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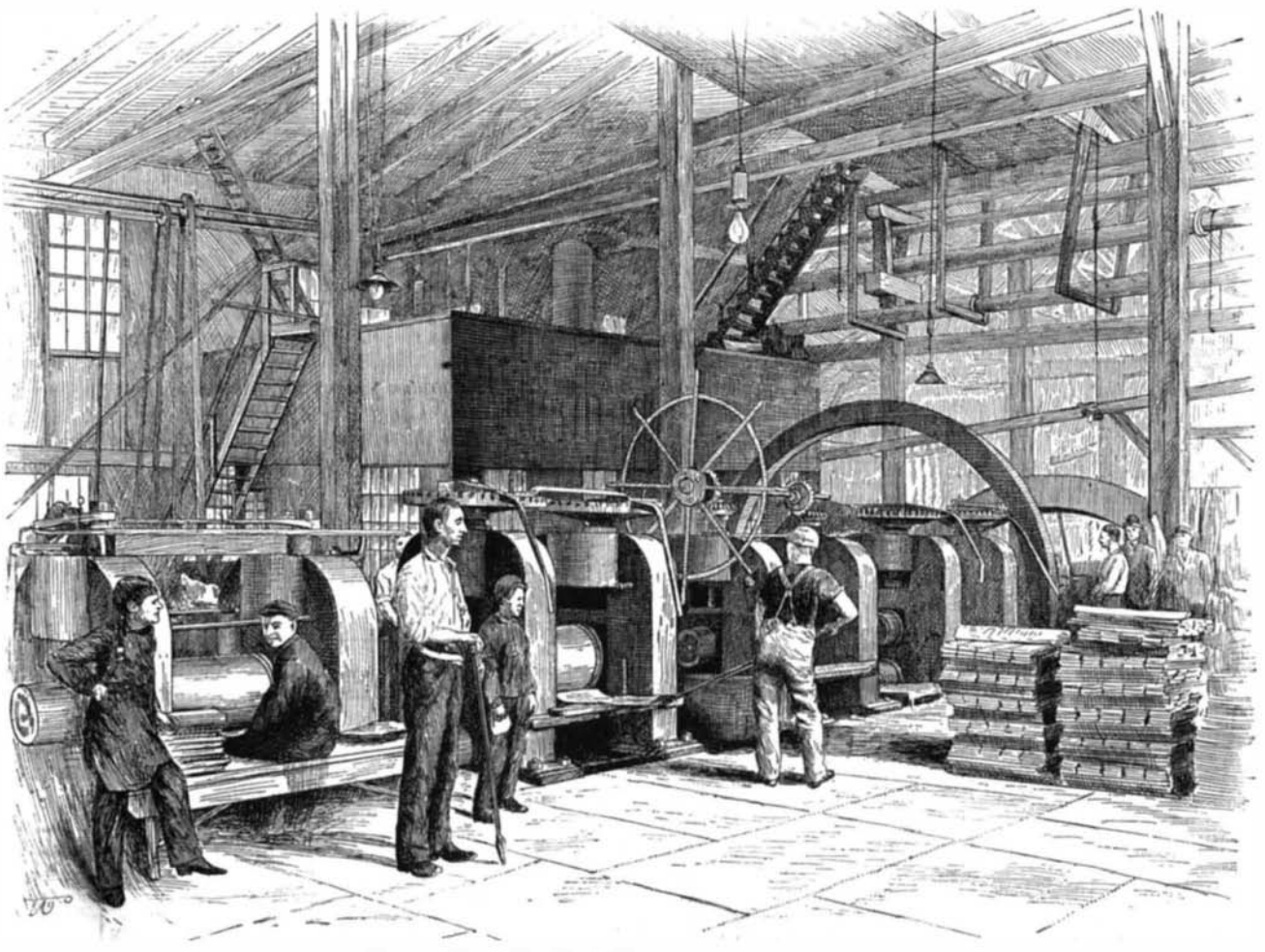
## THE MANUFACTURE OF TIN AT ST. LOUIS.

A recent census bulletin gives us various interesting particulars showing the rapid growth of St. Louis as an industrial center. She already stands in the front ranks as a manufacturing district, and a few more years of progress will give her a positive pre-eminence. Among the more recent industries commenced at St. Louis is the manufacture of tin, and, according to the *Iron Age*, to which we are indebted for the following particulars, the enterprise presents every prospect of permanent success. The works here illustrated are those of the St. Louis Stamping Company.

The works have been completed at a cost of $250,000 for the tin plate mill alone, but, including forge, bar mills, warehouses, etc., the investment is over $400,000, and we take pleasure in laying before our readers views of the different departments taken from photographs.

