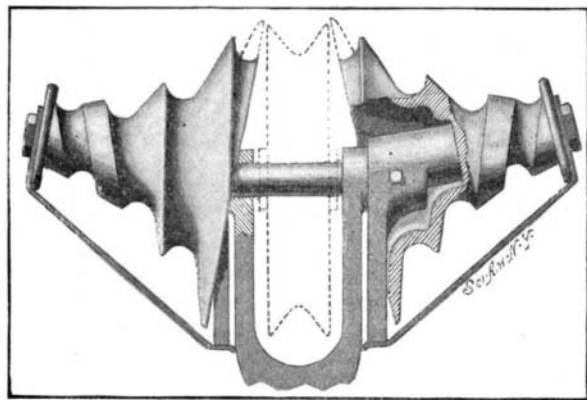


TROLLEY FINDER.

Many inventors have with more or less success directed their attention to the task of contriving some simple device which will either prevent a trolley wheel from slipping off the line wire, or which will enable one to readily replace the trolley wheel after it has slipped off. The invention which we show herewith practically covers both of these requirements; for should the trolley slip off to a limited distance on either side of the wire, the latter will be caught by a spirally-grooved roller and fed back onto the trolley wheel. This device also possesses the further advantage of having no parts projecting above the trolley wheel which might interfere with the free action of the trolley or the finder. The rollers which are adapted to feed the line wire back onto the trolley wheel, have approximately the form of a cone, and are mounted with their axes inclined upwardly from the trolley harp. The rollers are loosely journaled on studs, which are threaded into rocking frames supported on the projecting ends of the trolley shaft. In order to retain these frames on the shaft, the latter near each end is peripherally grooved to receive the squared ends of bolts threaded through the hubs of the rocker frames. The rocker frames are preferably connected to form a yoke, which spans the trolley wheel, and to the outer end of the yoke a guide rod is fastened, which runs parallel with the trolley pole, and is fastened at its lower end to the trolley pole stand.

Now, supposing the trolley should slip off to one side, the line wire would be caught at some point in the spiral groove of the roller on that side, and as the car continued to move forward, the roller would rotate, feeding the wire laterally and upwardly until it was replaced on the trolley wheel. The object of having the axes of the rollers inclined is to give clearance for the trolley harp, and also to reduce the incline up which the wire must travel. Normally, the rollers will, under the action of gravity, assume the position shown in our illustration, that is, with the largest radial projection hanging downward, so that no portion of the roller will project above the trolley wheel. If the wire should slip clear of the rollers, it is a very easy matter to bring some portion of the rollers into contact with it, when it would automatically be fed back to the trolley after the car was started up. A patent for



TROLLEY FINDER.

this invention has been granted to Messrs. F. A. Graham, F. F. Carmiencke, and J. R. Neely, Box 495, Muncie, Ind.

The Band Saw Is an English Invention.

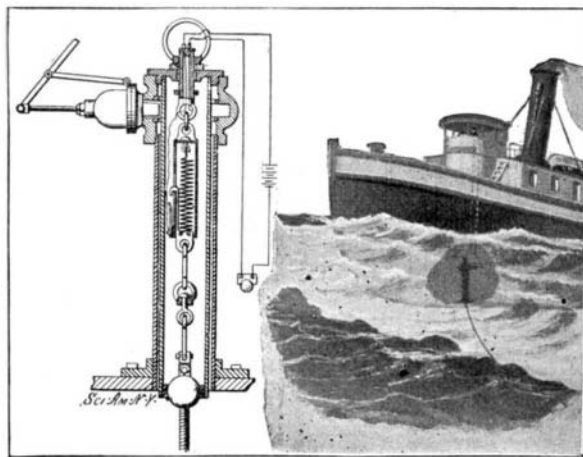
The well-known English author of several books on woodworking machinery, Mr. M. Powis Bale, of London, takes issue with the Timber Trades Journal of the same city regarding the invention of the band saw, which was attributed by that publication to a Frenchman. He says:

