

N. PALMAFFY.
VALVE.

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Fig. 1.

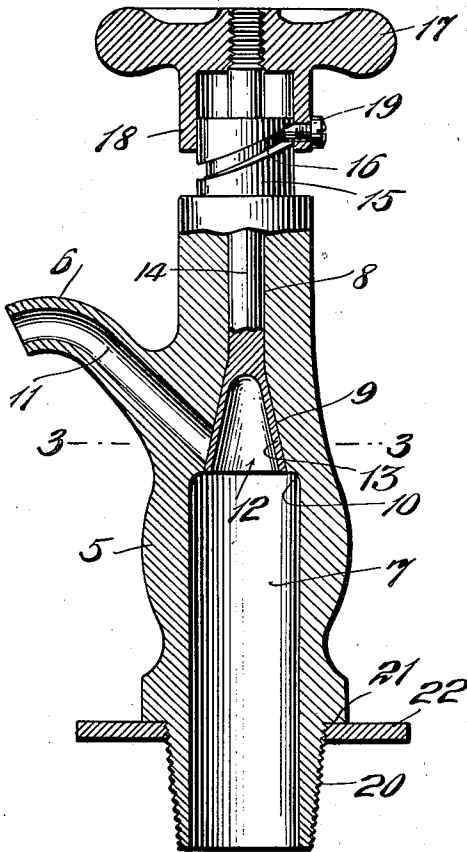


Fig. 2.

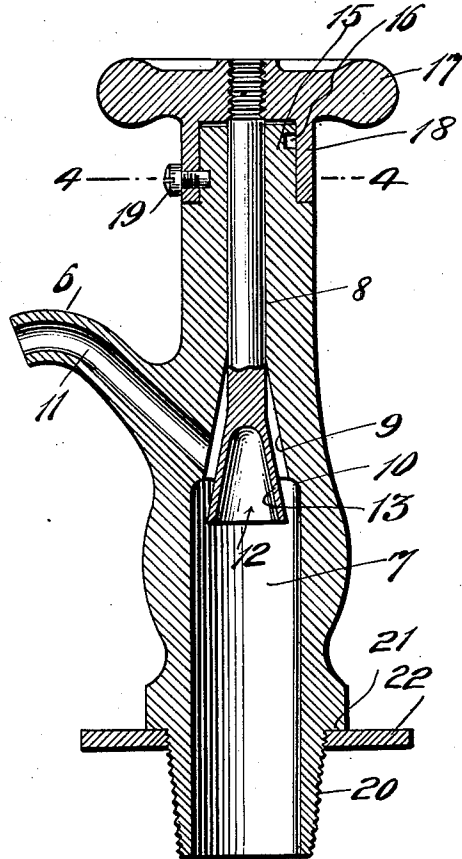


Fig. 3.

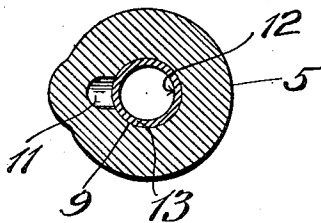
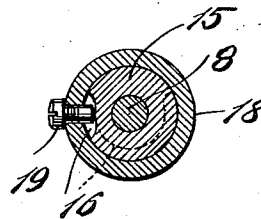


Fig. 4.



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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, NICHOLAS PALMAFFY, a citizen of the United States, and resident of the city of West Orange, State of New Jersey, have invented certain new and useful Improvements in Valves, of which the following is a specification.

This invention relates to valves and has for its primary object to provide a valve especially designed for use in connection with water faucets and of such construction that the movable valve element is automatically returned to its closed position and tightly held against its seat by the water pressure.

It is a more particular object of my invention to provide a valve of the character above stated including a rotary valve element and cam means for imparting a rectilinear movement to the valve element during such rotary movement whereby the valve is opened.

And it is also an important object of the invention to provide a valve having the above noted desirable feature which consists of relatively few parts of very simple and inexpensive construction and not liable to get out of order.

In detail, the invention contemplates a valve casing having an elongated tapering seat and a correspondingly elongated conical valve member of hollow construction for engagement upon the seat, the hollow valve member providing a water chamber so that the water pressure may act against a relatively extensive surface to normally maintain the valve in a tightly closed position.

With the above and other objects in view, the present invention comprehends an improved construction, combination and relative arrangement of the several parts as will be hereinafter more fully described and subsequently incorporated in the subjoined claims.

In the accompanying drawing forming a part of this specification and wherein like reference characters designate corresponding parts throughout the several views:

Fig. 1 is a longitudinal sectional view illustrating one embodiment of my invention, certain of the parts being shown in elevation and the valve being in its closed position.

Fig. 2 is a similar view, the valve being open.

Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 1.

Fig. 4 is a horizontal section taken on the line 4—4 of Fig. 2.

Referring in detail to the drawing 5 designates the valve casing; which as herein shown is in the form of a faucet and provided with an outlet or discharge spout 6. It is, however, to be distinctly understood that the present invention is not limited in its utility to this specific form of valve casing but is readily adaptable to many other types of valves employed for different purposes.

The casing 5 is formed with a longitudinal bore having a main portion 7 of relatively large diameter and the reduced portion 8 in which the stem of the valve member to be presently referred to is slidably and rotatably engaged.

