

LARGEST DRY DOCK ON THE GREAT LAKES.

Almost a year has been required in the work of constructing the recently completed dock shown in our illustration, at the foot of Orleans Street, Detroit, Mich., where the saw mill, engine, boiler, and repair yards of the Detroit Dry Dock Company have been located for the past forty years. The soil where the dock is built is of fine blue clay, so that there was no interruption to the progress of the work from land slides or leakage. Two thousand piles were driven, making the structure very strong, it being designed to safely dock loaded ships carrying a cargo of 3,000 tons, while taking in vessels of the largest size.

The inside dimensions of the dock are: 378 ft. long; 91 ft. wide on top; 78 ft. opening at entrance; 56 ft. opening on miter sill; 55 ft. wide on floor; 16 ft. 6 in. of water over keel blocks; 16 ft. 6 in. of water over sill; 4 ft. 6 in. from top of keel blocks to floor of dock; 20 ft. 6 in. from water line to floor of dock.

The keel and bilge blocks are 5 feet from center to center, averaging 5 feet high, thus leaving plenty of room under a ship for the movements of workmen in making any necessary repairs to her bottom. There are two wells 12 feet deep situated at each end of the dock, with cranes above them for hoisting out and replacing wheels, etc. The caisson gate which, when closed, shuts off the ingress or egress of water, is of steel, constructed at the company's steel shipbuilding plant, at Wyandotte, Mich. It is 12 feet beam, 79 feet 5 inches long, with five 30 inch valves for flooding the dock, which it is estimated it will do in twenty minutes. Time required to pump the dock out is 1½ hours. The whole dock is surrounded with a puddling wall filled with blue clay 5 feet thick, and extending down below the old river bed, which completely shuts off all water from leaking through the sides.

The pumping plant consists of two centrifugal pumps, with 30 inch discharge each, driven by two 150 horse power independent compound Westinghouse engines. The pumps are in a well 22 by 11 feet inside and 35 feet deep, the water passing from the dock to the well through a brick tunnel, 5½ feet diameter and 55 feet long. The steam for the engines is supplied by a battery of three boilers, 5½ feet in diameter and 15 feet 6 inches long, built by the Dry Dock Engine Works. The fuel is oil, and the whole pumping plant is housed in a two-story brick building, 34 by 81 feet. A dynamo room is provided, where an electric light plant will be put in during the coming winter, which will supply the entire shipbuilding plant with light.

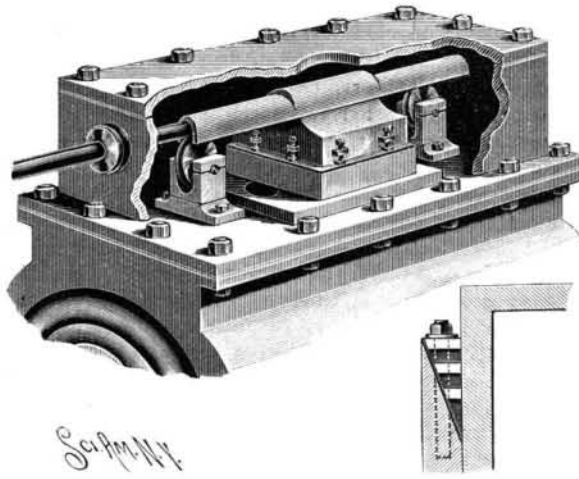
This dock is large enough to take in any boat now upon the great lakes, and has been designed especially for the wide railway car ferries and passenger boats with their overhanging guards and paddle-wheels. The cost of the dock was upward of \$200,000. There has also been added to the Detroit Dry Dock Company's plant a pair of steel shear legs for hoisting boilers, engines, spars, etc., from and into boats. They are 100 feet high and have a lifting capacity of 100 tons.

When timbers or shingles are found in this country that have withstood the blasts of one hundred or one hundred and fifty winters it is regarded as quite remarkable, but in Norway there are wooden churches standing, with timbers in excellent state of preservation, that have withstood the fierce frosts of seven hundred almost Arctic winters. These timbers are not oak nor beech, but Norway pine, and their

preservation is largely owing to the fact that they have been coated over and over again with tar.

