

The Progress of the Trans-Siberian Railway.

For a long distance toward the Pacific Ocean it is expected to lay the rails of the Trans-Siberian Railway at the rate of four miles per day. The road is now being built without foreign employes, except for a number of Italian stone cutters. The rails are being turned out by subsidized Siberian foundries. Every seven miles a side track is being built, so that the entire route may be cleared for military trains, should it become necessary. A train de luxe now runs once a week from Moscow as far east as Tomsk. From that point a second-class passenger train runs three times a week as far as Irkutsk. The cost of a second-class ticket from Moscow to Lake Baikal, where the government is now laying rails, is about \$40, and the journey lasts some twelve days.

AN IMPROVED WOOD-WORKING MACHINE.

A machine for doing a variety of work is a necessity in any factory where there is not a full line of machinery, and the universal wood-worker, which has just been redesigned and patented by the Egan Company, Nos. 327 to 347 West Front Street, Cincinnati, O., is well adapted to meet the various requirements of the wood-worker. The machine will make glue-joints, will chamfer, tongue, and groove, raise panels, miter, rabbet, flute, and bead.

The column is cored out, cast in one piece, and is heavily braced. The connected and movable bearings are laterally adjustable across the machine in square gibbed slides. When the operator has his fence set for doing work, he can adjust the head with the greatest rapidity to the exact line desired.

The spindle has an outside bearing which can be instantly removed by loosening one hand bolt, to give free access to the head. All cutter-heads used are adapted to run at the highest speed.

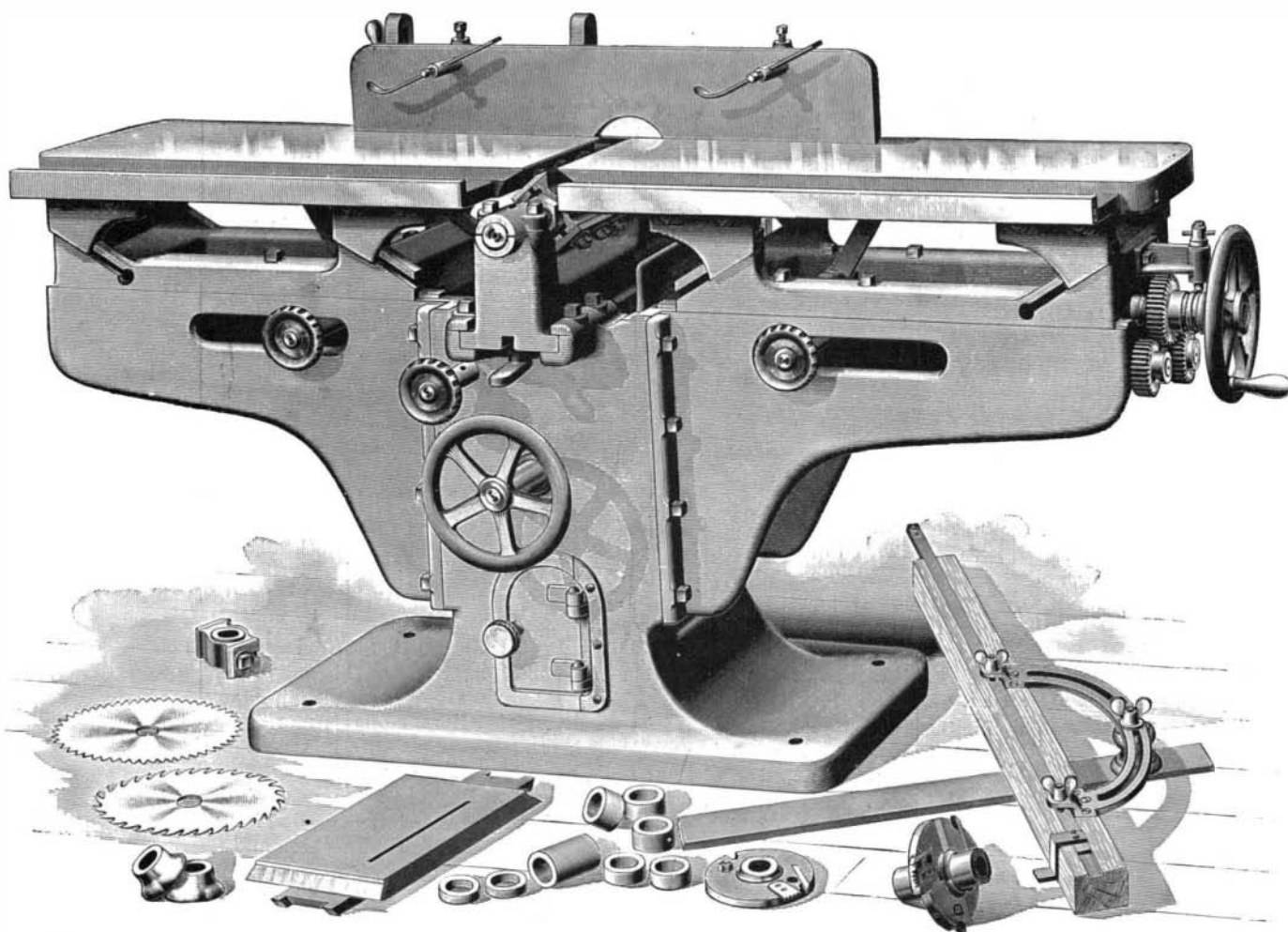
Both tables may be adjusted vertically, horizontally, and to the circle of the head independently, or may be drawn clear back from the cutter-head, to give free access to the mandrel in order to put on any cutters, heads, or saws, by means of the hand wheel at the working end of the machine. Both tables may be raised and lowered together, following the circle of the head. By the large hand wheel at the front both tables may be raised and lowered together vertically. The relative positions of the tables are not changed, and the adjustment is accomplished in either instance by means of a single hand wheel. There are four inclines to each table, one at each corner, so arranged that all wear may be taken up and the tables always kept in perfect alignment, notwithstanding any wear that may take place.

