G. O. MILLER.

FAUCET.

APPLICATION FILED AUG. 30, 1912.

1,177,204. Patented Mar. 28, 1916.

Fig. 1.

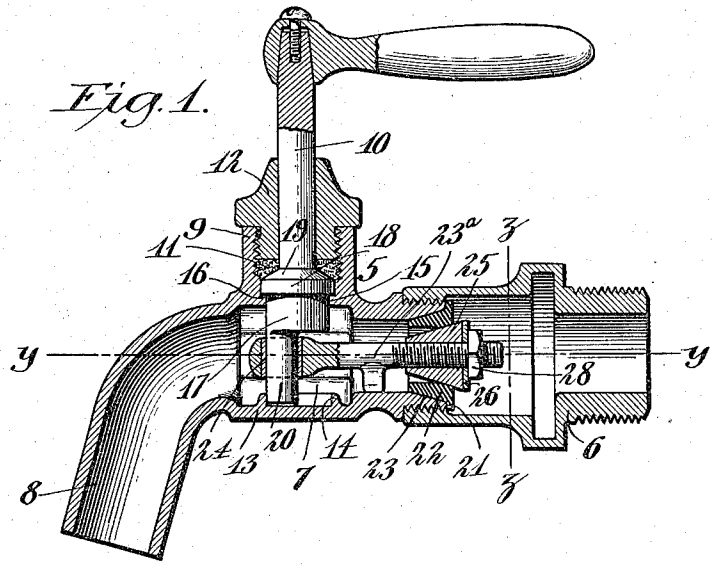


Fig. 2.

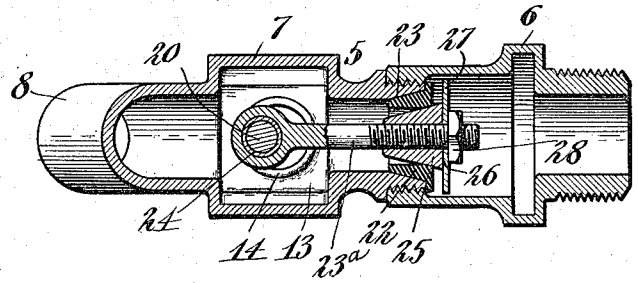


Fig. 3.

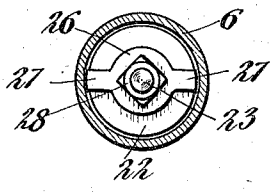
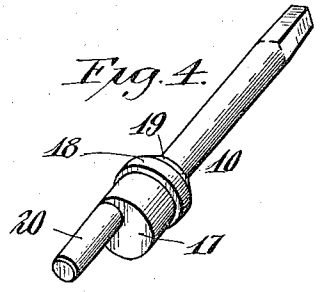


Fig. 4.



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FAUCET.

1,177,204. Specification of Letters Patent. Patented Mar. 28, 1916.

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To all whom it may concern:

Be it known that I, GEORGE O. MILLER, a citizen of the United States, residing at North Tonawanda, in the county of Niagara and State of New York, did invent certain new and useful Improvements in Faucets, of which the following is a specification.

My invention relates to faucets, and more particularly to that type in which the actuating spindle or stem is provided with an eccentric or crank portion to which the valve is connected and whereby the valve is caused to open or close. Faucets of this type as now constructed have a rubber valve which, when constantly in water, have a tendency to soften and swell, causing at times the complete closing of the water passage. Such valves when worn also cause hammering and rattling in the water system, and are difficult to keep in service.

My improved faucet is designed to eliminate the above-named objections and it also has for its object the provision of a simple, durable and inexpensive faucet in which the actuating spindle or stem is provided with a comparatively long bearing so that there will be no lost motion when the parts become worn.

Other objects are to so construct the faucet that the actuating spindle or stem is guided at its inner end although not journaled; to so construct the faucet that the tendency to wear is reduced to the minimum and so that adjustment of the parts can be readily made without renewing packings; and to otherwise improve on faucets of this type, all with a view of increasing the efficiency in service.

With these objects in view, the invention consists in certain novel features of construction, and in the arrangement and combination of parts to be hereinafter described and particularly pointed out in the subjoined claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal section through the faucet. Fig. 2 is a horizontal section taken on line *y—y*, Fig. 1. Fig. 3 is a cross section taken on line *z—z*, Fig. 1. Fig. 4 is a detached perspective view of the actuating spindle or stem.

The same numerals of reference denote like parts in the several figures of the drawings.

The reference number 5 designates the faucet casing which is preferably constructed in two parts 6, 7 threadingly connected so that they may be easily disconnected and render parts within readily accessible. The part 6 of the casing is adapted for connection to a pipe of the water system and may be retained in place while part 7 is disconnected therefrom.

Part 7 of the casing has a downwardly directed nozzle 8 and the passage in the latter is a continuation of that in the horizontal portion of the casing. Rising from part 7 at a point between said nozzle and part 6 is a packing-box 9 through which is passed the actuating spindle or stem 10, said packing-box having packing 11 therein and being interiorly threaded for the reception of a gland or nut 12 which serves to pack the packing around said spindle or stem and thus prevent leakage along the latter. Said spindle or stem extends well into the casing so that only the necessary clearance intervenes between its inner end and the bottom wall of the casing, and to its outer end it has secured a handle in any approved manner. It will be noticed that the casing is made preferably angular in cross section in the plane of said spindle so as to provide a flat bottom wall 13 from which rises an annular rib or web 14 which serves as a guide for the inner end of the actuating spindle or stem. The passage in the casing is preferably cylindrical except at the portion where the actuating spindle or stem enters and at this portion it may be of any cross-sectional shape so long as it admits of the use of the annular rib or web 14.

