

IRON AND WOOD GEAR-DRESSING MACHINE.

We give herewith an engraving of a novel machine recently patented by Mr. William Gleason, of Rochester, N. Y., for dressing the teeth of iron wheels and for shaping the cogs of wooden gears. The machine may be changed from iron to wood without any delay or change of parts. The gear to be dressed is chucked on the overhanging end of the spindle, the dividing wheel being on the opposite end. The tool holding the slide moves on a bar which may be swung to any required angle for bevels, and power is imparted to the gear-dressing tool by a belt from a drum on an overhead shaft that swings to accommodate the position of the bar that supports the tool slide.

The tool may also be readily adjusted to move parallel with the wheel supporting spindle for dressing spur gears. The bar is jointed both horizontally and vertically, so that it may follow a template or form at or near the outer end of the bar having the shape of the tooth to be dressed. By means of this arrangement the perfect shape of tooth for beveled wheels is secured. For spur gears the form is placed directly under the tool holder.

The movements of the slide carrying the tool are similar to those of a crank planer having a quick return movement. In dressing wooden gears both reciprocating and rotary motions are used, and in place of the ordinary tool, a bracket supporting a spindle and circular saw is carried by the tool holder. A quick rotary motion is communicated to the saw spindle from the overhead shaft by a belt, and the tool holder is reciprocated in the same manner as in dressing iron teeth. The machine does its work perfectly and very rapidly, as the saw cuts on the back stroke as well as on the forward stroke. The face and ends of the teeth may be dressed without re-chucking the wheel.

It will be noticed that this machine shapes both wood and iron teeth without the use of expensive rotary cutters, and it has the advantage of making perfect teeth on bevel wheels, a thing impossible with rotary cutters used in the ordinary way.

We understand that this machine is in use in some of the largest shops in the country, giving good satisfaction in every case.

IMPROVED BOILER FEED PUMP.

The accompanying cut represents an improved boiler feed pump patented by I. B. Davis, Hartford, Conn., May 29, 1879

It is an established fact that the most economical of all methods of supplying steam boilers with feed water is by the use of a pump driven by a belt, the economy being much greater than is generally supposed. The "Economic" boiler feed pump, as the inventor calls it, is designed to supply a want for a cheap, durable pump, economical in its workings, and not liable to get out of repair. As will be seen by the cut, it is a double pump driven by a single set of gears. All the parts are made very heavy and well finished. The valves, the only part that can wear or get out of order, are made separate and distinct from the pump, and are attached to it by bolts. They can be got at by unscrewing a brass cap, and in case of any accident a duplicate can be put in its place without disturbing any other part of the pump, as they are made interchangeable in all its parts. It is completed ready to run by attaching a water pipe to and from it, and putting on a driving belt. The gear being made from cut iron pattern, and the pump being double acting, make its action much smoother and quieter than other geared pumps. It is especially valuable in sandy water, as the valve can, if worn by the action of the sand, be ground tight in a few minutes by any one. We are informed that its cost is below other pumps of equal capacity. It is made by I. B. Davis, Hartford, Conn., who has offices at 92 and 94 Liberty Street, N. Y., and 43 South 4th street, Philadelphia, managed by H. T. Brewster; and at Boston, 36 and 38 Oliver Street, managed by R. B. Lincoln, Jr.

The American vs. the British Miller.

A correspondent in the *Miller* (English) berates his countrymen for not being more fully alive to the causes which give the American miller pre-eminence over the English miller.

While British millers, he says, are wondering at the ever-increasing importations of American flour, wasting both time and money in discussing various systems, with minds not always open to conviction, Jonathan has discovered a market for his flour

under the very nose of the British miller, and has even converted the latter into his salesman.

The writer also refers to our worthy contemporary, the *American Miller*, where, he acknowledges, may be found instructive reading for old-style English millers who will hug their hesitation, deplore foreign competition, and seek for

paper to which I refer, remodels his mill, improves his flour both in quality and quantity, and no doubt "calculates" on the indecision of the millers here, for some time at least, enabling him to make a small fortune. Ultimately finding us alive to the fact that we have lost ground, and increase our pace, he takes another jump ahead—not so thoughtlessly as may be supposed; on the contrary, his mind is more open to new ideas, and he is ever seeking the way to go ahead, while we pine for a corner in which we can lie down and feel snug. The relative advantages of new over old systems of milling are discussed in a very half-hearted and skeptical spirit by old-style millers; indeed there seems little hope that, without resorting to a surgical operation, some will ever be convinced. Unfortunately there is no recognized system of grading or testing flour, in this country, made under various systems and from certain wheats, both as to quality and quantity. There must, therefore, always be indecision, controversy, and little result, until some test of these systems that can be relied upon is made."

