(No Model.) 2 Sheets—Sheet 1.

C. P. HOWARD.

WATER CLOSET.

No. 537,288. Patented Apr. 9, 1895.

Fig. 1

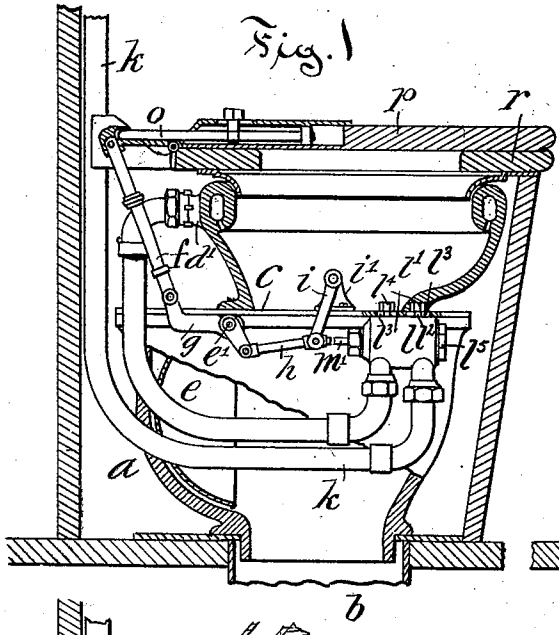


Fig. 2.

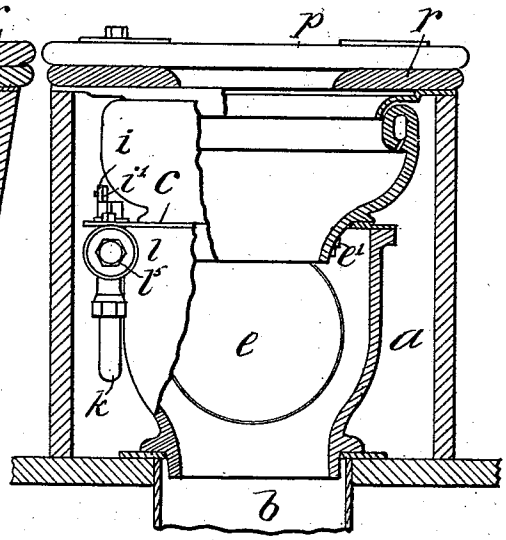


Fig. 3.

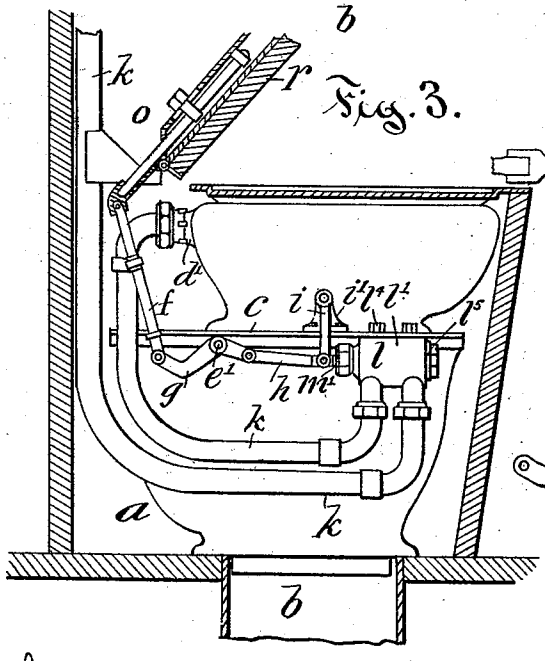


Fig. 4.

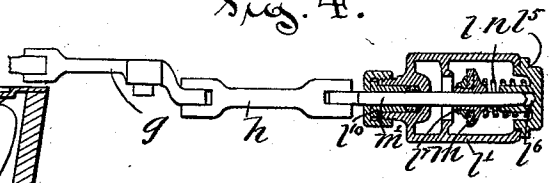
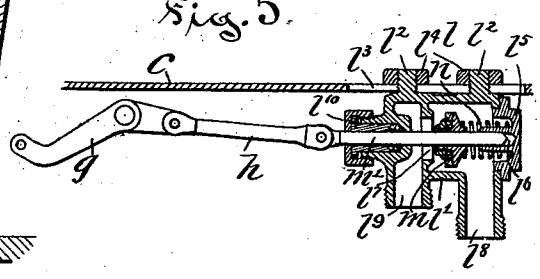


Fig. 5.



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(No Model.) 2 Sheets—Sheet 2.

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WATER CLOSET.

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Fig. 6.

