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2,188,457

VALVE MECHANISM FOR WATER CLOSETS

Filed Dec. 28, 1938.

2 Sheets-Sheet 1

Fig. 1

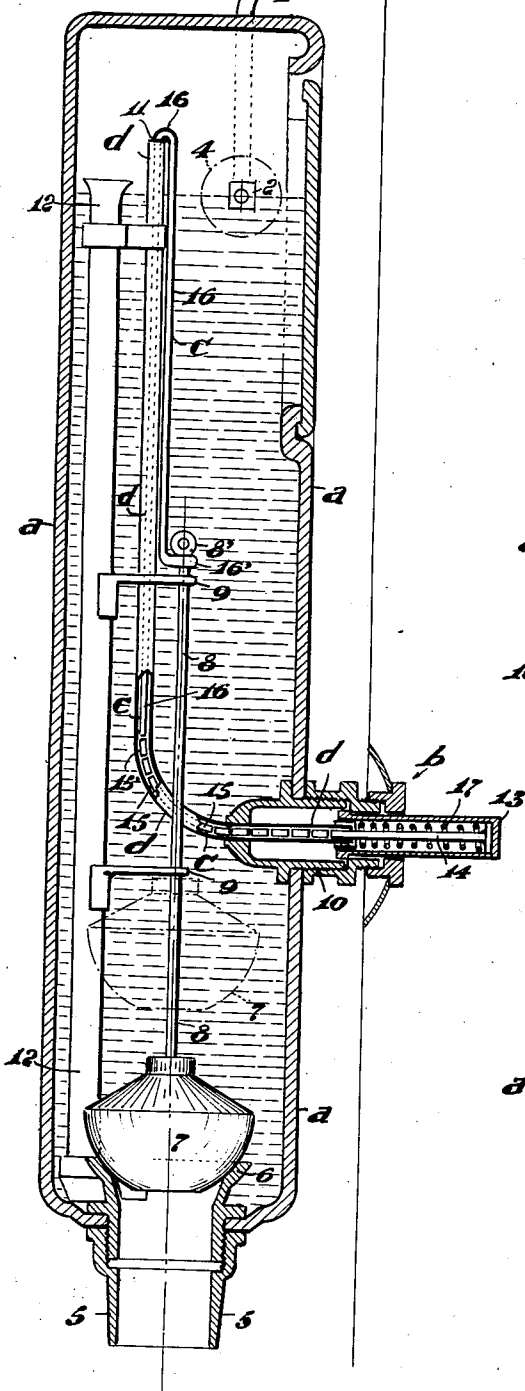
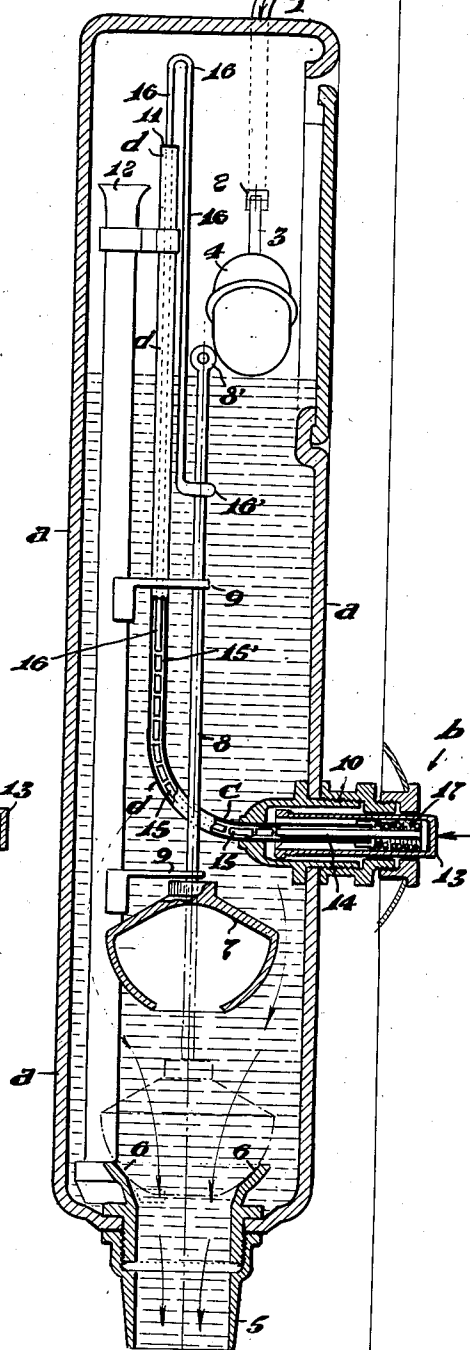


