

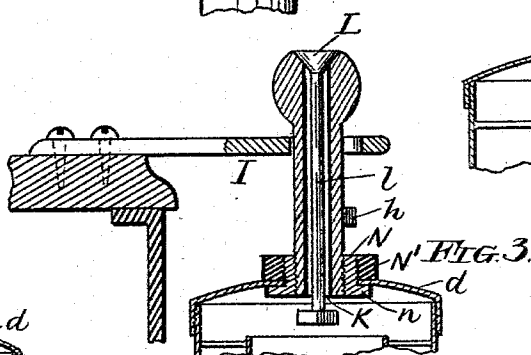
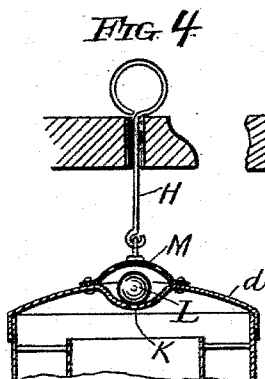
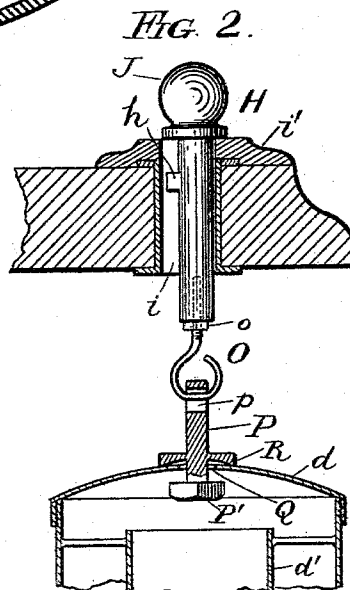
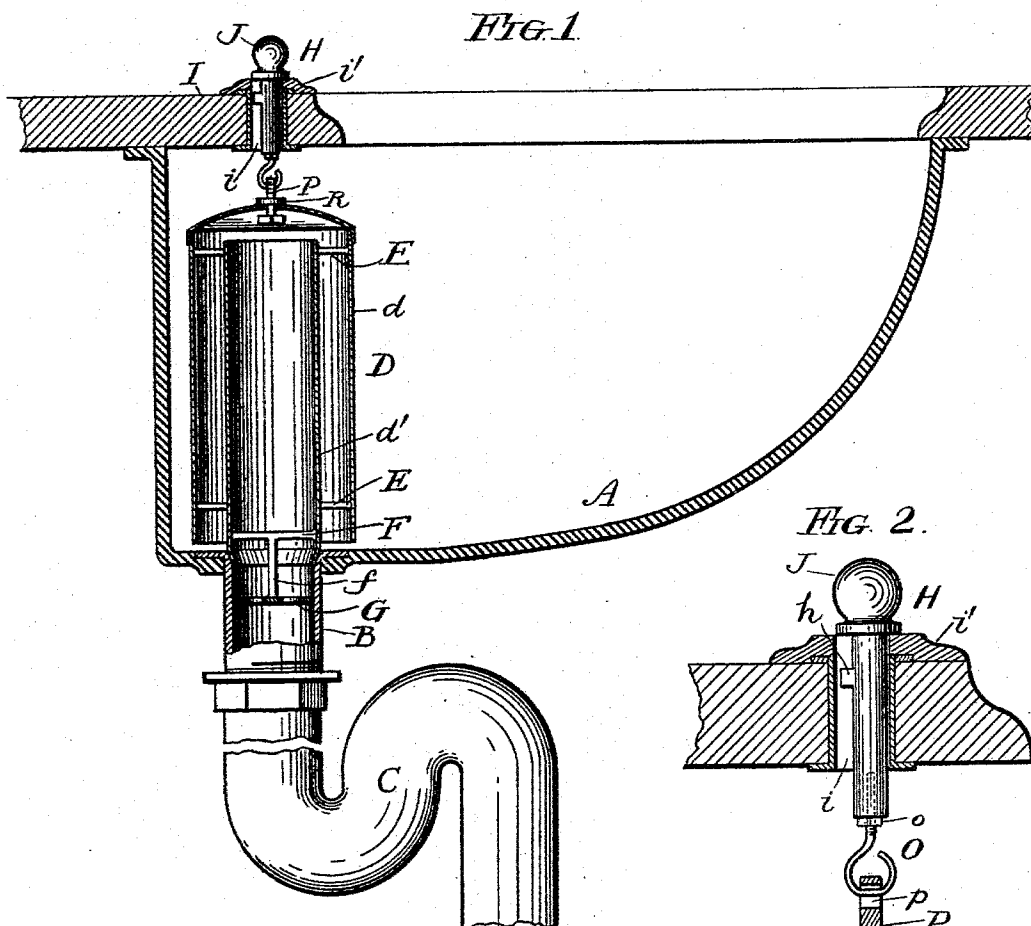
(No Model.)

