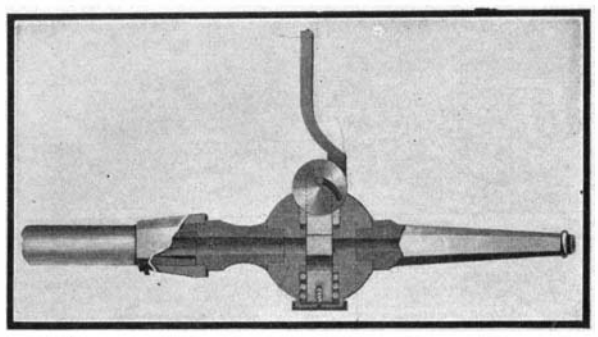
Patent Department

IMPROVED HOSE-NOZZLE.

In the accompanying illustration we show an improved form of hose-nozzle invented by Mr. Charles L. Sankey, of Engine Company 7, Yonkers, N. Y. This hose-nozzle is so constructed that the plug of the valve will be operated by a cam lever arranged to bring the waterway or passage opening in the plug in registry with the water passage in the body of the nozzle, and to admit the waterway of the plug to be automatically carried out of such registry. The cam lever is also so arranged that it will remain in either position in

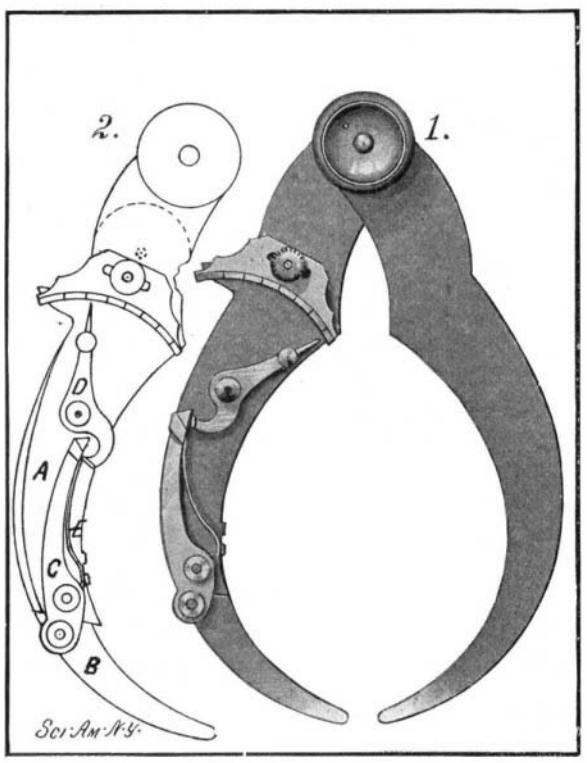


IMPROVED HOSE-NOZZLE.

which it is placed until purposely moved, enabling the nozzle to be set for the free delivery of the water for an indefinite period of time without attention, or the supply of water to the tip of the nozzle to be conveniently and instantly shut off when desired. As shown in our illustration, the tip and the neck of the nozzle are threaded into opposite sides of the spherical body portion. The body of the nozzle is vertically traversed by a chamber in which the valve plug is adapted to slide. A coil spring bearing against a washer on the bottom of the plug serves to hold the plug normally in its lowest position. At its upper end the plug is slotted to receive a cam, which is also seated in a groove in the top of the body of the nozzle. The cam is held in place by a pin passing through a slot therein, and driven into the members of the bifurcated portion of the plug. The valve is operated by means of a handle, which projects from the cam. When it is desired to open the valve, the handle is turned to a horizontal position, and the plug is forced to rise by the pin acting in the cam slot, which brings the opening in the plug into registry with the bore in the body of the nozzle. Whenever it is desired to cut off the flow through the nozzle, it is simply necessary to throw the handle upward, when the spring will force the plug down to the position illustrated.

IMPROVED CALIPERS.