A STEAM ENGINE SLIDE VALVE.

A valve of simple and durable construction, designed to reduce friction to a minimum, and be easily adjusted to its seat, is shown in the accompanying illustration, and has been patented by Mr. Roland E.



VANDEVENTER'S BALANCED SLIDE VALVE.

Vandeventer, Mount Sterling, Ill. The valve is connected with a yoke made in the shape of an inverted box and fitting with its sides on the inner surface of the upwardly extending sides of the valve. Attached to the top of the yoke is a bar connected with the valve stem, passing through one end of the steam chest, and this bar has near each end longitudinal grooves on its under side, each groove engaged by a roller journaled in a suitable support, whereby the weight of the yoke, as the valve is moved, is wholly carried by the rollers. In order to secure a steam-tight joint between the sides of the yoke and the sides of the valve, beveled packing strips are fitted in beveled inner sides of the valve, as shown in the small view. To prevent the valve from being unseated by back pressure in the cylinder, set screws are arranged in lugs on the sides of the yoke, the lower ends of the screws being a very slight distance above the packing strips.

and, with but slight changes in the steam chest, the device may be readily applied on engines now in use.

The Drawbaugh Telephone Claims Rejected.

The Drawbaugh telephone case, which has been dragging through the Patent Office for the last eleven years, was decided on October 28, by Commissioner Simonds' affirmation of the decision of the board of examiners in chief, denying the patentability of the subject matter of an application for patent for telephones, filed by Daniel Drawbaugh, on April 3, 1884, in continuance of his original application, filed July 26, 1880. The decision is on the ground that the invention was put to public use by Thomas A. Edison and others for more than two years prior to the date last mentioned, the evidence being presented that Edison had made the complete invention as early as July 30, 1877, as disclosed in the shape of his British patent of that date, etc.

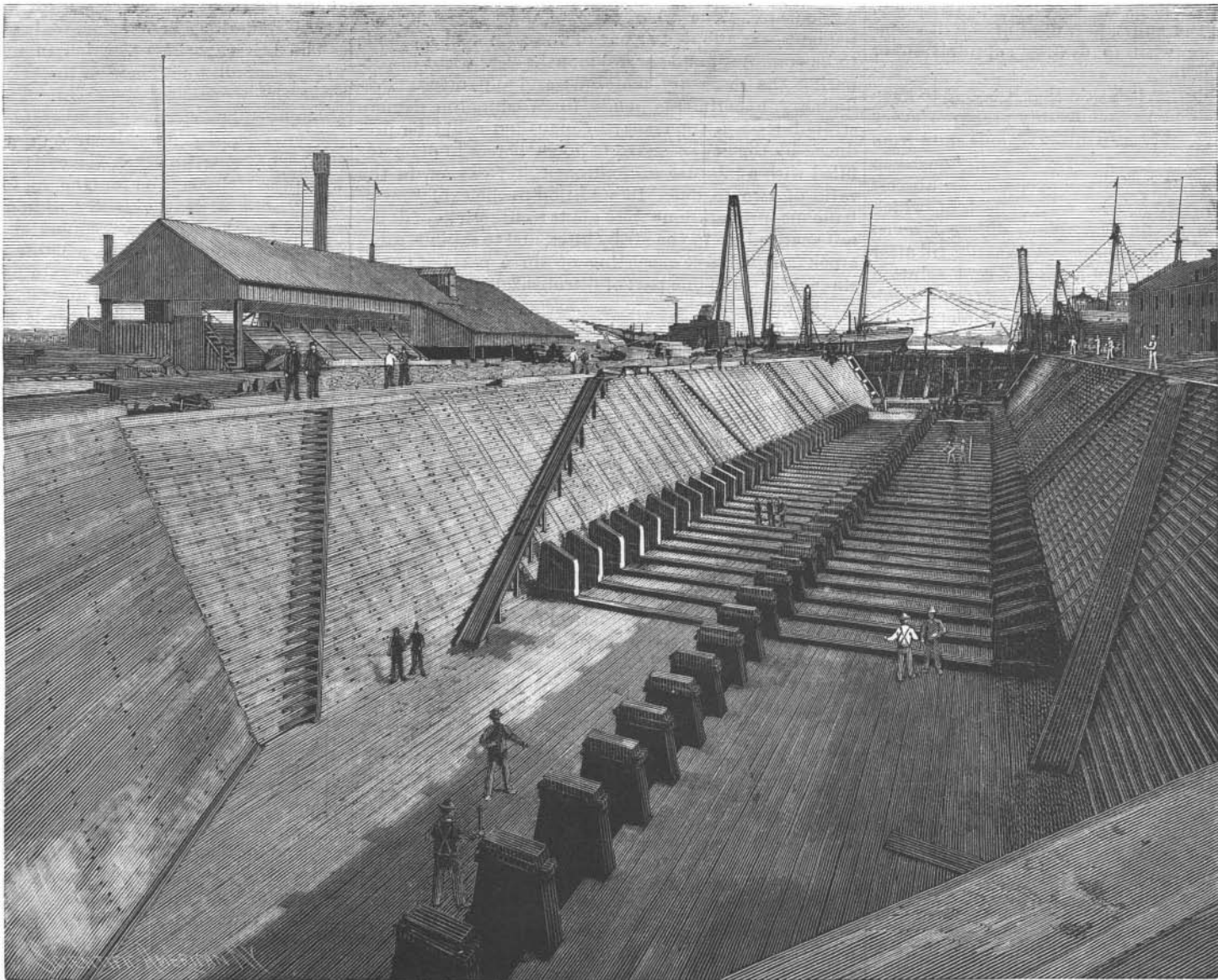
How to Drink Milk.

