

(No Model.)

P. MUELLER.  
COCK.

No. 418,377.

Patented Dec. 31, 1889.

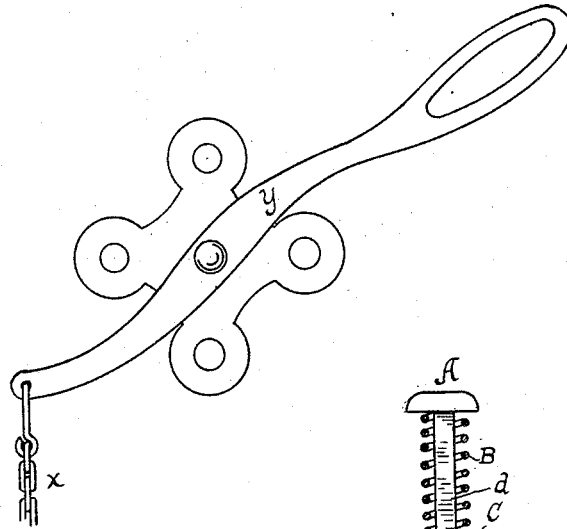


Fig. 1.

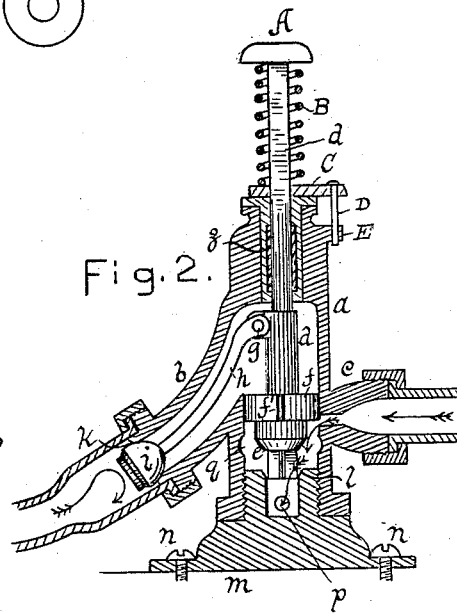
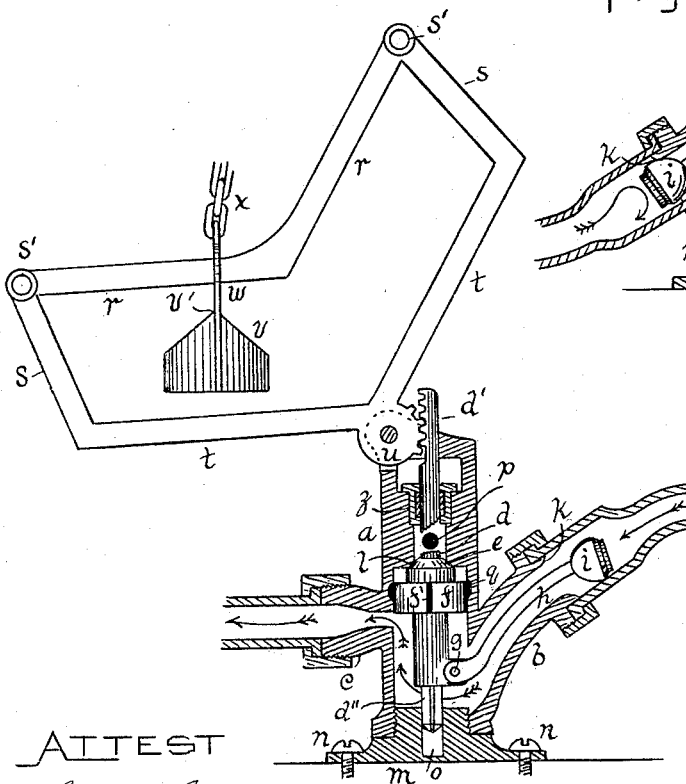


Fig. 2.



ATTEST

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# UNITED STATES PATENT OFFICE.

PHILIP MUELLER, OF DECATUR, ILLINOIS.

## COCK.

SPECIFICATION forming part of Letters Patent No. 418,377, dated December 31, 1889.

Application filed November 5, 1888. Serial No. 290,008. (No model.)

*To all whom it may concern:*

Be it known that I, PHILIP MUELLER, of the city of Decatur, county of Macon, and State of Illinois, have invented certain new and useful Improvements in Cocks, of which the following is a specification.

My invention is in the nature of a stop and waste cock, though several of the main features are equally applicable to a hopper-cock; and it comprises the details of construction and combinations of parts hereinafter set forth and claimed.

In the drawings accompanying and forming a part of this specification, Figure 1 shows my stop and waste cock partly in vertical section, and Fig. 2 shows in vertical section a hopper-cock embodying certain features of my invention.