Fig. 2



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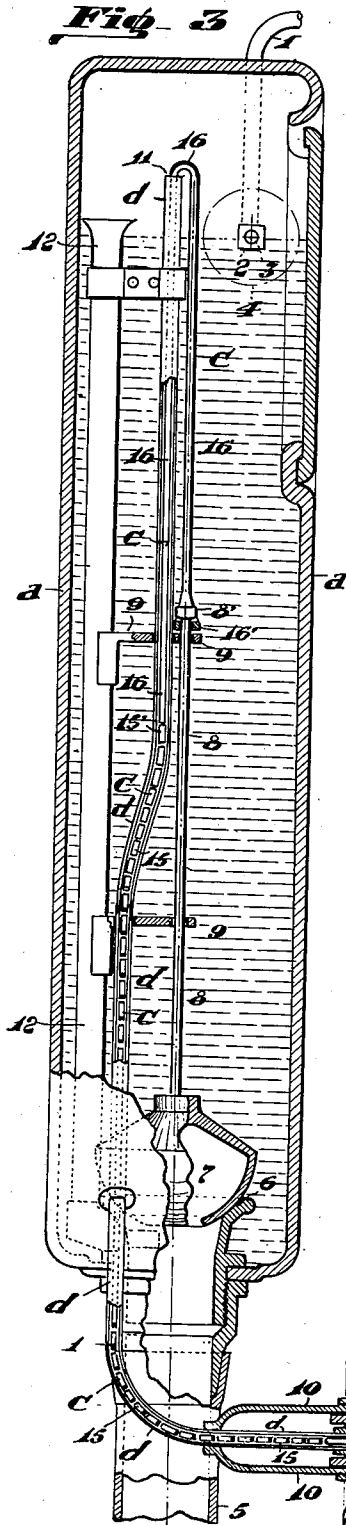
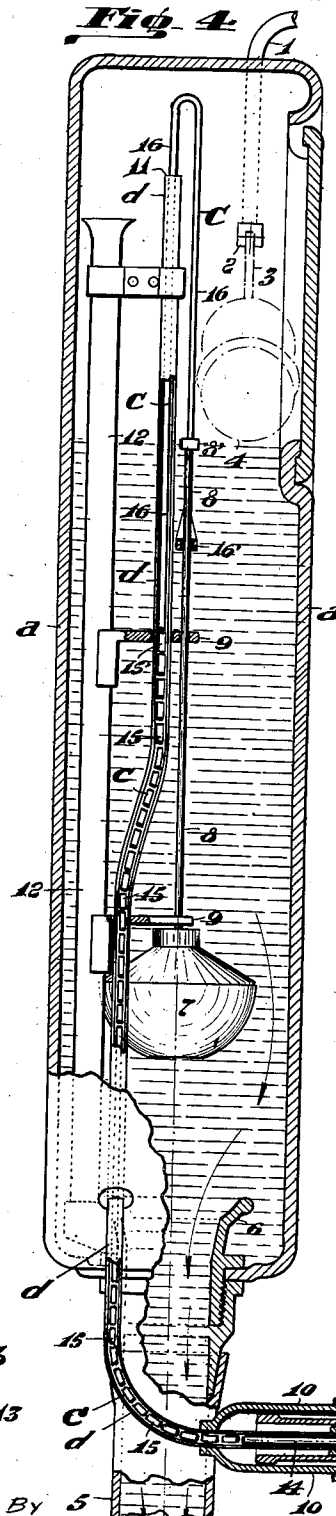
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VALVE MECHANISM FOR WATER CLOSETS

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3 Claims. (Cl. 4-67)

This invention relates to improvements in apparatus for washing water closets, and has for its main object the provision of an apparatus which presents important advantages over all other types of water-closet washing devices known and used heretofore.