The St. Louis tin plate plant comprises a sheet mill 150 ft. long by 100 ft. wide, an annealing department 150 by 65 ft., and a tinning department 250 by 60 ft. The steel plate bars are made in the other departments of the works. In the forge mill the billets and bars are prepared and rolled to suitable thickness, width, and length, after which they are taken to the tin plate works, where they are reheated and rolled to about No. 16 gauge. They are then doubled, rerolled three times, and sheared to the different sizes. The doubler and shearer used by the company is of their own design, and is in use nowhere else. An upright bar, jointed at its base, has two arms, one forming the doubler and the other the shearer, which work alternately with the motion of a cam at the top. There are four mills in the sheet mill department, a mill consisting of a roughing and a finishing roll. The sheets are then cut to the size required, after which they are taken to the pickling machine or agitator, to remove the scale and other impurities from the surface of the sheet, and allowed to remain there from twenty to twenty-five minutes. The agitator is capable of pickling sheets for 500 boxes of tin plate a day.

After being pickled, the sheets are taken to the annealing department, where they remain in the furnace for 24 hours. They are then taken back to the rolling mill to be cold-rolled, in order to make their surfaces perfect to receive the coating. After this they are annealed again, and repickled in the so-called white pickle, after which they are placed in water tanks to prevent oxidation, being then ready for tinning. The process of tinning is comparatively simple. The sheets first go to the tinning, next to the wash, and last to the finishing or grease pot, in which they are run through rollers which strip them of superfluous tin. They are then taken to the cleaning boxes and finally rubbed with the woolly side of a sheep skin, after which they are ready to be packed. Ten tinning pots or stacks are now in operation in these works, producing about 350 boxes a day, to which will immediately be added six more, and with these 16 stacks the company will be able to turn out over 600 boxes of tin plate daily. The stacks now in operation are producing



MANUFACTURE OF TIN—THE SHEET MILL.

THE ST. LOUIS STAMPING COMPANY—VIEW IN THE TINNING HOUSE.

half-bright plates, which are largely used in the company's own works, save what are sold to the retail trade. The balance of the production is roofing or terne plates. The roofing plates are all sold to dealers, and the company say that consumers report the plates are much better than English plates of the same grade. It may be of interest to note that the Government Building at the World's Fair at Chicago is covered with these plates. There are 11 furnaces in the annealing department running on sheets for the tinning department, to which will soon be added four more, when sufficient quantities of sheets can be annealed to run the tinning department full. Arrangements have also been completed for the erection of a cold-rolling house, with 12 sets of rolls, for finishing the sheets before they are sent to the tinning house. This will give the company two more mills in the mill proper now being used for cold-rolling, which will increase their capacity about one-third. In addition to the improvements noted, the company is soon to erect a new steel plant, which will be located at Granite City, a new town now being built by the Neidringhaus Bros., opposite the city of St. Louis. The steel plant will produce steel both by the open hearth and Bessemer process, and will contain boiler, stack and nail plate mills. The nail plate mills will be run to prepare plate for the tin plate mills, where they will be rolled to the thin sheets as above described. The company intend to be able to control the entire process of the manufacturing operations step by step, from the production of the steel ingot to the finished tin

