(No Model.)

J. H. JOHNSON.

STOP AND WASTE COCK.

No. 354,148. Patented Dec. 14, 1886.

Fig. 1.

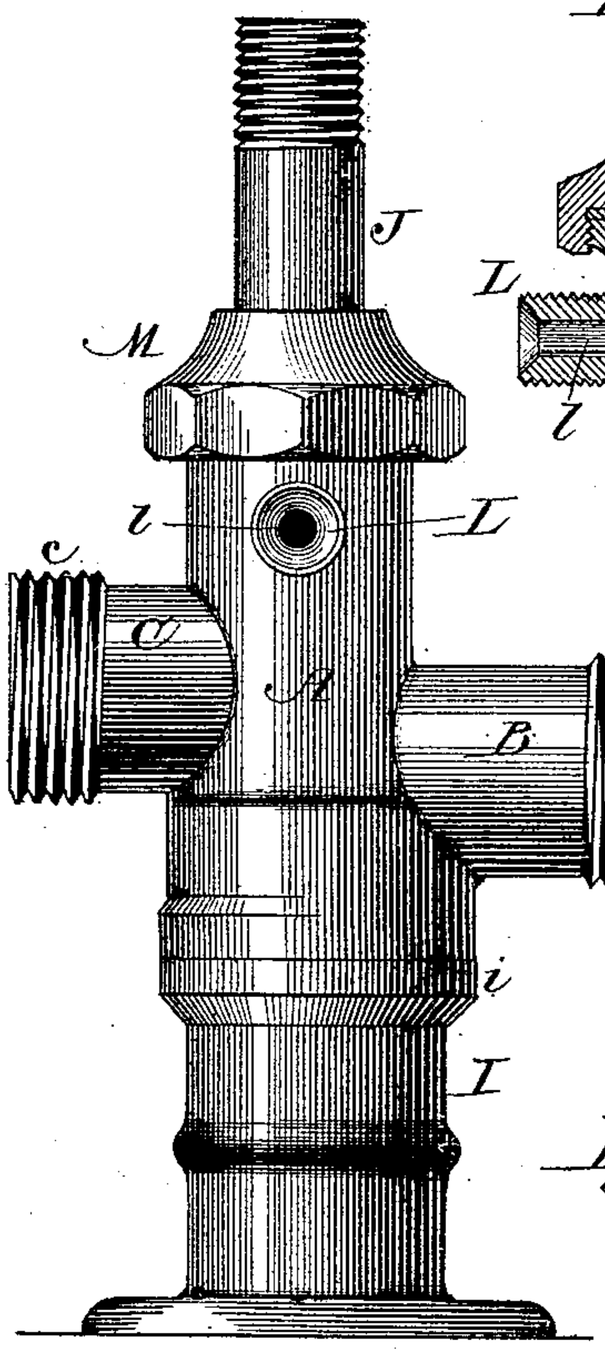


Fig. 4.

