

No. 815,661.

PATENTED MAR. 20, 1906.

W. C. A. VISSING, JR.
CLOSET TANK.

APPLICATION FILED NOV. 28, 1904.

2 SHEETS—SHEET 1.

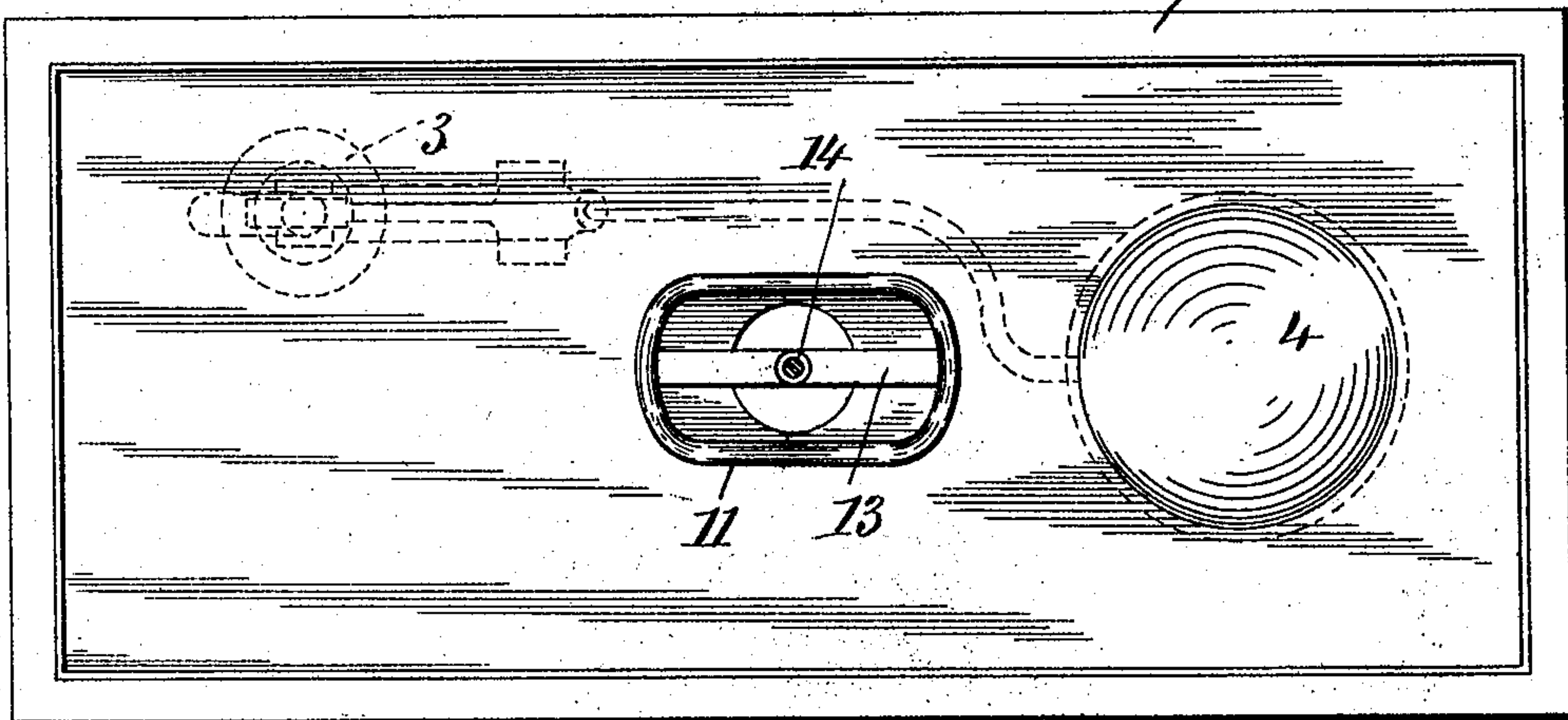
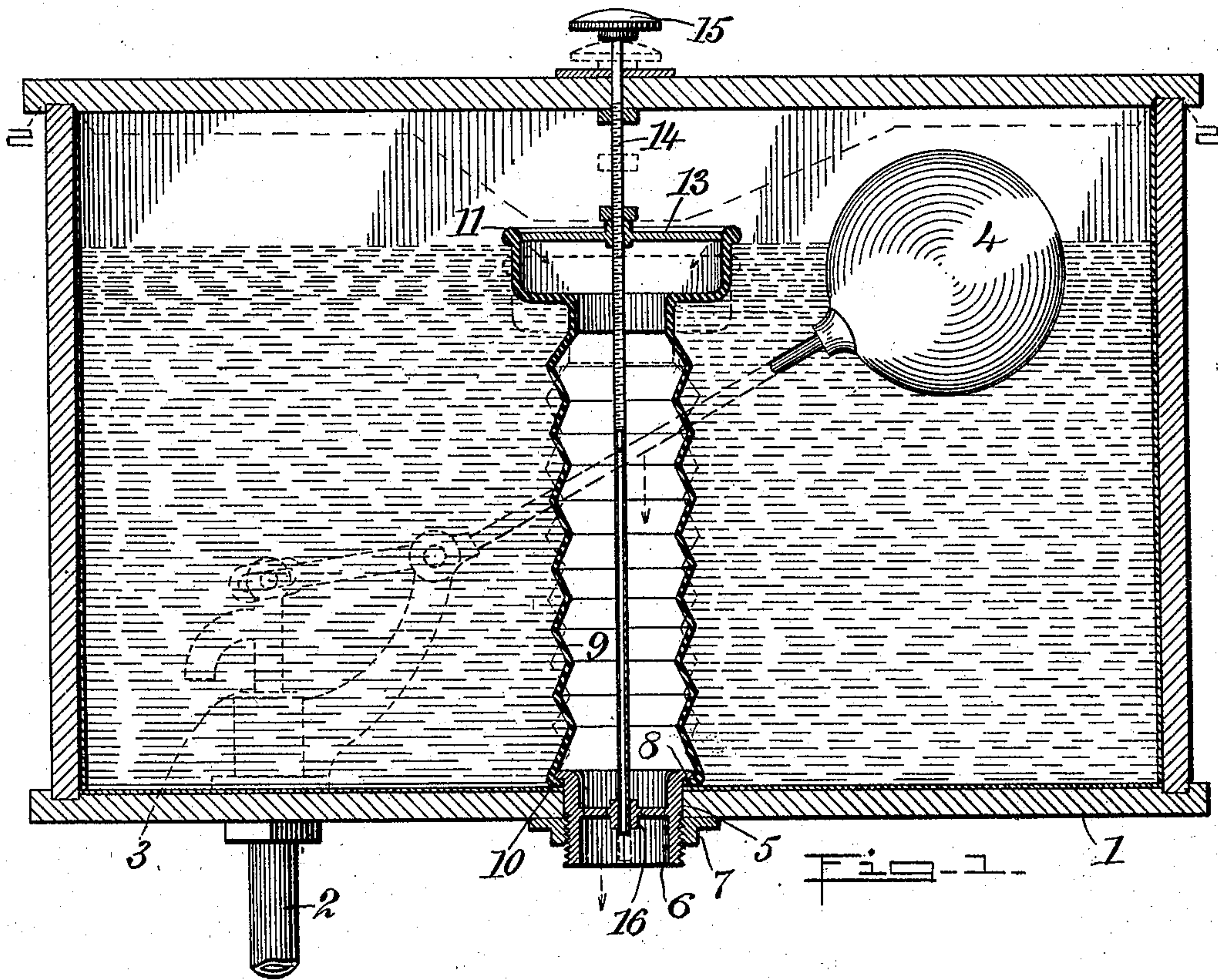