C. T. BYRNE.

COMBINED DISCHARGE AND OVERFLOW SIPHON FOR WASHBASINS, &c.

No. 495,018.

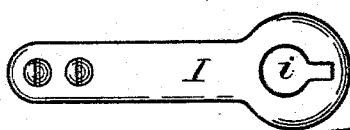
Patented Apr. 11, 1893.



Witnesses:

J. Halpern
Russell H. Jones

FIG. 5.



Inventor:

Charles T. Byrne
By his attorneys
Bridley Hopkins

UNITED STATES PATENT OFFICE.

CHARLES T. BYRNE, OF CHICAGO, ILLINOIS.

COMBINED DISCHARGE AND OVERFLOW SIPHON FOR WASHBASINS, &c.

SPECIFICATION forming part of Letters Patent No. 495,018, dated April 11, 1893.

Application filed April 12, 1892. Serial No. 428,925. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. BYRNE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Combined Discharge and Overflow Siphon for Washbasins, Bath-Tubs, &c., of which the following is a specification.

A familiar means for discharging the contents of elevated flushing tanks is a siphon-plug, *i. e.* a plug which is in fact a siphon, the longer leg of which enters and closes the upper end of the discharge pipe, while the shorter leg terminates a short distance from the bottom of the tank. This siphon is usually constructed of two concentric tubes of about the same length, the outer one of which is closed at its upper end and forms the short leg of the siphon, while the inner one, which forms the long leg of the siphon, is open at both ends and at its lower end projects below the outer tube a sufficient distance to form the plug for closing the entrance to the discharge pipe and at the same time hold the lower end of said outer tube from contact with the bottom of the tank. If the discharge pipe is without a seal or trap of any kind, as the water rises in the tank it rises also in the short leg of the siphon, expelling the air therefrom into the long leg, and thence into the discharge pipe from which it escapes at bottom. Hence if the water rises to the level of the top of the long leg of the siphon it will overflow into said leg and be prevented from overflowing the sides of the tank. If, however, the discharge pipe were provided with a trap or seal of any sort (albeit the discharge pipes of flushing tanks never are) the air within it would be confined and therefore the water could rise in the short leg of the siphon only to the extent that it could compress the air within the siphon and discharge tube. This would be only a short distance and the water would overflow the walls of the tank before it could overflow into the long leg of the siphon.

The object of the present invention is to provide a combined discharge siphon and overflow for wash-basins, bath-tubs, sinks and other vessels whose discharge pipes are provided with traps or seals.

To this end, the present invention contem-

plates the use of a siphon of any suitable construction, having at or near the top a vent, through which air may escape as the water rises up in the short leg of the siphon, said vent being preferably provided with a valve which normally closes it but which is adapted to be unseated by the pressure of the air inside of the siphon.

The invention consists in certain features of novelty that are particularly pointed out in the claims hereinafter, being first fully described with reference to the accompanying drawings, which is made a part of this specification, and in which—

Figure 1 is a vertical section of a wash-basin and a siphon-plug embodying the invention under one of its many possible modifications. Fig. 2 is a vertical section of some of the parts and on a larger scale. Fig. 3 is a similar section showing a modification. Fig. 4 is a section of a vent and valve of still another modification. Fig. 5 is a plan view showing the shape of the opening in the support through which the pull rod passes.

A represents a wash-basin, B the drain-pipe thereof, and C a seal or trap in said pipe.

D is the siphon-plug consisting of the tube *d* closed at top and the smaller tube *d'* open at both ends and held concentrically within the tube *d* by means of suitable struts E. The tube *d'* does not extend quite to the top of tube *d*, but projects some distance below it, and has its lower end slightly contracted in order to enable it to enter and seat firmly against the upper end of the discharge pipe. The tube *d* forms the short leg and the tube *d'* the long leg of the siphon. Within the long leg of the siphon is a cross-bar F from which depends a stem *f*, carrying at its lower end a strainer G, which fits the discharge pipe snugly and thereby constitutes also a guide for controlling the movement of the lower end of the siphon. To the upper end of the siphon is connected a pull rod H, which passes through an opening *i*, through a support I, and is provided at its upper end with a knob or handle J. The support I may consist of a portion of the top of the wash-stand projecting over the edge of the basin, as shown by Fig. 1, or it may consist of a metal arm or bracket secured to some convenient part and

projecting over the edge of the vessel, as shown by Fig. 3, or of any other suitable device.

The opening *i* through the support, or a collar *i'* resting upon it, is of key-hole shape and the pull rod is provided with a laterally projecting lug *h*, so situated that by pulling the rod up until the lug is above the top of the support, and turning the rod until the lug is out of register with the notch of the opening, the lug will bear upon the top of the support and thereby hold the siphon elevated, permitting the water to flow from the vessel directly into the discharge pipe.

