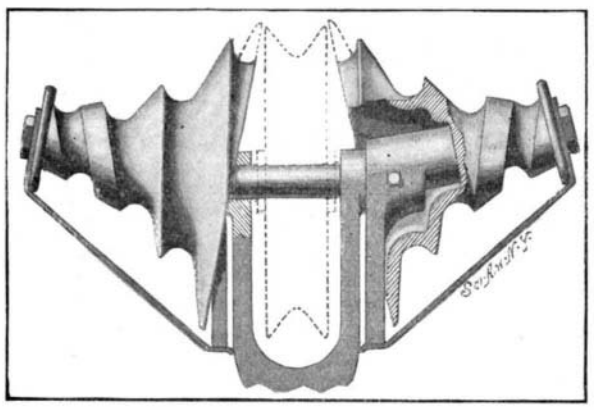
Patent Department

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.

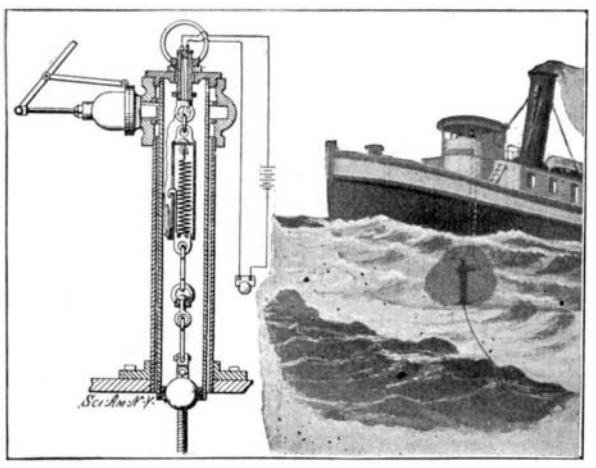
The Band Saw Is an English Invention.

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.

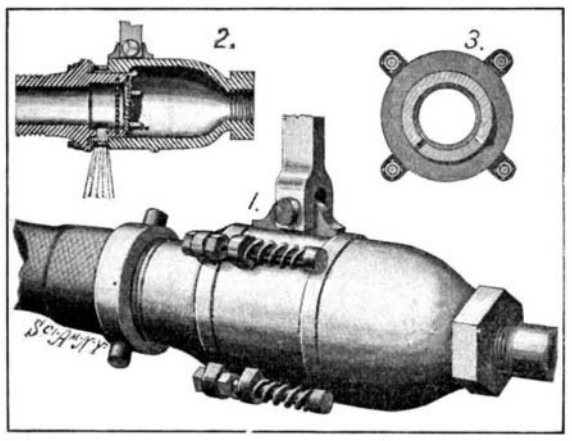
First Dynamo Described in a United States Patent.

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 India 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.

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Berliner's Advice to Inventors.

How an inventor ought to invent is told by Emil Berliner, himself well known for his improved telephones and sound-recording devices, in a recent number of the Saturday Evening Post.

"I had for years been studying the science of electricity and the physics of sound when Mr. Bell's patent was issued in 1876," writes Mr. Berliner, "and it occurred to me at once that the knowledge I had absorbed in my studies might be very profitably applied to improve the telephone. At that time I was engaged in commercial pursuits in Washington, and my experiments and studies were more in the nature of a recreation than anything else. I paid frequent visits to the central office of the Fire Department, the electrical superintendent of which, Mr. Richardson, was a particular friend of mine. He had a dummy telegraph instrument on which he had taught me telegraphy, and on this particular evening I was working the instrument as usual, when he said:

"'You don't press hard enough, Berliner.'

"'Does that make any difference?'

"'Certainly; it makes all the difference in the world in the strength and clearness of the message at the other end. That is why women do not make good and effective operators as a rule. They are not strong enough—their touch is too light. They do not give thorough contact.'

"That was a revelation to me. Under Mr. Bell's invention the voice had to vibrate a diaphragm against a magnet, and the volume of electricity thus produced was not sufficient to transmit sound waves sufficiently strong. That night, before I went to sleep, I had set up the movable diaphragm used in the telephone today, which keeps in constant contact, but with varying pressure, with the transmitting end of the telephone wire, simply pressing back and forth as the sound waves produced by the voice diminish or strengthen.

