of irresponsible parties, but by a close investigation of the record of the machines you want. This is the course that every reliable maker of machinery invites you to follow. Choose machinery neatly and durably finished, simple yet positive in adjustment, combined with the highest attainable degree of efficiency of actual operation. This will apply to such machinery as rolls, purifiers, centrifugal and other reels upon which depend the "results." Not quite as important a factor in the manufacture of satisfactory grades of flour, but equally important in the ease and economy of operation, are the shafting, pulleys, hangers and bearings, to the selection of which a fair amount of discretion may judiciously be given. Procure shafting of a diameter sufficient to serve its purpose faultlessly; use pulleys of a size and proportion consistent with the work they are to perform; have self-oiling bearings and hangers with good drip cups, also self-contained provision for vertical and lateral adjustment. Careful attention to these "unconsidered trifles" will insure you possession of a plant which, for perfection of products, durability, ease and economy of operation and first cost cannot be excelled.

THE CARE REQUIRED BY LEATHER BELTING.

A recent issue of *Annales Industrielles* says on this very important question: We have had occasion at various times to combat the widespread custom of employing resinous substances for augmenting the adhesion of leather belts to pulleys.

These substances for a short time produce the desired effect, but rapidly become inactive and deteriorate the belts. One must not forget that it is the more or less perfect contact between the belts and the pulleys which renders the adhesion more or less intense.

It has been suggested, perhaps with reason, that it is the pressure of the atmosphere which renders the friction so considerable between a well-polished pulley and a belt of good quality and condition. According to this, we should seek to render the contact between the surface of the leather and the surface of the pulley as intimate as possible. This result is not obtained by means of resin, but rather with a fatty substance, such as fish-oil, tallow, or better yet, with a mineral oil. A belt so treated glues itself, so to speak, to the polished surfaces.

For some time mineral oils have been substituted for the oil, and other substances above mentioned. We could not recommend the former too highly for the preservation of belts. It suffices for maintaining them in excellent condition, to oil them about every two months on the exterior face; they will then remain supple, and consequently easily take the form of the pulley. It is needless to add that this suppleness contributes essentially to their preservation, because cracks and ruptures are not produced as in belts dried by the action of the atmosphere.

The experiments of Morin have demonstrated that the co-efficient of friction of new belts on wooden pulleys .50; that of greasy belts on the same pulleys .47. The co-efficient of friction between humid belts and turned and polished cast-iron pulleys is .38; that of greasy belts on cast-iron pulleys .28. Belts heavily saturated with oil on the interior, and running on cast-iron pulleys, have a co-efficient of .12 only.

It is the humid belts which have the highest co-efficient of friction. Now the oiling of the external surface of the belt with a mineral oil maintains throughout the thickness of the same a species of humidity that is very advantageous. It is specially so in locations that are very dry or filled with dust, where the belts generally become dry in a short time, that this oiling is very useful.

The mineral oil may be applied while the belt is running, and ought to be employed every few weeks. For the best results a thorough cleaning of the belt should take place every three or four months.

For this purpose the belt is first removed from the pulleys, then washed with tepid water in order to remove the dust and other matters which are always deposited upon it. The belt is dried by rubbing it energetically with waste or a cloth, then the mineral oil is applied to it, likewise by means of a cloth, and it is hung in a warm place. After the first portion of the oil has penetrated the leather, more is applied.

The employment of mineral oils has up to the present given excellent results. A belt treated in the manner we have given above retains its suppleness for a long period, and resists the action of the atmosphere. Its running is noiseless and regular, the losses from passive resistances are much less, the belt has a much longer life, and the expenses of maintenance are by this same largely, and in fact we may say in most cases fully, compensated for.

ELECTRICAL SPARKS.

The Halifax Gas Light Company has called a meeting of its shareholders to authorize the adoption of the electric light by the company and enter into competition with the Halifax Electric Light Company.

In future the Gananoque Electric Light Company will use power instead of steam.

It has been calculated that the cash invested in the electric light industries of the United States amounts to $150,000,000.