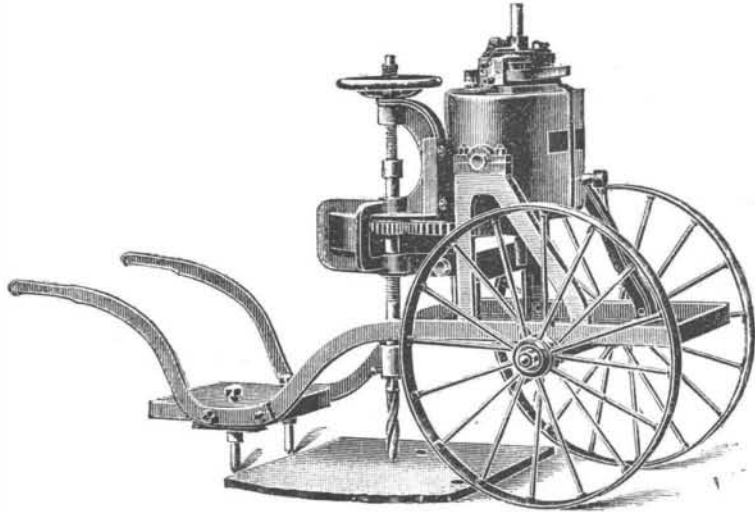


PORTABLE ELECTRIC DRILL.

We illustrate a neatly arranged portable electric drilling machine designed by Mr. F. Kodolitsch, which, it is claimed, can be adapted to almost any job, however difficult or inaccessible, and the inventor has developed a large number of different types which are employed in the arsenal of the Austrian Lloyd's Steam Navigation Company. Here, where the workmen are 2,000 in number, only an exceptionally small number of holes are now bored with the ratchet brace. A net of electric wires extends all over the place, and each



PORTABLE ELECTRIC DRILL.

shop is provided with a number of special drilling machines and the necessary cables, so that any man who requires to bore holes has only to wheel the small portable drill to the work and complete the operation at his bench, and thus saves much time. One of these machines is intended for boring holes in the deck of a steamer to receive the screws holding the planking in place. As will be seen from the engraving, the machine is mounted on a carriage and can thus be easily moved from place to place. The motor is slung on trunnions and drives the drill spindle by means of gearing. The spindle is fed forward by means of the hand wheel shown. It is stated that with this device a man and a boy can bore 400 $\frac{1}{2}$ inch holes in $\frac{1}{2}$ inch deck plates per day. When used for countersinking, the work done is from 800 to 1,000 holes per day. For this latter operation the feed is not touched at all. The workman simply lifts the countersinking bit out of one hole by elevating the handles, wheels it to the next, and dropping it in keeps it there till the operation is completed.

In our other illustration the drill is shown at work in the somewhat awkward job of drilling the rivet holes for a furnace mouth. In this instance the machine is wheeled up to the front of the boiler and connected to a special drilling bar by a flexible shaft. In the fitting shop of the arsenal the machines have been largely used. Thus a large condenser may have all holes bored on one side while it is being planed on the other.

A condenser for a 5,000 indicated horse power marine engine has thus been finished complete without removing it from the table of the planing machine; even the seats for the air pumps were completely finished by a boring bar driven by one of the portable electric machines. Where necessary, these latter can be slung by means of tackle, thus enabling work to be done in almost any position. In the shipyard the machines have proved extremely useful, not only for drilling and countersinking all rivet holes, but also for cutting out side lights, scuttles and hawse pipe holes. The sternpost bushes may also be bored out in a similar manner.

In repairing stranded ships the machines have proved very convenient for drilling out the rivets of the plates to be replaced.

We are indebted to Engineering for our illustrations and the foregoing particulars.

Electric Mirror.

A so-called electric shaving mirror has made its appearance in England. The electric feature consists of a beveled frame of translucent material, behind which is an electric incandescent lamp and reflector. The light is thus thrown directly upon the face of the user, with an entire absence of shadow. The lamp has a flexible cord and socket attached and can be connected instantly with any existing electric fixture.

The device is made by Messrs. Evered & Company, Limited, 27 Drury Lane, London.

