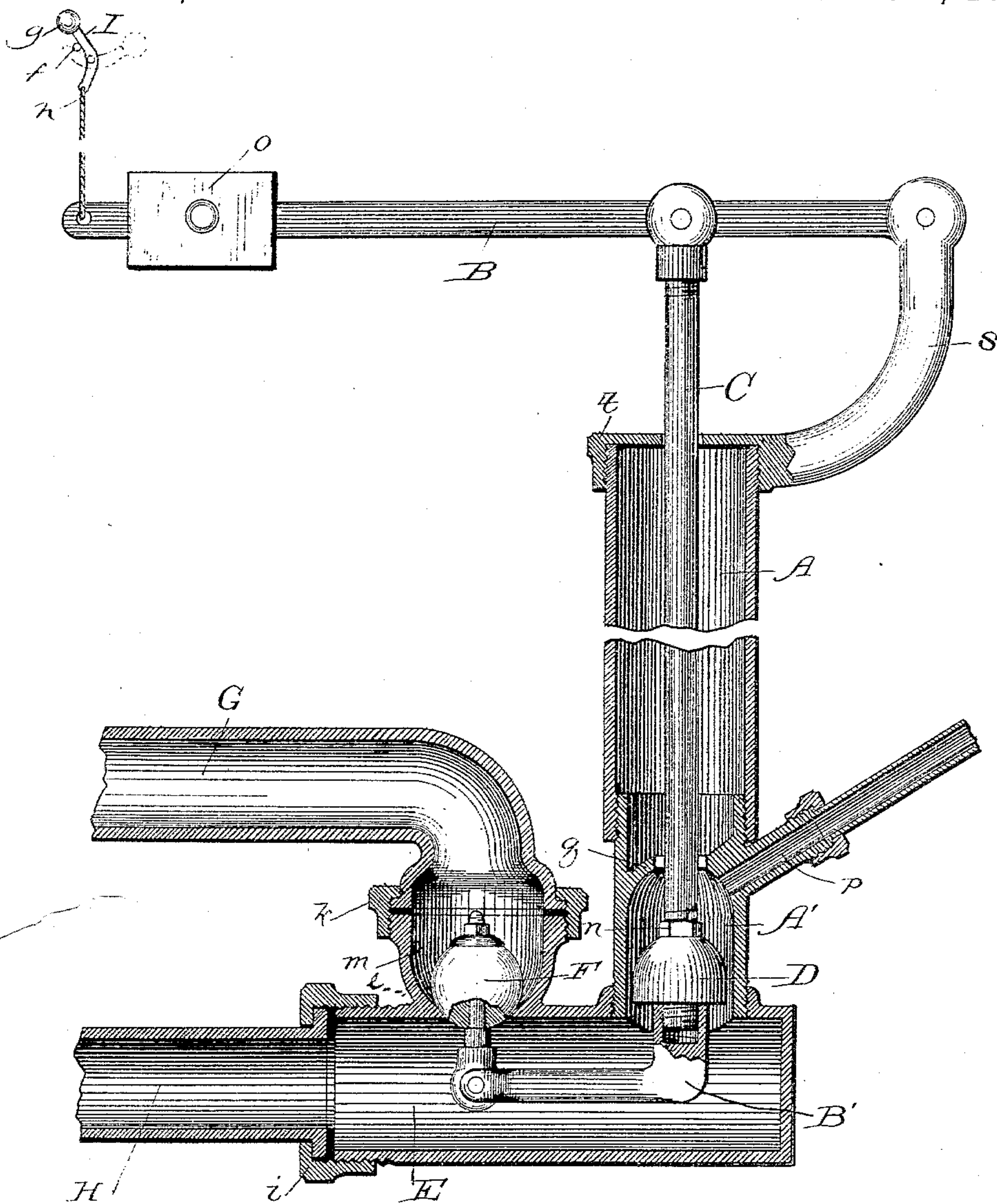


(No Model.)

D. WHITEFORD.
STOP AND WASTE COCK.

No. 319,157.

Patented June 2, 1885.



Witnesses:

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UNITED STATES PATENT OFFICE.

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STOP AND WASTE COCK.

SPECIFICATION forming part of Letters Patent No. 319,157, dated June 2, 1885.

Application filed December 26, 1884. (No model.)

To all whom it may concern:

Be it known that I, DAVID WHITEFORD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Stop and Waste Cocks; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of devices ordinarily employed in connection with the water-supply in houses for the purpose of permitting in the winter-time the supply to be "shut-off," and allowing in this operation water already within the pipes to escape in order to avoid freezing therein.