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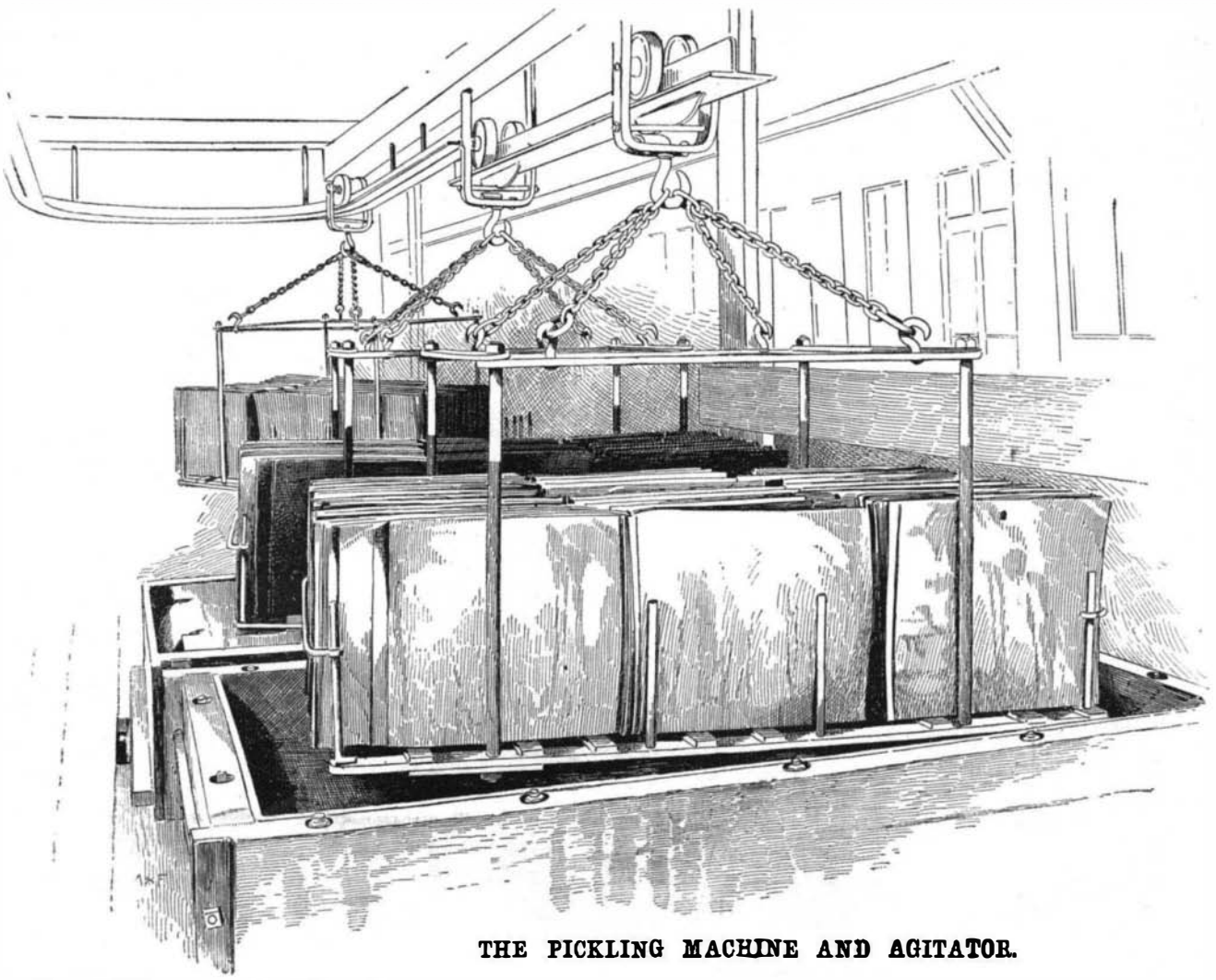


THE PICKLING MACHINE AND AGITATOR.

## THE MANUFACTURE OF TIN AT ST. LOUIS.

(*Continued from first page.*)

plate. The location for a steel plant at Granite City, as well as for other manufactures, is unsurpassed. Coal will cost about one-third the price in Wales. The leading railroad systems of the country connect at this point, and labor is plentiful and of a high grade. The total production of this concern is but a drop in the bucket compared with the aggregate consumption of the article. To indicate to what proportions the manufacture of tin plate can develop, it is only necessary to add that it will require fifty establishments similar to the one we have just described to supply the demand in this country.

### Speed of Elevators.

The maximum speed of the fastest passenger elevators which have ever been built, the New York *Journal of Commerce* says, is 1,500 feet a minute, a rate of one mile in three minutes and a fraction. Before the fire in the Western Union building in New York City occurred that company had a machine which could run 1,500 feet a minute. It was the only one of its kind in the East.

