No. 831,767. PATENTED SEPT. 25, 1906.

E. P. BODEN.

REMOVABLE STOPPER AND STRAINER.

APPLICATION FILED OCT. 9, 1905.

FIG. 1

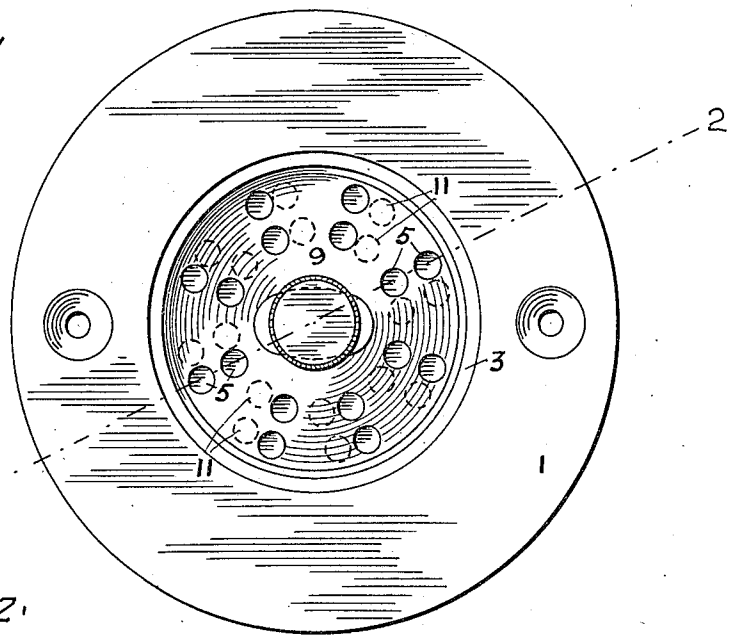


FIG. 2

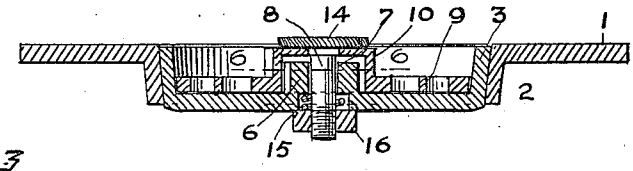


FIG. 3

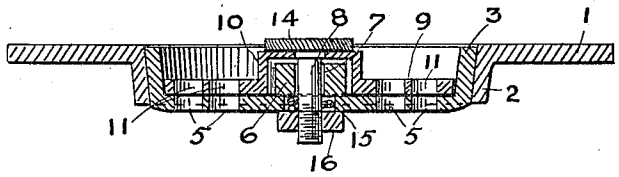


FIG. 4

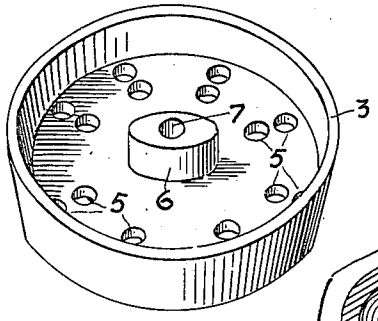


FIG. 5

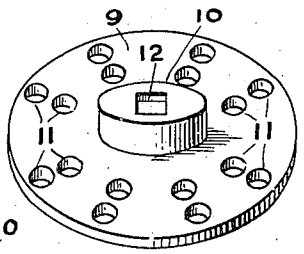
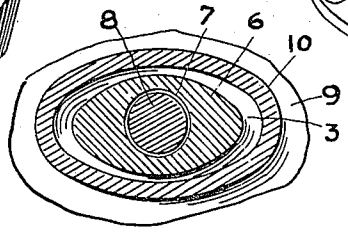


FIG. 6



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDMUND P. BODEN, OF SANTA CLARA, CALIFORNIA.

REMOVABLE STOPPER AND STRAINER.

No. 831,767. Specification of Letters Patent. Patented Sept. 25, 1906.

Application filed October 9, 1905. Serial No. 281,996.

To all whom it may concern:

Be it known that I, EDMUND P. BODEN, a citizen of the United States, residing at Santa Clara, in the county of Santa Clara and State of California, have invented certain new and useful Improvements in Removable Stoppers and Strainers, of which the following is a specification.

This invention relates to a removable strainer and stopper useful for kitchen and other sinks or for any such apparatus in which it is desirable sometimes to strain the passing liquid and sometimes to entirely stop the passage thereof.

The object of the present invention is to provide a device of this character which will be cheap to manufacture and simple and effective in operation and which will facilitate the flushing or opening of the pipe into which the liquid passes from the strainer in case of its being stopped up.

In the accompanying drawings, Figure 1 is a plan view of the device, showing the drain-holes closed. Fig. 2 is a sectional view of the same in the same position. Fig. 3 is a similar view in the open position. Fig. 4 is a perspective view of the upper side of the cup. Fig. 5 is a similar view of the upper side of the shutter. Fig. 6 is an enlarged horizontal section through the stopper and socket.