"Another case illustrating this point occurred not so many years afterward. Upon the completion of my invention of the constant contact sound transmitter, the Bell telephone people engaged my services as expert to aid in perfecting the telephone, which was still in a crude state. Mr. Blake had just invented his form of transmitter and the instrument was placed in my hands for final development. It secured a very much clearer transmission than had been possible before, but one of its troubles was that the carbon button used would rapidly wear holes at the contact. The material was so soft that it kept us busy replacing or refacing the carbon buttons. These buttons were made from the ordinary long soft carbons used in arc lights, which had only just appeared in the market. They were made by sawing the long carbons into thin circular buttons. We conducted all sorts of experiments with a view to securing a hardening of this carbon, but for a long time we failed in effecting any improvement. It was well known that the hardest carbon in the world was that which is deposited in gas retorts. This carbon deposit had always proved a serious source of trouble since the manufacture of coal gas was invented, because it has to be cleaned out from time to time, and this is a difficult job.

"It occurred to me to have a little iron cage built, into which I put a lot of our soft carbon buttons. This cage I asked the gas people in Boston to put into their retort on the next occasion when they were ready for a charge. I left it there during six charges; then, when I took it out, I found my carbons all shriveled and shrunken. The intense heat had half burned them up. They were all rough, and for a little while I thought there was another failure. In a contemplative mood I began to rub one of the roughened buttons on a piece of emery paper to see what polishing might do for it. Soon I had rubbed away entirely the spongy rough surface and got down to the original button. Examining this closely, I found to my great surprise that the carbon itself was practically unchanged, except that it had become tremendously hardened. A closer inspection showed that not alone had the carbon in the gas deposited itself on the surface of the buttons, but that it had also penetrated the pores of my carbon, filling them up absolutely and making buttons as hard as any one could desire. That was in the year 1879. By exposing to fewer gas charges we thereafter produced a carbon button that was at once hard and smooth, and to this day this process is employed. Nothing has ever been found that hardens carbon buttons for telephone use better or more economically."

Dr. F. O. Hawley, the city physician of Charlotte, N. C., has recently received a patent on a fumigator, which he says is much simpler and more effective than anything else he has seen for the purpose. The city recently suffered from an outbreak of small-pox, and was compelled to buy a number of fumigators, and nearly all of them were unsatisfactory in some respects, and those which did the work properly were generally very expensive or cumbersome. The device which the doctor has made can be made and sold for about one-third the cost of the average implement of this character, and the doctor says that he has several times demonstrated that it can do more work than the best of them.

ODDITIES IN INVENTIONS.

EYE SHADE.—Eye shades now commonly in use are clumsy affairs, covering the whole forehead and held in place by spring strips which are adapted to fit tightly against the head. A recent patent provides an improvement on this device, which is illustrated herewith. The improved shade has approximately the form of a pair of spectacles, being held to the head by bows and loops arranged to loop over the

EYE SHADE.

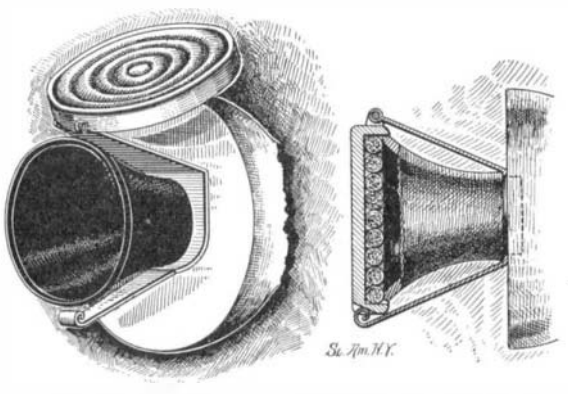
ears, and a nose bridge to prevent the shade from falling down over the face. In place of the lenses small shades are provided, one for each eye. The shades consist of semi-cylindrical portions projecting forward to shield the eyes, and vertical portions adapted to fit closely to the line of the forehead, thus preventing entrance of light at that point. The shades are so arranged as not to interfere with the action of the eyelids.

BROOM ATTACHMENT.—By the use of the broom attachment illustrated herewith, oil may be supplied to a broom in any desired amount for the purpose of oiling floors, etc. The attachment consists of a can provided with a false bottom forming an auxiliary chamber which communicates through a series of perforations with spouts projecting between the straws of the broom when the device is secured in place. The

BROOM ATTACHMENT.

oil or other liquid is stored in the can, and may be fed into the auxiliary chamber through a small opening, controlled by a needle valve, whence it passes through the spouts to the broom, and is distributed to the lower ends of the straws on the broom for application to the floor. The series of troughs are connected by a channel, so that in case an opening from which one of the troughs is fed should become clogged, the trough could receive its quota of oil from the common channel. This attachment will be found useful also for moistening the floor with water, to prevent raising the dust when sweeping.