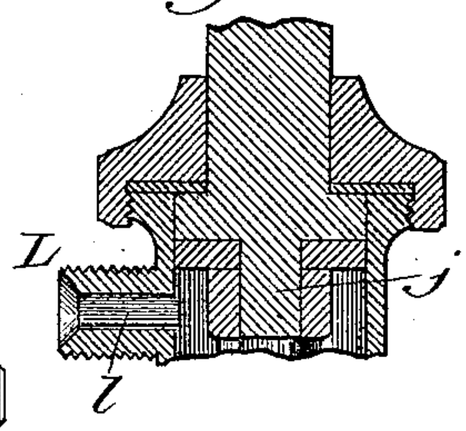


Fig. 2

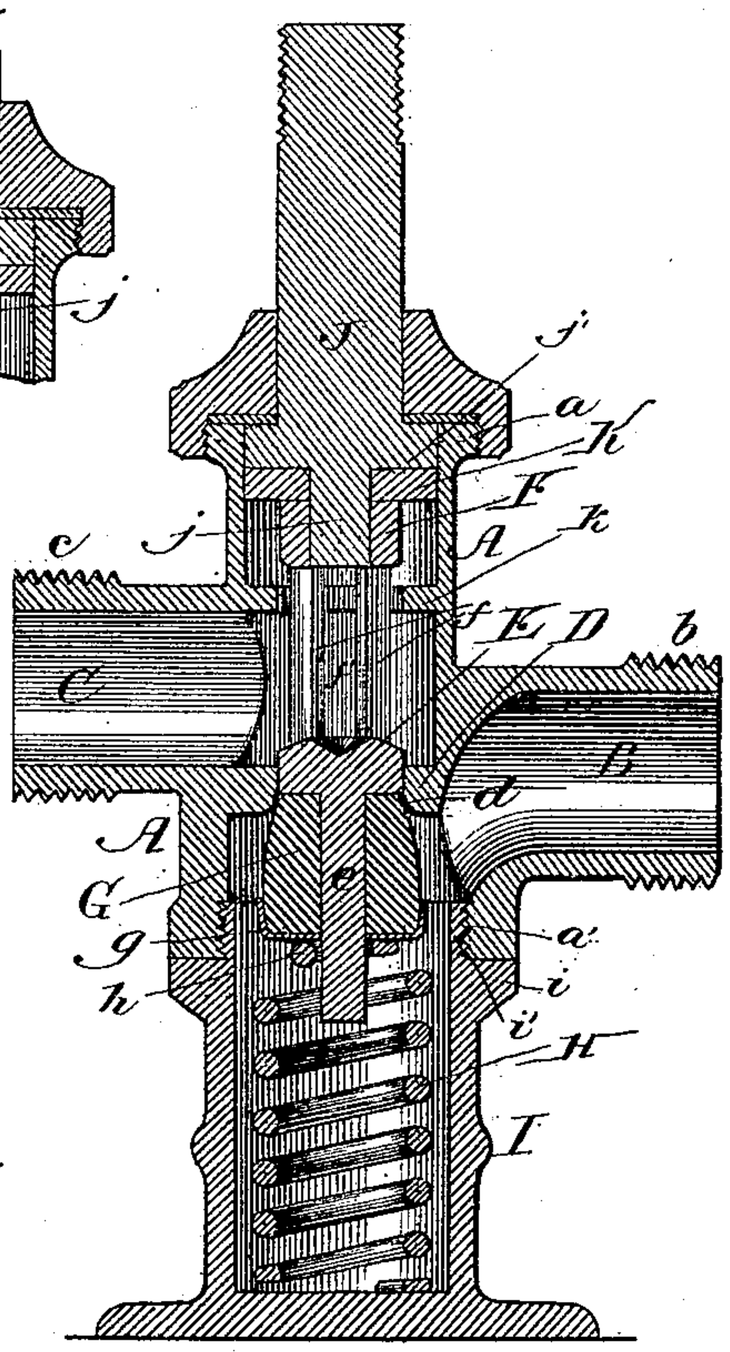


Fig. 3.

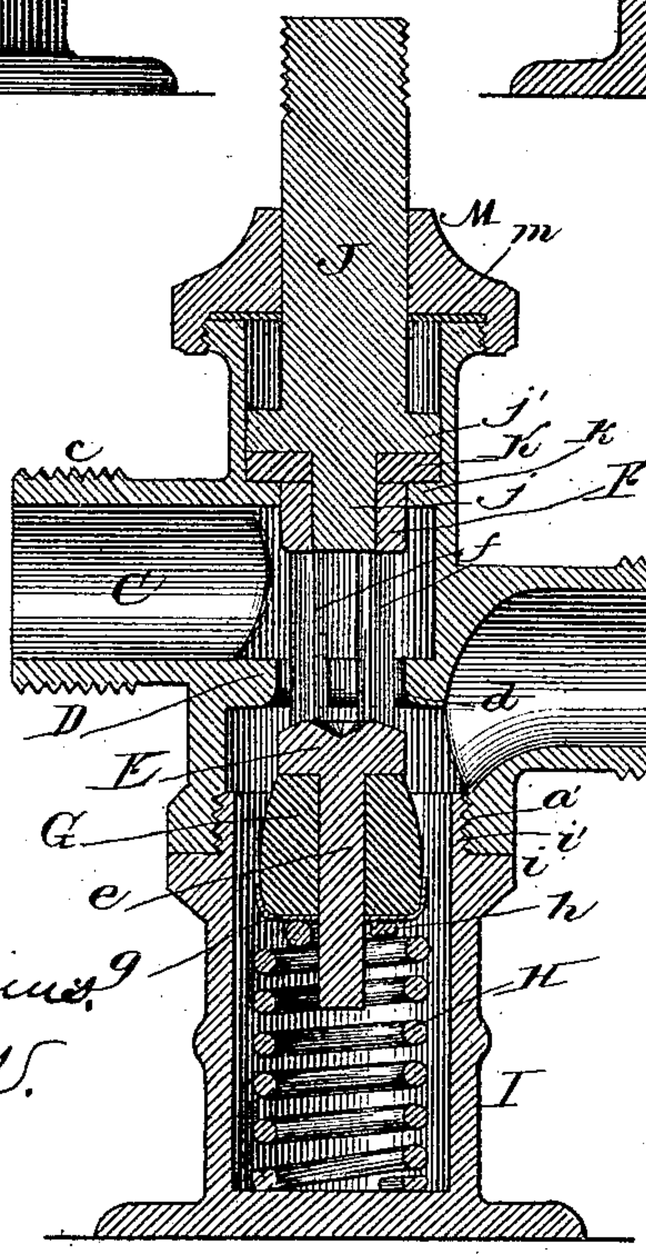


Fig. 5.