"I notice that the invention of the band saw is attributed to M. Perin, of Paris. This is an error, as it was really the invention of an Englishman—one William Newberry, who, in 1808, patented a machine for sawing wood, in which an endless band or ribbon saw strung over two wheels was used. Owing to the difficulty, however, of obtaining saw blades that would withstand the strain put on them, the machine remained in abeyance for many years, till M. Perin, about 1855, introduced a much improved machine on which he used specially-tempered saw blades of French manufacture, and thus made the machine a practical commercial success. The early history of woodworking machinery is extremely interesting, and I would draw your attention to the marvelous patent specifications of Sir Samuel Bentham in 1791 and 1793, as they are truly remarkable examples of inventive genius, and

fully illustrate the old adage, 'There is nothing new under the sun.' In these specifications the principles involved in many of the most important woodworking machines at present in use are claimed and set forth in the clearest and tersest manner, including planing machines with rotary cutters to cut on several sides of the wood at once, veneer cutting machines, horizontal saws, molding and recessing machines, bevel sawing machine, saw-sharpening machine, tenon cutting by means of saws, and many kinds of rotary and boring tools. Well may the disappointed inventor say, 'Those beastly ancients have cribbed all our best ideas.'"

SAFETY ALARM DEVICE FOR MARINE VESSELS.

With a view to making vessels independent of the ordinary sounding line, as an indicator of approach to shallow water, Mr. Marshall Shepard, of 134 West 73d Street, New York city, has invented a device



SAFETY ALARM DEVICE FOR MARINE VESSELS.

which will automatically sound an alarm when the water beneath the vessel is dangerously shallow, thus giving time to reverse the engines or change the course and prevent possible accident by grounding. At any suitable point in the vessel a cylinder is arranged which opens through the hull and is provided at the top with a cut-off valve. Within this cylinder is a second cylinder threaded into a cap which forms a cover for both of the cylinders. Extending through this cap is a small tube, to the lower end of which a thimble is connected by means of a link. This thimble incloses a spring, on the lower end of which a block is secured, which carries a contact finger projecting through a slot in the wall of the thimble. The block is connected by means of links and a swivel joint to a ball at the bottom of the cylinder. This ball has bearing in a socket or seat which while holding the ball in place yet allows it universal rotary movement. Depending from the ball is a rod formed of a close coil of bronze. This construction produces a fairly rigid rod, but one having sufficient spring to prevent breaking when coming in contact with an obstruction.

In operation the depending rod, on striking the ground or bed of the waterway, will be deflected, drawing down the spring block and bringing the contact finger into engagement with the contact piece on the cylinder wall. This completes the circuit of an electric bell and battery, as conventionally shown in our illustration, and the ringing of the bell warns the pilot of danger. The purpose of the cut-off valve on the outer cylinder is to prevent water from flowing into the vessel when the apparatus is removed for inspection or repair.

First Dynamo Described in a United States Patent.

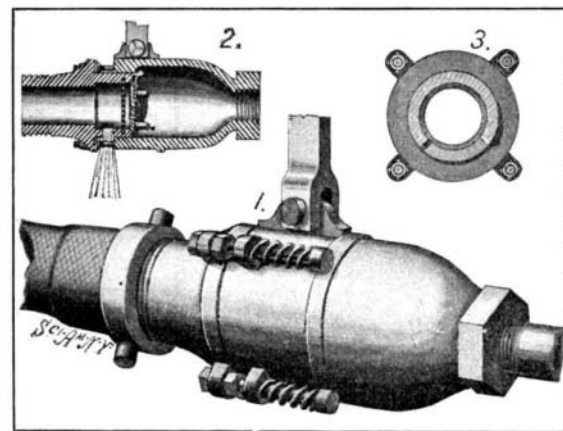
The earliest United States patent on electric generators was issued on March 30, 1852, under the title "Electric Whaling Apparatus." The apparatus was the invention of Dr. Albert Sonnenburg and Philip Rechten, of Bremen, Germany. The invention provided a means for capturing whales "by the application of electric galvanic current conveyed by a conductor to the instrument commonly called 'whale iron,' or 'harpoon,' and which is used to be thrown into the fish." The current was produced by means of a "magneto-electric rotation-machine." The inventors describe their generator as a machine containing "four or more horizontal permanently-fixed boat-magnets placed opposite each other, which produce the electric current in four or any other convenient number of inductors. The inductors are attached to a rotation axle by a cross, a disk, arms, or other means well known in the construction of magneto-electric machinery, and get their rotation before the magnetic poles by means of a crank or other suitable gearing. Through a commutator on the axle, on which slides a strong, steel spring in the shape of a fork, the counteracting currents in the wires on the inductors are thrown into one and the same direction." The current was conducted to the harpoon head by a "gilt copper wire covered with In-

