

(No Model.)

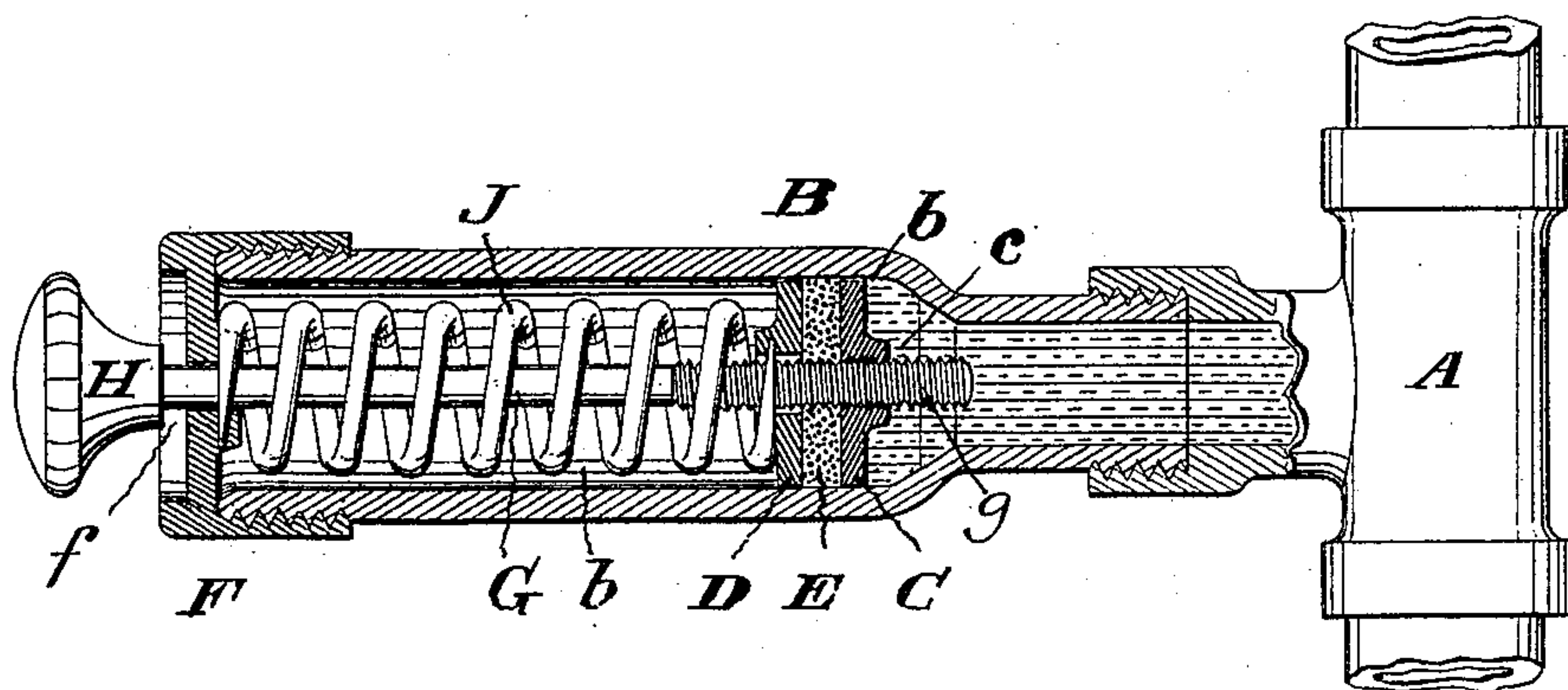
J. STORY.

HYDRAULIC CUSHION FOR WATER PIPES.

