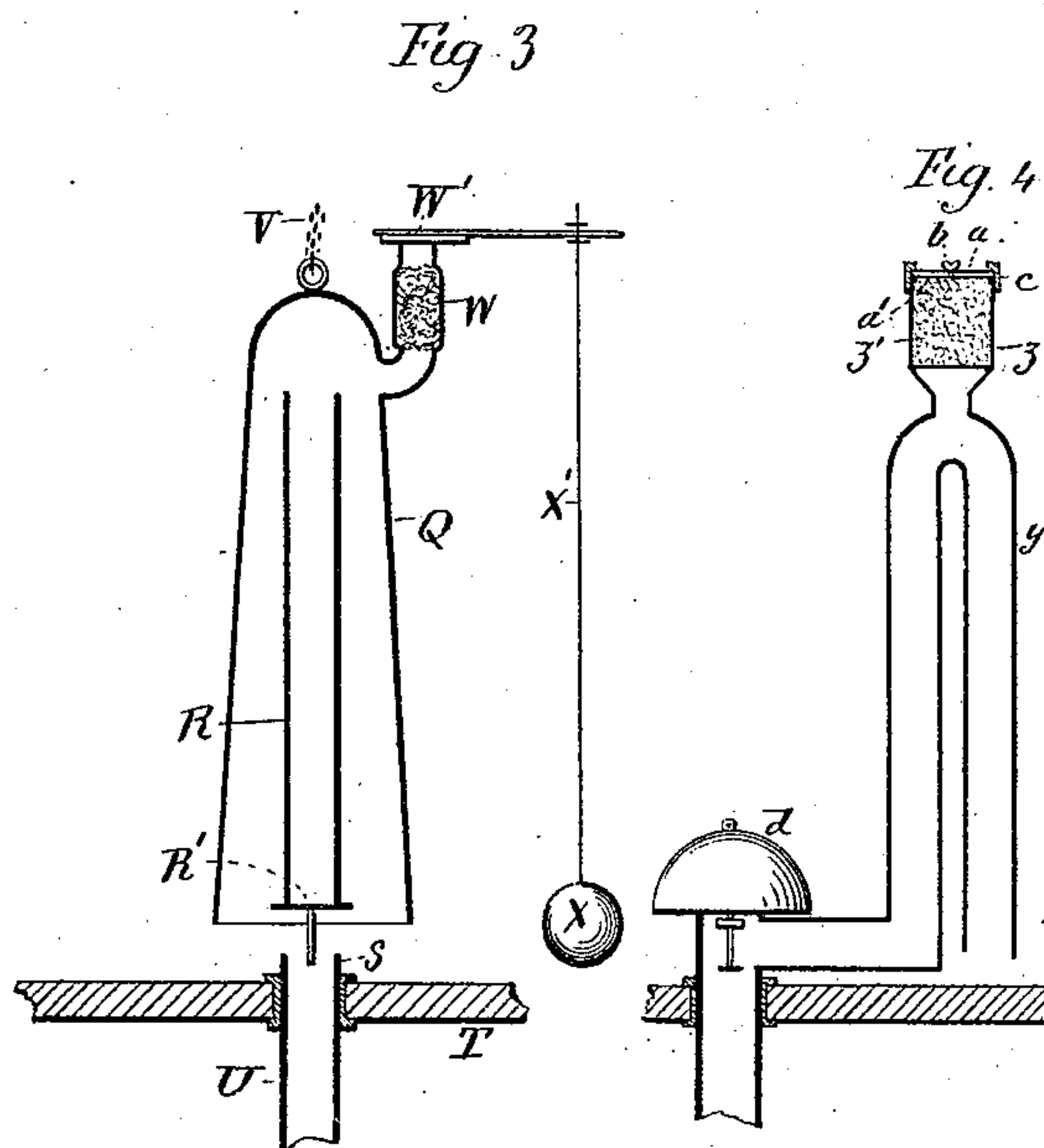