dia rubber, and thus completely isolated from salt water." On harpooning a whale the machine was operated, generating a current which flowed through the animal, the circuit being completed through the sea water to the copper bottom of the boat, and thence to the dynamo. As to the power of this machine, the inventors claimed that the whale received "about eight tremendous strokes at each turning of the machine handle. If only two turns be made each second, she receives 960 strokes each minute—so formidable a power that no living being can resist the same." In order to reassure the operator of so deadly a machine, the inventors state that "there is no possible personal danger in using our machine or apparatus, except the man who throws the whale iron take the metallic part of it into one hand and put the other hand at the same time into the sea when the machine is in motion. But such a position is not to be assumed, as it cannot take place except intentionally." The patent also contains some interesting advice in regard to the proper care of the machine. "If good care be taken of the apparatus, there is no wearing it out; only keep the wet out, and do not let it be thrown about or be roughly handled. Should the machine refuse its wonted effect, examine whether the inductors be too remote from their magnets. The distance between the inductors and their magnets should be such that a French playing card can be put between them. Examine whether the steel spring on the commutator be in such a condition that intensive sparks appear when the machine is in motion; if not, regulate it by the small screws connected with the same." It is interesting to compare this crude machine with our present-day generators, and note the rapid strides which have been made within the fifty years intervening.

IMPROVED FEED-WATER FILTER.

A recently-invented device which is applicable to feed water pipes of locomotives consists of a filter which not only prevents foreign matter from entering the boiler, but also embodies means whereby this accumulated matter may be ejected from the hose without requiring manipulation of the coupling. The filter comprises two sections; one which is stationary is secured to the feed-pipe and the other which is movable is coupled to the hose leading from the water tank. The latter section is formed with a reduced portion adapted to fit into the mouth of the main or stationary section, normally forming a water-tight connection therewith.

In order to hold the sections in closed position four bolts threaded into lugs on the movable section pass



EASILY-CLEANED FEED-WATER FILTER.

loosely through lugs on the stationary section, and are provided with springs which bear between the latter lugs and the heads of the bolts as shown in Fig. 1. The end of the movable section is provided with a gate opening outwardly so that it will be forced open by the flow of water into the feed pipe, but will close when pressure is exerted in the opposite direction. Immediately back of this gate is the filtering sieve, and directly back of the latter a segment is cut out of the reduced portion of the movable section as shown in Fig. 3, forming a port through which the foreign matter collected on the sieve may be discharged. Normally this port is closed by the overlapping mouth of the stationary section. But when it is desired to clean the filter steam is admitted into the feed pipe, causing the gate on the movable section to close as shown in Fig. 2. The steam then acts on the gate as a piston, forcing the movable section outward against the tension of the springs, thus opening the discharge port. A small opening is formed in the gate, and through this a small volume of steam passes, spreading through the sieve and blowing off the collected sediment, which thereupon flows out with the water through the discharge pipe. When the filter is sufficiently cleaned, the steam is cut off, and the parts return automatically to their normal positions. A patent for this invention has just been granted to Mr. James F. Barrett, 20 South Church Street, Carbondale, Pa.