No. 706,573. Patented Aug. 12, 1902.

R. F. LINDSAY.

COCK OR FAUCET.

(Application filed Feb. 15, 1901.)

(No Model.)

Fig. 1.

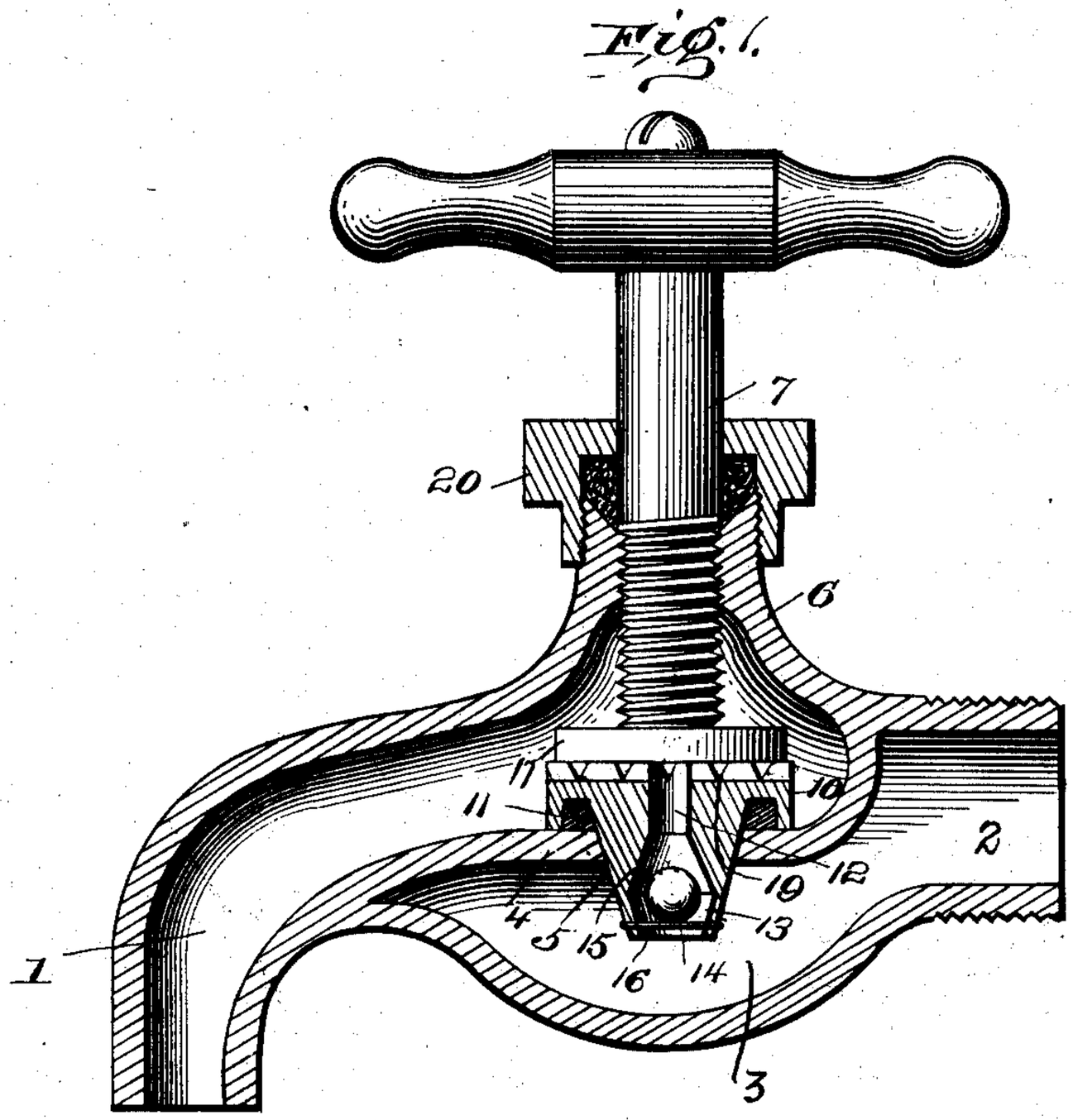
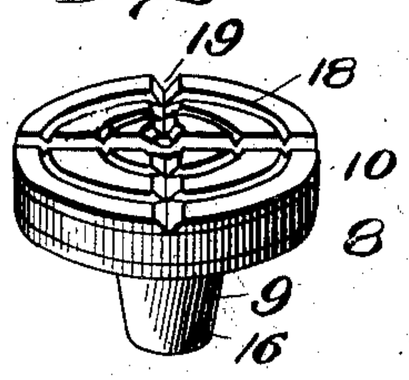


Fig. 2.



