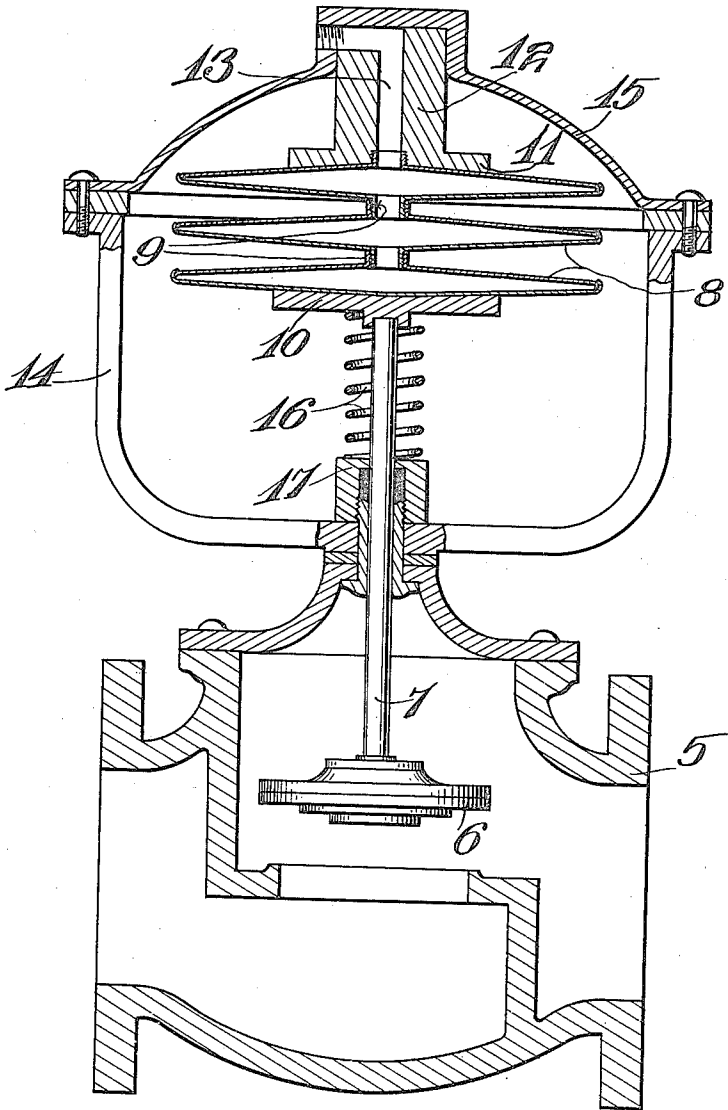


F. H. SCHULER.
VALVE,
APPLICATION FILED JUNE 4, 1915.

1,236,216.

Patented Aug. 7, 1917.



Inventor

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UNITED STATES PATENT OFFICE.

FRANK H. SCHULER, OF CHICAGO, ILLINOIS.

VALVE.

1,236,216.

Specification of Letters Patent.

Patented Aug. 7, 1917.

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To all whom it may concern:

Be it known that I, FRANK H. SCHULER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Valves, of which the following is a specification.

This invention relates to valves which are controlled by fluid pressure admitted into a hollow expansible device connected to the valve stem, and the invention has for its object to provide a novel and improved valve operating device of this kind as will be described in detail hereafter and claimed.

In order that the invention may be better understood, reference is had to the accompanying drawing in which a vertical section of the valve and its operating means is shown.

Referring specifically to the drawing, 5 denotes a valve casing having an inlet and an outlet, with a partition therebetween provided with an aperture for the passage of the fluid, said aperture being controlled by a reciprocating valve 6 carried by a stem 7 and adapted to seat over the aperture. These parts are constructed and arranged in the ordinary manner and nothing is claimed therefor.

The valve stem 7 extends from the casing 5, and on the outside of the latter is connected to a fluid-pressure actuated operating device. This valve-operating device comprises a series of concavo-convex disks 8 of resilient metal, assembled with their concave sides facing and joined to produce a bellows-like structure. The disks are joined at their edges by brazing or soldering. At the center of the disks are short nipples 9 which are screw-threaded and extend from the convex sides of the disks. By means of these nipples a connection is made between adjacent disks at the center thereof, the nipple of one disk being externally threaded and the nipple of the next section being internally threaded. The disks are formed of thin flexible metal so that the structure can freely expand and contract similar to a bellows.

One end of the bellows-structure hereinbefore described is fitted with a rigid disk 10 to which the outer end of the valve stem 7 is

connected. The other end of the bellows-structure is fitted with a rigid disk 11 carrying a fluid-pressure inlet nipple 12 having a passage 13 which is continued through the disk to open into the bellows. The inlet end of the passage 13 opens through the side of the nipple and is adapted to be connected to a suitable source of fluid-pressure.

The valve casing 5 carries upwardly extending arms 14 which carry a cap 15 against which the nipple 12 abuts, whereby the bellows-structure is constrained to expand in one direction only.

A spring 16 is coiled around the valve stem 7, between the disk 10 and an abutment 17 carried by the valve casing 5. This spring operates in a direction to open the valve 6.

To close the valve 6, fluid-pressure is admitted into the bellows, whereupon the latter expands downward, or toward the valve casing 5, and pushes the valve stem 7 in a direction to seat or close the valve 6. Upon releasing the fluid-pressure, the spring 16 folds or collapses the bellows, whereupon the valve is opened.

The device may also be used as a damper regulator for automatically controlling temperature, and for various other purposes.

I claim:—

The combination with a valve and its casing; of a valve stem extending from the casing, a bellows-like structure connected to the outer end of the valve stem and adapted when expanded to move the valve stem to operate the valve, outwardly extending arms carried by the valve casing, a cap carried by the outer ends of the arms, rigid disks on the ends of the aforesaid bellows-like structure, the valve stem being connected to one of the disks, and the other disk having a fluid pressure inlet nipple abutting against the aforesaid cap, an abutment carried by the valve casing, and a spring coiled around the valve stem between said abutment and the first-mentioned disk.

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

FRANK H. SCHULER.

Witnesses:

H. G. BATCHELOR,
S. J. LEHRER.