ANTISEPTIC ATTACHMENT FOR TELEPHONE MOUTHPIECES.—The mouthpiece of a telephone, which is in constant use by a large number of persons, is apt to become charged with filthy and even contagious accumulations from the breath of the users. To remedy this evil two Californians have devised a simple little attachment designed to deodorize and disinfect the mouthpiece. A small bracket is employed, consisting of a plate with two outwardly-projecting arms. This plate is provided with a central opening adapted to fit over the threaded shank of the mouthpiece, and it is firmly held between a shoulder on the mouthpiece and the receiver proper. Hinged to the upper projecting arm of the bracket is a cap adapted to normally close over the mouthpiece. This cap is provided with any suitable absorbent material, saturated with a sterilizing or antiseptic substance, which will deodorize and disinfect the mouthpiece. The cap is held tightly against the mouthpiece by the lower projecting arm of the bracket, which serves as a spring catch therefor. In use the cap may be easily swung up clear of the mouthpiece, as shown in our illustration.



ANTISEPTIC ATTACHMENT FOR TELEPHONE MOUTHPIECES.

A Patent's Strange Career.

BY IRVING W. TOWNSEND, EXAMINER, U. S. PATENT OFFICE.

It is a strange and unprecedented occurrence that a patent should have been passed upon by seventeen judges, including the Supreme Court of the United States, and its validity be as open and undetermined a question as it was prior to the bringing of the first suit upon it. It is only by a combination of very unusual circumstances that such a condition of affairs could have arisen. Of these seventeen judges, eight have upheld the patent, eight have found it unpatentable, and one has been upon both sides of the question. Nothing could have been more evenly balanced.

In 1887 Levi Bywater obtained patent No. 374,888, claiming "a knitted fabric, composed of face and back yarns of different materials, the face yarn being looped at regular intervals and on alternate stitches of adjacent rows of the back yarn, and being matted and curly, and having a smooth back, whereby the said fabric has the appearance of looped or Astrakhan cloth, as described." When suit was brought upon this patent, the British patent to Booth of 1881 was set up as an anticipation. Prior to these patents imitation Astrakhan had been produced, but it was always a woven, not a knitted article. The whole question, which has proved so puzzling, is whether the British patent discloses imitation Astrakhan, or whether the change, if any, made by Bywater, involved more than the skill of the artisan. The British patentee claimed to have invented a novel description of looped fabric of ornamental appearance. Just what this means is uncertain. Apparently, he did not claim to knit Astrakhan. Knitters of the present day have, following the direction of the British patent, undoubtedly produced knitted imitation Astrakhan, but the question still remains whether they have not, in so doing, made something that Booth did not have in mind, for the law undoubtedly is that a foreign patent is not to be measured by its possibilities, but by what it substantially displays—what is necessarily inherent in it. Bywater in producing his fabric, uses Mohair yarn, which will both mat and curl, so as to give the shaggy appearance of Astrakhan. Booth used a backing of wool, capable of felting, and for the face a long-fibered yarn, incapable of felting, laid in position in loops. When the fabric was felted the loops projected. If a curly or krinkly yarn happened to be used, the loops curled, but the patent does not apparently suggest both matting and curling. Bywater seems to have made a wise choice of yarns, using those that necessarily curl, and by patient work in mechanical development, has provided his fabric. Has he, in so doing, exercised invention?

Judge Dallas, in Hanifen vs. Godshalk Co. (78 F. R. 811), sustained the Bywater patent, but upon a rehearing he changed his mind, and held the patent invalid. Upon appeal he was reversed, although by a divided court, Judges Shiras and Acheson holding the patent valid and Judge Butler dissenting (84 F. R. 649). This was in the Third Circuit. The patent was next sued upon in the Second Circuit and was sustained by Judge Townsend (Hanifen v. Price, 96 F. R. 435), but he in turn was reversed by the Court of Appeals for that circuit in an opinion rendered by Judge Shipman (102 F. R. 509) and concurred in by the two other judges. Hence, as the patent was invalid in New York and valid in Philadelphia, the United States Supreme Court allowed a writ of certiorari, and it was naturally expected that the matter would thus be put to rest. But it so happened that only eight justices sat when the case was heard and that the Court was equally divided. Such a decision is recognized as an affirmance of the decision appealed from, and as the writ of certiorari happened to have been allowed from the Second Circuit, where the patent was invalid, the decision of the Supreme Court was that the patent was invalid. Had the writ of certiorari been allowed from the Third Circuit, where the patent was valid, there would also have been an affirmance with the result that the patent would have been held valid. It seems clear

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