

No. 607,210.

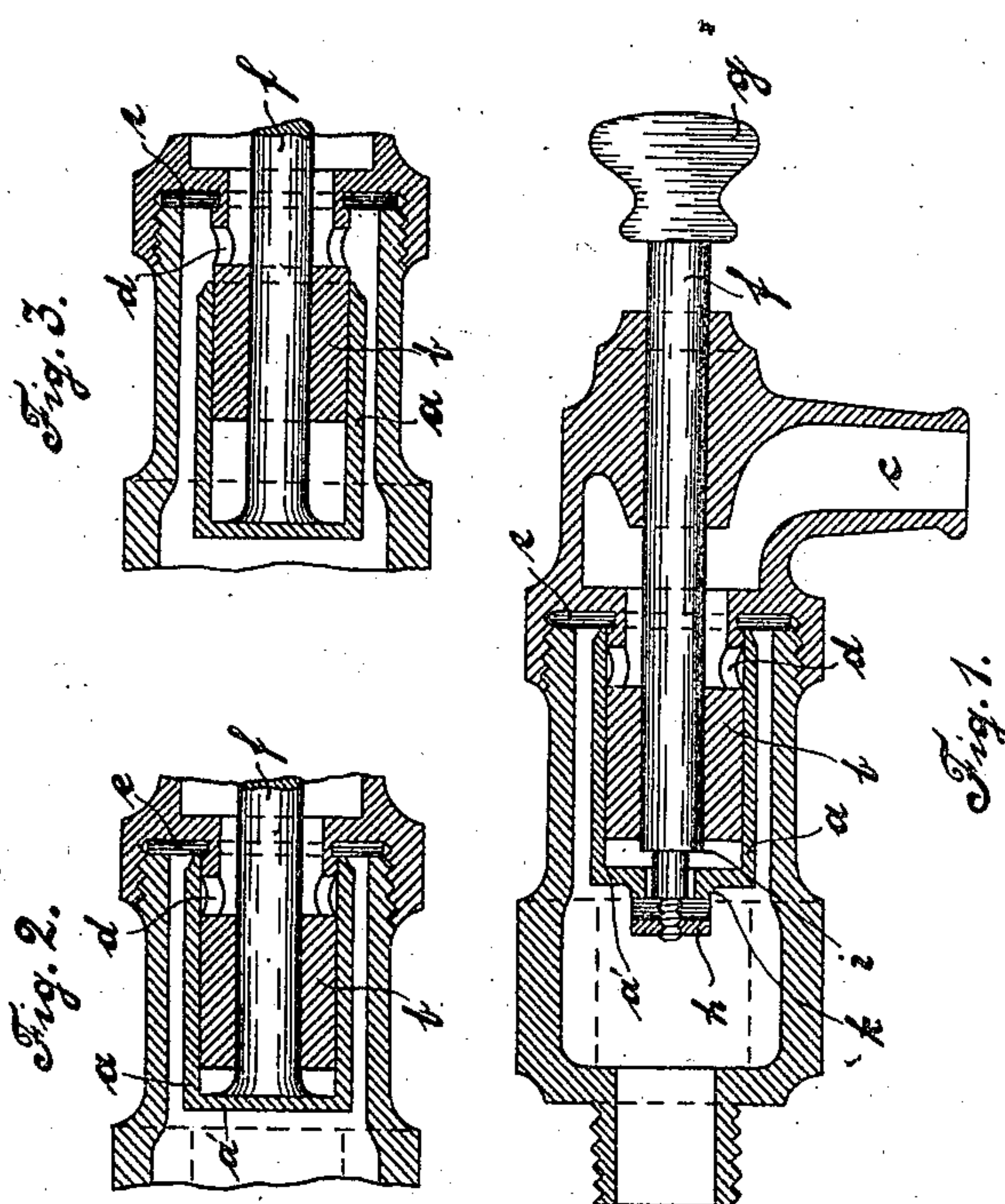
Patented July 12, 1898.

E. A. BOLINDER.

SELF CLOSING COCK OR TAP VALVE.

(Application filed July 24, 1897.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

ERIK AUGUST BOLINDER, OF STOCKHOLM, SWEDEN.

SELF-CLOSING COCK OR TAP-VALVE.

SPECIFICATION forming part of Letters Patent No. 607,210, dated July 12, 1898.

Application filed July 24, 1897. Serial No. 645,828. (No model.) Patented in Sweden February 9, 1894, No. 5,384; in England March 13, 1894, No. 5,229, and in Denmark May 31, 1895, No. 1,493.

