

(No Model.)

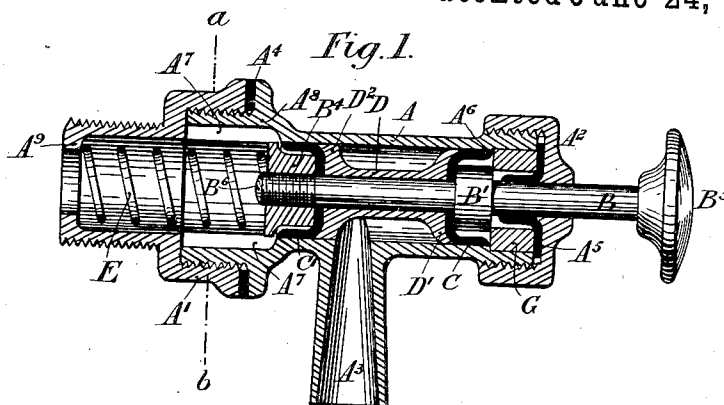
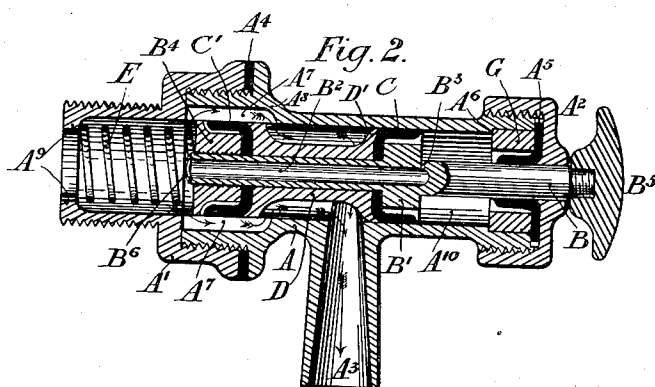
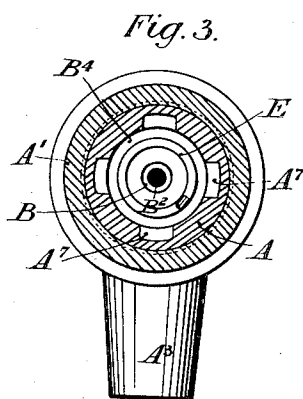
J. RIGG & T. MEACOCK.

2 Sheets—Sheet 1.

TAP OR VALVE.

No. 430,689.

Patented June 24, 1890.



Witnesses:
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(No Model.)

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2 Sheets—Sheet 2.

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Fig. 4.

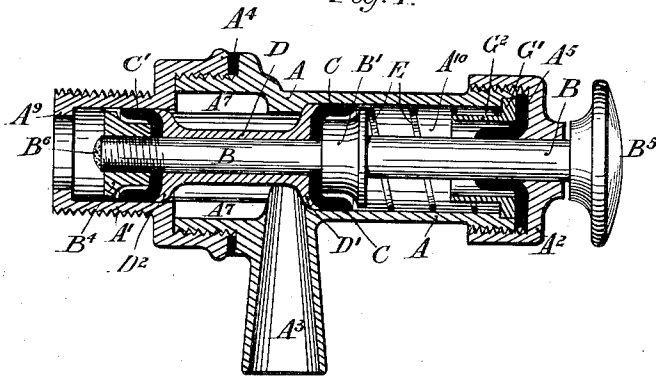


Fig. 5.

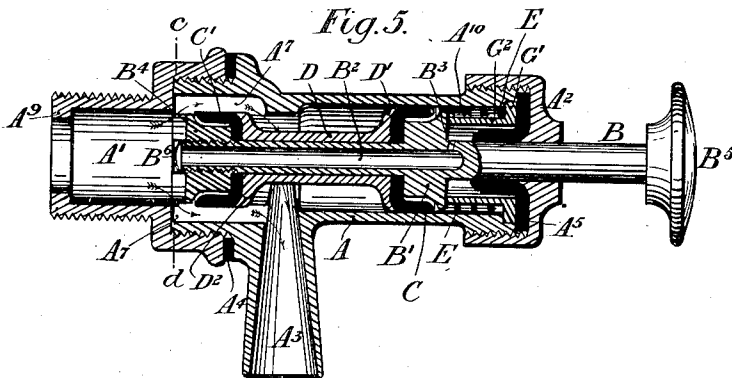
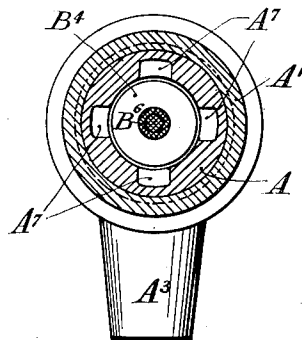


Fig. 6.



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UNITED STATES PATENT OFFICE.

JAMES RIGG, OF LONDON, AND THOMAS MEACOCK, OF BIRMINGHAM,
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TAP OR VALVE.