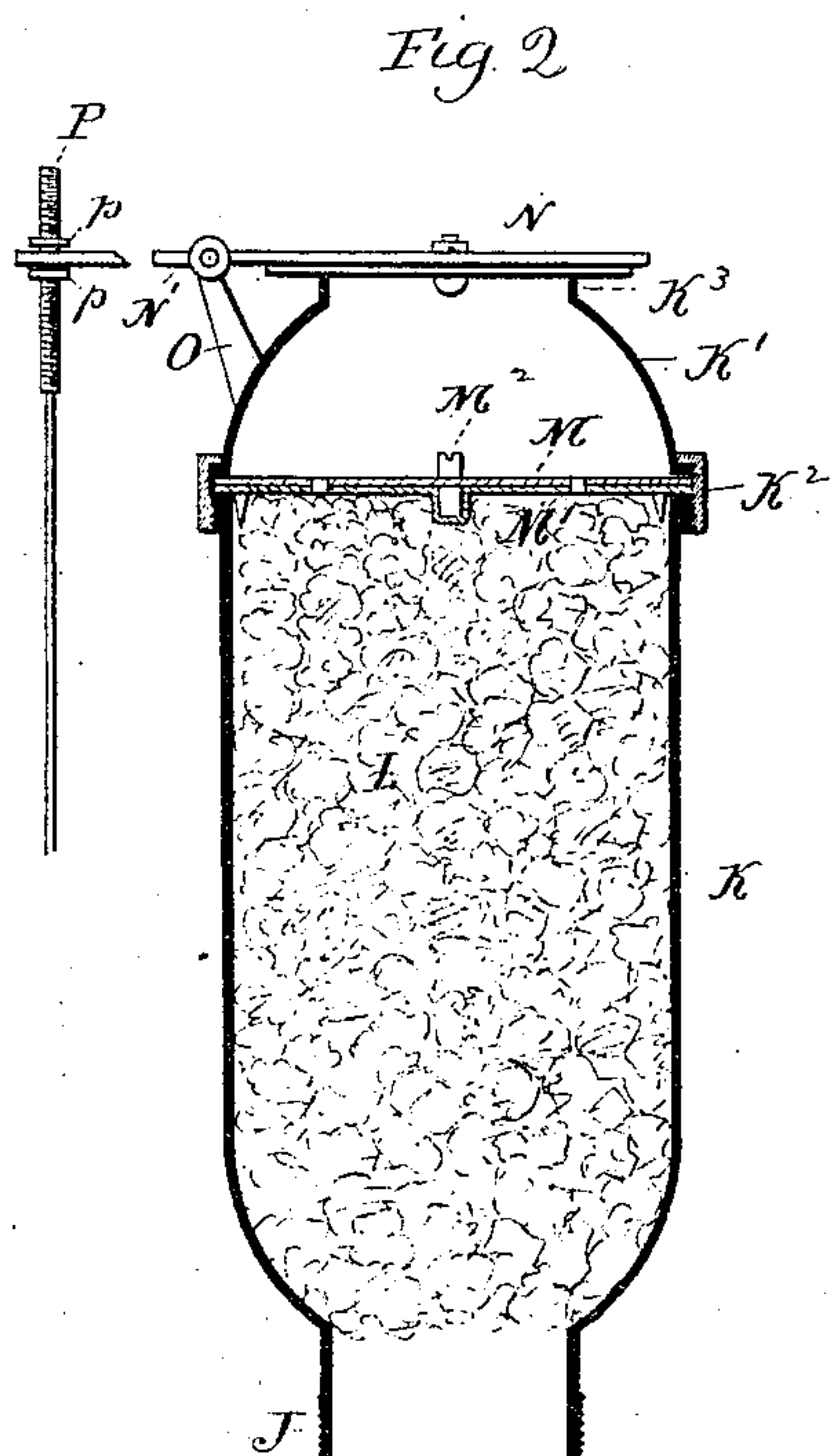
