July 30, 1929. T. S. TODD 1,722,401

FAUCET

Filed Sept. 24, 1928

Fig. 1.

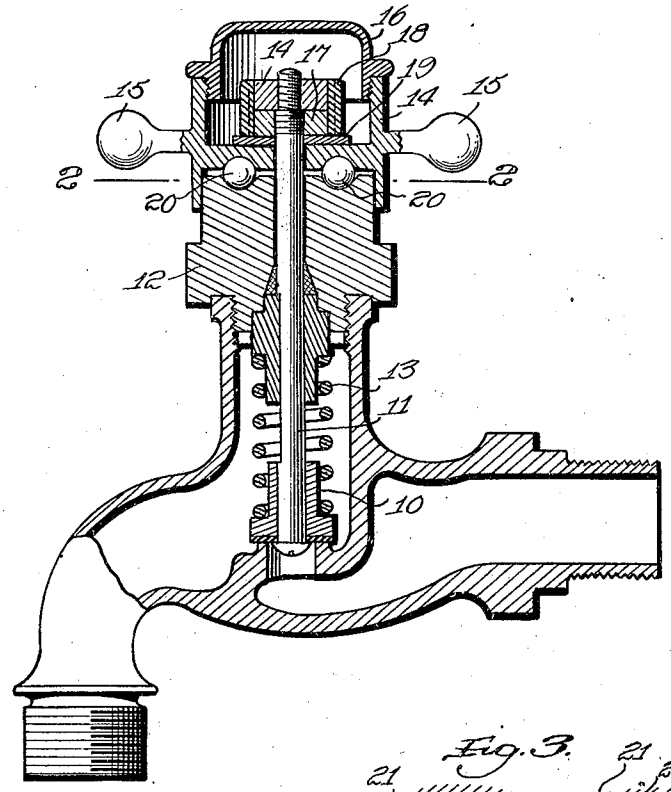


Fig. 3.

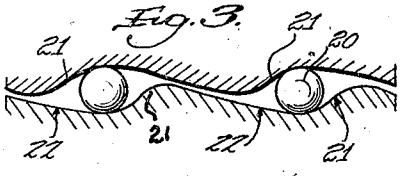


Fig. 2.

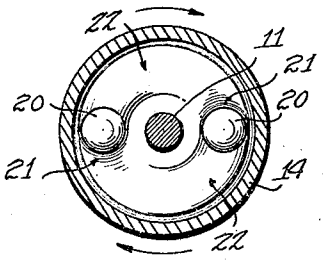


Fig. 4

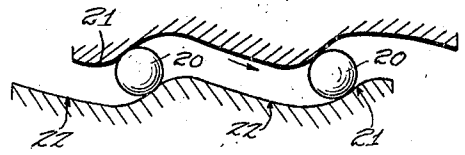




Fig. 5.

Inventor,
Thomas S. Todd
By Davis & Davis
Attorneys

Patented July 30, 1929. 1,722,401

UNITED STATES PATENT OFFICE.

THOMAS STEPHEN TODD, OF GASTONIA, NORTH CAROLINA.

FAUCET.

Application filed September 24, 1928. Serial No. 308,076.

The object of the invention is to provide simple means whereby in a single faucet is combined a self-closing faucet as well as a stay-open faucet, as more fully hereinafter set forth.

In the drawing annexed—

Fig. 1 is a vertical sectional view of a faucet constructed in accordance with my invention;

Fig. 2 is a horizontal sectional view on the line 2—2 of Fig. 1;

Figs. 3, 4 and 5 are diagrams showing the operation of the cam-grooves in the balls.

Referring to the drawing annexed by reference-characters, 10 designates the usual valve carried at the lower end of a vertically-movable valve-stem 11 working up through the usual stuffing-box in the usual plug 12 in the top of the faucet, a coil-spring 13 of the usual type being employed to normally force the valve downwardly to its seat.

Mounted on top of the plug is a cap 14 provided with the usual radial handle-members 15, this cap being closed at its upper side by the usual screw-cover 16. Within the cavity formed under the cover 16 is a pair of locknuts 17 screwed onto the upper end of the vertically-slidable stem 11, these nuts being locked together by a ring 18, said ring and nuts resting on a washer 19 which in turn rests upon the upper side of the cap 14.

Interposed between the under surface of the cap 14 and the upper surface of the plug 12 is a pair of balls 20 which work in cam-grooves in said surfaces, the grooves being so shaped as to permit the cap 14 to be rotated in either direction—i. e., either clockwise or anti-clockwise. The cam-grooves are so shaped that, when the cap is rotated clockwise to thus open the valve, the cap, when released from the hand of the operator, will return to its normal position and thus close the valve, and, when the cap 14 is rotated anti-clockwise, the cap will stay in the position to which it is rotated and thus hold the valve open until it is normally closed. The shape of the cam-grooves is shown in diagram in Figs. 3, 4 and 5. In Fig. 3, the parts are shown in normal, closed position; in Fig. 4, the parts are shown as they appear in a self-closing movement of the cap; and in Fig. 5, the parts are shown in the position they assume when the cap is rotated in the stay-open direction.

To accomplish this purpose, it will be observed that each cam-groove is inclined beyond the angle of repose at one side of each ball, this part being designated 21, and that at the other side of the ball each cam-groove is inclined at an angle less than the angle of repose, this part being designated by the numeral 22. It will be observed also that the two abrupt or steep parts 21 associated with each ball are arranged at opposite sides of the ball and likewise with respect to the gradually-inclined surfaces 22. With cams constructed and arranged in this manner, it will be observed that, when the handle of the faucet is turned in the normal direction, namely, clockwise, the balls will work on the steep parts 21 of the cam-grooves, so that, when the handle is released, the spring will quickly return the parts to normal, closed position; but, when the handle is turned in the opposite direction—i. e., anti-clockwise—, as shown in Fig. 5, the balls will run up the long slopes 22 and that, therefore, the valve will remain open, these slopes being, as stated, less than the angle of repose, so that a straight downward pull of the spring will not be sufficient to cause the balls to roll back automatically into the deeper parts of the grooves.

What I claim as new is:

1. The combination with a faucet having a spring-actuated vertically-movable valve-stem, of a valve-operating element adapted to rotate in either direction from normal closed position, and cam and roller means so constructed that when said element is rotated in one direction the spring will automatically close the valve when the element is released and the element will stay in valve opening position when rotated in the opposite direction.

2. The combination with a faucet having a spring-actuated valve-stem working through a top plug, a manually-operable cap-member engaging the upper end of said valve-stem, and means between said cap-member and said plug for raising said valve-stem to open position when said cap is rotated in either direction, said means embodying two balls and a pair of cam-grooves associated with each ball, these grooves being opposite and reversed with respect to each other and each having one end-portion inclined beyond the angle of repose and the other end-portion inclined at less than the angle of repose, for the purpose set forth.

In testimony whereof I hereunto affix my signature.

THOMAS STEPHEN TODD.