Some complain, says a contemporary, that they cannot drink milk without being "distressed by it." The most common reason why milk is not well borne is due to the fact that people drink it too quickly. If a glass of it is swallowed hastily, it enters the stomach and then forms in one solid, curdled mass, difficult of digestion. If, on the other hand, the same quantity is sipped, and three minutes at least are occupied in drinking it, then on reaching the stomach it is so divided that when coagulated, as it must be by the gastric juice, while digestion is going on, instead of being in one hard, condensed mass upon the outside of which only the digestive fluids can act, it is more in the form of a sponge, and in and out of the entire bulk the gastric juice can play freely and perform its functions.

Half Century Jubilees.

The jubilee celebrations of two important inventions take place this year. One is the galvanic gilding and silvering method devised by the Swiss chemist, Mons. August de la Rive, in the year 1841, for which, in the course of the following twelve months, he received the Montyon prize of 3,000 francs from the Academie de Paris. Mons. Rive's process of imparting to common metal a firm gold or silver coating has entirely supplanted the old-fashioned pyritic method which, owing

to the noxious mercurial vapors engendered, materially injured the health of the artisan. The second invention is that of steel-facing copperplates, the outcome of the ingenuity of a Frankfort professor, Herr A. Bottger. By this process engraved copperplates are coated with a very thin but firm and durable steel deposit. The shape and fineness of outline of the engraving are not thereby altered, and the copperplate is imbued with the metallic hardness of steel, by which means a considerably larger number of clear, sharp impressions may be taken than with the ordinary copperplate. A further advantage is that when the steel face begins to show signs of



A GREAT DOCK RECENTLY BUILT BY THE DETROIT DRY DOCK COMPANY.

wear it may be dissolved by a chemical solution without in the least affecting the copperplate, which is then ready to receive another steel deposit.

The bar supporting the yoke is prevented from being displaced on the rollers by suitable cross guards, not shown, and oil cups are arranged in the top of the steam chest to lubricate the rollers and bearings. The wear of the valve and of the bar traveling on the rollers is readily taken up, so that the relative positions of the several parts and their operations are not disturbed,

THE longest railroad bridge span in the United States is the cantilever span in the Poughkeepsie bridge over the Hudson River—548 feet.