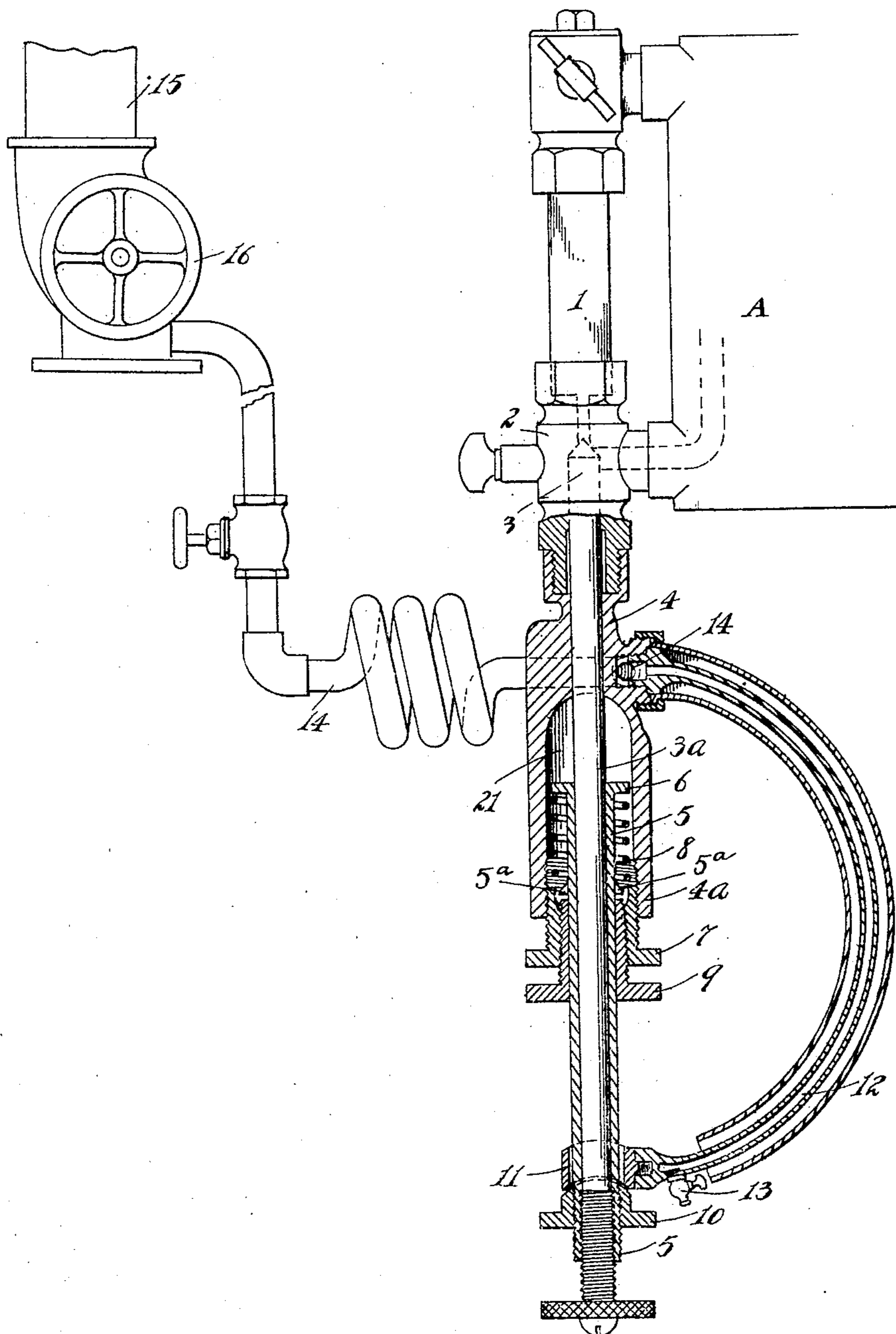


No. 803,725.

PATENTED NOV. 7, 1905.

C. A. SULLIVAN & E. J. WOODISON.
AUTOMATIC VALVE ACTUATOR.

APPLICATION FILED APR. 22, 1903.



WITNESSES

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CHARLES A. SULLIVAN, OF WINDSOR, CANADA, AND EDWARD J. WOODISON, OF DETROIT, MICHIGAN.