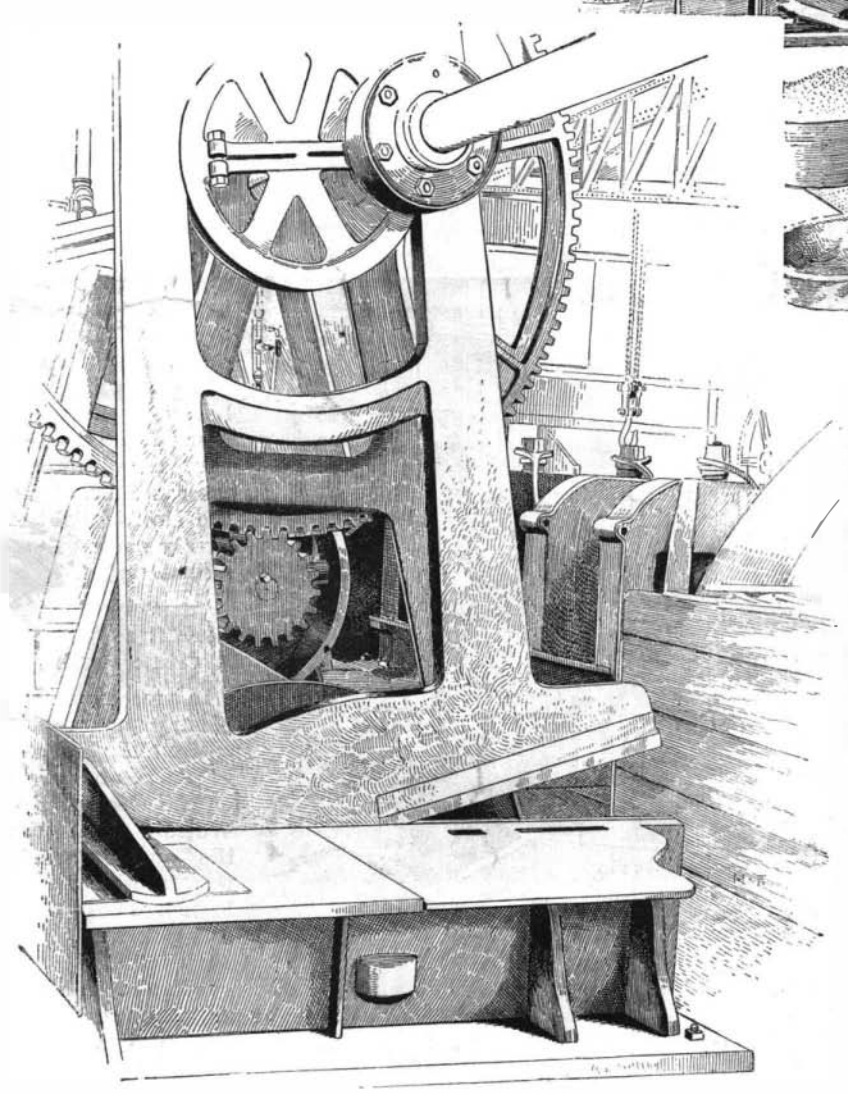
These machines are of the water balance type—that of the orignal hydraulic elevator, the invention of Cyrus Baldwin. Owing to its expensiveness, and the fact that it could not be controlled automatically, it went out of use. The speed was regulated by the engineer, and it went fast or slow as he pleased.

With the modern elevator almost any speed desired can be obtained; it all depends on the power used and the distance traveled. In a building which has a shaft of 250 feet, a speed of from 850 to 1,000 feet a minute can be attained. On a rise of 150 feet it is easy to get a speed of 750 feet per minute with a weight of 1,000 pounds aboard the elevator. In New York the fastest elevators are in the Union Trust Company's building on Broadway, near Wall Street. They shoot up or down, carrying 3,000 pounds, at a speed of 600 feet a minute. When tested with lighter weights, they have traveled from 800 to 900 feet in a minute. But the average speed of elevators in office buildings in and around New York is 300 feet a minute.

The largest elevator cars in the world are now at Weehawken. These elevators, of which there are three, are designed to carry 135 persons on each trip, and are equivalent to ten tons. They are owned by the North Hudson County Railway Company. A viaduct, 875 feet in length, has been built out from the Palisades to a point above the ferry depot. From the rails on the viaduct to the river level the distance is about 150 feet. The railroad company's contract calls for a speed of 200 feet a minute. The common elevators of small business buildings are worth at least $3,000. From that they range up to $13,000 in the same class of buildings.

From an elevator point of view, the new Masonic Temple building in Chicago will be the most important in the world. It will have 24 cars built in a circular shaft having a 250 foot rise. There will be express elevators, way and freight trains. The first will go to the top floor without stopping, while the others will stop either at every floor, or at the 5th, 10th, 15th, and so on. They will not run at full speed, probably, because passengers do not like the sensation of flying. With the present safety devices it is just as safe to run fast as slow.

THE ANNEALING OVENS FOR TIN PLATES.



THE DOUBLING AND SHEARING MACHINE.

### Zinc Chloride for Preserving Wood.

A new method of impregnating logs with zinc chloride, in order to preserve them, is now in use in Austria, being known as the Pfister process. The timber is impregnated in the forest as soon as possible after it is felled. The zinc chloride solution has a specific gravity of 1·01 and is forced into the thick end of the log by a force pump. To this end, an iron disk of suitable diameter and furnished with a cutting rim is forced into the end of the log and secured by clamps. The time required for this preliminary work is only three or four minutes for each log. After a pressure of two or three atmospheres has been maintained at the thick end of the log for a few minutes, the sap begins to exude at the opposite end, and finally a weak solution of zinc chloride comes through, showing that the operation has been completed. About 2¼ gallons of the solution are required per cubic foot of timber treated. Though rapid, the process does not appear to distribute the solution so uniformly as other methods.