My present device is designed particularly for use in connection with the water-supply of houses arranged to be occupied as "flats," each of which flats is supplied by a separate branch leading from the service-pipe connected with the city main, to afford to the occupants of each independent control of its water-supply. Owing to this construction and arrangement of tenement-houses, the rod hitherto commonly used for shutting off the water, particularly in cold weather, to prevent its freezing in the pipes, cannot be employed owing to the ordinary location in flats, as at present constructed, of the sinks, and, even if this reason did not exist, for the obvious reasons, besides the one that after comparatively few operations it fails to work satisfactorily, that it would have to project through the apartments below the one from which it is operated, presenting therein an unsightly appearance, and if used at all it could only be employed in the lowest story.

I am aware that various devices devoid of rods and resembling my present improvement, and for a similar purpose, are in use, but, owing to their construction, particularly in the matter of the operation of their valves, produce unsatisfactory results and prevent ready access for the purpose of repair to their internal parts whenever these shall get out of order.

I am also aware that devices constructed somewhat similar to my present apparatus are in use as stop and waste cocks, and as hopper-cocks in water-closets.

It is my object to afford a device for the

purposes above stated in which the valves shall operate accurately and readily to accomplish their work; and to this end my invention consists in the particular construction and combination of the parts forming my improved stop and waste cock.

The drawing represents a vertical section of my improvement, showing its internal construction, having a part broken away to permit the representation upon the sheet of operative features.

A is a vertical pipe, having a diameter preferably of about one and one-quarter inch, and provided on its upper side with a perforated cap, *t*, screwed upon it, and from which cap an upward-projecting bracket, *s*, extends. The pipe A is screwed toward its lower end to a pipe, A', forming an extension of the pipe A, having a diameter in the first instance somewhat less than that of the last-named pipe, and provided internally with a valve-seat, *q*, and provided on one side below the valve-seat with a waste-outlet, *p*.

B is a horizontal rod or bar pivoted toward one extremity to the upper end of the bracket *s*, and provided toward its opposite extremity with a weight, *o*.

C is a vertical rod pivoted at its upper extremity to the rod or bar B, and extending through the perforated cap *t*, to hang centrally within the pipes A and A', and pass through the perforated valve-seat *q*. A valve, D, is adjusted upon the rod C, toward its lower extremity, to lie below the valve-seat *q*, and is maintained in position from its upper side by means of a suitable nut, *n*. The lower extremity of the rod C is screw-threaded and adjusted into the vertical part of an angular arm, B', lying within a horizontal pipe, E, preferably of the same diameter as the pipe A.

F is a ball-valve having a seat within a chamber, *m*, formed upon the pipe E, and connected with the extremity of the horizontal portion of the bar B' by means of its stem *l*.

G is the water-inlet pipe, connected by means of a coupling-joint, *k*, with the valve-chamber *m*, and through which connection of the device with the service-pipe leading from the water-main in the street is effected.

H is the water-supply pipe, attached by means of the coupling *i* to the pipe E, which forms the body of the device, and supplying water to the fixture to be supplied in one of the flats of a building.

The operative position of the device when used as a stop and waste cock, as shown in the drawing, is underneath the ground, in which it is buried to the lower extremity of the bracket *s*. The weight *o* operates to maintain the valve F upon its seat and prevent ingress of water into the pipes E and H, the pressure of water upon it serving to pack it firmly in its position, and its effect upon the valve D, which is connected by means of a stiff joint with the valve F, is to maintain it away from its seat *q*. These are the normal positions of the valves produced by the downward pressure of the weight *o* upon the rod *c*, and which are produced to shut off the water-supply through the medium of the valve F, as hereinbefore stated, and permit the escape in winter, to prevent its freezing, of water contained in the supply-pipe H, by way of the pipes E and A', through the waste-outlet *p*, which may lead into the ground or be connected with the sewer.

The relative positions just described of the valves D and F, though normal, owing to the influence upon the valves of the weight *o*, will only be sought occasionally, and particularly in freezing weather, to permit the supply-pipe H to be freed of its contents, the ordinary position of the valve D being against its seat, upon which it is packed by the pressure of water from underneath, and of the valve F above its seat. The relative positions of the valve last named are effected by a crank, I, conveniently located in the story supplied through the pipe H, and connected from its extremity with the end of the horizontal bar B through the medium of a suitable cable, which may, if desired, pass over pulleys. The lever I is bent, as shown, and pivotally attached toward its lower extremity to a suitable support, and provided at its opposite extremity with a weight, *g*. When the weighted crank I is raised to the position shown by the full lines representing it in the drawing, it will be maintained in such position against the pin *f*, forming a stop by the gravity of the weight *o*, the arrangement being such that when the crank is adjusted in position the ball-valve F will rest upon its seat and the passage from the supply-pipe H to the waste-outlet *p* will be opened; or, in other words, to use the common expression for this operation, the water is "shut off." To "turn it on" the valve F is raised from its seat and the valve D adjusted upon its seat by turning the weighted crank I slightly away from the stop *f*, when it will immediately fall to the position in which it is shown in dotted lines in the drawing, raising the weighted end of the rod B, and with it, through the medium of the vertical rod C, the valves. Owing to the rapid fall of the weighted end of the crank I, in assuming the position shown in dotted

lines, water entering the pipe E through the chamber *m* cannot reach the underside of the valve D before the latter shall have been raised to its seat, and when it shall once have reached the last-named position the pressure of water from underneath will serve to pack it the more tightly to prevent the entrance of water into the pipe A, wherein, if it should enter in quantities sufficient to cause it to rise toward the top, it would be liable to freeze and obstruct the operation of the device.