Through the top of the siphon is a vent through which air may escape from the inside of the siphon, said vent being preferably provided with a valve which "seats inward," so that when the water rises up in the short leg of the siphon the pressure within the siphon will lift the valve from its seat and permit the air to escape. In this way air may be expelled from the siphon until the water has risen in it to the level of the top of the long leg thereof, and if the water still continues to rise in the tank it will overflow into the long leg of the siphon, and if the volume of water overflowing be sufficient, siphoning will commence and continue until the basin is emptied of its contents. Nor will this be interfered with in the least by the vent at the top of the siphon, because the valve of this vent is so arranged that it is unseated only by pressure within the siphon, and while siphoning is going on there is a suction and not pressure within the upper part of the siphon. Indeed by properly proportioning the vent the valve may be dispensed with altogether. This is possible because, since the water in the vessel rises slowly a very small perforation will be sufficient to permit the air to escape from the siphon, and, on the other hand, when siphoning does commence the small amount of air that would be drawn in through such an opening would not be sufficient to interfere with it. I prefer, however, to use a valve, but do not limit myself to a valve constructed in any particularly way or located in any particular place, and have shown this feature under several modifications.

In Fig. 4 I have shown the vent *K* formed at the bottom of a sphero-segmental depression in the top of the siphon, and a valve *L* consisting of a ball resting normally in said depression and closing said vent, said ball being held in place by a perforated hood *M*, secured to the siphon.

In Fig. 3 I have shown the vent *K* formed through the pull rod and a valve seat formed at the upper end thereof. The valve *L*, has on its under side a long, slender stem *l* that passes quite through the pull rod and is provided, inside of the siphon, with a nut for preventing the stem from being completely withdrawn, while not preventing the valve from unseating. In this form of the invention the pull rod is rigidly, but still remov-

ably attached to the siphon. Its lower end is screwed into an internally threaded sleeve *N*, which passes through an opening in the top of the siphon, has an enlarged head *n* that bears against the inside thereof, and is externally threaded for receiving a nut *N'* that bears against the top of the siphon on the outside thereof for holding the sleeve in place. The pull rod may be screwed out of the sleeve without disturbing the latter's connection with the siphon, and the siphon removed for cleaning.

As shown by Figs. 1 and 2, the shank of an open eye or hook *O*, is screwed into the lower end of the pull rod and held against turning by a jam-nut *o*. This hook passes through a perforation *p* formed through a stem *P*, which passes through an opening *Q* in the top of the siphon, and has on the interior thereof an enlarged head *P'*. The stem is of less diameter than the opening *Q*, leaving sufficient space for venting the siphon, said opening being normally closed by a valve consisting of a flange *R* formed on or secured to the stem *P* above the siphon. The perforation *p* is elongated, so that when the parts are in normal positions, as shown by the drawings, the valve rests upon the top of the siphon and it and its stem are free to rise whenever sufficient pressure is produced within the siphon. In this form of the invention, also, the siphon can be removed, either by unscrewing the shank of hook *O*, or by disengaging the hook from the stem *P*. This removability of the siphon is an important feature, because a siphon used on a wash-basin, bath tub, sink or similar vessel, will soon become foul, and if it cannot be removed and cleaned it will become an unendurable nuisance.

I am aware that it is not new to use a plug consisting of a pipe open at both ends and extending up to the desired high water line of the vessel, and do not claim such as my invention. The invention is not limited to a receptacle of any particular description; but is equally applicable to wash-basins, bathtubs, sinks, tanks, and vessels of all other descriptions having discharge pipes that are so sealed or closed as to prevent air from being expelled from them by the force of the water as it rises in the siphon, nor is it in any way limited to the character of this seal or trap.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a vessel, a discharge pipe therefor, and a seal closing said pipe, of a movable siphon-plug, the long leg of which closes the upper end of said pipe, said siphon-plug having at its upper part a vent, through which air may escape whenever there is a pressure within the siphon-plug in excess of atmospheric pressure, and means for raising and lowering the said siphon-plug, substantially as set forth.

2. The combination with a vessel, a dis-

charge pipe therefor, and a seal closing said pipe, of a movable siphon-plug, the long leg of which closes the upper end of said pipe, said siphon-plug having at top a vent, an inward seating valve closing said vent and adapted to be unseated by pressure within the siphon-plug, and means for raising and lowering the siphon-plug, substantially as set forth.

10 3. The combination with a vessel and a discharge pipe, of a movable siphon-plug having

a pull rod, a vent formed through said rod, an independently movable stem located in said vent, means for preventing its withdrawal, and an inward seating valve on the stem, adapted to normally close the vent and to be unseated by pressure within the siphon-plug, substantially as set forth. 15

CHARLES T. BYRNE.

Witnesses:

L. M. HOPKINS,
J. HALPENNY.