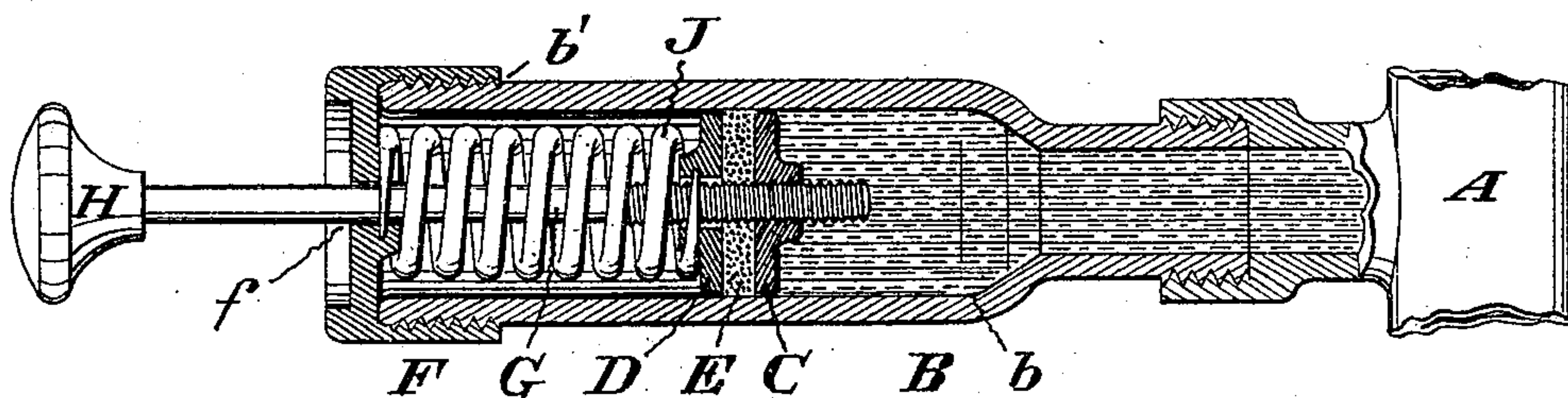
No. 300,917.

Patented June 24, 1884.

*Fig. 1.*



*Fig. 2.*



Attest:

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# UNITED STATES PATENT OFFICE.

JOHN STORY, OF CINCINNATI, OHIO.

## HYDRAULIC CUSHION FOR WATER-PIPES.

SPECIFICATION forming part of Letters Patent No. 300,917, dated June 24, 1884.

Application filed December 28, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN STORY, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Improvement in Hydraulic Cushions for Water-Pipes, of which the following is a specification.

My invention relates to an attachment for water-pipes to protect them from liability to burst from pressure generated by sudden stoppage of the discharge, commonly known as "water-hammer. With this object in view I provide for attachment to and communication with such pipes a cylindrical branch or chamber containing a valve or piston that is pressed forcibly inward or toward the pipe by a helical spring whose pressure force is susceptible of regulation by the person in charge, as hereinafter explained.

In the accompanying drawings, Figures 1 and 2 are axial sections, which respectively show the normal condition and the active condition of a hydraulic cushion embodying my invention.

A may represent a portion of any water-pipe or other liquid conduit.

B represents a tube adapted to be united to such pipe in any customary way—for example, by screwing in the manner here shown when attached to an iron pipe, or by soldering when attached to a lead pipe. The cylindrical chamber *b* of the tube B contains a composite (metal and rubber) valve, in which a wad, E, of rubber is inclosed between a nut, C, and a follower, D. The tube B has at its outer margin a screw-thread, *b'*, for a correspondingly screw-threaded cap, F, a central orifice, *f*, in which serves the double use of permitting escape of any water that may seep into the chamber *b*, and of permitting insertion and play of the shaft or stem G, whose knob

H serves as a handle. The stem G has at its inner end a screw-thread, *g*, to occupy the correspondingly screw-threaded eye *c* of nut C. The tube-space *b* between the valve C D E and the cap F is occupied by a helical spring, J, one end of which, abutting against the cap-wall, causes the other end of the spring to hold the valve inward with a force equal to the normal water-pressure. (See Fig. 1.) On occurrence of any pressure in excess of normal the valve gives way, retreating into the chamber *b*, (see Fig. 2,) and on the subsidence of such excess of pressure the valve returns to its normal position, as shown in Fig. 1. By turning the valve-stem to right or to left the person in charge is enabled to graduate the valve-pressure to conform with any predetermined normal water-pressure. The attendant may at any moment assure himself of the efficient condition of the cushion by pulling at the valve-stem.

In the manufacture of such cushion the tube, the valve-stem, and the helical spring are given such length as will permit the contemplated maximum stroke of valve.

I claim as new and of my invention—

In a hydraulic cushion for water-pipes, the combination of the cylindrical chamber B F, containing the helical spring J, and a piston-valve composed of the follower D, the wad E, and of a nut, C, that has screw-threaded attachment to a handle, G H, accessible to the attendant, in the manner and for the objects designated.

In testimony of which invention I hereunto set my hand.

JOHN STORY.

Attest:

GEO. H. KNIGHT,  
S. S. CARPENTER.