Fig. 2.

WITNESSES:

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A. E. Fay.

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ATTORNEYS

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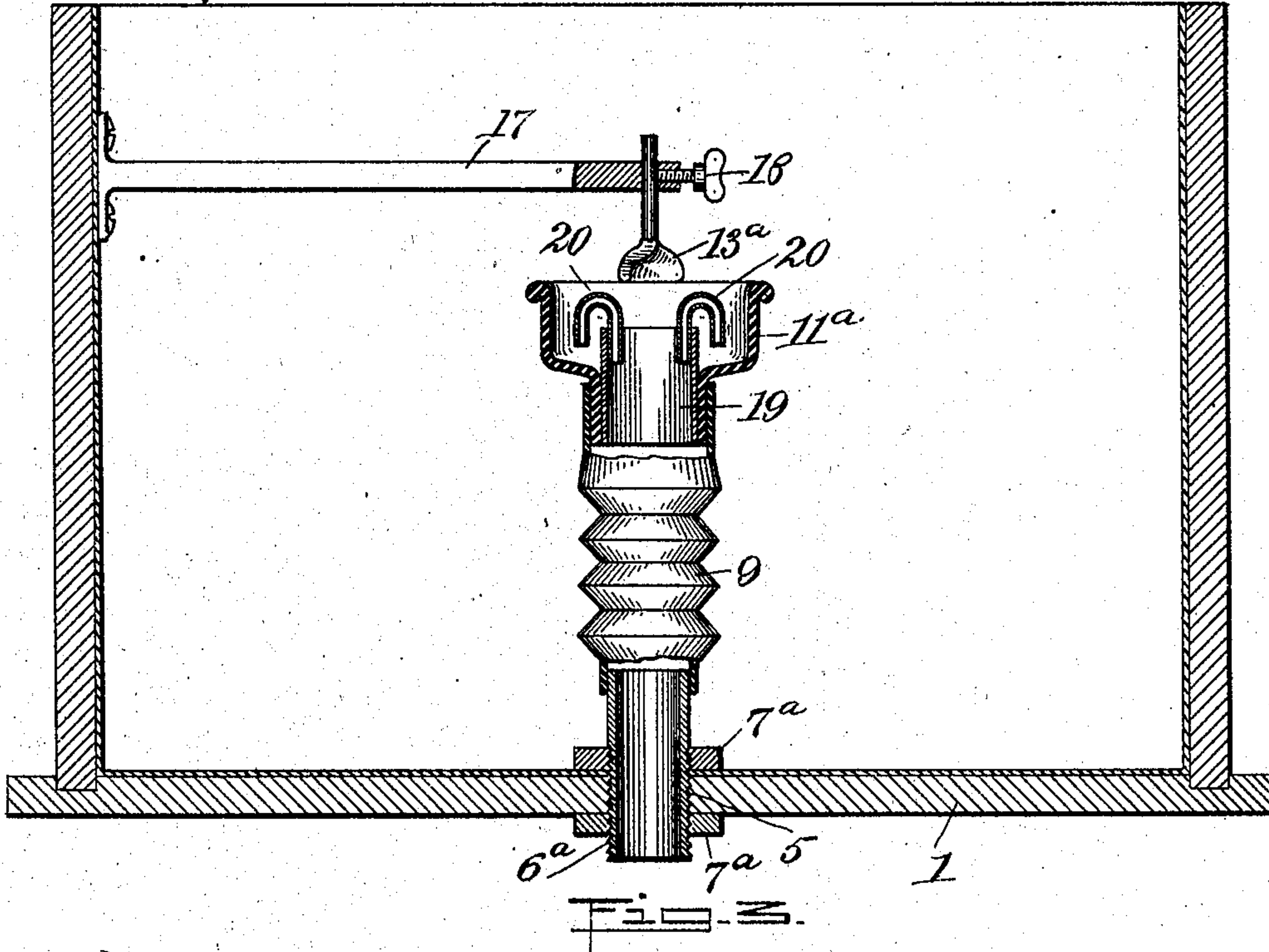
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UNITED STATES PATENT OFFICE.

WILLIAM C. A. VISSING, JR., OF SALT LAKE CITY, UTAH.

CLOSET-TANK.

No. 815,661.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed November 28, 1904. Serial No. 234,533.

To all whom it may concern:

Be it known that I, WILLIAM C. A. VISSING, Jr., a citizen of the United States, and a resident of Salt Lake City, in the county of Salt Lake and State of Utah, have invented a new and Improved Closet-Tank, of which the following is a full, clear, and exact description.

My invention relates to an improved closet-tank and valve therefor. Although I have given the invention this name, it is to be understood that it is capable of employment upon all kinds of tanks which are designed to be filled and emptied at intervals, either automatically or at the will of an operator, and while I describe the invention with especial reference to a closet-tank it is to be borne in mind that it is not limited to that application.

