J. E. MURCH.

GAS COCK.

APPLICATION FILED MAY 29, 1907.

916,954. Patented Mar. 30, 1909.

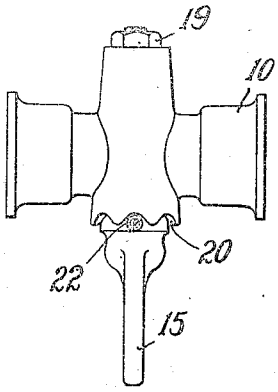


FIG. 1

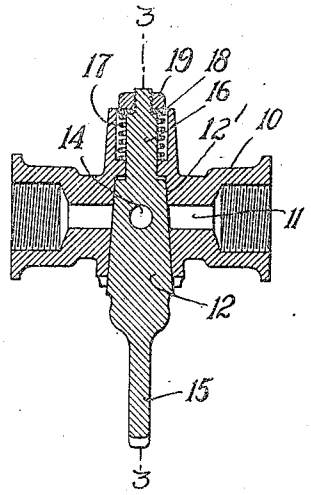


FIG. 2

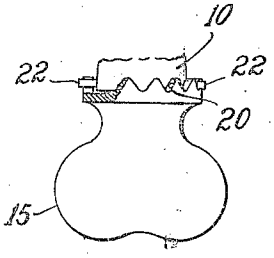


FIG. 4.

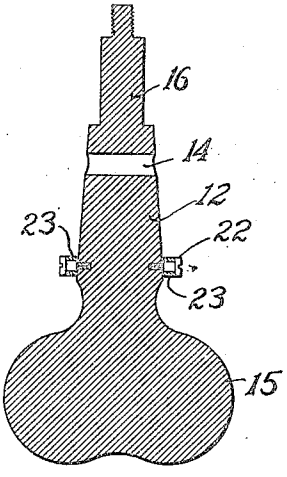


FIG. 3

WITNESSES

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BY HIS ATTORNEY

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UNITED STATES PATENT OFFICE.

JAMES E. MURCH, OF LYNN, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO JAMES E. PHELAN, OF LYNN, MASSACHUSETTS.

GAS-COCK.

No. 916,954. Specification of Letters Patent. Patented March 30, 1909.

Application filed May 29, 1907. Serial No. 376,317.

To all whom it may concern:

Be it known that I, JAMES E. MURCH, of Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Gas-Cocks, of which the following is a specification.

This invention relates to gas cocks.

The object of the invention is to provide a safety cock of simple construction and capable of manufacture with but slight variation from forms already extensively in use and capable of effective operation by any person who understands the ordinary non-safety cock.

Safety gas cocks have heretofore been proposed in which a locking device is used and in which a distinct unlocking operation has to be performed before the cock can be turned. This requires previous instruction of the person who is to use the cock and therefore makes these cocks unsuitable for installation in hotels, lodging houses and other places, where they are most desired but where the transient character of the users makes it impracticable to instruct them in advance as to the method of operating the device.

Another object of the invention is to reduce the cost of manufacture and to simplify the construction of safety cocks and in general to produce apparatus having the advantages of the construction hereinafter shown and described.

The accompanying drawings represent an embodiment of the invention, in which—

Figure 1 is a side elevation of one of my improved gas cocks; Fig. 2 is a sectional elevation of the same; Fig. 3 is an enlarged view of a detail, represented as if sectioned on the line 3—3 of Fig. 2; Fig. 4 is an elevation of a detail of a modification.

Referring to the drawings: 10 represents a short section of pipe or tubing in which a valve is set, the passage through the pipe being marked 11, the valve 12, the valve seat 12′ and the passage through the valve 14. The piece 12 is conical and passes through the pipe; being flattened externally at one end, forming a handle, thumb piece or key 15 suitable for being grasped by the user; and having a spindle 16 projecting from the other side of the pipe, on which a spring 17 is strung, held by a washer 18 and a nut 19. The valve piece 12 is loose in its conical seat 12′ except as the tension of spring 17 draws the valve toward the seat. On the pipe adjacent to the key or thumb piece is an undulating circular raceway 20, comprising a series of cams; and the adjacent portion of the key has projecting pins 22, which, as represented in the drawings and as shown most clearly in the enlargement in Fig. 3, carry rollers 23.