Referring to the drawings, 1 represents an annular plate adapted to be secured by screws to the sink or other part which it is desired to drain. The central hole of this plate is formed with a depending flange 2, the inner surface of which tapers or converges inwardly downward to form a tapering seat for a cup 3, the wall of which correspondingly tapers downward. The bottom of the cup is formed with a series of holes 5, arranged radially in pairs. Said cup is also formed with a central stop 6, approximately of an elliptical or elongated form, preferably formed by stamping upward the metal of the cup into the desired shape. Through the center of this stop is a hole 7 for the passage of a bolt 8. Upon said cup rests a shutter 9, which is also formed, in like manner as the cup, with an approximately elliptical or elongated socket 10, formed, preferably, by stamping upward the metal of the shutter. This socket 10 lies over the elongated stop 6, but covers the same loosely, so as to allow of a limited angular motion in either direction of the shutter relatively to the cup. The shutter is also formed with a circular series of holes 11, arranged radially in pairs and corresponding with the holes 5, and at one end of the angular movement of the shutter each pair of holes therein registers with a pair of holes in the cup; but when moved in the other direction the holes fail to register and lie, respectively, against closed portions of the cup and shutter, thus entirely stopping the passage of liquid through said holes. Through the center of the socketed portion of the plate is formed a square hole 12, into which fits the squared upper portion of the bolt 8, the head 14 of said bolt resting upon said socket. The body of the bolt is passed through the round hole 7 in the stop on the cup and has a close fit therethrough, but is spaced from the side of the stop on the under portion thereof, and in said space a coiled spring 15 is passed around said bolt. It will of course be understood that in place of a coiled spring a flat plate-spring could be used. Upon the lower end of the bolt is screwed the nut 16.

The operation of the device is therefore as follows: When it is desired to use it as a strainer, the shutter is turned so as to bring the holes in the shutter and cup into register with each other, the body of the socket serving as a convenient holding means for so turning it. To close the device, the shutter is turned so that the holes no longer register with each other, and then, on account of the pressure of the shutter against the cup produced by the spring 15, a water-tight joint is effected between said shutter and cup, and the passage for the water is entirely closed. This provides a convenient arrangement where it is desired to use, for instance, a sink as a receptacle to hold a large body of water. It is also convenient in sinks for collecting the small particles of crumbs and other matter, as the holes may be stopped, and then such particles may be brushed into the cup, which may be then lifted and dumped into any desired receptacle, and the cup can then easily be cleaned by holding it under a faucet. This device also provides a ready means for flushing the drain-pipe in case it becomes stopped up. For this purpose the cup would be removed, and in place thereof would be inserted a tightly-fitting cup provided at the center with a threaded flange, upon which a hose could be screwed. Then by attaching the hose to a faucet and holding down the cup water can be forced into the pipe under great pressure, thus forcing the water through the trap in the pipe.

While I have herein for convenience referred to the invention as in use with a kitchen-sink, it is to be borne in mind that the combined strainer and stopper has many other uses, all of which I do not think it necessary herein to enumerate; but I may instance that instead of being used as a stopper for liquids it may in certain cases be advantageously used as a stopper for gas.

I claim—

1. In a combined strainer and stopper, a main plate having a depending inwardly-tapering annular flange, and a cup entirely separable from the plate and having a downwardly-tapering wall fitting snugly within said flange, the bottom of the cup below said wall being provided with means for permitting or preventing at will the passage of liquid, substantially as described.

2. In a combined strainer and stopper, a main plate having a depending inwardly-tapering annular flange, and a cup entirely separable from the plate and having a downwardly-tapering wall fitting snugly within said flange, the bottom of the cup below said wall being provided with means for permitting or preventing at will the passage of liquid, said means having a portion extending upward centrally from the bottom of the cup to facilitate the removal of the cup, substantially as described.

3. In a combined strainer and stopper, an annular plate having a depending inwardly-tapering annular flange, a cup having a downwardly-tapering wall fitting within said flange, and a shutter in the bottom of the cup below said plate to form a receptacle for debris, substantially as described.

4. In combination, a plate having a circular seat, a circular device removably secured in said seat and having a series of holes, a shutter movable over said device and having a corresponding series of holes adapted to register in one position with the holes in the device, the device and shutter having the one an elongated stop and the other an elongated socket receiving said stop, said socket being larger than the said stop to permit of limited movement of the one within the other, and means for holding said shutter and device together, substantially as described.

5. In combination, a plate having a circular seat, a circular device removably secured in said seat and having a series of holes, a shutter movable over said device and having a corresponding series of holes adapted to register in one position with the holes in the device, the device and shutter having the one an elongated stop and the other an elongated socket receiving said stop, said socket being larger than said stop to permit of limited movement of the one within the other, and means for holding said shutter and device together, said means comprising a bolt and a spring around said bolt, the stop being hollowed out on its under side to receive said spring, substantially as described.

6. In combination, a plate having a circular seat, a cup removably secured on said seat and having a series of holes, a shutter movable over the bottom of said cup and having a corresponding series of holes adapted to register in one position with the holes in the cup, said cup and shutter having the one an elongated hollow stop and the other an elongated socket adapted to receive said stop and being larger than the stop to permit of limited movement therein, and means for holding said shutter and cup together, comprising a bolt and a spring around said bolt in the concavity of the stop, substantially as described.

7. In combination, a plate having a circular tapering seat, a cup having a series of holes, and a tapering wall fitting within said seat, and a shutter movable over said cup and having a corresponding series of holes adapted to register in one position with the holes in the cup, said cup and shutter being provided with means for limiting the movement of the shutter relatively to the cup, said means consisting of an elongated stop in one element and an elongated socket in the other element receiving said stop and being larger than the same, and with means for holding said cup and shutter together, substantially as described.

8. In combination, a plate having a circular tapering seat, a cup having a series of holes and a tapering wall fitting within said seat, and a shutter movable over said cup and having a corresponding series of holes adapted to register in one position with the holes in the cup, said cup and shutter being provided with means for limiting the movement of the shutter relatively to the cup, said means consisting of an elongated stop in one element and an elongated socket in the other element receiving said stop and being larger than the same, and with means for holding said cup and shutter together, said means comprising a bolt and a spring around said bolt in the hollow stop, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

E. P. BODEN.

Witnesses:
E. WOODWARD,
BESSIE GORFINKEL.