The shell or body of the cock is represented by reference-letter *a*, and it has an inlet-chamber *b*, obliquely extended. The stem *d* carries piston *f* and valve *e*, the former of which has grooves *f'* or their equivalent, and the latter of which is adapted to seat *l*. In Fig. 1 the valve-stem is broken to show the waste-hole *p*, which in this case is above valve *e*. Rod *h* extends through the inlet-chamber and carries valve *i*. It is pivotally connected with pin *g* of stem *d*, and it partakes of the motion of the stem and operates the valve with relation to seat *k* in a manner to be hereinafter specified. The body is screwed onto base-plate *m*, and the base-plate is secured to a suitable foundation by screws *n n*. The lower end *d''* of stem *d* has a sliding bearing in hole *o* of the base-plate. The outlet *c* is adjacent to piston *f*, and it is contracted vertically and expanded horizontally. The body has an internal groove at *q*, or is otherwise enlarged internally at that point. Packing is provided for the stem at *z*.

In Fig. 1 the position of the body is such that the inlet is below the outlet, and the end of the stem next valve *e* receives the operating force. In Fig. 2 the body is inverted and force is applied to the opposite end of the stem. The construction and operation of the cock are in both cases the same; but in Fig. 1 the means used to operate the device as a stop and waste is of my invention, while in

Fig. 2 the means shown to operate the cock is in all essentials found in ordinary hopper-cocks.

In Fig. 1 the inlet and outlet are open and the waste-valve is closed. When it is desired to stop the flow of water, the stem is forced downward until the piston is slightly below the upper edge of the outlet-opening, when valve *i* will engage its seat and the flow through the cock will cease. This condition of affairs is shown at Fig. 2, and the water in the outlet-pipe is indicated by the arrows as passing gradually out of the waste-hole.

Consideration of the drawings will develop the fact that the piston will to a great extent close the outlet-opening before the inlet is affected. This creates a back-pressure that neutralizes the force of the water acting on valve *i* in the direction indicated by arrows in Fig. 1, and permits said valve to approach its seat gently without danger of developing "water-hammer."

When the cock is used as a stop and waste, the upper end of the valve-stem has the rack formation shown at *d'* in Fig. 1. A segment of a pinion *u* meshes with the rack and carries a frame composed of bars *r*, *s*, and *t*. The weight *v* has the apex *v'*, and is carried by bail *w*, that encompasses the bar *r*. Chain *x* connects the weight with lever *y*, or some equivalent actuating device suitably situated. The bar *r* is centrally depressed to form an angle approximating sixty degrees. Bar or bars *t* are preferably parallel with corresponding parts of bar *r*, to which they are connected by cross-bars *s*, and they tilt on the pivot of pinion *u*. Lateral projections at *s'* *s'* prevent the bail of the weight from passing off bar *r*. As shown, the cock has been opened by downward pressure on lever *y*, and the weight has been permitted to descend the incline to a position considerably to the left of the pivot of the pinion. When the lever is again pressed downward, the weight will raise the left side of the tilting frame and ascend the incline that forms as the raising proceeds. The inlet-valve will be closed and the waste-valve opened, as hereinbefore specified, and when the weight is again permitted to descend it will pass down the newly-formed incline to

the right of the pivot, in position to close the inlet-valve and open the waste when the lever is again operated.

It will be understood that while I prefer to use the construction set forth in Fig. 1 as a stop and waste, there is no necessary connection between the cock and the tilting frame or between the tilting frame and the lever *y*.

In order to operate the cock, the stem must be moved longitudinally in the body, and it matters not by what means or where or in what manner the connection is made. So it is necessary that the weight in the tilting frame should be alternately raised and lowered, but whether by the lever or by other means is a matter of no importance.

The means set forth in Fig. 2, whereby my device is made to act as a hopper-cock, has nothing to do with my invention other than as an adjunct or auxiliary. It will, however, be briefly described as follows:

A is a head on stem *d*.

B is a spring that presses under the head and keeps the inlet-valve normally closed.

C is a square collar that embraces a square portion of the stem and prevents the same from rotating.

D is a rod that connects the collar with lug E.

The head A is depressed by the seat or in other well-known ways, and the water runs through the cock until pressure is removed.

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

1. A cock comprising the body having the oblique inlet-chamber, the outlet and the waste-hole, the stem carrying the waste-valve, the bar in the inlet-chamber pivoted on the stem and carrying an inlet-valve, and a piston on the stem in position to check the outlet before the inlet is closed, as and for the purpose set forth.

2. In combination with the stem of a stop and waste cock, the tilting frame connected with the stem and having the depressed angle, and the weight adapted to slide on the frame and having a flexible connection extending upward, as set forth.

3. In combination, a stop and waste cock having a rack formed on its stem, a tilting frame with a depressed angle having a pinion in mesh with the rack, and a weight adapted to slide on the frame and having a flexible connection upward extended, as set forth.

4. A cock comprising the body having an inlet-chamber, an outlet, and a waste-hole, a stem carrying a waste-valve and connecting with an inlet-valve, and a piston on the stem in position to check the outlet before the inlet is closed, as set forth.

PHILIP MUELLER.

Attest:

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