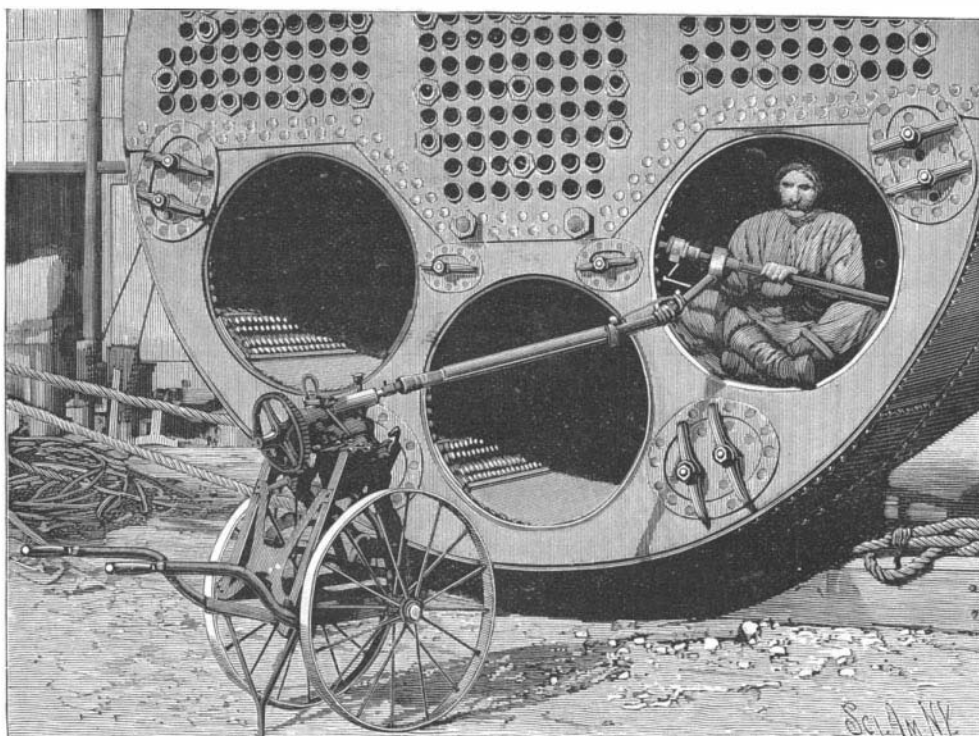
An Immense Fossil Skeleton.

The fossil remains of a huge sea animal are being exhibited in southeastern Kansas. The discoverer came upon them accidentally while looking for firewood in the Cherokee Strip. The head, bill, some vertebrae, a few ribs, and the propellers were in a fair state of preservation, but the remainder of the skeleton crumbled as soon as it was exposed to the air. The bones were purchased by Henry Patterson, of Humboldt, Kan., who at once sent a description of them to the director of the National Museum at Washington. The letter was submitted to the secretary of the Smithsonian Institution, with the request that a qualified man be sent to investigate the discovery. The fossil is thus described by Dr. R. L. Patterson in a letter to the Registered Pharmacist, of Chicago:

"The eye sockets are 4 feet in the long diameter with a space of 20 inches between them, making a skull diameter of 8 feet and 8 inches. It has a pointed bill or beak 12 feet long and a small brain cavity comparatively. The vertebrae measure 12 inches each way, and the distance from tip to tip of the transverse processes is 40 inches, and resemble those of a mammal rather than a fish. The ostryodes is 38 inches long; a rib is 13 feet and 8 inches long, circumference 33 inches, and two triangular shaped bones $3\frac{1}{2}$ by 12 feet, the use of which is conjectural, but supposed to be propellers or fins."

Automatic Whistling Device.

While there are many wonderful devices on the new lake steamer North Land, to make her navigation safe in every way, there is none showing the power of invention as well as the automatic whistling device. In connection with this device there is a system of electrical wiring to all parts of the bridge, by which the great whistle can be blown at will by the pressing of a button. To blow a fog signal regularly every 60 seconds it is only necessary to put in a connection which puts the whistle in control of the electrical clockwork, and it needs no further attention, as it will blow all day at regular intervals; and every time it blows, a stamping device in connection with the clock registers on paper tape the date, hour and minute when the signal was given, as well as duration of blast. In case of some steamer getting across the bow of the North Land during a fog, and being cut in two, the testimony of this tape showing the regularity of the fog signals would be valuable. The same clockwork registers time and date of passing signals, and when a