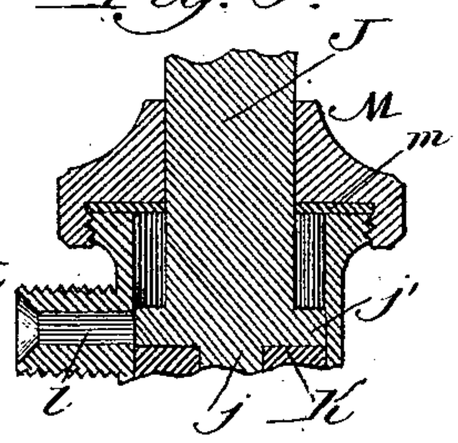
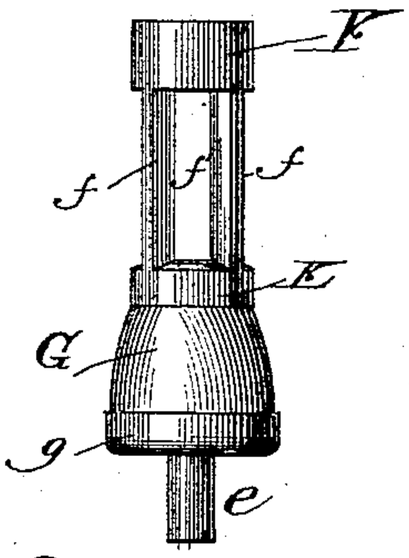


Fig. 6.



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UNITED STATES PATENT OFFICE.

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STOP AND WASTE COCK.

SPECIFICATION forming part of Letters Patent No. 354,143, dated December 14, 1886.

Application filed July 1, 1886. Serial No. 206,879. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. JOHNSON, residing at Chicago, in the county of Cook and State of Illinois, and a citizen of the United States, have invented a new and useful Improvement in Stop and Waste Cocks, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation; Fig. 2, a vertical longitudinal section with the valve closed; Fig. 3, a vertical longitudinal section with the valve open; Fig. 4, a detail in section showing the waste-port open; Fig. 5, a detail in section showing the waste-port closed; Fig. 6, an elevation of the valve.

This invention has for its object to improve the construction and operation of stop and waste cocks by giving the valve a positive movement to open the supply and shut off the waste, and a return movement to close the supply and open the waste, and to connect the several parts forming the valve and shut-off one with the other to leave each part independent of the other and at the same time have all the parts to work in unison, and to have the valve and shut-off maintain their proper relative position one to the other to perform their respective offices as the parts become worn; and its nature consists in the several parts and combinations of parts hereinafter described, and pointed out in the claims as new.

In the drawings, A represents the main shell, of a cylindrical shape on the exterior, as shown, and with an interior cylindrical chamber. One end of the shell is provided with an external screw-thread, *a*, to receive a stuffing-box or cap, and the other end is provided with an interior screw-thread, *a'*, for attaching the shell or case to its continuation or base.

B is the inlet-port formed with the shell A, its opening communicating with the interior chamber of the shell below the valve-seat, and, as shown, this inlet-port B is provided at its ends with an external screw-thread for attachment to the supply-pipe, as usual.

C is the outlet-port formed with the shell A, with its opening communicating with the interior chamber of the shell A above the valve-seat, and, as shown, this port at its end is provided with an external screw-thread, *c*, for connection with the waste-pipe.

D is a flange located on the interior of the chamber A, and having an edge formed to act as a valve-seat, *d*.

E is a head of a circular form and a diameter to pass through the opening therefor in the flange or wall D, and this head is provided with an extension or stem, *e*.

F is a head corresponding in diameter, or nearly so, to the head E, its diameter being one to allow the head to pass through the opening in the wall D, and this head F is connected with the head E by bars *f*, between which are openings *f'*.

G is a rubber or other valve located around the stem E, and supported on the stem by a cup, *g*, in the form of construction shown, the valve being so formed as to properly seat on the edge *d* of the flange or wall D and close the opening for the suppiy.

H is a coiled spring, the lower end of which is contracted so as to leave an opening, *h*, to receive the end of the stem *e*, which extends below the cup *g*, which opening forms a guide for the stem to maintain the valve G in proper relation to be seated and close the opening in the wall or flange D.

I is a base or extension having a closed bottom and an interior chamber in which is located the spring H, and the upper end of this base I has a flange, *i*, to coincide with the lower end of the shell A, and its extreme upper end is provided with an external screw-thread, *i'*, to receive the screw-thread *a'*, and connecting the shell A and base I one to the other.