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UNITED STATES PATENT OFFICE.

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COCK OR FAUCET.

SPECIFICATION forming part of Letters Patent No. 706,573, dated August 12, 1902.

Application filed February 15, 1901. Serial No. 47,399. (No model.)

To all whom it may concern:

Be it known that I, ROBERT F. LINDSAY, a citizen of the United States, residing at Greenville, in the county of Greenville and State of South Carolina, have invented certain new and useful Improvements in Cocks or Faucets; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to that class of water-supply systems which include means by which the supply to the service-pipe may be shut off and a waste-port from said pipe opened to permit said pipe to be drained of its contents, and thereby prevent freezing thereof; and it has special reference to the cocks or faucets adapted to said systems and designed under ordinary conditions to serve the usual purposes of a cock or faucet and operable automatically when the supply to the service-pipe is shut off and the waste from said pipe is open to assist in draining the same by admitting air thereto.

The object of the invention is to provide a faucet of the type stated which will be of the most simple, durable, and practical construction; and a further object of the invention is to provide a valve which may be applied to faucets already in use and will convert the same into a faucet of the type stated with comparatively no labor and without requiring in such conversion the exercise or employment of special skill or tools.

To these ends the invention consists mainly of a valve for such faucets which serves to control communication of the service-pipe with the spout of the faucet and which is formed separately from the stem thereof and contains within itself the means by which air is admitted to the service-pipe automatically to assist in draining the same when pressure in said pipe is reduced or ceases; and the invention also consists in certain peculiarities in the construction of parts and in certain novel combinations, substantially as hereinafter described, and particularly pointed out in the subjoined claims.

In the accompanying drawings, illustrating the invention, Figure 1 is a vertical section through a cock or faucet provided with my improvements, showing the position of the parts when there is pressure in the service-pipe and supply of water to the spout is cut off. Fig. 2 is a perspective view of the valve thereof detached.

Similar numerals of reference designate similar parts thereof in both figures.

A body or casing of an ordinary form of cock or faucet is shown embodying a spout 1, an inlet-port 2, opening into a water-chamber 3, a diaphragm 4, having a port 5, through which said water-chamber has communication with the spout when the valve is raised from its seat contiguous to said port, and an upward extension 6, having threaded engagement with the stem 7 of a key which controls the action of said valve and provided with means (indicated at 20) for forming a watertight connection around said stem.

It has been previously proposed in the type of cocks or faucets to which the present invention relates to specially construct the key-stem to form a part of the means for admitting air to the service-pipe. Such devices, therefore, do not present a construction by which an ordinary cock or faucet may be converted into one of the present type without entailing the employment of skilled labor, special tools, and considerable time, owing to the necessity of drilling the stem to provide a chamber therein for the air-inlet valve and openings leading to said chamber. It has also been proposed to thread the valve upon the key-stem so that it will be raised and lowered relatively to said stem by proper manipulation of the stem. In such construction channels for admitting air to the service-pipe are not formed in the key-stem; but the threading of the valve upon its stem increases the cost of the construction, necessitates that the valve be made with particular reference to the specific stem to which it is to be applied, and requires a larger valve or plug than otherwise necessary in order to provide for its application to and movement upon the stem.

The previous proposals also contemplate the arrangement of the valve wholly above the diaphragm which contains the port through which the water flows to the spout, thus necessitating a comparatively large chamber above said diaphragm in which to locate the valve.

The construction and arrangement of valve shown in the accompanying drawings and hereinafter described in detail embraces a detail embodiment of my invention which is greatly preferred for the reasons that it eliminates the valve-stem as a part of the means through which air is admitted to the water-inlet side of the diaphragm, obviates the necessity of fixing the valve upon the stem or of threading it thereupon, so as to have movement relative thereto, and does not require the provision of large chambers either above or below the diaphragm to accommodate the valve. In said preferred embodiment the valve 8 comprises an inverted frusto-conical body 9, depending from a radially-extending flange or head 10. Said head is of such diameter as to rest upon the valve-seat or upon the diaphragm 4 adjacent to the opening 5 therein and has an annular groove in its under face in which is seated a washer 11 to insure a water-tight joint. The lateral dimensions of the valve are such that when lowered its body will fit snugly in said opening 5 and when raised there will be presented between the depending body 9 and the wall of the opening 5 a space sufficient to allow a free flow of water to the spout 1. The depending portion 9 of the valve, which extends into or through said opening 5, is formed with a passage 12, which extends vertically through it and to the upper surface of the valve, and the lower end of said passage is increased in diameter to form a valve-chamber 13, in which is disposed a ball-valve 4, which in rising seats against the contracted portion 15 of the passage, and thereby closes the same. The valve 14 is held against downward displacement from the chamber by means of a transverse pin 16, as shown. Thus when pressure is in the chamber 3 the valve 14 will be held thereby to its seat 15, and when pressure is relieved, as by operation of the cut-off and drain above referred to, the valve will drop and will permit air to flow into said chamber 3, from which it will flow into the service-pipe of the system.