A patent has recently been granted to Mr. William A. McDonald, of Garfield, N. J., for an improvement in calipers which affords many advantages over the crude instruments now generally in use. The improved calipers can be used while the work in the lathe is running, without danger of altering the size set on the calipers, thus saving the time of stopping and starting the lathe, as would be necessary with other types of calipers. When set to the size wanted



IMPROVED CALIPERS.

the calipers may be made to indicate how much larger the piece is than desired without the size already set being changed. As illustrated herewith, one of the caliper arms is formed of two members, *A* and *B*, which are pivoted together near their upper ends. A lever *C* is pivoted to the lower end of arm *A* and also at its lower end to member *B*, while at its upper end it carries a flat spring *E* which presses against an ear on member *A*, thereby holding the member *B* in the normal position indicated in Fig. 1. When in this position the member *B* presses against the stop formed on the inner edge of the member *A*. A pointer lever *D* is also pivoted to the member *A* in such position that it will be engaged by the upper end of the lever *C*. Whenever the member *B* is moved out of normal, as shown in Fig. 2, this pointer indicates on a scale the amount of this movement, and, due to the compound leverage, a movement at the caliper points will be multiplied about eight times on the scale, thus virtually supplying the calipers with a micrometer attachment. In use the points of the calipers are brought slightly closer together than the measure desired and the thumb screw on the main joint is screwed up as tightly as possible. Then, with the pointer moved into engagement with the lever *C*, the points are passed over the object which it is desired to measure. This will move the pointer slightly to the left and the adjustable scale is then set, bringing one of the marks on the scale in line with the index point. Now, in passing the points of the calipers over the work in the lathe, the index hand will show just how much larger the work is than desired by moving past the mark on the adjustable scale, or if the object is smaller than desired the index pointer, which had previously been set into engagement with the lever *C*, would not reach the mark set on the scale. In this way one can measure anything larger or smaller than the work desired and to a much finer degree of accuracy than with calipers now in use.

A Novel Life-Saving Boat.

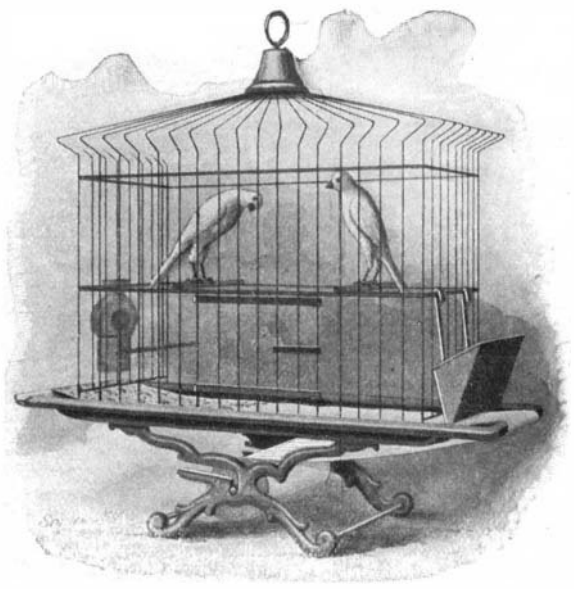
James Mitchell, Sr., of Arrow River, Manitoba, Canada, is the inventor of a novel life-saving boat, which has more than once been made the subject of a note in this journal. Mr. Mitchell sends us two certificates, issued by the Naval Assistant's office at Halifax, in which some interesting tests made with the lifeboat are described. In November, 1902, a lifeboat was built according to Mr. Mitchell's plans, which was made the subject of rigorous tests. She carried about 1,200 pounds of ballast in addition to five men on the thwarts; in the bottom of the boat. She was parbuckled over, and righted very quickly and satisfactorily. A boat, similar to this, was ordered by the Dominion government for the fishery protection cruiser "Acadia." She was tested without any ballast whatever, with only three men on board, who held on to the thwarts. When parbuckled over, she righted at once. The Naval Assistant gave it as his opinion that the Mitchell lifeboat was thoroughly self-righting without ballast. Admiral Rivet, of the French flagship "Tage," made a test on July 28, 1903, on which occasion the boat was launched from a wharf 14 feet 6 inches above the tide level. The boat took the water end-on with a crew in her, was immersed about one-third of her length, and then floated on an even keel.

WINDMILL WITH REVERSING ATTACHMENT.