An opening 15 connects the packing-box with the passage of the casing and it is somewhat smaller in diameter than the internal diameter of the stuffing box so as to provide an annular ledge 16 at the lower end of said box. The actuating spindle or stem is provided with an enlargement 17 which fits into said opening and with an integral collar 18 which bears against the upper face of said ledge, said collar having its upper portion made conical, as at 19, whereby a gradual reduction in diameter is obtained from that of the lower portion of the collar to that of the major portion of the spindle or stem. Said conical portion of the collar also assures a more efficient packing of the spindle or stem since it tends to crowd the packing material outward and well down into the angle formed by the ledge 16 and the circular wall of the packing-box when

the gland or nut is tightened. The inner portion of the actuating spindle or stem, which extends from the enlargement 17 to its inner extremity, is made eccentric with respect to the remainder of the spindle or stem so as to form a crank 20 which extends into the space bounded by the annular rib or web 14 and upon partially rotating said spindle or stem, said crank travels in a curved path in contact with the inner face of said rib or web, it being only necessary to partially rotate said spindle or stem in either direction to open the passage of the faucet, as will presently be described, and then reverse the movement of the same to close said passage. It is apparent, however, that said spindle or stem may be rotated through a complete revolution, in which case the passage in the faucet would be opened during the first half revolution and closed during the second. When said spindle or stem is given a complete revolution, the crank or eccentric portion 20 thereof travels in a circular path in contact with the inner face of said annular rib or web 14.

The annular rib or web 14 serves as a guide for the inner end of the spindle or stem 10 and assures free and easy action for the latter and by reason of the valve, to be presently described, being secured to said spindle or stem, the adjustment of the same can be maintained for a greater period of time than if the inner end of said spindle or stem were free. By reason of the construction described, the spindle or stem is guided at three points in its length and consequently the tendency to wear is reduced to the minimum and a wabbling action of the eccentric or crank portion of said spindle or guide in its curved or annular path is practically impossible.

As stated, the parts 6, 7 of the casing are threadingly connected, and in order that a removable valve seat may conveniently be employed, I thread the part 7 into part 6 so that the inner end of part 7 serves as an abutment, such as 21, for a removable valve seat 22, and the inner end of the passage in part 7 is flared toward its extremity, as at 23, to receive said valve seat. The latter is made conical exteriorly and it has a cylindrical bore extending axially therethrough. It is constructed of rubber or other resilient material so that it may be compressed into said flaring portion of the passage and by its inherent expansive quality be self-retained. Said valve seat projects beyond the face of the abutment 21 and has an annular outstanding flange which bears against said abutment. By making the valve-seat conical and fitting the same into the flaring portion of the passage said valve-seat is given bearing its full length in addition to having a bearing for its flange.

Arranged centrally in the passage of the casing is a valve rod 23^a having at one end an aperture 24 through which extends the eccentric or crank portion of the actuating spindle or stem. At its other end said rod is threaded and has a conical metallic valve or stopper 25 threaded thereon which enters the resilient valve seat 22 and is adapted to close the water passage in the part 7 of the casing. By reason of said valve or stopper being threaded onto the rod 23^a it is lengthwise adjustable thereon so that wear, if any, may be taken up. Said valve or stopper is retained in adjusted position by a washer 26 having wings 27 whereby it may readily be caused to follow and bear against the valve or stopper and by a nut 28 which bears against said washer. The conical valve or stopper 25 is movable into the resilient valve-seat 22 and engages the interior surface thereof with the small end of the valve or stopper separated from the valve-seat by an annular intervening space. By means of this construction the valve is always assured of a water-tight fit against the valve-seat.

By constructing the faucet with a rubber or other resilient valve seat and a metal or other similar valve or stopper there is no possibility of parts swelling so as to restrict if not entirely close the water passage, and as the swelling of the valve seat would only act to more securely retain it in place, such action is a decided advantage in my construction rather than an objection as in faucets of this type now in use. Moreover, other security is provided to retain the valve seat in position; for example,—when the valve or stopper is closed against the valve seat, the latter is positively held against unseating and it is to be noted that at all times, the pressure of the water acts against said seat in a direction to tighten it.

Having thus described my invention, what I claim, and desire to secure by Letters-Patent is,—

1. In a faucet, the combination with a casing having a water passage and an abutment, a part of the latter being flared, of a resilient valve seat having its exterior conically formed to fit into the flaring portion of said abutment and having a cylindrical bore extending from end to end thereof, and a tapering metallic valve movable into and against said valve seat and having a portion of its length spaced from said valve seat by an annular intervening space.

2. In a faucet, the combination with a casing having a water passage and an abutment, a part of the latter being flared, of a resilient valve-seat having its exterior conically formed to fit into the flaring portion of said abutment and having a cylindrical bore extending axially therethrough, said valve seat having an outstanding flange at its large end adapted to bear against the

abutment, and a tapering metallic valve movable into said valve-seat and against the cylindrical wall of its bore and having a portion of its length spaced from said valve-seat by an annular intervening space gradually restricted toward the larger end of said valve.

In testimony whereof, I have affixed my signature in the presence of two subscribing witnesses.

GEORGE O. MILLER.

Witnesses:
R. H. GETMAN,
EDNA GERNEO.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."