

THE COLUMBIAN EXPOSITION—EAST INDIA BUILDING.

The East Indian building was one of the delightful bits of color to which the Exposition proper was almost a stranger. Although the East Indian building was not erected by the government, which decided to make no official exhibit, still the Fair authorities allowed the building, which was built by private enterprise, to be placed in the midst of the buildings erected by various governments. The building measured 80 by 60 feet and was 50 feet high. The material used in its construction was staff, and the splendid polychromatic decoration on the exterior was especially fine. The large room in the interior was reached through a lofty gateway surmounted by small minarets. Goods were sold on the ground floor and in the mezzanine story. In addition to oriental wares, tea was served by red garbed turbaned attendants. The tea was furnished gratuitously to all comers. The building was immensely popular with visitors and was always thronged.

Dynamo Telegraphy.

In the Western Union Company's Boston office the current is taken in a commutator on one side of the machine, and sent out from a commutator on the opposite side, the transformation being effected by two different windings on the armature.

The Boston plant has at present nineteen of these transformers in use and will put in addition probably ten more. Of the machines now in use, five are of 3 horse power each, three are 1 horse power, two are 1/2 horse power, two are 1/4 horse power and seven are 1-6 horse power. The potential of these machines varies anywhere from 25 up to 260 volts. The farthest point to which a message has to be sent from Boston is Buffalo, N. Y., and this can be accomplished by throwing one large machine of 260 volts into service or several connected in tandem or in series. The small machines, which are wound for from fifty to seventy volts, are thrown into what is known as the loop from New York to Portland, thus necessitating the sending of but one message.

The use of primary batteries in telegraphing has mostly passed away and the dynamo, with its greater steadiness of current and economy, is now employed.

IMPROVED STEAM STEERING GEAR.

We take from a recent number of *Engineering* the steam steering gear constructed by Messrs. Napier Brothers, Limited, of the Windlass Engine Works, Glasgow, for the new steamers Nile and Danube, of the Royal Mail Steam Packet Company's South American fleet. The gear is arranged to work direct with a double-threaded screw, or, if expediency demands, it may be worked with chain and barrel, operated by quadrant. The change is easily and quickly made, and either of the arrangements can be worked by steam or hand. By a simple arrangement of clutches, the mechanism is shifted from screw to chain barrel gear, or disconnected from steam to work by hand. The cylinders are 10 in. in diameter, and the stroke is 10 in., the steam pressure being 160 lb. to the square inch. On trial on board the Nile, the gear worked from hard over to hard over in 28 seconds. Everything is made to stand heavy strains, all working parts being of steel, the wheels being machine cut. The operating of the valves of the steering engine from the bridge may, of course, be done in many ways; in the Nile and Danube Brown's telemotor system is introduced.

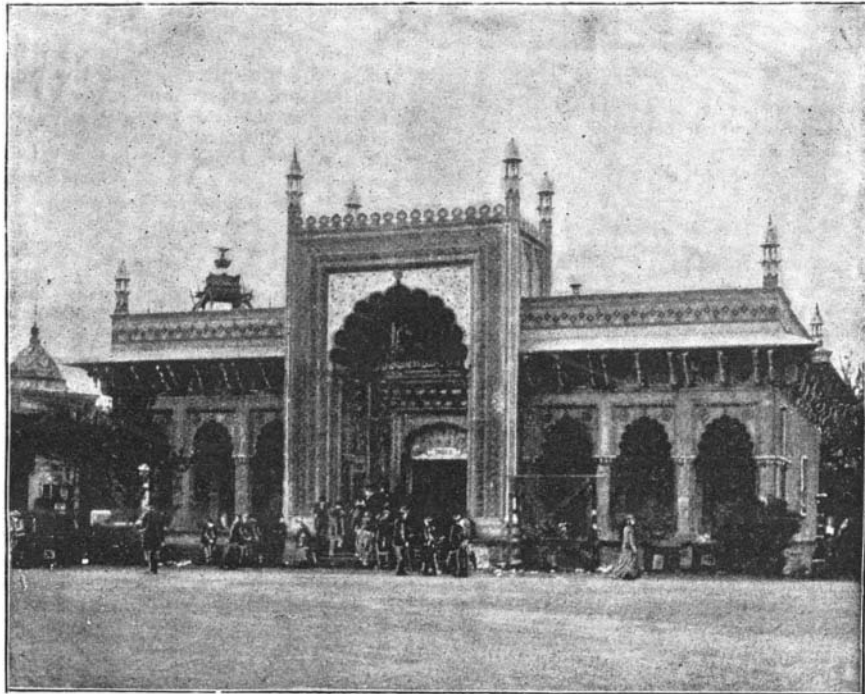
Plugs for Spike Holes.

