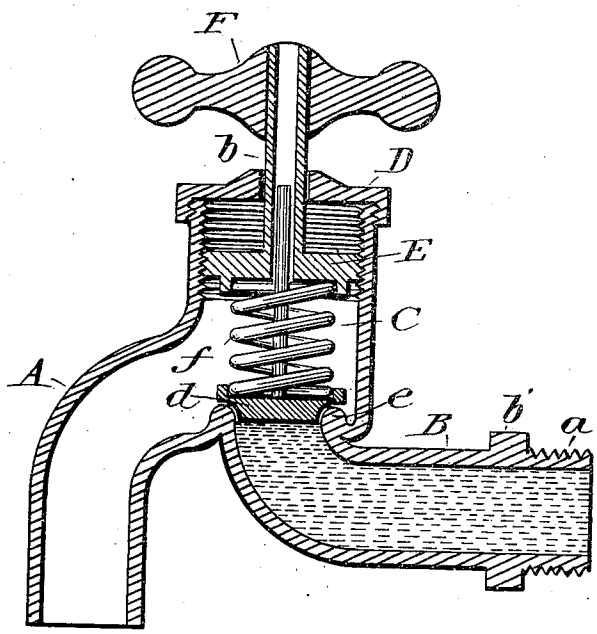
No. 680,329. Patented Aug. 13, 1901.

N. M. HOPKINS.

FAUCET.

(Application filed Apr. 7, 1900. Renewed July 10, 1901.)

(No Model.)



WITNESSES:

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FAUCET.

SPECIFICATION forming part of Letters Patent No. 680,329, dated August 13, 1901.

Application filed April 7, 1900. Renewed July 10, 1901. Serial No. 67,811. (No model.)

To all whom it may concern:

Be it known that I, NEVIL MONROE HOPKINS, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Faucets; and I do hereby 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.

My invention relates to certain new and useful improvements in faucets, and has for its object to provide a construction of such character that should the water within the pipe freeze in the neighborhood of the faucet the accompanying expansion of the freezing water or of the forming ice will be exerted through a yielding valve which normally closes the faucet-valve opening against a predetermined normal water-pressure. The arrangement of parts is such as to guide and direct the expanding column of freezing water or the ice into the relief-chamber of the faucet, so as to exert the maximum lifting power upon the valve without imposing undue strain upon the walls of the faucet itself.

In the accompanying drawing I have illustrated in vertical cross-section a form of faucet embodying my invention.

Referring to the drawing, A indicates the discharge branch of the faucet, and B the supply branch thereof, provided with the coupling screw-thread *a* and annular flange *b'* for the purpose of making connection with the supply-main. Between the branches A and B is located the relief-chamber C, screw-threaded at its upper end for the reception of the closing-cap D and also screw-threaded internally, as shown. Engaging with the internal screw-thread of the relief-chamber C is a screw-threaded disk E, having a hollow stem *b*, which passes through an opening in the cap D and which is provided at its upper end with the operating-handle F. The stem *b* is hollow and receives the stem *c* of a valve *d*, which is adapted to rest upon a raised seat *e* of the faucet and which is normally held water-tight upon said seat by means of a spring *f*, reacting between suitable seats, as shown, upon the upper surface of the valve *d* and upon the lower surface of the disk E. It will be noted that the configuration and arrangement of the branch B are such that the water column exerts a direct pressure upon the spring-seated valve *d*, and the configuration of the branch B is such that it approaches the valve-seat in the form of a gradual curve, so as to reduce as far as possible the strain of the expanding ice column upon the walls of the faucet, while still giving to the column the necessary guiding or directing tendency to cause it to readily raise the valve and enter the relief-chamber C.

In the operation of my invention I so graduate the length of the internal screw-thread of the relief-chamber C and so graduate the strength of the spring *f* that when the disk E is screwed down to its lowermost limit the valve *d* will resist the maximum water-pressure of the service-main. When the disk E is screwed down, therefore, no danger of leakage of the faucet need be apprehended from water-pressure within the main, although it will be evident that by operating the handle F, so as to partially relieve the pressure of the spring *f* upon the valve, a corresponding flow of water through the branch A may be obtained by the operator. Under normal conditions, therefore, the faucet is constantly available for obtaining a flow of water from the main of the volume desired by the user, but will remain permanently closed against the maximum water-pressure existing in the main when the disk E is screwed down to its lowermost limit. On the other hand, should the column of water within and in the vicinity of the faucet begin to freeze and expand the expanding column of freezing water or ice will be guided upwardly through the curved branch B and, raising the valve *d*, will enter the relief-chamber C, thereby saving the faucet from rupture.

The spring-seated valve *d* subserves best its function of protecting the faucet against bursting when located, as shown in the drawing, at the extreme outlet end of the branch B. In some instances, however, the spring-seated valve *d* might be employed to protect

a faucet against bursting if said relief-valve were located in near proximity to the faucet—as, for instance, in a fitting or coupling-piece interposed between the water-main and the inlet end of the branch B, in which case the lower wall of the coupling would be provided with oppositely-curved inclines of such a configuration as to direct the expanding freezing water or ice column upwardly against the lower surface of the valve in manner similar to direction given to the freezing water or ice column in the faucet branch B shown in the drawing. I regard this modification of the invention as less advantageous than the combined faucet and relief-valve illustrated in the drawing, but describe it in order to indicate the scope and extent of my invention.

Having thus described my invention, what I claim is—

1. A non-bursting faucet, comprising an inlet branch, a discharge branch, a relief-chamber, and a pressure-valve normally closing the inlet branch, said inlet branch being of non-diminishing bore and having its interior walls free of shoulders, abrupt curves, or other obstructions to the free movement of the ice column along the inlet branch, to the valve-opening.

2. A non-bursting faucet, comprising an inlet branch, a discharge branch, a relief-chamber, and a pressure-valve normally closing the inlet branch, said inlet branch having a gradual curvature between the water-supply end and the valve-seat end and of non-diminishing bore in the direction of the flow, so as to relieve strain upon the faucet-walls and direct the freezing water or ice column without undue resistance into the relief-chamber; substantially as described.

3. A spring-seated relief-valve for faucets, in combination with a valve-seat normally closed thereby, and pipe-walls of gradual curvature below the valve and of non-diminishing bore in the direction of flow to direct or guide the freezing water or ice column against the valve; substantially as described.

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

NEVIL MONROE HOPKINS.

Witnesses:
JOHN C. PENNIE,
A. E. GRANT.