Closet-tanks as now constructed consist of several parts, sometimes containing as many as thirty or more. There are, therefore, many chances of their getting out of order, as is well known, and when the float is broken or fails to work they are likely to overflow, thus causing a great deal of damage. On account of the large number of parts the cost of manufacture is high, as well as the cost of maintenance. The washers which are used frequently leak and have to be replaced at short intervals.

The principal objects of my invention are to overcome these and other difficulties, so as to simplify, cheapen, and otherwise improve devices of this character.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a transverse sectional view of a tank, showing a practical form of my invention applied thereto. Fig. 2 is a sectional view of the same on the line 2 2 of Fig. 1, showing the interior of the tank in plan; and Fig. 3 is a sectional view of a modification which comes within the scope of my invention.

The tank 1 is provided with an inlet 2, controlled, as usual, by a valve 3 and a float 4 or in any other desired manner. It is to be understood that the inlet forms no part of my invention and that any ordinary or desired kind may be employed. The tank is also provided with an outlet 5, in which is placed a bushing 6, secured thereto by a collar 7, and a flange 8 upon the bushing. The valve which I prefer to employ consists of a receptacle or tube 9, so constructed as to be capa-

ble of changing its size, and preferably so constructed as to be collapsible longitudinally, although it will be readily observed that it could be constructed in any other way so as to obtain the desired result. In its preferred form this collapsible tube is formed of rubber and has a flange 10 at the bottom, which is engaged under the flange 8 of the bushing and is thus secured to the bushing and to the bottom of the tank, so that no water can pass between it and these two elements. At the top of the tube it is provided with an open-top cup 11, preferably integrally mounted upon it. The cup can be of hard or soft rubber, as desired. It will be readily understood that as this tube is collapsible, as stated, in a longitudinal direction it will, with the cup, fall to the bottom of the tank when no water is contained in the latter. When, however, water is admitted through the inlet 2, the cup will float with the water until the tube is stretched to a position such as that shown in Fig. 1, and while it is floating it will prevent the outlet of water through the bushing 6; but when the cup reaches its highest point, whether stopped by the tube itself or by a positive stop located in the top of the tank, the water will overflow the upper edges of the cup and fill it to a certain extent, so as to cause it to sink in the water. When this is done, the water will freely flow out of the tank until it is emptied to a point as high as the top of the cup, and it will again float as the water rises. The afterflow can be provided for in any desired way, as by a siphon, located with its long leg in the tube and its short one in the tank outside the tube. I prefer to employ a stop 13 for the cup in the form of a bar extending across it and adapted to engage with its opposite sides or ends. This stop is conveniently located upon a rod 14, which is screw-threaded, so that the stop may be adjusted to any desired height upon it. If a float 4 or any other device is employed for stopping the inlet of water before it reaches the top of the cup when in its highest position, the valve will not work automatically, as stated above. In this case means is provided for depressing the cup in the water, so as to permit it to be filled. The form of device which I have illustrated for accomplishing this result is the rod 14 and a push-button 15, attached thereto, in combination with the stop 13. It will be readily observed that the depression of the rod and stop will lower the cup below the sur-

face of the water and permit the whole device to sink in the water. It will be apparent that instead of a push-button a lever or any ordinary connection, such as those usually employed in tanks of this character, may be used.

The rod 14 is guided by an opening in the top of the tank through which it enters and by a spider 16 in the bushing 6. The rod is also made hollow, so as to lessen the work which will have to be done by the cup in raising it when the water is admitted again to the tank. The size of the cup will therefore be lessened from that which would have to be employed if a solid rod were used.

Although, as has been explained, the form shown in Figs. 1 and 2 could be operated automatically, the form shown in Fig. 3 is more especially adapted for that purpose. In this form the tank 1 is provided with an outlet 5, as before, and with a bushing 6^a passing through it. This bushing is secured by means of nuts 7^a or in any other desired manner. The tube 9 is secured to the top of the bushing and to the bottom of a cup 11^a, so as to prevent the passage of water through the joints. A stop 13^a is provided for the top of the cup, and this is mounted on a support 17 and capable of being secured in adjusted positions by means of a thumb-screw 18, so that the height to which the level of the water is allowed to reach may be regulated. It is understood that the regulation in both cases is preferably made when the device is installed and that having once been regulated it will not be necessary to interfere with it afterward. The cup is provided with a tube or the like 19, attached to its lower portion and extending thereabove so as to form a receptacle between it and the walls of the cup for holding water, so as to insure the sinking of the cup when the level of the water reaches the desired height. This tube is provided with siphons 20 to empty the cup after the tank has been emptied. It is believed that the operation of this modification will be readily understood and need not be described in detail.