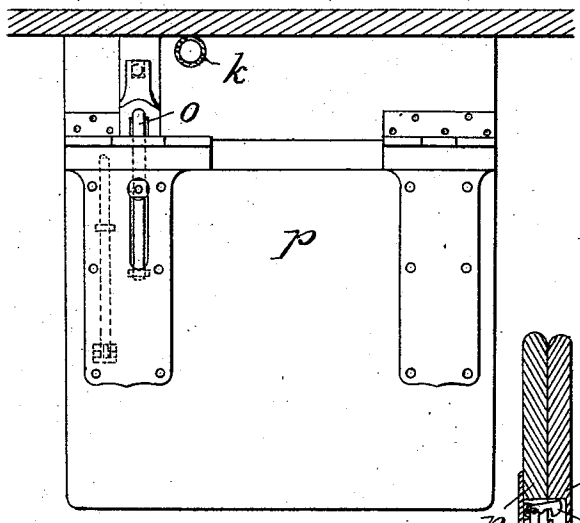


Fig. 7.

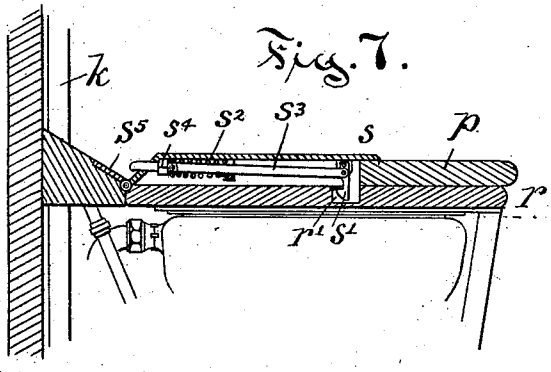
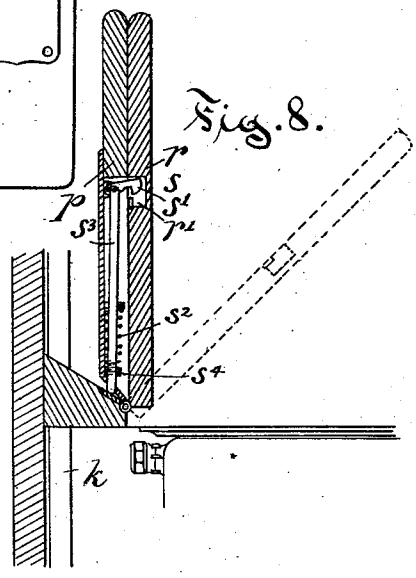


Fig. 8.



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UNITED STATES PATENT OFFICE.

CHARLES P. HOWARD, OF HARTFORD, CONNECTICUT.

WATER-CLOSET.

SPECIFICATION forming part of Letters Patent No. 537,288, dated April 9, 1895.

Application filed January 19, 1894. Serial No. 497,392. (No model.)

To all whom it may concern:

Be it known that I, CHARLES P. HOWARD, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Water-Closets, of which the following is a full, clear, and exact description.

The object of my invention is to provide an apparatus which shall be particularly applicable for use on railway cars as a urinal and closet, but it is not limited in its application to use in any particular location, nor to any special kind of water closet.

My invention consists in the details of the several parts relating to the water supply and means for controlling it, and also to the lid and cover device for connecting them; and it further consists in the details of the several parts making up the apparatus as a whole, and in the combination of the parts, as more particularly hereinafter described and pointed out in the claims.

Referring to the drawings: Figure 1 is a detail view in side elevation of a closet embodying my invention, with parts cut away to show construction. Fig. 2 is a front elevation of the same with parts cut away in vertical section. Fig. 3 is a detail view in side elevation of the apparatus, with parts cut away to show construction. Fig. 4 is a detail plan view on enlarged scale showing the valve in section and a part of its operating mechanism in plan. Fig. 5 is a detail view in central section through the valve and showing the connecting mechanism in side elevation, on enlarged scale. Fig. 6 is a detail plan view of the closet. Fig. 7 is a detail view is section through the seat and cover showing them in a closed position, the plane of section passing through the cover catch. Fig. 8 is a detail view in section of the seat and cover in a raised position and illustrating the operation of the cover catch.

In the accompanying drawings the letter *a* denotes a hopper, which may be of ordinary construction, fitted to overlie an opening *b* and having on its upper surface a cover plate *c* of thin metal. This plate supports a lever to which the lower end of the pull rod *f* is pivoted.

My invention is described and illustrated herein in connection with a pan closet, but in none of its features is it necessarily limited to that form of sanitary apparatus, although it finds its best use in connection with that specific form of structure.