For panel-raising, two panel-heads, with a special fence, are used. Both sides of any door-panel of any shape can be raised at the same time.

An adjustable bevel-fence is provided which can be set to any angle desired by loosening one clamp bolt, and which has a free movement across the table for the different kinds of work to be done. The face of this fence is planed perfectly true.

The boring side can be used for all kinds of boring or routing. The table is raised and lowered independently by the cranks shown in the cut. A fence for angle boring is fitted on the table, with stops for spacing the holes and routing.

The Egan Company's wood-worker was awarded a medal at the Cincinnati Industrial Exposition October 3, 1882; October 6, 1883; at the Cincinnati Centennial Exposition, 1888; at the World's Fair, Chicago, 1893; at Antwerp, Belgium, 1893; and at Santiago, Chile, 1894, for convenience of adjustment and originality of construction and the trustworthy and thorough workmanship displayed throughout.

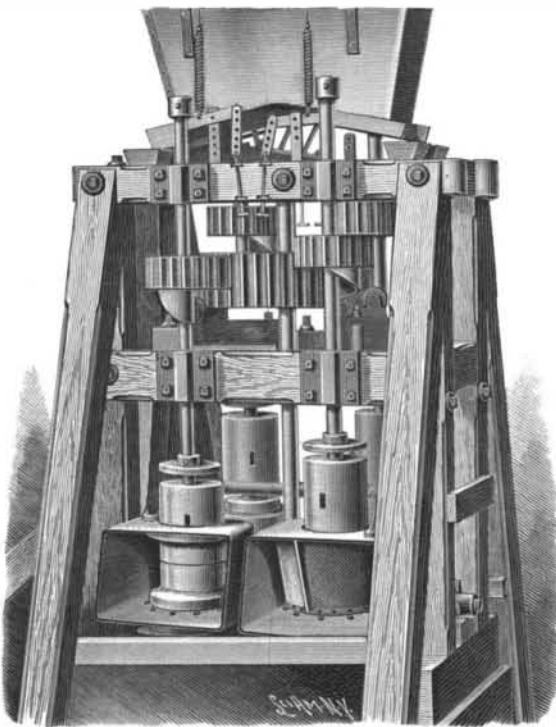


PLANING AND JOINTING SIDE OF AN IMPROVED WOOD-WORKING MACHINE.