It is to be noticed that the working parts of the tank are by this invention greatly reduced in number, there being only eight instead of thirty-four, as is the case with one kind of tank which is very much used. There is nothing, also, to get out of order except the collapsible tube itself, and as this can be made of the best quality of rubber it will last for several years, and if it becomes necessary to replace it this can be very readily and cheaply done, because the tube itself can be purchased for a small sum. With a device constructed upon this principle there are no washers which can miss their seats, no chains that can become unfastened, no levers that can get sprung, and no weights that can get caught and refuse to work. The other acci-

dents that are so common in modern tanks will also be avoided and no repairs will be needed until the tube and cup give out, and it is believed that with the quality of rubber employed these will last as long as the copper lining of the tank. On account of the reduction in the number of parts and the additional simplicity of the device the cost for all the trimmings will be greatly reduced over those of the tanks in use at the present day. The periodical expense of replacing worn-out washers in the tanks now in use will be entirely avoided.

No tank can be more safely equipped in the matter of overflow than the present one. It will be seen that it will positively carry off all water that the ball-cock may furnish, even if the float should break off and the arm fall to the bottom, as is often the case. The water leaving the tank not having to pass through a siphon is discharged with much less noise than is at the present time the case. It is as direct and positive as it is possible to make any outlet, being nothing but an opening in the box, and it empties as quickly as is possible.

The automatic feature shown in Fig. 3 can obviously be applied to the form shown in Fig. 1 for safety, if desired, and consequently the operation of the device will be insured under all conditions.

While I have illustrated and described only two modifications of my invention, it will be readily understood that it is capable of embodiment in many other forms and that it is capable of use for many other purposes than that which has been mentioned.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with a closet-tank having an inlet and an outlet, of a valve for said outlet, comprising a collapsible tube surrounding the outlet at one end, a cup upon the upper end of the tube adapted to float, and an adjustable stop for preventing the cup from rising above a certain level.

2. The combination with a closet-tank having an inlet and an outlet, of a valve for said outlet comprising a collapsible receptacle secured around the outlet at one end, an open-top cup mounted at the other end of the receptacle and adapted to float, and means for forcing the cup below the surface of the water in the tank; said means comprising a stop adapted to engage with said cup, a movable rod upon which said stop is mounted, and means for moving the rod.

3. A flush-valve comprising a collapsible tube having one end secured in a stationary position, an open-top cup mounted at the other end of said tube and adapted to float, and means for forcing the cup toward the stationary end of the tube; said means comprising a stop adapted to engage the cup, a

rod on which said stop is mounted, and means for moving the rod.

5 4. A flush-valve comprising a collapsible tube having one end secured in a stationary position, a cup mounted at the other end of said tube, a movable rod passing into the tube, a stop adjustably mounted on said rod and adapted to engage the cup, and means for moving the rod.

10 5. A flush-valve comprising a bushing having a flange upon its inner end, a collapsible tube secured beneath said flange and surrounding the latter, said tube being provided with an integral cup-shaped open upper end, and an adjustable stop adapted to extend across and engage the upper edges of said cup.

15 6. A flush-valve comprising a bushing having a flange upon its inner end, said bushing having a spider upon the inside thereof, a

collapsible tube secured beneath said flange and surrounding it, said tube being provided with an open-top cup integrally mounted upon its end, a hollow rod passing through and guided by said spider, said rod being provided with a screw-threaded portion and with a push-button, and a bar adjustably secured upon the threaded portion of said rod and adapted to engage the upper edges of said cup for limiting the height to which the cup can be floated by water.

30 In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM C. A. VISSING, JR.

Witnesses:

G. H. BACKMAN,
EDGAR HOWE.