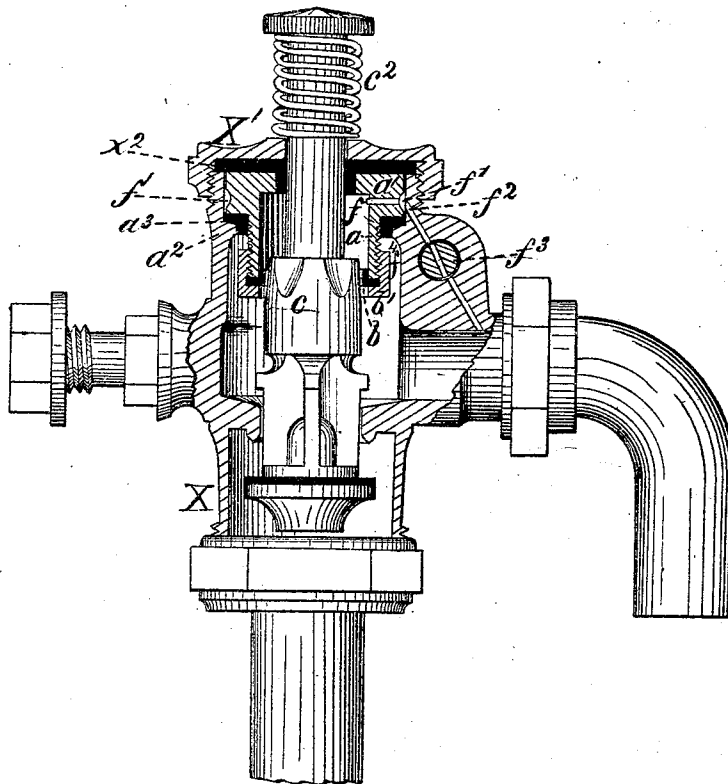


M. S. CLARK.
Self-Closing Cocks.

No. 141,630.

Patented August 12, 1873.



WITNESSES:

Edw. A. Payson

Geo. H. Matt

INVENTOR:

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UNITED STATES PATENT OFFICE.

MINFORD S. CLARK, OF NEW YORK, N. Y., ASSIGNOR TO CHARLES HARRISON, OF SAME PLACE.

IMPROVEMENT IN SELF-CLOSING COCKS.

Specification forming part of Letters Patent No. **141,630**, dated August 12, 1873; application filed April 24, 1873.

To all whom it may concern:

Be it known that I, MINFORD S. CLARK, of the city, county, and State of New York, have invented certain Improvements in Self-Closing Cocks, of which the following is a specification:

My invention consists in the described mode of constructing and arranging the variable chamber of a self-closing cock, first, with respect to the shell of the valve-chamber; and, secondly, with respect to the peculiar enlargement of the valve-stem, the object of the latter peculiarity being to dispense with the use of a cup-leather valve.

My invention is applicable to all variable chamber-cocks, but I have preferred to exhibit it as applied to cocks having an adjustable outlet for the discharge of the variable chamber. The accompanying drawing is accordingly a longitudinal view, partly in section, of a cock of this class, such as will be found more fully described in Charles Harrison's patent, No. 92,190, dated July 6, 1869.

It will be seen that the variable chamber is formed within an inner cylinder, a , contained within the shell of the cock X . An inner cylinder or sleeve is found in the patent of Charles H. Miller, No. 71,510, dated November 26, 1867; but Miller's sleeve extends down to the valve-seat, and constitutes an inner casing for the entire valve-chamber. My inner cylinder, on the contrary, occupies only that part of the shell which is appropriated to the purpose of a variable chamber, and is of considerably less diameter than the valve-chamber, so that there is an annular space between the outside of the variable chamber-cylinder and the inner wall of the valve chamber or shell, and, of course, a large annular space between the inner wall of the shell and the periphery of the variable chamber-plug. This arrangement of the variable chamber with relation to the valve-shell improves the efficiency of the cock by increasing the facility with which the variable chamber is filled when the cock is only partially opened, first, because the variable chamber, owing to its reduced capacity, is filled more quickly; and, secondly, because of the ample

room provided for the passage of fluid into the variable chamber. It will be seen that when the cock is opened the plug is pushed into a cylindrical mass of liquid considerably larger in diameter than itself.

The construction is as follows: The cylinder a is provided with a heavy flange, a^1 , which bears upon the shoulder a^2 , upon which it is rigidly held by the cap X' . An elastic packing-ring, a^3 , is introduced between the flange and the shoulder, and the usual packing x^2 between the end of the cylinder and the cap X' . The flanged end of the inner cylinder thus performs the function of the metallic washer usually introduced for the purpose of confining the packing x^2 . The inner end of the cylinder a is provided with the annular packing b , which is held in position by the annular cap b' , when the latter is screwed on the outside of the cylinder a . The packing-ring b fits closely to the enlarged valve-stem c , which serves as a plug to close the mouth of the cylinder a after the valve c^1 has commenced to move toward its seat in obedience to the action of the spiral spring c^2 .

The interior of the cylinder a constitutes the variable chamber, and is nearly filled by the plug c when the valve is at rest. The plug c is slightly tapered, and is partially grooved or corrugated on the end toward the variable chamber, so that when the valve-stem is depressed, as shown in the drawing, the plug ceases to completely fill the aperture surrounded by the packing-ring b , and thus allows the variable chamber to be filled with fluid. As the plug moves back it fills the mouth of the variable chamber, and thus forces the contained fluid out through the lateral aperture f and into an annular chamber formed by a groove, f^1 , in the periphery of the flange a^1 . This groove is opposite the outlet f^2 , by means of which the variable chamber is discharged. The discharge through the outlet f^2 is regulated by means of the cock f^3 , and I have therefore designated this class of cocks as a class having adjustable outlets from the variable chambers.

In applying my invention to cocks not provided with the outlet f^2 in the shell X of the

variable chamber, the lateral aperture f , instead of being made through the flange a^1 , will be made through the shell of the cylinder a , between the annular cap b' and the packing a^3 , and thus the fluid from the variable chamber will be discharged into the valve-chamber through the annular space f^4 between the cylinder a and the shell of the valve-chamber X .

I claim as my invention—

1. In a self-closing cock, the inner cylinder a , provided with the lateral aperture f and with the reciprocating piston or plunger c , and arranged in relation to the valve-shell X ,

substantially in the manner described, and for the purpose set forth.

2. The combination of the lateral opening f , the annular groove f^1 , and the outlet f^2 with the cylinder a , the reciprocating piston or plug c , and the packing-ring b , substantially as described.

3. The partly tapered or corrugated plug c , in combination with the variable chamber of a self-closing cock, substantially as described.

MINFORD S. CLARK.

Witnesses:

EDWD. PAYSON,
GEO. W. MIATT.