Between the main portion 7 and the reduced portion 8 of the bore of the valve casing there is formed the elongated tapering or conical valve seat 9. This valve seat at its smaller end merges into the wall of the portion 8 of the bore while the larger end of the seat is of appreciably less diameter than the main portion 7 of the bore, the wall of the latter portion of the bore being inwardly curved or bevelled to the valve seat as shown at 10. The outlet passage 11 through the spout 6 opens at its inner end upon the valve seat 9.

12 designates the valve member which is of elongated conical form and also of hollow construction to provide a water receiving chamber 13. This valve member is of a length somewhat in excess of its greatest diameter and said valve member and the seat 9 are properly ground in order to assure a tight fit at their contacting faces. The valve stem 14 is preferably formed integral with the smaller end of the valve member and extends through the portion 8 of the bore in the valve casing.

The latter end of the casing is formed with a diametrically reduced extension 15 through which the bore 8 is likewise extended. This reduced extension of the valve casing is formed with the cam groove 16 in its periphery which extends around substan-

tially one half of the circumference of said extension. The valve stem 14 projects longitudinally beyond the extension 15 and upon the end of the valve stem a hand-wheel 17 is threaded. This wheel is formed with a hollow hub portion 18 which closely surrounds the extension 15 of the valve casing. In the hub of the wheel 18 a pin 19 is suitably fixed, the inner end of said pin being engaged in the cam groove 16.

At its opposite end the valve casing 5 is exteriorly tapered and threaded as shown at 20, said casing being formed at the inner end of said threaded portion with the annular shoulder 21 for bearing engagement against a washer plate 22 which is engaged upon the threaded end of the casing.

Having above described the several structural features of my improved valve, its operation will be understood as follows:

In the closed position of the valve member 12, as seen in Fig. 1, the pin 19 carried by the hand wheel is engaged in the upper end of the cam groove 16. When it is desired to open the valve, the hand wheel 17 is turned to the left, and the valve member being connected with the wheel is of course turned or rotated. In this turning movement of the wheel, the end of the pin 19 riding against the wall of the groove 16 also causes a rectilinear movement of the valve member and the hand wheel which continues until the hub 18 of the wheel abuts against the body of the valve casing, at which time substantially one-half of a full turn of the wheel will have been made and the pin 19 will be disposed in the inner end of the groove 16. The valve member 12 will now be in its open position in spaced relation to the seat 9 as seen in Fig. 2 of the drawing and the water may freely flow from the bore 7 around the valve member and through the outlet passage 11. The valve will remain in this open position as long as the wheel 17 is held or grasped with the hand. Immediately upon the release of the wheel, the water pressure within the chamber 13 acts against the wall of the valve member and forces said valve member longitudinally and returns the same to its closed position upon the seat 9. Of course, in this return movement of the valve member the pin 19 co-acting with the wall of the cam groove 16 imparts a reverse rotation to the valve member. The water pressure acting to automatically urge the valve member to its seat and exerting pressure uniformly against all portions of the wall of said member, will maintain a very tight engagement of said wall with the surface of the seat 9. Thus, the possibility of leakage of the water, when the valve is closed, into the outlet passage is substantially obviated.

From the foregoing description taken in connection with the accompanying drawing,

the construction, manner of operation, and several advantages of my invention will be clearly and fully understood. A valve of the improved construction above described provides means whereby the valve member may be quickly moved to its fully opened position so that a maximum flow of water may be obtained, and such flow will be almost instantly cut off automatically, by the water pressure, simply by releasing the hand wheel. It is also to be noted that there are no threaded relatively movable parts employed for the operation of the valve, and the improved construction also eliminates the necessity of using springs and other easily breakable elements for returning the valve member to its closed position. The several parts of the device are each of very simple form so that the valve as a whole will not be liable to get out of order or require frequent repairs and can also be manufactured and sold at comparatively small cost.

While I have herein shown and described one practical embodiment of the invention, it is to be understood that the same may also be exemplified in numerous alternative forms and I do not therefore, consider myself limited to the construction, form, or arrangement of the several parts as above described, but reserve the privilege of resorting to all such legitimate modifications as may fairly fall within the spirit and scope of the invention as claimed.

I claim:

1. In a valve, a casing having a bore terminating at one of its ends in an elongated valve seat and a laterally extending outlet passage communicating with said seat, and a hollow conical valve member normally held upon said seat solely by fluid pressure acting against the inner surfaces of the valve walls, the walls of said conical valve member being imperforate and spaced from said seat when the valve member is in open position to permit passage of the fluid into the outlet, said imperforate wall extending circumferentially over the end of the outlet passage and closing the same when the valve is in its normal position.

2. In a valve, a casing having a bore terminating at one of its ends in an elongated conical valve seat and having an outlet passage extending laterally from the valve seat and opening upon one side thereof, and a conical valve member normally held upon said seat by fluid pressure and closing said outlet passage, said valve member and said casing being constructed to prevent outflow of fluid from the casing when the valve member is in closed position upon said seat.

3. In a valve, a casing having a bore terminating at one of its ends in an elongated conical valve seat and having an obliquely inclined outlet passage opening upon the

valve seat at one side thereof and adjacent to its larger end, and a hollow conical valve member normally held upon said seat by fluid pressure, the wall of said valve member extending circumferentially over the end of the outlet passage and closing same, said valve member and said casing being constructed to prevent out-flow of fluid from the casing when the valve member is in closed position upon said seat. 10

In testimony that he claims the foregoing as his invention, he has signed his name hereunder.

NIK PALMAFFY.