The pan *e* is supported on a pivot shaft *e'*, the end projecting beyond the side of the hopper so as to enable a bent lever *g* to be secured to the end of the shaft. A pull rod *f* is connected to one arm of the bent lever and its upper end is arranged in position to be controlled from above the lid. The other end of the lever is connected to a rod *h* pivoted to a toggle arm *i*, the latter being hinged or pivoted to a bracket *i'* which is secured to the cover plate *c*. A water supply pipe *k* extends from a suitable source of water supply, as a tank, and is connected to the bowl-inlet *d'*, a valve *l* being arranged in the line of the supply pipe.

The valve body *l'* is secured to the cover plate *c* by means of the threaded projections l^2 which extend through a slot l^3 in the cover plate, nuts l^4 serving to clamp the valve body in any desired position of adjustment along the lower surface of the plate and within the limits of the slot. The valve body is closed at one end by a cover l^5 threaded and screwed to place but looking outward in convenient position to enable the parts of the valve to be easily removed for the purpose of renewal or repair. The cap l^5 has a guide socket l^6 into which the end of the valve stem *m'* projects, the valve *m* being located within the valve body on the stem and having a packing fitting the valve seat l^7. A spring *n* located between the inner surface of the cap and the back of the valve operates to hold the valve normally in contact with the valve seat with a yielding pressure and this closes the fluid way through the valve, the water entering through the inlet l^8 and passing out through the outlet l^9. The end of the valve stem projects through a stuffing box and gland l^{10} and is arranged with its end in the line of movement of the end of the rod *h*.

When the pan *e* is in its lowermost position a slight space is left between the end of the rod *h* and the outer end of the valve stem, but when the pan is lifted into a position for use and in which it can hold water the swinging movement of the link *i* carries the end of the rod into contact with the end of the valve stem and thrusts the valve away from its seat

opening the way through the valve and providing for an inflow of water into the bowl and pan.

The valve operating mechanism is preferably connected, as by means of a bolt *o* and pull rod *f*, with the cover *p* so that the lifting of the latter causes the valve to be operated. The valve operating mechanism, however, is so arranged that the valve is both opened and closed by a single complete lifting or closing movement of the cover, the valve being fully opened when the parts are in the position shown in Fig. 3 of the drawings, but closed when the cover is down as shown in Fig. 1, and also when it is fully opened. The length of time during which the cover is held in the position indicated in Fig. 3 will determine the duration of the maximum flow of water through the valve, but it is intended that a proper supply sufficient to fill the pan shall be discharged during each of the opening and closing movements of the cover. The quantity of water supplied to the pan by the lifting movement of the cover is intended to put the latter in condition for use while the supply thrown in by the closing of the cover is intended for flushing purposes, the pan at that time being open to a greater or less extent.

When the cover and valve operating mechanism are connected as illustrated a complete movement of the cover from the open to the closed position gives always the same extent of swinging movement to the end of the rod *h*, but the valve body may be adjusted with reference to the rod so that the end of the latter will not strike the end of the stem until after the swinging movement is begun, and this enables the time during which the valve will, under usual circumstances, be held open to be adjusted, owing to the permissible movement of the valve body. The pipes which are connected to the valve body are usually of lead and sufficiently flexible to allow of the adjustment of the valve body to effect this purpose.

A main object of this construction of parts as described is to provide a water closet which shall, by the opening movement of the closet raise a pan into position for use and pour into the pan an initial supply of water. After the use of the closet the closing of the lid automatically drops the pan, dumps the contents and throws through the bowl a second supply of water for flushing out the latter.

In connection with a closet of this description it is desirable to provide means which will enable it to be used not only as a urinal but for other sanitary purposes and prevent the seat or lid from being soiled when the closet is used as a urinal. To this end the cover *p* and the seat *r* are connected by a catch *s* which is automatic in its operation and fastens the two together when they are in their lowermost position and causes the seat *r* to be lifted each time that the cover *p* is raised.

The seat catch consists of a hook s' adapted to enter a socket r' in the cover and engages an overhanging lip in which position it is held as by means of a spring s^2 which is arranged on the trip rod s^3 with one end thrusting against a shoulder on a cover plate and the other against a nut s^4 or pin fast to the rod s^3. This push rod extends through a hole in a rear plate or cover of the socket so that when the cover is lifted the end of the push rod comes into contact with a striker plate s^5 and is thrust inward against the impulse of the spring.

