speed, and the apparatus successfully withstood the strain. The tests were all most satisfactory and thoroughly demonstrated the great utility of the invention. Although the apparatus was not placed in a recess, no disadvantages were experienced in the manoeuvering of the vessel.

# (Signed), JAMES HOWDEN,

## Superintendent of Dredging, Canada.

The cylinders of the brake used on the Eureka were 7-in. by 3-in., 13-in. stroke. The brake on the Eureka was rigged on the outside of the boat, but on a boat built to use it, there will be a recess provided, so that it will come flush with sides.

Lloyds' statistics are said to prove that over 50 per cent. of accidents are due to collisions and strandings, which this brake is calculated to prevent to a very large extent.



Louis Lacoste, Inventor of the Patent Ship Brake.

Mr. Lacoste is now promoting the Parent Company to handle his invention. He has already received offers for United States rights.

#### A NEW ELECTRIC TRUCK.

The illustration shows an electric truck in use by the Niles-Bement-Pond Co., of New York. The body of the truck is 16 ft. long by 5½ ft. wide. It is built on the Gibbs system of steel frame construction, with what is known as pedestal running gear, instead of the reach system heretofore used on electric vehicles. The pedestal is a single steel casting fastened to I beam body frame, and has diagonal brace bars for support. The axles are placed into the jaws of this pedestal, and have absolute freedom vertically, but none whatever laterally. This overcomes the intricate mechanism resulting from split axles, differential gears, etc. The I beam steel frame relieves the vehicle body of any strain and tendency to buckle, and at the same time affords substantial support for suspending the battery and leaving the inside of the wagon body absolutely clear. The battery is made in



sectional trays which slide out at either side. The power is furnished by two motors of General Electric make, operating independently on rear wheels. Tires are 6-in. solid rubber. Forward springs are full elliptic, the rear one-half elliptic. A double brake operates on inside of gear wheels, being worked by foot pressure. The controller has four speeds ahead and two reverse, maximum speed of truck being  $5\frac{1}{2}$  miles per hour. The battery has radius of 25 miles on a single charge. An important and labor saving device peculiar to this style of truck is the electric windlass which is placed forward under the seat. This is operated by an independent motor and controller, the power being derived from the storage battery. This apparatus will hoist five tons at rate of 8 feet per minute, and has all safety appliances, including brake, ratchet-pawl and reverse controller.

#### AN AMERICAN IRON MASTER.

John Fritz was recently honored with a dinner in New York as a mark of appreciation for what he has done for a generation to place and keep the United States in the front rank of iron and steel producers, and who contributed more than any living man to the means which have enabled that country to attain its present pre-eminence in the metallurgical industries. He was the son of a small farmer in Chester county, Pennsylvania, but left the uncongenial occupation of tilling the soil at the age of sixteen after very little and extremely intermittent schooling, and found work in a machine shop in Parkersburg. Before many years he was sent to Safe Harbor, Penn., to erect and install the machinery for a rolling mill. Next he was manager of an anthracite blast furnace at Norristown, and in 1854, at the age of 32, was engaged to remodel and rebuild the plant of what is now the Cambria Steel Company. In 1860 he returned to the Lehigh valley to begin the erection of what has since developed into the Bethlehem Steel Company's plant, and under his hand it grew to its present rank and importance. He designed and built the plant needed for the creation of an American navy, and did not retire from its active management until his 75th year. He is a man of the highest and most amiable character, widely beloved and everywhere honored.

## WATER WASHED SAND FOR HIGH GRADE WORK.

The Sand and Dredging Co., of Toronto, have had in operation the past season a steam barge with a sand-dredging apparatus, with a daily capacity of 80 yards of waterwashed sand, suitable for the best quality of concrete, mason work, brickwork, or plastering. This sand is not lake shore sand which has been rolled along the beach for years until each grain is worn round, but it is taken from deep water, and is sharper and more angular than the best bank sand, and absolutely free from any trace of loam, which is a drawback to almost all the bank sands around Toronto. Examples of the class of work which has been done with water-washed sand are seen in the new Dairy Building, and the foundation and cement blocks in the Art Gallery Building at the Exhibition grounds, and Spadina avenue pavement foundation, from Queen street to College street. The city engineer says he never saw a better piece of concrete laid in Toronto than the latter. Appended will be found a report of tests which show the advantage of water washed sand.

### Report of Comparative Tests of different Sands for Concreting Purposes.

All tests made with German Hercules cement. All briquettes made with same percentage of water in the mixtures. All mixtures 3 parts sand to 1 part cement. Results are tensile strength in pounds per square inch:

Standard	L'a pres chartes	Coarse Water
Quartz.	Pit Sand.	Washed Sand.
24 hour test 64 lbs.	51 lbs.	52 lbs.
7 day test177 lbs.	157 lbs.	213 lbs.
28 day test	212 lbs.	300 lbs.
Specific gravity 2.62	2.67	2.66
· · · · · · · · · · · · · · · · · · ·	(Sgd.) Chas W	Dil

#### December 29th, 1902.

Assistant Engineer.

It will be noted that in 7 days the water washed sand showed an additional strength for same cement of 36 per cent., and in 28 days 41 per cent.