J is a stem, the upper end of which is screw-threaded for connection with the operating arms or levers by which the stem is moved, which levers or arms are not shown, as they may be of the usual construction of such parts for use with a water-closet seat. The inner end, *j*, of the stem J is of less diameter than the body of the stem, and enters a hole in the head F, the end *j* being circular and the hole therefor in the head F corresponding in diameter thereto, and the stem J is also provided near its inner end with a flange or rim, *j'*, which fits the interior chamber of the shell A.

K is a packing, of leather or other suitable

material, located around the end *j* of the stem J, below the flange *j'*, and corresponding in diameter to the diameter of the flange, and this packing K, when the stem J is down, rests on a wall or flange, *k*, formed within the chamber of the shell A, which wall is provided with a hole corresponding in diameter, or nearly so, to the diameter of the head F, so as to allow such head to pass through the hole, and the packing K closes the hole in the wall or flange *k* when the stem J is forced down.

L is the waste nipple formed with the shell A and located to have communication with that portion of the chamber of the shell A above the flange or wall *k*, and opened or closed by the movement of the stem J through the packing K. The nipple L is provided with an external screw-thread, *l*, for connection with the waste-pipe, the connection not being shown, but being the usual construction for stop and waste cocks for use with water-closet seats.

M is a stuffing-box or cap for closing the upper end of the chamber in the shell A, and through which stuffing-box the stem J passes, and, as shown, between the stuffing-box and the end of the shell A is a suitable packing, *m*, which packing makes a tight joint between the stuffing-box and shell and prevents any escape at that point.

The parts are assembled by placing the valve G on the stem *e* and securing it thereto and against outward spread by the cup *g*. The heads E and F, with the stem *e* and connecting-bars *f*, can be cast or formed from a single piece, and these heads, with the valve G, are inserted in the interior of the shell A to have the end of the valve G engage the seat *d* when the valve is closed. The spring H is dropped into the chamber of the base I, and the end of the stem *e* inserted in the opening *h* of the spring, and the base secured to the shell A by the screw-threads *a'* and *i'*. The packing K is placed around the end *j* of the stem J, and the stem and packing inserted in the opening or the chamber of the shell A, with the end *j* entering the hole in the head F, and the stuffing-box or cap M is then screwed down to place, closing the end of the chamber and completing the device ready for use.

In use the forcing down of the stem J by the action of the water-closet seat or otherwise, carries down the packing K to close the opening in the wall or flange *k* and the port or opening of the nipple L, shutting off the flow of water through the waste-cock at that point, and this same movement of the stem J forces down the heads E F through the connection of the head F with the end *j* of the stem J, opening the valve G and allowing the water to pass in from the inlet B to the chamber of the shell A and out through the opening of the outlet C to the bowl, as usual, and when the pressure is released on the stem J the spring H, in connection with the force of the inflowing water, acts to close the valve G tightly onto the seat *d* of the flange or wall D, shutting off the flow of water into the chamber of the shell, and at the same time the packing K is carried up to open the nipple L, and the opening in the wall or flange *k* allowing the water to pass through the waste-pipe, as usual.

The connection of the valve with its closing-spring H, through the end of the stem *e* entering the hole *h*, formed by the end of the spring, allows a certain amount of free play between the spring and valve for the valve to seat properly without interference from the spring, and the connection also keeps the valve and spring properly centered for performing the work required of each. The connection between the stem J and the head F allows the valve G to perform its work without interference from the stem, and the stem to operate without affecting the operation of the valve, and this connection allows of a degree of end movement for both the stem and the valve, by which both devices will work effectually in case of wear, and it also maintains the proper line of movement between the valve and the stem for the stem to operate in a direct manner and open and close the valve. The several parts being made independent of the other and yet working in unison, enables one part to be taken away and replaced by a new one, in case such part becomes too much worn, and by making the parts independent and still operating one with the other an accurate fitting of the parts to work properly is not required, as is the case where the stem and valve are made continuous without any disconnection between them.

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

1. The combination of the movable stem J, having the bottom extension or end, *j*, with the head F, having an opening for the reception of said extension, the connecting-bars *f*, head E, stem *e*, valve G, and spring H, substantially as herein set forth.

2. The heads E F, connected by bars *f*, with openings *f'* between them, and stem *e*, in combination with a valve, G, spring H, and stem J, for opening and closing the valve, substantially as specified.

3. A stop and waste cock consisting of the shell A, inlet-port B, outlet-port C, wall D, with valve-seat *d*, heads E F, connected by bars *f*, stem *e*, valve G, spring H, base I, stem J, packing K, wall *k*, and waste-nipple L, all constructed and operating substantially as and for the purposes specified.

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