A further object of the present invention is to provide an apparatus of this nature which will be light to operate, as it is free from packing glands or other sealing elements, regardless of the fact that the control thereof is located on the lower part, as it comprises a transmission protected so that the means constituting the actuating mechanism are isolated from the liquid contained in the reservoir. For this purpose, the reservoir comprises a conduit or channel leading from an opening in the front wall thereof, through said reservoir and to its upper portion, where it ends with a corresponding opening above the maximum level of the free surface of the water, and as the conduit or channel carries the transmission means connecting the hand control device to the guided rod of the floating closure, the liquid contained in the reservoir is only in contact with the means leading downwards from the terminal of said conduit or channel, so that the water cannot at any time reach the button or other control means. In this manner, it is possible to keep the transmission mechanism contained in said conduit perfectly lubricated so as to insure the good working thereof, as well as a smooth operation. Also, it requires no packing glands or sealing means and therefore admits the free work without necessitating additional springs, as the weight of the parts forming the ascending column may be used to render normal and return to their initial position all the parts forming the mechanism, after the opening of the closure or obturator.

A further object of the invention is to provide an apparatus of the type described which consists of a single transmission means housed in the conduit or channel in such a manner that the actuation of the button or like control means will reflect on the upper portion or terminal of the device, wherefrom the depending member will pull the guided rod of the floating obturator. A special feature of the invention resides in the means used for transmitting the motion through the angle formed between the control line and the downward line, which comprise a plurality of segments connected to the stem of the control button, the opposite portion of said segments being connected to the ascending rod housed within the conduit and which is in turn con-

nected to the guided rod of the obturator. As said segments are guided on an axial rod or by the walls of the conduit, they slide without any difficulty upon being driven by the button, in such a manner that a perfect and smooth transmission is obtained.

In order that the invention may be more clearly understood and readily carried into practice, same has been illustrated by way of example and in a preferred embodiment in the accompanying drawings, wherein:

Figure 1 is a vertical side section of the sanitary apparatus in charged position, showing the conduit housing the transmission which in this case starts at the control device located on the front wall of the reservoir. This figure also shows the maximum liquid level which is passed by the protecting conduit or channel so as to render the upward line independent from the transmission ending in a downward portion with means for taking and lifting the rod of the floating obturator.

Figure 2 shows the same unit as Figure 1 but in discharge position in response to the action of the button or other control means which, through the transmission housed in the protecting conduit, raises the obturator, allowing the passage of the liquid to the water closet.

Figure 3 is a side vertical section of the apparatus in full charge, showing a modification in the transmission and control device, which in the present case is located underneath the body of the reservoir, so that the protecting conduit enters from the lower portion thereof and, as in the case of Figures 1 and 2, leads upwardly over the maximum liquid level, from where the transmission leads downwardly for connection to the float rod; and

Figure 4 shows the same unit as Figure 3, illustrating the control action for the discharge.

The same reference characters indicate like or corresponding parts or elements throughout the different figures.

With reference to the drawings, *a* indicates the reservoir which is as usual fed by a pipe having a valve 2 which by means of the rod 3 depends from the float 4, so that the incoming liquid, upon reaching the maximum level, will raise the float, closing the valve and thereby the feed.

The lower portion of the reservoir is provided with an outlet to the discharge pipe 5, and this outlet has a seat 6 for the floating obturator 7. The lower portion of the obturator 7 is open, so that the weight of the liquid will effect a water-

tight seal, said float being connected to a rod 8 slidable on guides 9 so that the float, on being pulled from the top, that is to say, from the rod 8 thereof, may be raised maintaining its position by means of said guides 9. This means that the opening of the obturator is effected by a pulling action from the top, but as the reservoir may be located at a certain height to insure the perfect discharge thereof, and therefore the control means cannot be located above the reservoir as it would remain out of reach, the device *b* constituting the control element is located on the lower portion, so that the box 10 thereof is fixed direct to the front wall of the reservoir, as shown in Figures 1 and 2, or to the lower portion of the reservoir, as shown in Figures 3 and 4. However, as with this arrangement it could not operate without sealing means and without the danger of water filtrations, the deriving and transmission means thereof, instead of being directed straight to the liquid mass are directed upwardly enclosed in a protection conduit which renders same entirely independent and isolated from the liquid contained in the reservoir.