On some of the French railroads the spike holes in ties are filled with plugs of oak or creosoted pine. These plugs used to be manufactured by hand, but were naturally ill-fitting. A simple machine for cutting these plugs has been invented by Albert Collet. It was exhibited first at the Paris Exposition of 1889, and has since been in successful operation. On a single railroad more than a million and a half of the plugs have been used. Their

price is \$1.80 per 1,000. They are cut in pyramidal shape, with square or octagonal section, out of the best parts of old ties. The use of plugs prolongs the life of ties by several years.

A Great Sunfish.

A fishing party of seven, under the charge of Alex. Mathison, were recently some five miles off the coast of Redondo in the sloop Helen after barracuda. One of their number saw floating in the water what at first was taken for a young whale. On approaching the

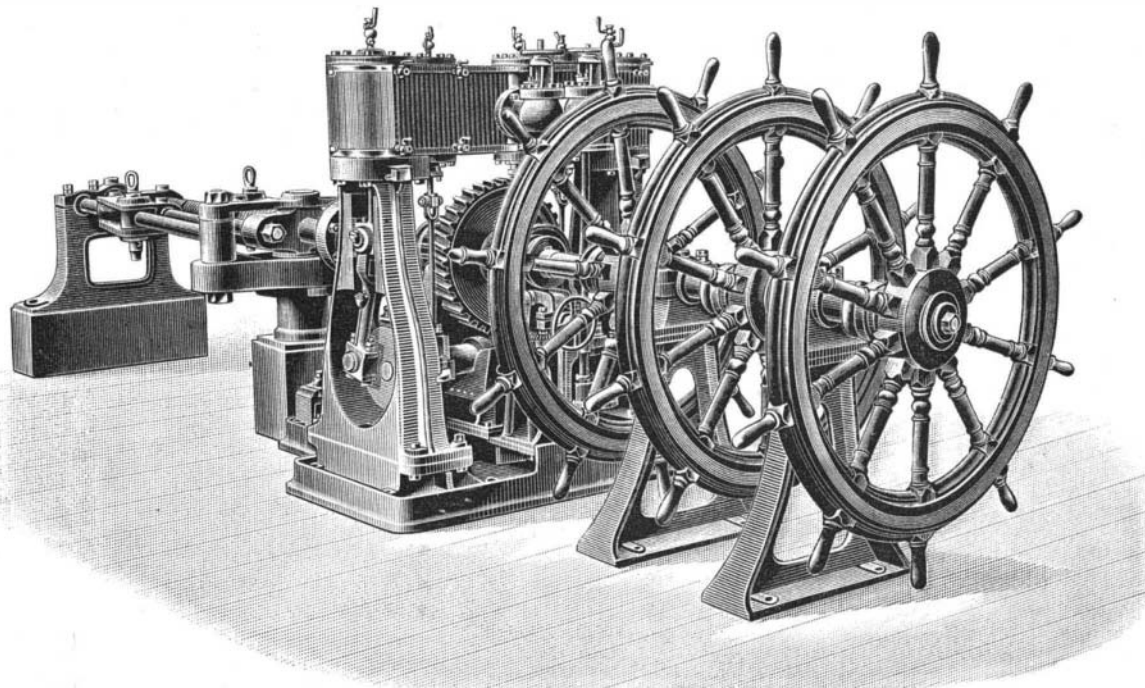


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object it was discovered to be a large sunfish lying on its side, evidently enjoying the sunlight. On the nearer approach of the party the monster dived beneath the boat, coming to the surface a few yards on the other side. The boat was turned and bore down on it once more. In its effort to escape the fish was struck by the bow of the boat and thrown upon its side.