Both the seat *r* and cover *p* are hinged with the pivots of the hinges in substantially the same line, that is the seat is hinged to the back post by a hinge at its upper edge while the cover is hinged to the same back post by a hinge formed at its lower edge. This arrangement of hinges enables the cover and lid to lie flat upon each other and keeps these surfaces substantially in contact with each other while the cover and seat are being raised.

The trip is operated and the seat catch caused to release the seat when the parts have reached substantially the position indicated in Fig. 8 of the drawings. The cover and seat are held in the raised position if the apparatus is to be used as a urinal, and if the seat is needed it can be closed down into position for use. As soon as the cover is closed it automatically re-engages the seat and provides for the certain lifting of the latter when the bowl is again uncovered by raising the cover.

In the form of apparatus shown the bolt *o* and the seat catch and its operating mechanism are supported on the hinge strap or cover plate, but it is obvious that these parts may be changed in detail and other forms adopted without departing from the invention.

A special feature of improvement resides in the construction and arrangement of the valve and its stem. These parts are readily removed by unscrewing the cap l^5 from the valve body and withdrawing them. The end of the valve stem is arranged so that it is moved by a swinging movement of the link *i* but is not connected or attached to the contact piece. When it is desired to repack the valve the closing of the stop cock in the supply pipe is all the protection needed and the removing and repacking of the valve is a simple operation.

The cover and seat connecting mechanism are not limited to any particular form of closet, whether a water closet or an earth closet, nor is the apparatus limited to use in connection with any special form of water closet, as changes may be made in these regards without departing from the several described features of invention, and I do not limit myself to the particular device or exact arrangement of related parts as illustrated and described herein.

In the following claims the term water

closet is used as describing the device as a whole rather than a particular form or class of such a sanitary appliance.

I claim as my invention—

1. In combination in a water closet, a water supply pipe, a lengthwise adjustable valve body, a valve located in the valve body and normally closing the fluid-way therethrough, the valve stem projecting beyond the valve body and with its end located in the path of movement of but disconnected from a contact piece forming part of the valve operating mechanism, and the valve operating mechanism, all substantially as described.

2. In combination in a water closet, a water supply pipe, a lengthwise adjustable valve body, a valve located in the valve body and normally closing the fluid way therethrough, the valve stem projecting beyond the valve body and with its end in the path of movement of but disconnected from a contact piece, the contact piece pivotally connected with one end of a bent lever, the bent lever pivoted between its two ends, and a hinged cover pivotally connected with the opposite end of the bent lever whereby the valve is opened and closed in a single opening or closing movement of the cover, all substantially as described.

3. In combination in a water closet, a water supply pipe, a valve located in said supply pipe and normally closing the fluid way therethrough, a valve stem projecting beyond the pipe with its end located in the path of movement of but disconnected from a contact piece, the contact piece pivoted to the end of a toggle arm, the toggle arm, a connecting rod pivoted to the toggle arm and to one end of a bent lever, the bent lever pivoted between its two ends, and a hinged cover pivotally connected with the opposite end of the bent lever, all substantially a described.

4. In combination in a water closet, a water supply pipe, a valve located in the supply pipe and with a stem projecting therefrom and with its end in the path of movement of but disconnected from a contact piece, the contact piece pivotally connected with one end of a bent lever, the bent lever secured between its ends to a shaft, the shaft, a pan secured to the shaft, and a hinged cover pivotally connected with the opposite end of the bent lever, all substantially as described.

5. In combination in a water closet, a water supply pipe, a valve located in the supply pipe and with its end projecting in the path of movement of but disconnected from a reciprocating contact piece, the contact piece pivotally connected with one end of a bent lever, the bent lever secured to a rock shaft, the rock shaft, a pan also secured to said shaft, a pull rod secured to the opposite end of the bent lever, a swinging cover, and an adjustable bolt secured to the pull rod and to the cover, all substantially as described.

6. In combination with a bowl or like receptacle, a fixed support, a seat and a cover hinged to the fixed support at adjacent edges and with their pivots in substantially the same axial line, and an automatic catch detachably connecting the seat and cover in the closed position and with a projecting part of the catch adapted to encounter the fixed support as the cover reaches a raised position in its swinging movement, all substantially as described.

7. In combination in a water closet, a hinged seat, a hinged cover, a catch attached to one part and adapted to engage the opposite part, a trip rod operatively connected with the catch, and a striker plate located in the path of movement of the trip rod, all substantially as described.

8. In combination in a water closet, a hinged seat, a hinged cover, a catch pivoted to the cover, a spring retained trip rod operatively connected with the catch, and a striker plate located in the path of movement of the trip rod whereby the catch is automatically disconnected, all substantially as described.

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