For this purpose, the transmission means indicated at *c* are housed in the conduit *d* which, due to its application, constitutes the main object of the present invention. Said conduit *d* is coupled to the box 10 of the control device *d* so that in the case of Figures 1 and 2, it starts from an opening in the front wall of reservoir *a*, and in the case of Figures 3 and 4, the conduit *d* passes through the bottom or wall of the same reservoir. As may be seen in the drawings, the conduit or channel *d*, after passing through the reservoir is directed vertically upwards towards the upper portion thereof, where said conduit is provided with an opening 11 located above the upper maximum level of the liquid; thus, the interior of the conduit or channel *d* is kept perfectly isolated from the liquid, so that the transmission *c* will operate dry or, if desired, lubricated in the usual manner to render the operation smoother and increase the life of the mechanism. Thus, the independence of the interior of conduit *d* is insured not only during the normal operation of the apparatus but also in emergency cases, since the mouth 11 of said conduit is located above the mouth of the overflow pipe 12, so that in case the valve 2 should fail, the liquid would flow through said overflow pipe 12 before reaching the interior of said conduit.

The device *b* comprises a button 13 ending in a stem 14 which enters the conduit *d* and is guided therein on being pressed as shown in Figure 3. Following said stem are a series of segments 15 which may be annular or have the shape of small solid cylinders. The size of the segments 15 will be in accordance with the cross-section of the tubular conduit *d*, so as to be maintained in correct alignment guided by the walls of the conduit.

The last segment 15' is connected to the rod 16 guided in the upwardly directed portion of the same conduit *d* and projects through the opening 11 which, as already stated, is located above the maximum upper water level. Said rod 16 is turned at an angle of about 180° and extends out of the conduit *d* in the opposite direction, that is to say, downwardly; by means of a hook 16'

said rod is connected to the rod 8, the latter being provided with a head 8' so that on raising the rod 16 the hook 16' will engage said head 8', thereby pulling the rod 8 which brings the obturator 7 upwardly. Said obturator leaves its seat 6 and floats, causing the discharge of the water contained in the reservoir, as shown in Figures 2 and 4.

Therefore, the transmission *c* is constituted by the segments 15 and rod 16, as through this transmission the action of the button 13 reflects on the obturator 7 to lift same and cause the discharge, and as the rod 16 and segments 15 form a linear column, after pressing the button 13 to open or raise the obturator 7, the transmission returns to its normal position by its own weight, although this action may be aided with an auxiliary spring 17 so arranged in the control device *b* that it will press the button 13 towards its initial position indicated in Figures 1 and 3. The liquid in reservoir *a* passes through the pipe 5 to the water closet to which the apparatus has been connected, and once the water has been entirely eliminated the obturator falls by its own weight on the seat 6 closing the outlet to admit a new charge.

Instead of segments 15, other elements may constitute the transmission *c*, provided the latter is housed in the protecting conduit which extends above the maximum liquid level.

It is evident that several modifications in construction and detail may be introduced without departing from the scope of the present invention as clearly set forth in the appended claims.

What is claimed is:

1. In a valve mechanism for water closets having a reservoir the discharge pipe of which is provided with a float valve dependent upon a transmission responsive to a control button: a transmission formed with a rod turned at substantially 180° into an elbow, one arm of said rod acting within a shielding tube serving to avoid the contact thereof with the water, said arm being also coupled to the rest of the transmission responsive to the control button, the other arm of said rod extending downwardly to engage the rod of said float valve.

2. In a valve mechanism for water closets having a reservoir the discharge pipe of which is provided with a float valve dependent upon a transmission responsive to a control button: a transmission extending upwardly within a shielding tube and turned at substantially 180° into an elbow, directed downwardly and engaging the rod of said float valve, a portion of said transmission formed by segments housed within the angle or curves of said shielding tube, and a control button connected to said transmission segments.

3. In a valve mechanism for water closets having a reservoir the discharge pipe of which is provided with a float valve dependent upon a transmission responsive to a control button: a rod turned at substantially 180° into an elbow, forming two arms, one of said arms being housed within a shielding tube and connected to segments dependent upon the control button, and the other of said arms being connected so as to pull and lift the discharge float valve.

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