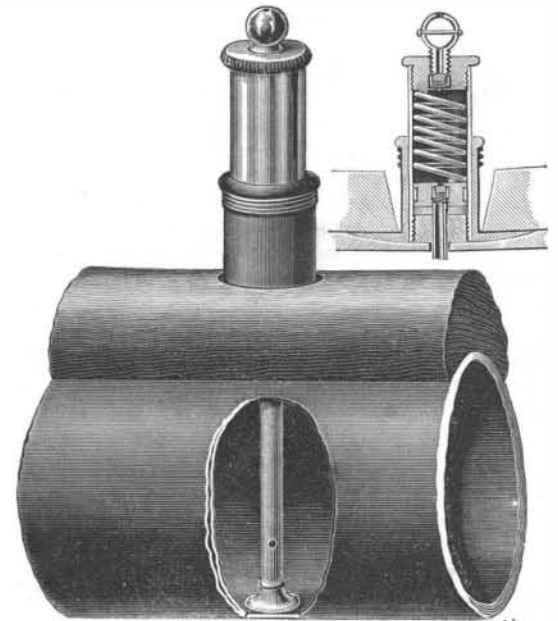
PORTABLE ELECTRIC DRILL.

passing signal is blown it disconnects the automatic whistle, but it can be connected with the pressure of another button. The valve which opens the whistle throttle is very finely balanced, and when the dynamo is not running it can be blown by hand with the strength of one finger. By means of this tape no claim can be made for cross signals when they were not blown. Another feature is the promptness with which the whistle is blown. It responds instantly to the button. The electrical power required to operate the whole device amounts to that used by a 16 candle power lamp. In addition to the gong signal between the bridge and engine room there is the Chadburn

telegraph, which permits of no mistakes. To make assurance doubly sure, however, for contingencies arising that could not be signaled, there is a regular telephone in the dog box connected with one in the engine room.—Marine Review.

AN AUTOMATIC BICYCLE TIRE INFLATER.

This is a device for keeping the pneumatic tire of a wheel inflated to the desired degree, the device being



STANFORD'S AUTOMATIC TIRE INFLATER.

adjustable for maintaining a hard or soft tire, as may be preferred. It has been patented by Mr. Philip W. Stanford, of San Francisco, Cal. The large figure represents the device applied, the piston rod of the pump being seen through a cut-away portion of the tire, while the small figure is a sectional view of the pump. The piston rod is hollow, and has at its lower end a foot piece normally butting against the inner surface of the outer wall of the tire, and an air exit port communicating with the interior of the tire. There is in the piston head a port controlled by a spring-pressed valve, and in the head of the cylinder is a port formed in the plug of a dust filter screwed into the head, the latter port being also closed by a spring-pressed valve, while within the cylinder and between its head and the piston is a spring to return the piston. The connection between the piston and cylinder and the wheel is made by a flexible sleeve, a foot flange of which is clamped between the outer surface of the rim and the inner wall of the tire, the packing and sleeve allowing the parts to yield to side strains on the piston rod.

The desired degree of tire expansion is obtained by varying the projection of the piston rod into the tire by screwing the rod farther into or out of the piston, or by similarly adjusting the foot piece, or by the adjustment of the encircling sleeve. In operation, each time the tire presses upon the ground and is compressed at the point opposite the foot of the piston rod, the upward movement of the latter allows the air in the cylinder to pass into the tire, and on the piston being forced downward by the spring air is drawn into the cylinder, the air drawn in passing through a filtering diaphragm designed to free it from dust.

Glucose as Food.

In a recent issue of the Literary Digest, published by Funk & Wagnalls, New York, an account is given of a paper by Dr. E. H. Bartley, recently read before the American Chemical Society, in which Dr. Bartley condemns the long accepted opinion that commercial glucose is suitable as a food. The Medical News, commenting on this, says that this opinion was promulgated

some years ago by a committee of American chemists, appointed partly under government auspices, and it has been made the basis for justification of much substitution and adulteration.

Dr. Bartley says that mere chemical knowledge, or even experiments on the lower animals or healthy subjects for a brief period, are not sufficient to establish the harmlessness of a substitute food. Glucose made from starch by the action of acid is not the same as the product of digestion by animal ferments, and it is not likely that it will be a satisfactory substitute for the forms of sugar that arise in the process of normal digestion.