The usual faucet-stem 7 has a disk or similar head 17, to which the valve or washers are attached, and therefore in order that there may be a free flow of air to the passage 12 when said disk is upon the upper surface of the valve said surface is formed with concentric grooves 18, connected by radial grooves 19, which extend from the passage 12 through the outer edge of the valve.

Obviously the valve herein described is intended as a substitute for the valves or washers at the lower end of the stem 7 of ordinary cocks or faucets, and it will be seen that its construction is such as to adapt it for such substitution in cocks or faucets already in use without changing the construction of the stem simply by removing the stem from the faucet-body, removing the valve or valve-washers therefrom, dropping the herein-above-described valve 8 into position, and replacing the stem and the parts indicated at 20 for forming a water-tight joint around the stem. The valve 8 may be detachably secured to the lower end of the stem, so as to be raised and lowered positively by the movement thereof; but this is wholly unnecesary, and is therefore not preferred, as it entails a waste of time and labor. When not attached to the stem and when the latter is raised in the usual manner, the entire valve 8 will be raised from its seat by the pressure of the water, and said pressure will also hold the valve 14 to its seat 15, and the valve 8 is closed upon its seat by the downward pressure exerted thereon when said stem is lowered. As the valve-body depends through the opening 5, the walls of the latter tend to guide it in its movements, and it may be applied to cocks or faucets having comparatively small chambers above and below the diaphragm.

Having thus described the invention, what I believe to be new, and desire to secure by Letters Patent, is—

1. As a new article of manufacture, a valvular device for controlling the exit of water from and the admission of air to the water-inlet side of a cock or faucet, formed separate from the key or stem of the cock or faucet and to have a non-threaded engagement therewith, said valvular device consisting essentially of a main body portion having a flange or head from which it depends, said flange or head being designed to rest upon the diaphragm of the cock or faucet and said body to extend through the opening therein and being formed relatively to the wall of said opening to leave a water-passage between it and said wall when it is elevated, said valvular device being also formed with longitudinal and lateral openings for the admission of air from the spout of the cock or faucet to the water-inlet side thereof and having a valve in said longitudinal opening arranged and constructed to be upheld to its seat therein by the pressure of water in the cock or faucet, substantially as described and for the purpose set forth.

2. As a new article of manufacture, a valve for cocks or faucets, formed separately from the key-stem of the cock or faucet and comprising an externally-tapered body having a longitudinal opening, a flange projecting from said body and adapted to seat upon the diaphragm of the cock or faucet, said flange having openings through which the opening in said body communicates with the spout, and a valve seated in the opening in said body and adapted to be held to its seat therein by the

pressure of water at the inlet side of the diaphragm of the cock or faucet, for the purposes specified.

3. The combination with a cock or faucet having a diaphragm formed to provide an opening and having its key-stem provided with a disk at its lower end, of a valve formed separately from said stem and adapted to close said opening, said valve having a valved inlet air-passage therethrough and a head formed with grooves leading to said passage, said head being engaged with said disk, substantially as described and for the purposes set forth.

4. The combination with the key-stem and body of a cock or faucet, said body having its diaphragm formed to provide an opening, of a valvular device for controlling the passage of water through said opening and for admitting air to the water-inlet side of cock or faucet from the spout thereof, said valvular device being formed separate from said key-stem and having a non-threaded engagement therewith, and consisting essentially of a main body portion having a head from which it depends and which rests upon said diaphragm, said body portion extending through said opening and being formed relatively to the wall thereof to provide a water-space between them, and having a longitudinal air-passage and a valve in said passage upheld to its seat therein by the pressure of water, said valvular device having openings through which its passage communicates with the spout of the cock or faucet, substantially as described and for the purposes specified.

5. The combination with the body of a cock or faucet, having its diaphragm formed to provide an opening, and a key-stem, provided with a disk at its lower end, of a valve formed separately from said stem and adapted to close said opening, said valve comprising a body portion of externally-tapered form projecting through said opening and having an air-passage through it, a valve in said passage held to its seat by the pressure at the water-inlet side of the cock or faucet, and a head having openings leading to said passage, said head being engaged with said disk and designed to be seated upon said diaphragm.

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

ROBERT F. LINDSAY.

Witnesses:
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