The particular advantage afforded by the crank mechanism I, hereinbefore described, consists in the fact that thereby a difficulty is overcome which, as far as I am aware, attends the use of all stop and waste cocks similar in construction to the present invention. As is well known, the local authorities of municipalities, to whose supervision and control matters relating to the water-supply are intrusted, generally forbid the use of stop and waste cocks which permit, even in a small degree, constant waste of water. In devices at present in use having connected valves operated simultaneously to control the outlet or "waste" and the inlet or "supply" of water, and in which the operation of shutting off or turning on the water is performed through the medium of a cable, the length of which is accurately measured to permit one valve to fit closely upon its seat while its companion valve is removed a certain distance from its seat, and to cause the latter, by adjusting it through the medium of the cable a certain prescribed distance, to fit upon its seat, whereby the former is removed the same distance from its seat, continual waste of water occurs after such device has been in use for a short time. This is due to the fact that the weight provided upon the lever, which weight tends to maintain one valve upon its seat, and the lifting of which, through the medium of the cable, reverses the positions of the valves with relation to each other, produces a constant strain upon the cable, and stretches it more or less, of whatever material it is composed. The prescribed distance of adjustment of the valves is insufficient to bring that controlling the waste snugly against its seat, and thus an opening is provided which permits continual flow through it of water from the service-pipe. By providing the weighted crank I this difficulty is completely overcome, since its play in a downward direction is controlled by the length of cable in excess of what is required to permit the valve controlling the supply, when originally adjusted, to rest firmly against its seat. In other words, as the cable becomes lengthened by stretching, whereby the valve D would not otherwise, by raising it the distance prescribed in adjusting the device, be brought against its seat, the weighted crank I will fall as far below its position (shown by dotted lines in the drawings) as shall be necessary to make up for the increasing length of cable.

The various couplings, hereinbefore referred

to and shown in the drawings, affording to their particular arrangement, ready and convenient access to the internal parts of the device, which ordinarily require most frequent repair.

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

1. In a stop and waste cock, the combination, with the water-inlet and water-outlet pipes, of valves adjusted with reference to the supply and waste outlets to control the supply and waste, and fitting upon their seats in opposite directions, and connected together by an arm and a vertical rod connected toward one end with the said valves, whereby raising or lowering the said rod will lift or lower the said valves in opposite directions with reference to their respective seats, but in the same direction with reference to each other, substantially as described.

2. A stop and waste cock comprising, in combination, vertically-operating valves F and D, adjusted with reference to the supply and waste outlets to control the supply and waste, and fitting upon their seats in opposite directions and connected together by an arm, B, a vertical pipe, A, provided with a perforated cap, *t*, having a bracket, *s*, and connected with a pipe, A', having a waste-outlet, *p*, a horizontal pipe, E, communicating with the pipe A', and provided with a chamber, *m*, a vertical rod, C, passing through the pipes A and A', and connected at its lower extremity with the valve D, a water-inlet pipe, G, connected with the said chamber *m* by means of a suitable coupling, *k*, and a water-supply pipe, H, connected with the horizontal pipe E by means of a suitable coupling, *i*, substantially as described.

3. The combination, with the valve portion

of a stop and waste cock, of a crank or lever, I, suitably weighted toward one extremity and pivoted below its center of gravity to a suitable support, and connected with the said valves through the medium of a cable, whereby the valve controlling the waste may to "turn on" the water-supply be raised with the assistance of the water-pressure underneath it, and firmly maintained against its seat, substantially as described.

4. A stop and waste cock comprising, in combination, a valve, F, within the water-inlet pipe G, provided with a valve-seat, *e*, a valve, D, within the water-outlet pipe A', provided with a valve-seat, *q*, the said valves being removably attached to opposite extremities of an arm, B', lying within a horizontal pipe, E, connecting the said inlet-pipe G and outlet-pipe A', and from which pipe E a supply-pipe, H, leads, a vertical pipe, A, removably connected with the water-outlet pipe A', a vertical rod, C, removably connected with the said valve D and supported within the pipe A, a horizontal weighted bar, B, connected toward one extremity to the upper end of the said rod C and having its fulcrum *s* projecting from the said pipe A, a weighted crank, I, pivoted to a suitable support within the apartment to which the said water-supply pipe H leads, a pin, *f*, forming a stop for the said crank, and a suitable cable, *h*, connecting the said crank from its extremity with the free end of the said bar B, the whole being constructed and arranged to operate substantially as described.

DAVID WHITEFORD.

In presence of—

EDWARD THORPE,
MASON BROSS.