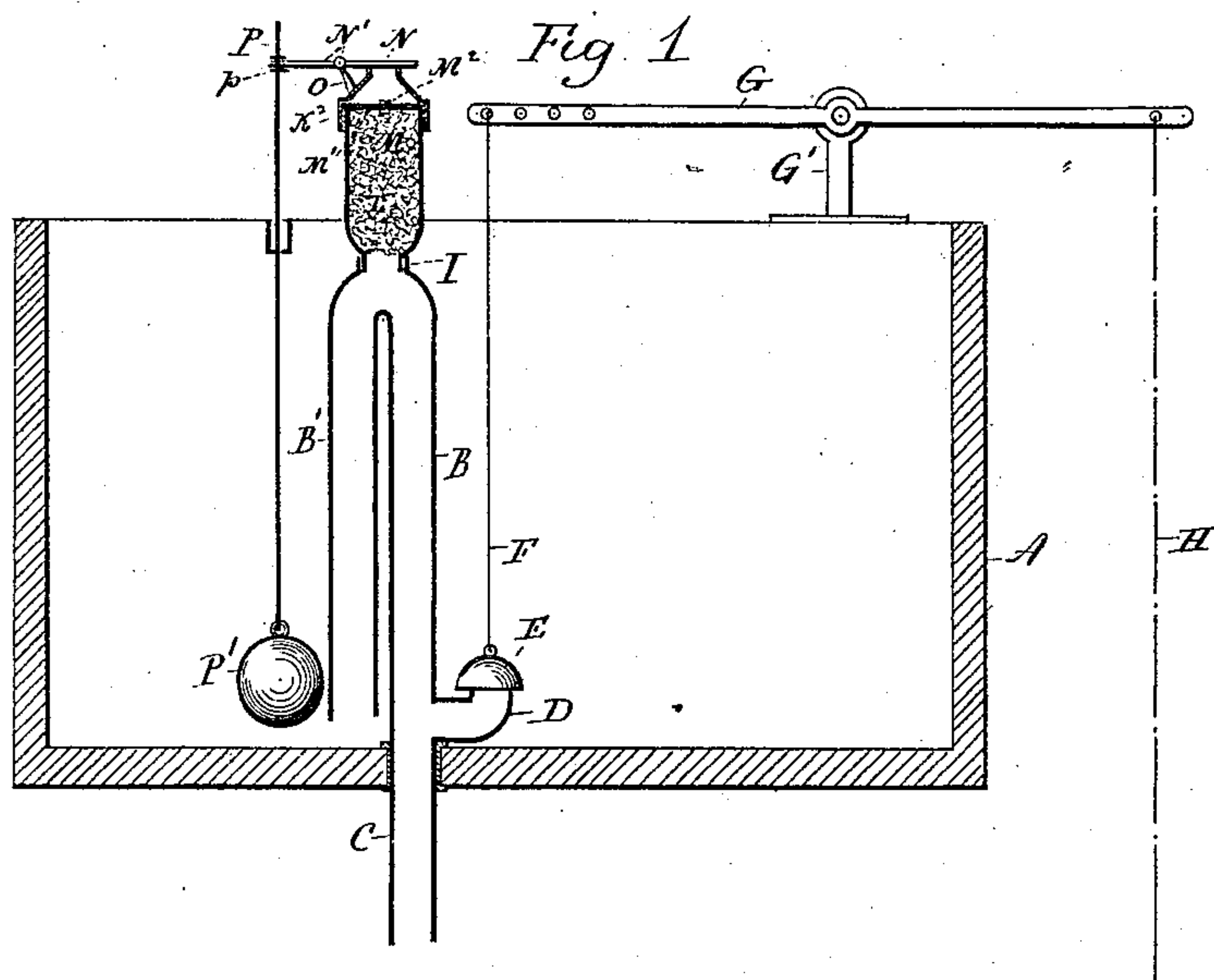