In Figs. 1 and 2 the valve is represented closed, and the rollers 23 rest in hollows in the undulating raceway. When the key is turned the pin and roller 23 pass over a convex portion of the undulating raceway and in so doing the valve piece 12 is drawn away from its conical seat 12′, spring 17 being thus compressed. The key is to be turned in the ordinary manner till the valve is open as far as desired. When the user's hold upon the key is released the spring draws the pin and roller 23 into one of the concavities of the raceway, thus seating the valve piece 12 upon its conical seat 12′ and bringing the passage 14 of the valve piece into register with the bore 11 of the pipe. When it is desired to close the valve the same operation is repeated. Upon the user's turning it to the cross position shown in Figs. 1 and 2 and releasing his hold, the valve seats itself in closed position. The tension of the spring prevents the valve from being unwittingly opened by the user in taking his hand away. This tension is so proportioned that the pin and roller cannot be raised upon the convex cam surface without a conscious effort of the user; but, nevertheless, so that they will readily rise upon it thus when a reasonable amount of force is applied. Owing to this feature no special instruction is needed to make the device possible of use by the public generally; as it is a matter of common skill for a user to apply extra force if the handle does not turn with a slight force. In this respect the device is distinguished from certain prior devices, which will not turn with any amount of pressure in the turning direction until a preliminary unlocking motion in a different direction has been performed, for which special instruction is needed by the public. The raceway represented in Fig. 1 has three positions of the valve: completely closed, as represented; half on; and full on, the last corresponding to a quarter turn of the valve. If the user fails to turn the valve to a complete right angle position as shown in Fig. 2, the cam

and spring act together to complete the motion to the fully closed position, provided the cock has been turned past the crest of the cam surface. If the user has not turned it so far as the crest the cam will throw the valve back open again when released, thus leaving the light burning. More undulations might be formed in the raceway, or the circle on which the undulations are cut might be made of larger diameter thus allowing room conveniently for a larger number of undulations and therefore a larger number of graduations at which the valve may be set. Such a device is represented in Fig. 4 in which the key has a flange carrying the raceway; and the pins project from the pipe portion of the device. While the pins are here shown as set rigidly in one part and the raceway formed integrally with the other, these parts may if preferred be formed on separate pieces attachable firmly to the pipe and to the key respectively; and this method is applicable to cases where a gas cock is already installed in a fixture to which it is desired to add the improvement above described.

Other features or advantages in the construction here illustrated are that the valve handle and valve may be turned through a complete circle instead of a half circle as is ordinary; with the result that the wear is uniform all around the circle of the conical valve piece, and that the spring 17 draws it tightly to its seat at all times irrespective of the amount of wear which has taken place; so that the valve will never require adjustment and never wear loose and thus become dangerous.

I claim:

1. The combination of a pipe and a conical cock therein, there being an undulating cam raceway and pin engagement between them, with a spring engaged between the pipe and cock drawing the cock to its seat and the pin to its raceway.

2. The combination of a pipe and a conical cock therein, there being an undulating raceway and pin engagement between them, there being a flange of larger diameter than the parts comprising the cock body and stem on which the raceway is formed, and a spring engaged between the pipe and cock normally maintaining the parts seated.

3. The combination of a pipe and a conical cock therein, there being a cam raceway and pin engagement between them, and a spring engaged between the pipe and cock normally maintaining the parts seated; there being one face of the cam running from an unseated open position of the cock and ending at a seated closed position thereof.

In testimony whereof I hereto affix my signature, in presence of two witnesses.

JAMES E. MURCH.

Witnesses:
EVERETT E. KENT,
ELLIOTT B. CHURCH.