Sawmills Wanted in Brazil.

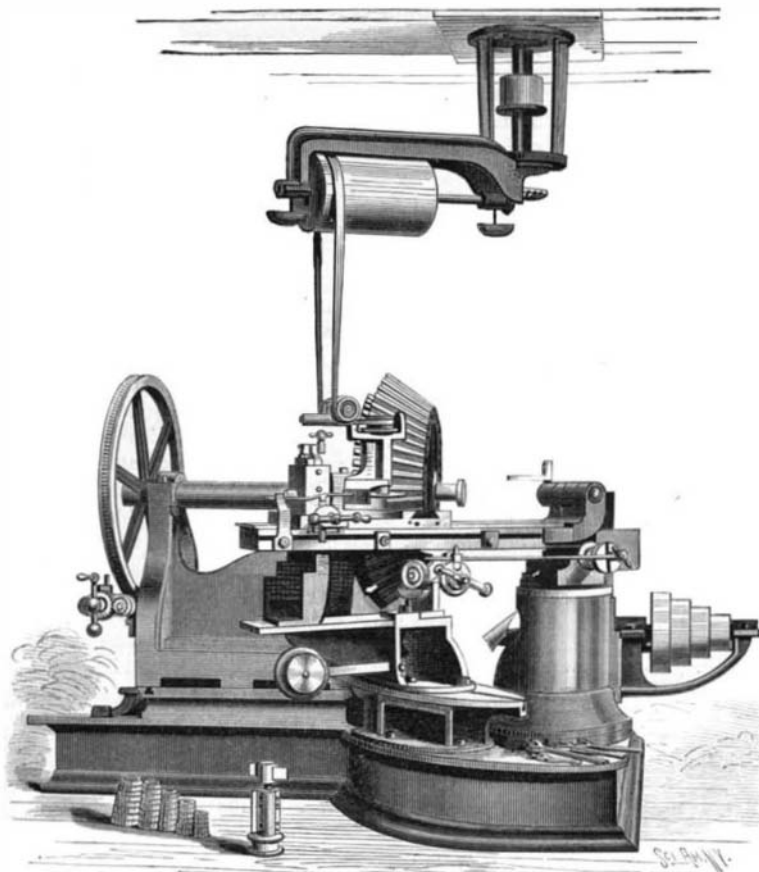
Mr. Maurice Mauris, the explorer of the Amazon, says that sawmills are much needed in Brazil, and that their establishment could scarcely fail to prove extremely profitable. In many cases, more especially on the Madeira, the current conveys the largest logs of excellent woods, which the sawyer would only have to capture and land. At Serpa, near the mouth of the Madeira, a Portuguese speculator built a sawmill, and the cedar carried down the river supplied his concern in five months with sufficient timber for a whole year's work. So well did his work prosper that this speculator was enabled to retire after a few years independently wealthy, although he had been assisted only by the rudest machinery and unskilled, intractable workmen. Though situated on the confines of a vast forest, Para consumes large quantities of North American timber, only a single sawmill existing in the city. A dozen boards of red cedar (a very common wood) cost about \$30 at Santarem.

Useful Hints on Sewerage.

To sewer a town, and then leave house drains to haphazard construction, is simply little better than to waste the ratepayers' money. Comfort and means for health are only to be secured by the best house drainage, and the best house drainage will not be accomplished by builders working under no responsibility. The sewerage of a town or village will consist of waste water and excreta from the houses, and the volume, in round figures, may range from 100 to 250 gallons per day from each house. This volume will probably flow off in about eight hours, so that the sewers must provide for not less than three times this volume, if every drop of roof and surface water can be excluded. As this cannot in all cases be accomplished, the sewers should provide for not less than 1,000 gallons from each house, or, for a town of 1,000 houses (5,500 population), have a delivering capacity of about 1,000,000 gallons. An outlet sewer of two feet diameter, laid with a fall of five feet per mile, will deliver upward of 2,000,000 gallons, flowing a little more than half full; and, as provision should be made for an increase of population, a sewer of two feet diameter may be provided for each 5,500 persons, where no better fall than one in one thousand can be obtained. Lesser diameters will answer where there are no greater falls.