(No Model.)

J. MENZIES & R. MORGAN.  
WATER CLOSET CISTERN.

No. 485,469.

Patented Nov. 1, 1892.



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# UNITED STATES PATENT OFFICE.

JOHN MENZIES AND ROBERT MORGAN, OF NEW HAVEN, CONNECTICUT.

## WATER-CLOSET CISTERN.

SPECIFICATION forming part of Letters Patent No. 485,469, dated November 1, 1892.

Application filed June 20, 1892. Serial No. 437,306. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN MENZIES and ROBERT MORGAN, of New Haven, in the county of New Haven and State of Connecticut, have  
5 invented a new Improvement in Water-Closets; and we do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a view in vertical section showing one application of our invention to the tank  
15 of a water-closet; Fig. 2, a similar enlarged view of the air-retarding chamber; Fig. 3, a view in vertical section showing the application of our invention to a bell or cone siphon; Fig. 4, a sectional view of an application of  
20 our invention in which the valve of the air-retarding chamber is dispensed with.

Our invention relates to an improvement in means for controlling the discharge of water through siphons of whatever character when  
25 used for flushing, and particularly when combined with the tanks of water-closets, whereby the discharge of water therefrom is arrested without the sucking noise that usually accompanies the operation and with  
30 such an abatement of force that the "after filling" of the bowl is effected.

With these ends in view our invention consists in the combination, with a tank, of a siphon located therein and having a starting-  
35 valve, an air-retarding chamber applied to the upper end of the siphon, and a body of retarding material located in the said chamber to break up and retard the passage of air through the same, whereby the siphon is  
40 broken gradually and the force of the water flowing through it correspondingly abated.

Our invention further consists in certain details of construction and combinations of parts, as will be hereinafter described, and  
45 particularly recited in the claims.

As shown in Figs. 1 and 2 of the drawings, the tank A is furnished with a siphon having a long leg B and a short leg B', the former being connected with the discharge-pipe C of  
50 the tank, while the latter is open and terminates just above the floor thereof. A branch

pipe D, located near the bottom of the tank and leading horizontally into the long leg B of the siphon, forms a seat for a starting-valve E, which is connected by a cord or chain F 55 with the inner end of an operating-lever G, arranged horizontally and hung in a bearing G', mounted upon the tank, the outer end of the said lever having the pull-cord H of the closet attached to it. At the bend of the siphon, or 60 where the legs B and B' thereof merge into each other, which is at their upper ends, they are provided with an internally-threaded collar I, which receives an exteriorly-threaded neck J, of corresponding diameter, located at 65 the lower end of a chamber K, which is thus secured to the upper end of the siphon and which we shall hereinafter speak of as an "air-retarding chamber," as that language describes its function. The said air-retarding 70 chamber K is filled with a body of retarding material L, such as sand, powdered charcoal, powdered quartz, or a fibrous substance, or anything that will break up or comminute and retard the passage of air through the 75 chamber. As an additional means of retarding the air in its passage through the chamber to the siphon and also of regulating the amount of air admitted thereto, we may employ in the upper end of the chamber two 80 correspondingly-perforated disks M and M', one of which is movable on the other, so as to vary the virtual size of the openings through them formed by the complete or partial registration of their perforations. As herein 85 shown, the pin M<sup>2</sup>, which unites them, has its upper end slotted to receive a screw-driver, whereby the upper disk may be rotated. The outer edges of these disks are clamped 90 between the upper edge of the chamber K and the flanged lower edge of a cap K', applied thereto and held in place by a threaded ring K<sup>2</sup>, as clearly seen by Fig. 2 of the drawings. The upper end of the said cap, which is in fact a part of the chamber, is adapted 95 to form a valve-seat K<sup>3</sup> for a valve N, pivotally mounted in an arm O, extending upward from the said cap. The said valve is furnished with an operating-arm N', the extreme outer end of which is perforated to receive 100 the threaded upper end of a float-stem P, on which it is secured by two nuts p p, located



above and below it, and adjusted according to the desired immersion of the float  $P'$ , attached to the lower end of the said stem in the water of the tank.

5 When the apparatus described is in its normal condition, which we assume to be its condition when it is ready to be discharged, the tank will be nearly filled with water, whereby the float will be elevated, so as to close the  
10 valve  $N$  down upon the valve-seat  $K^3$ , while at the same time the starting-valve  $E$  will be resting upon the valve-seat  $D'$ . When now the said valve  $E$  is momentarily lifted by the pulling of the cord  $H$ , the siphon is started  
15 and the water in the tank rapidly drawn off, during which time the valve  $N$  is held down tightly upon its seat  $K^3$  by the suction caused by the flowage of water through the siphon; but when the float has been nearly uncovered,  
20 owing to the discharge of water from the tank, it becomes as a weight, overbalancing the suction of the valve  $N'$ , and, dropping, suddenly raises the said valve from its seat. Air will now rush into the air-retarding chamber  $K$  through the valve-seat  $K^3$  and encounter first the perforated disks and then the retarding material within the chamber, whereby it will be so broken up and retarded in its progress that the siphon will be broken  
30 very gradually and without any perceptible noise from the inflowing air more than what we may call a "slight whiff." The siphon being thus gradually broken, the passage of water through it is correspondingly decreased  
35 in force, which is so lowered or abated that instead of being discharged from the bowl of the closet it remains in the same, which is thus "after-filled," as the term is. When the tank is refilled, the float rises again and closes  
40 the valve of the air-retarding chamber. By varying the adjustment of the regulating-disks and the density, quantity, or character of the retarding material, and also by varying the adjustment between the arm of the  
45 valve  $N'$  and the float-stem, the apparatus may be adjusted to break the siphon at any desired point and with comparative slowness or rapidity, as circumstances may call for.