The opportunity was seized to throw a jew-fish hook into its mouth. Gaining its equilibrium, the gigantic fish sped away, the reel humming with the 150 fathoms of line carried with it. Then came a battle royal between the great ocean rover and the fisherman. After long maneuvering, a rope was made fast under its fins and attached to the mast. The boat was nearly dragged beneath the waves by the violent efforts the enormous fish made to escape. Finally, under the pressure of sail and by the exhaustion of its own efforts, it was towed to Redondo and there upon the beach.

The fish is a magnificent specimen of its kind, measuring 11 feet from the dorsal to the anal fin, 8 feet 2 inches in length, and weighed in the neighborhood of



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1,800 pounds. When the fact is considered that this is the largest specimen of its species ever captured, it will be of more than passing interest to the general public and of value to the scientific world. The largest heretofore recorded is numbered in the collection of the British Museum, which measures 7 feet 6 inches in length, captured off the coast of Dorsetshire in 1846.—*Los Angeles Herald.*

Explosion of a Compressed Gas Cylinder.

A fatality which occurred recently in the streets of Bradford, England, brings rather prominently under notice an unsuspected source of danger to which the public are exposed from the extended use of compressed oxygen and hydrogen for magic lantern purposes, and to which it appears desirable to direct a little attention. As photographic amateurs will be aware, the gas for operating the oxy-hydrogen light is now supplied in a convenient form in welded steel cylinders by companies who make a specialty of the manufacture. The gas is compressed in the cylinders to an exceedingly high pressure, 120 atmospheres, or nearly 1,800 lb. per square inch, being about the usual limit. It will be evident that the rupture of a cylinder about 8 inches in diameter and 3 feet or 4 feet in length, under a pressure such as that just named, is not a matter to be trifled with, and that adequate security should, at least, be furnished in the shape of an ample margin of safety. We fear, however, that in this respect many of the cylinders now used are seriously deficient. It is customary, we believe, by those engaged in the trade to test the cylinders up to a pressure of 1 1/2 tons on the inch, and to load them, as we have stated above, to 120 atmospheres, the test pressure being thus rather less than twice the working load, the exact ratio being 1:8. We believe it is not an unusual thing for the cylinders employed to show signs of distress, and be rejected in consequence, even at this low test pressure, while it will probably be a surprise to many to know that a pressure of 2 tons on the inch would cause deformation and bulging in a great many instances.

Accepting this as practically the maximum limit of strength, it gives a factor of safety of about 2 1/2. This, we have no hesitation in saying, is insufficient, especially considering the shocks and rough usage to which these vessels are occasionally liable. Their harmless appearance conveys no adequate idea of the enormous store of energy contained within. They are carried about the streets of crowded thoroughfares in charge of boys, who are apt to pitch them from their shoulders, or bring them down on the pavement with a bang, like a log of wood, with possible consequences that are fearful to contemplate. That the danger is not imaginary was fully illustrated by the fatality to which we have alluded at Bradford. A boy, about fourteen years of age, was dispatched by a firm of lantern dealers, with a couple of these cylinders in his charge, to the station. The burden appears to have been somewhat beyond his powers, with the result that he was trailing one of these cylinders after him along the ground, when it suddenly exploded, without a moment's warning, and killed him on the spot, while a man who happened to be behind him was also injured.

We have ourselves frequently seen these charged cylinders handled by porters at railway stations in a way calculated to excite considerable misgiving, and we have wondered whether railway companies were aware of the dangerous character of these harmless-looking vessels, and of the risks which, through acts of carelessness or ignorance on the part of servants, attend their transit. Quite recently we observed them used as log rollers for moving a heavy load in a railway yard.—*Practical Engineer.*

ON one of the transatlantic steamers just about ready to sail from Bremen smoke was seen to issue from a box; upon opening, to see the cause, the material, lupulin, burst into flame. The lupulin had been sent from some part

of Bavaria and was to be shipped to this country. The unconsumed portion was found to be thoroughly caked, due to the presence of moisture, and thus furnishes the cause of the ignition: a material, rich in oil; moisture; large quantity and considerable time of storage, by which the heat generated by the slow oxidation of the oil was so much increased that it reached the ignition temperature.—*Sudd. Apotheker Ztg.*