SPECIFICATION forming part of Letters Patent No. 430,689, dated June 24, 1890.

Application filed January 6, 1890. Serial No. 336,113. (No model.) Patented in England June 5, 1888, No. 8,196.

To all whom it may concern:

Be it known that we, JAMES RIGG and THOMAS MEACOCK, both subjects of the Queen of Great Britain, and residents, respectively, of London and Birmingham, England, have invented certain new and useful Improvements in Taps or Valves, (for which we obtained Letters Patent of Great Britain, No. 8,196, of June 5, 1888,) of which the following is a specification.

This invention relates to that class of valves, taps, and the like which are intended to automatically close after having been opened for the drawing off of water or other liquid, and has for its object to so construct them that their action in closing shall be slow and gradual, so as to prevent concussion or reaction in the supply-pipes as is generally experienced when a draw-off cock as ordinarily constructed is suddenly closed.

In the accompanying drawings, Figures 1 and 2 are longitudinal sections of a valve or tap constructed according to this invention, Fig. 1 representing it closed and Fig. 2 open, the valve or tap there illustrated being one opened by the pushing in of the valve-spindle. Fig. 3 is a transverse section on the line *a b* of Fig. 1. Figs. 4 and 5 are views, respectively, corresponding with Figs. 1 and 2; and Fig. 6 is a section on the line *c d* of Fig. 5 of another valve or tap constructed according to this invention, the opening of which is effected by the pulling out of the valve-spindle.

Like letters indicate like parts throughout the drawings.

For convenience of description each of the taps or valves shown in the accompanying drawings will be hereinafter referred to as a "tap."

With reference to Figs. 1, 2, and 3, A is the body or casing, on one end of which is screwed the boss A', by which the tap is secured to the supply-pipe, and on the other end is fitted the cap A².

A³ is the outlet or nozzle which leads from the interior of the casing A. Between the parts A and A' is provided the leather or equivalent washer A⁴, and between the parts A and A² is the hat or other packing A⁵ for

making tight joints at those parts. Upon the hat-packing A⁵ we may place a plain washer or other packing. The packing A⁵ is of L-shaped section, to prevent leakage around the spindle B, where it passes through the cap A².

G is a collar, which fits against a shoulder A⁶ in the casing A and is of such internal diameter as to permit the pressure of the liquid to act upon the packing A⁵, so as to keep it tight around the spindle B.

B' is a collar or annular projection formed or fitted upon the spindle B, and B² is a longitudinal passage extending from the rear end of the spindle B toward the front, and with which connects a small tributary passage B³, preferably just at the front side of the collar B'.

C is a cup-leather passed over the rear end of the spindle B and held in position between the collar B' and the front flange D' of the double-flanged sleeve D, which is bored to fit snugly over the spindle B, and both the flanges D' and D² of which fit into the casing A, so that they may easily be moved in a longitudinal direction therein, and yet not allow the liquid to pass around them. The collar B', cup-leather C, and flange D', as a whole, are, for convenience, hereinafter referred to as the "piston" C, both in the tap shown in Figs. 1, 2, and 3, as well as that shown in Figs. 4, 5, and 6.

C' is a second cup-leather, which is held against the flange D² by means of the nut B⁴, which is screwed or otherwise suitably secured on the rear end of the spindle B, and between which and the inner side of the cup-leather C' is left space sufficient to allow of the pressure of the liquid acting on the said cup-leather to force it against the wall of the casing A, and thus prevent the liquid flowing past it. A similar provision is made by forming the collar B' of such external diameter as to allow the liquid to have access to the inner side of the cup-leather C. The collar B⁴, cup-leather C', and flange D², as a whole, are, for convenience, hereinafter referred to as the "valve" C', both as regards the tap shown in Figs. 1, 2, and 3, and 4, 5, and 6.

A⁷ are channels formed in the rear or en-

larged portion A⁸ of the casing A for the passage of the liquid around the valve C' to the outlet A³ when the valve is opened.

E is a spring, which at one end bears against the inwardly-projecting flange A⁹ and at the other end against the valve C' with force sufficient to overcome the necessary friction of the packings. The tap closes automatically under ordinary pressures, as will be described hereinafter, and this spring E is only required to overcome the necessary friction of the packings on occasions when there may be either no water in the supply-pipe or water at an extremely low pressure.

B⁵ is a knob or handle screwed or otherwise suitably secured upon the forward end of the spindle B. It will thus be seen that the construction is such that between the piston C and the front end of the tap is formed a chamber A¹⁰, herein termed the "cataract-chamber," to which the liquid has access through the passages B² B³ for the purpose of retarding the closing action. B⁶ is a perforated or wire-cloth grating, secured to the inner end of the spindle B to prevent the passage of sand, grit, or foreign matter into the passages B² and B³.