Towns situated on land rising considerably will best be sewered in zones; that is, by intercepting lines of sewers contouring the site, as such sewers will prevent gorging the low-level districts, and also prevent the rush of sewage down steep gradients at high velocities, which, in times of heavy rain, may burst the low-level sewers at the steep gradient junctions. Sewers with steep gradients, if the flow of sewage is unbroken, get up a velocity in the sewage, which is liable to be very injurious in its wearing action on the sewers. Sewage should not be allowed (except when flushing is in operation) to acquire a greater velocity at any state or time of more than six feet per second, as any higher velocity will take grit or other solids along the sewer invert with a cutting and disintegrating action rapidly destructive to the material of the sewer.—*Randinson's Suggestions.*

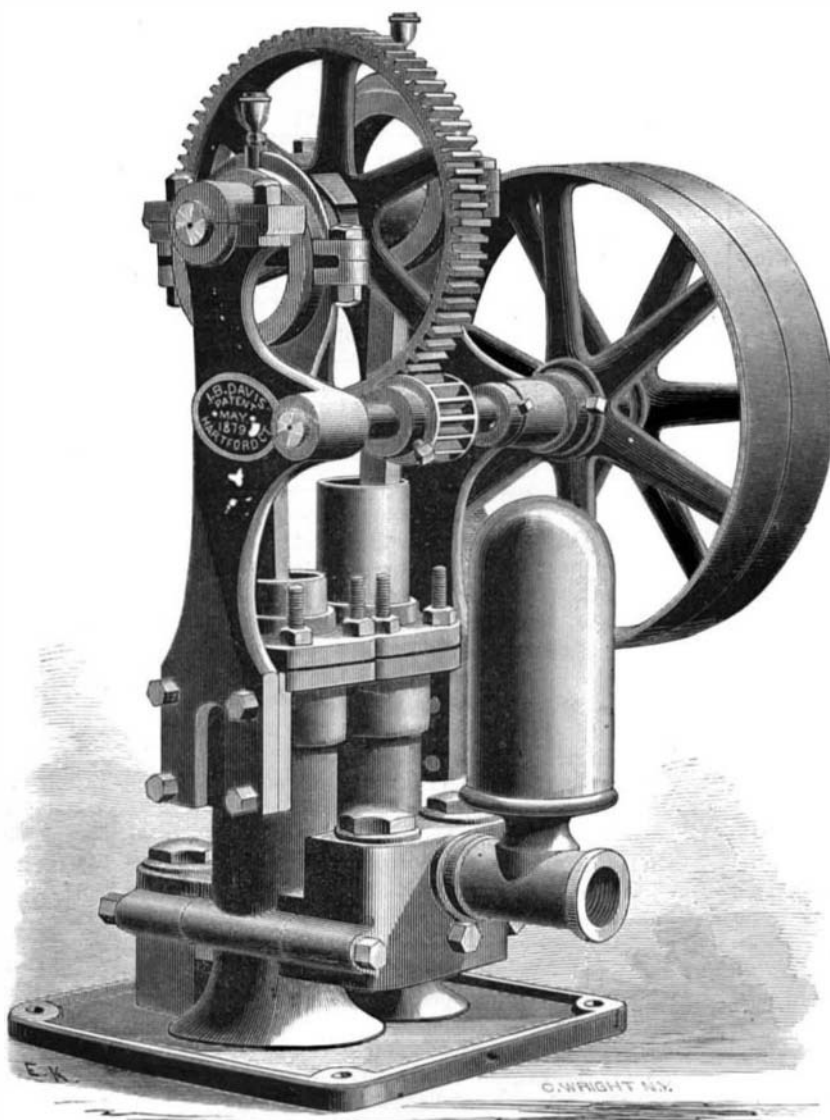
The largest tree in the Southern States, a tulip bearing poplar tree near Augusta, Ga., is 155 feet high and 9 feet in diameter, its lowest branches being 55 feet from the ground.



GLEASON'S GEAR DRESSING MACHINE.

deliverance in every possible way but that of a genuine effort on their part.

"While admitting the serious nature of foreign competition, with strange inconsistency too many British millers cling tenaciously to old methods and machinery, and are wilfully blind to the more improved methods at their command. The equipment of British mills, as a rule, is much inferior to American mills, if we except a few of the largest mills in this country, which are a stride in advance of the latter. The interest in improved machinery here is superficial and its adoption slow, while the adversary, judging from the



DAVIS' BOILER FEED PUMP.