A ROTARY ORE-STAMPING MILL.

In many of the gravity ore stamping mills no small percentage of values is lost in slime. Moreover, these mills are provided with stamps having only reciprocating motion. In the mill which forms the subject of the accompanying engraving the slime losses are considerably reduced, and the stamps are moved not only vertically, but are also rotated.

Mounted in the lower portion of a heavy frame is a



PARKER'S ROTARY ORE-STAMPING MILL.

horizontal shaft, driven in any desired manner, and geared to a vertical shaft extending upwardly to the top of the casing. At its upper end the vertical shaft is provided with a wide-faced cog-wheel meshing with four other cog-wheels provided on their under surfaces with cams adapted to engage rollers. The four cog-wheels are carried by vertical shafts having iron plungers or stamps at their lower ends. These stamps have chilled iron shoes and move vertically within crushing shells resting upon cast iron bases recessed to receive chilled iron dies. A wire screen, funnel-shaped in form, is fitted within each crushing shell. The ore crushed by the stamps will be gradually forced through the screens when it has been reduced to the requisite degree of fineness.

As the cog-wheel driven by the central shaft revolves, the stamp shafts will be rotated by their cog-wheels, and will rise and fall as the cams respectively engage and pass over the rollers. It is, therefore, evident that the stamps are enabled not only to crush, but also to

grind the ore, by reason of the movement of rotation imparted by the cog-wheels.

The inventor of this mill, Mr. A. A. Parker, of Ridgeway, Col., informs us that his apparatus has been used with gratifying results. A battery of four stamps driven by a ten horse power engine, it is said, will crush twenty-five tons of ore in twenty-four hours with screens of sixty-mesh fineness.

American Capital in Brazil.

An article on the resources of Brazil, written by L. Lipman, a prominent local authority, at the request of Consul-General Seiger, at Rio Janeiro, has been published by the Department of State. Supplementing the writer's observations, Consul-General Seiger says:

"I regard with much favor the proposition of organizing an American syndicate for business operations in Brazil. While the present financial and commercial depression is unfavorable to new industrial ventures and to rapid increase in the sale of American merchandise in Brazil, it offers, on the other hand, excellent opportunities for the investment of capital in industrial enterprises already established on terms much more favorable than could be obtained when the country is once more placed on a solid financial basis.

"European capitalists, especially British, are for these reasons making investments here. American capitalists ought to combine to send financial and technical experts to this country, men of experience and mature judgment, who speak the French and Portuguese languages, and let them look around in Rio, in Minas Geraes, in Parana, in Santa Catharina and Rio Grande do Sul. There is no lack of opportunity for good investments. This is also a good time for the preparatory work that may lead to permanent commercial relations at the time of a general trade revival, which is sure to come sooner or later.

"A great deal of harm has been done lately by adventurers who come here from the United States with a great flourish of trumpets, but without any means, experience or knowledge of French or Portuguese. They bring a great variety of 'samples' (easily convertible into cash) from manufacturers anxious to extend their trade in Brazil. Such unscrupulous and ill-prepared agents can only harm American prestige in this market.

"I would advise our export associations to quit sending circulars here, which are never read, and to establish a monthly American trade paper in Rio, printed in the Portuguese language. Such a paper could easily be made self-sustaining, and, if properly conducted, would pave the way to closer business relations between the United States and Brazil.

"A profitable business might be done in the shipment of Brazilian hard woods to the United States. This business is at present, so far as my observation goes, almost exclusively confined to rosewood; but there are many other fine cabinet woods in Brazil, some of which are much cheaper and even more beautiful.

"Lately the immigration into Brazil has fallen off very considerably, that of Teutonic and Anglo-Saxon origin having almost entirely ceased. This fact is due to the extremely hard times now prevailing in Brazil and also to the fact that the national government, as well as the state governments in the south, are at present financially unable to grant substantial assistance to immigrants.

"The overproduction of coffee is now forcing the Brazilian agriculturists to diversify agriculture so as to produce the foodstuffs necessary for home consumption." In this connection Mr. Seiger gives the figures of the crop for 1897-98 at about 11,000,000 bags of 132 pounds each, while that for 1898-99 is estimated at from 7,000,000 to 9,000,000 bags.