The various parts of the tap being in the positions in which they are represented in Fig. 1 of the drawings, the action of the tap may be described as follows: The person desiring to draw off water pushes the knob B⁵, and thus moves the valve C' from the position in which it is shown in Fig. 1, where it is surrounded by the undivided wall of the casing A, and where no liquid could in consequence pass around it to the outlet or nozzle A³, to the position in which it is shown in Fig. 2, where it is partly surrounded by the channels A⁷. The water will thus have free access through the channels A⁷ and around the valve C' to the interior of the casing, and consequently to the outlet A³, as indicated by the arrows. When it is desired to close the valve, the person withdraws the pressure from the knob B⁵, which, together with the spindle B and its connected parts, is moved forward under the influence of the pressure acting on the greater area of the valve C', being greater than that acting on the lesser area of the piston C within the cataract-chamber A¹⁰.

The sudden closing of a tap as ordinarily constructed causes reaction or concussion in the supply-pipe; but it will be seen that, having regard to the pressure at which water may be issued, the diameter of the orifice B³ communicating with the cataract-chamber A¹⁰ can be so determined as to cause the tap to occupy any length of time that may be desired in discharging its contents back into the supply-pipe, and thus not only automatically closing itself, but avoiding the concussion referred to.

Figs. 4, 5, and 6 illustrate our invention as applied to a "pull" form of tap, and where appropriate letters corresponding with the description of our "push" form of tap have

been adopted. In these figures, the collar G', corresponding with the collar G in Figs. 1 and 2, supports the leather or equivalent packing A⁵ on one side, while on the other side the said packing is pressed upon by the cover A². In this example, however, the collar G' differs from the before-mentioned collar G in so far that it is provided with a projecting sleeve G², which serves to limit the extent to which the valve-spindle B may be pulled outward, as is shown in Fig. 5. Besides this the present construction differs in the relative location of the valve C', which here fits into the boss A' when in its closed position, as shown in Fig. 4, and when in its open position, as shown in Fig. 5, fits in the part surrounded by the channels A⁷. The packings C and C' are held against the surfaces of the casing A and boss A' by the pressure of water acting upon their inner sides, as previously described with reference to Figs. 1, 2, and 3.

When the pull form of tap is closed, the parts thereof will be in the position in which they are represented in Fig. 4, and when it is desired to open it the spindle B, by means of the knob B⁵, is drawn outward, so that the valve C', which was before within the boss A', will be moved to that part of the casing A where are the channels A⁷, so that by way of these channels the water will have a free passage to the outlet A³, as shown by the arrows in Fig. 5. When it is desired that the valve shall close, the knob B⁵ is released, and the greater pressure in this instance acting upon the piston C within the cataract-chamber A¹⁰ overcomes the lesser pressure acting upon the valve C', thus causing the spindle to again assume the position shown in Fig. 4.

It will be observed that the spring previously described as required in the push form of tap to overcome the necessary friction of the packings when the pressure of the liquid might be very low or the supply-pipe empty has been in this instance placed within the cataract-chamber A¹⁰.

We claim—

1. The combination, in a tap-valve, of a main casing closed at one extremity and having external channels for the passage of the liquid from the supply to the outlet pipe, a spindle having a passage communicating with the supply-pipe and with the interior of the casing near the closed extremity, and a valve and a piston secured to said spindle, and said valve and piston having different areas with reference to each other, substantially as and for the purposes set forth.

2. The combination, in a tap-valve, of a main casing closed at one extremity and having external channels for the passage of a liquid from the supply to the outlet pipe, a spindle having a passage communicating with the supply-pipe and with the interior of the casing near its closed extremity, a collar secured to said spindle, and a valve and a piston having different areas with reference

to each other, and said valve and piston secured to the respective extremities of said collar, substantially as and for the purposes set forth.

5 3. The combination, in a tap-valve, of a main casing closed at one extremity and having external channels for the passage of a liquid from the supply to the outlet, a spindle having a passage communicating with the
10 supply and with the interior of the casing near the closed extremity, and a valve and a piston secured to said spindle, and said valve having a larger area than said piston, substantially as and for the purposes set forth.

15 4. The combination, in a tap-valve, of a main casing closed at one end and enlarged between the water-supply and outlet pipes in communication therewith, a collar, a valve located in the enlarged portion of said casing, a piston located near the closed ex-
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tr extremity thereof and having a smaller diameter than the valve, a spindle carrying said collar, and said spindle having a passage therein extending from the supply into the interior of said casing near the closed end 25 thereof, and a spiral spring interposed between said valve and casing, substantially as and for the purposes set forth.

In testimony whereof we have hereto set our hands in the presence of the two sub- 30 scribing witnesses.

JAMES RIGG,

THOMAS MEACOCK.

Witnesses to the signature of James Rigg:

HARRY B. BRIDGE,

RALPH MICKLE.

Witnesses to the signature of Thomas Meacock:

W. H. HARRIS,

FREDERICK BAXTER.