To all whom it may concern:

Be it known that I, ERIK AUGUST BOLINDER, a subject of the King of Sweden and Norway, and a resident of 32 Kungsgatan, in the city of Stockholm, in the Kingdom of Sweden, have invented a new and useful Improvement in Self-Closing Cocks or Tap-Valves, (for which I have obtained patents in Sweden, No. 5,384, dated February 9, 1894; in Denmark, No. 1,493, dated May 31, 1895, and in England, No. 5,229, dated March 13, 1894,) of which the following is a specification, reference being had to the drawings accompanying and forming a part hereof.

It is well known that the common kind of automatically-closing cocks or tap-valves used in water-pipes or the like cause a violent concussion in the pipe consequent on the sudden stoppage of the efflux of the motive column—sc., water-hammer.

The object of this invention is to provide an improved cock or tap-valve which closes itself automatically, but does not cause any such concussion or shock in the pipes as mentioned above.

The invention consists in the construction and combination of devices hereinafter described and claimed.

In the accompanying drawings, in which similar letters of reference indicate same or corresponding parts in all the views, Figure 1 shows a longitudinal vertical section of a valve according to this invention, and Figs. 2 and 3 show parts of a somewhat-modified valve also in vertical section. Fig. 2 shows the valve closed and Fig. 3 shows it open.

Referring to Fig. 1 in the drawings, *a* represents the valve proper, which preferably is in the shape of a hollow cylinder open in one end and in the other provided with a bottom *a'*. Said valve fits nicely and is movable on a long piston *b*, the one end of which is fastened to the valve-casing. The spout *c* communicates with that part of the valve-casing which is in communication with the pipe (or vessel) from which the liquid is drawn through openings *d* in the fixed end of the said piston, around which end is formed a seat for the said valve *a*. Said seat may consist of a washer *e*, held in its place by being wedged

in between the two parts of the valve-casing, where they are screwed together. A stem *f*, provided with a suitable handle *g*, passes movably through the valve-casing and the piston *b* and through the said bottom *a'*. On the end of said stem inside the valve-casing is placed a small auxiliary valve *h*, and the stem is just inside the bottom *a'* and provided with a shoulder *i*, (preferably by the expansion of the stem,) which prevents the stem from moving but a small distance through the bottom *a'* before it strikes the inside of said bottom, through which it moves so loosely that liquid may easily pass between. The said bottom *a'* is around the stem on the outside provided with a seat *k* for the said auxiliary valve *h*.

The working of the cock is as follows: When the handle *g* is pushed in, the stem *f* will first move the auxiliary valve *h* away from its seat, so that water from the pipe will enter the room between the bottom *a'* and the piston *b*. Upon pushing the handle farther the shoulder *i* will catch against the inside of the bottom *a'* and cause the valve *a* to move away from its seat until the openings *d* in the piston are uncovered, when the liquid will pass through said openings to the spout *c* and run out. When the pushing of the handle ceases, the pressure of the water will at once close the auxiliary valve *h*, so that water will be inclosed in the room between the valve-bottom *a'* and the piston *b*. The pressure of the water in the pipe and valve-casing will also tend to close the valve *a*; but as the inclosed water can only escape around the piston the closing of the valve *a* will not be sudden, but take as long time as the forcing out of the water necessitates. By making the valve fit more or less closely on the piston the time for closing the valve will of course be correspondingly regulated.

Instead of providing the auxiliary valve *h* the stem may be fixed to or in one part with the bottom *a'*, as shown in Figs. 2 and 3. The opening of the valve *a* will then take more power and require longer time, because the water for filling the room between the bottom *a'* and the piston *b* must be sucked in between the piston and the valve. To facilitate the

opening, the pushing in of the stem might in this case be accomplished by means of some lever mechanism.

The advantage of this construction besides the slow closing is that no packing around the stem is necessary, as it is plain that there is no tendency of the water to pass through where the stem passes through the valve-casing. This valve possesses another advantage—viz., that the valve is not directly in touch with the valve-casing. Hence if the walls of the same should for any reason be buckled this will not cause any disturbance in the proper working of the valve.

Having now described one way of carrying out my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a cock or tap, a hollow valve open in one end and in the other end provided with a small auxiliary valve, said hollow valve moving on a piston or the like fastened with one end to the valve-casing and in said fixed end provided with openings through which

the fluid has to flow when the cock is open, a seat for said valve around the fixed end of said piston, and a stem passing through the said hollow valve, substantially as and for the purpose specified.

2. In a cock or tap for liquids a hollow valve open in one end, moving and fitting on a piston which is fastened with one end to the valve-casing and in the fixed end provided with openings through which the fluid has to flow when the cock is open, a seat for said valve around the neck of the piston and a stem passing through the said piston and connected to the bottom of said hollow valve, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two witnesses.

ERIK AUGUST BOLINDER.

Witnesses:

AUG. SÖRENSON,
BERTIL BRANDER.