We illustrate herewith a new type of windmill, which is so arranged that its direction of rotation may be reversed whenever desired. The shaft of the windwheel lies transversely across the path of the wind, and it carries a drum on which radial blades are arranged like the blades of a paddle-wheel. A shield which is placed to windward of the wheel serves to cover either the lower or upper half of the wheel, according to its position. This shield is supported by two ropes, each of which is secured at one end to the top of the shield, and at the other end to the bottom of the shield. The ropes pass over pulleys at the top and bottom of the shield frame, and also over two pulleys keyed to a shaft which lies directly under the windwheel. Loosely mounted on this shaft is a sleeve, to which rotary movement is imparted from the windwheel by means of belt and pulley connection therewith. This sleeve carries at one end a cone, which forms one member of the friction clutch, the other or cup member being secured to the pulley shaft. Now, with the shield in the lower position, the wind will strike the upper blades of the windwheel and, if it is desired to shift the position of the shield, a cord is pulled which, through the medium of a forked lever, as illustrated, throws the friction cone into engagement with the cup, thereby imparting rotary movement to the pulley shaft and drawing the shield to its upper position, when the wind will strike only the lower half of the wheel, thus reversing the direction of its rotation. Now, when next the cord is pulled, the pulley shaft will rotate in the opposite direction, drawing the shield to its lowest position. In operation, the instant the shield reaches the desired position, the operating cord is released, whereupon a spring, acting on the forked lever, will throw the clutch members out of engagement. At the same time another cord is pulled, which is connected to a brake band that encircles the cup member of the clutch. This serves to instantly stop the rotation of the pulley shaft. Mr. William A. Butler, of 927 Market Street, San Francisco, Cal., is the inventor of this windmill.

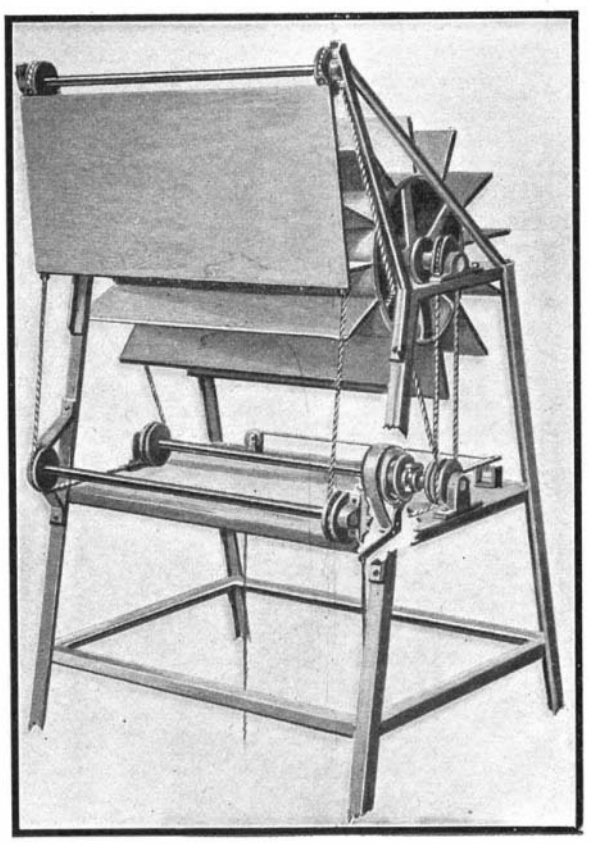
CONVENIENT ATTACHMENT FOR BIRD CAGES.

A recent invention provides a very convenient means of removing the paper in the bottom of a bird cage and replacing it with a new strip. The arrangement



CONVENIENT ATTACHMENT FOR BIRD CAGES.

is such that if desired the paper may be changed without removing the cage from its suspending hook. As shown in the accompanying illustration, the bird cage is provided with two downwardly-extending hangers, which also serve as legs for the support of the cage when it is placed on a table or the like. These hangers have inwardly-extending slots that terminate in depressions which form bearings for the spindles of a paper-roll holder. The paper from this roll extends over one edge of the cage and thence along the bottom of the cage to the opposite edge. At the point where the paper enters the cage a hopper is secured in which fine gravel is stored. When it is desired to change the paper in the cage the soiled strip is drawn out and torn off on the edge of the cage bottom, which is sharpened at this point. The fresh length of paper which is thus brought into the cage is covered with a thin layer of gravel which is fed out of a slot in the bottom of the hopper. Thus, by a single and very simple operation, the cage is cleaned and refitted with fresh paper and gravel. The hopper for gravel is held in place merely by two hooks, and can therefore be removed when desired. The paper holder also can be readily removed, owing to the slots which connect with the bearings. This affords a quick method of replacing the roll with a new one when the paper is exhausted. Mr. Joseph A. Quelch, of 331 Manhattan Avenue, Brooklyn, New York, is the inventor of this improved bird cage.



WINDMILL WITH REVERSING ATTACHMENT.