In the construction shown by Fig. 3 of the  
50 drawings our invention is shown as applied to a bell or cone siphon, which comprises a cone  $Q$  and a vertical pipe  $R$ , located centrally therein and constructed at its lower end with a valve  $R'$ , which co-operates with  
55 a valve-seat  $S$ , located in the bottom of the tank  $T$ , from which a discharge-pipe  $U$ , arranged in alignment with the pipe  $R$ , leads, the upper end of the said pipe  $R$  terminating within the upper end of the cone. A chain  
60  $V$ , connected with the upper end of the cone, is employed for lifting and lowering it to start the siphon. To one side of the cone near its upper end we have applied an air-retarding chamber  $W$ , having a valve  $W'$  applied  
65 to it and connected by a stem  $X$  with a float  $X'$ , all of the said parts, so far as the chamber is concerned, practically corresponding in

construction and arrangement with the corresponding parts before described, and therefore not needing detailed description. 70

In the construction shown by Fig. 4 of the drawings the valve applied to the air-retarding chamber in the other constructions is dispensed with, and also the float connected with it. In this construction the siphon  $Y$  is provided at its upper end with an air-retarding chamber  $Z$ , filled with retarding material  $Z'$  and furnished with two regulating-disks  $a$  and  $a'$ , one of which is revoluble by a thumb-screw  $b$ , each being held in place by a flanged collar  $c$ , applied to the upper end of the chamber. In this case the siphon is provided with a starting-valve  $d$ , which is lifted by connections (not shown) with a pull-cord. Under this construction air will begin to be drawn  
85 by suction into the siphon as soon as the same is started by the momentary lifting of the valve  $d$ ; but the admission of air to the siphon through the said chamber is so gradual that the siphon is not broken until it has done its work, and then it is broken so gradually that it makes no appreciable noise and with such an abatement in the force of the water discharged through it that the bowl of the closet is after-filled. The action of the  
95 siphon in this case will be regulated as desired by varying the character, quantity, or density of the retarding material in the chamber and by adjusting the regulating-disks, if the same are employed, for, if desired, the  
100 said disks may be dispensed with.

It is apparent from the foregoing descriptions that our improved air-retarding chamber may be applied in various forms to various forms of siphons when the same are employed for flushing purposes. We would therefore have it understood that we do not limit ourselves to the exact constructions herein shown and described, but hold ourselves at liberty to make such changes and  
110 alterations therein as fairly fall within the spirit and scope of our invention.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is— 115

1. The combination, with a tank, of a siphon located therein and having a starting-valve, an air-retarding chamber applied to the upper end of the siphon, and a body of retarding material located in the said chamber and adapted to break up and retard the passage of air through the same, substantially as set forth, whereby the siphon is broken gradually and the force of the water flowing through it correspondingly abated. 125

2. The combination, with a tank, of a siphon located therein and having a starting-valve, an air-retarding chamber applied to the upper end of the siphon, a body of retarding material located in the said chamber and adapted to break up and retard the passage of air through the same, a valve applied to the open end of the said chamber, and a float located in the tank and connected with the 130



said valve, the operation whereof it controls, substantially as described.

3. The combination, with a tank, of a siphon located therein and having a starting-  
5 valve, an air-retarding chamber applied to the upper end of the siphon, a body of retarding material located in the said chamber to break up and retard the passage of air through the same, and two perforated regu-  
10 lating-disks, combined with the said chamber

for controlling the passage of air through the same.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

JOHN MENZIES.  
ROBERT MORGAN.

Witnesses:

FRED. C. EARLE,  
GEORGE D. SEYMOUR.