AUTOMATIC VALVE-ACTUATOR.

No. 803,725.

Specification of Letters Patent.

Patented Nov. 7, 1905.

Application filed April 22, 1903. Serial No. 153,789.

To all whom it may concern:

Be it known that we, CHARLES A. SULLIVAN, residing at Windsor, in the county of Essex, in the Province of Ontario, Canada, and EDWARD J. WOODISON, residing at Detroit, county of Wayne, State of Michigan, citizens of the United States, have invented a certain new and useful Improvement in Automatic Valve-Actuators; and we 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 pertains to make and use the same, reference being had to the accompanying drawing, which forms a part of this specification.

This invention relates to automatic valve-actuators, and has for its object an improved valve-actuator to be used where it is desired to open any auxiliary valve contemporaneously with the opening of a throttle-valve or other main valve of an engine. As shown in the drawing, it is applied to actuate the valve of a lubricator, to open the feed-valve of the lubricator at times when the steam is passing from the boiler to the engine, and to close the feed-valve of the lubricator at times when the steam is shut off.

The drawing represents the device in sectional elevation.

A indicates the oil-cup of the lubricator; 1, the sight-feed glass; 2, the lower feed-arm, through which the oil flows from the lubricator to the sight feed-glass, and 3 a needle-valve closing the passage through the nipple in the lower feed-arm 2. A coupling 4 is secured to that part of the nipple through which the valve-stem 3^a of the valve 3 passes, and the coupling is extended parallel with the axis of the valve-stem. The coupling is tubular in form. The end of it which is next adjacent to the feed-arm 2 is provided with a hole of small diameter through which the stem of the valve passes. The end which is farthest removed from the feed-arm 2 has a large opening, which makes a chamber 21 around the valve-stem. In the chamber there is room for the end of a tube 5, that is sleeved on the valve-stem 3^a. The sleeve 5 is provided with a flange 6 at its end, and between the flange and a sleeve-nut 7 is a coil-spring 8. The nut is screwed into the threaded end of the tubular part 4^a of the coupling. An adjusting-nut 9, inserted in the first nut 7, engages closely against the sleeve 5, which

surrounds the valve-stem 3^a. The sleeve 5 works freely through the inner nut 9 and is held in under the tension of the spring 8.

5^a 5^a are lugs upon the sleeve 5, adapted to limit its downward movement by striking against the adjusting-nut 9. The outer end of the sleeve is secured to the valve-stem by a screw-thread cut at the head end of the valve-stem, which engages in a screw-thread in the sleeve 5. This outer end of the sleeve is threaded and an adjusting-nut 10 run thereon. On the sleeve between the nut 9 and the adjusting-nut 10 is a loose ring 11, connected to the end of a bent Bourdon tube 12. The Bourdon tube 12 is provided at its normally closed end with a petcock 13 and secured at its open end to the coupling 4 over a nipple with which the steam-pipe 14 from the boiler connects. The steam-pipe 14 is arranged in connection with the main steam-pipe 15 beyond the throttle-valve to receive a part of the steam therefrom whenever the throttle 16 is opened. As is well known, the Bourdon tube tends to straighten when it is subjected to an internal pressure, and this tendency is utilized to throw the valve-stem 3^a to open the needle-valve contemporaneously with the admission of steam from the steam-pipe 15, and whenever the steam is shut off the valve closes under the retractile action of both the tube 12 and the spring 8.

What we claim is—

1. The combination of a casing provided with a valve-seat, a valve therein adapted to interrupt the flow of a liquid therethrough when it is on its seat, a Bourdon tube firmly connected to said casing at one of its ends and having its other end engaging the end of said valve, a spring to counteract the straightening of said tube, and means for adjusting the tension of said spring, substantially as described.

2. The combination of a casing provided with a chamber in the end thereof, having the walls at its outer end screw-threaded, a part extending into said chamber adapted to be moved to and fro longitudinally therein and provided with a flange at its inner end, a Bourdon tube fixedly connected to said casing and adjustably connected to said movable member, a sleeve-nut surrounding said movable member and engaging with the screw-threads upon the wall of said chamber, a spring bearing upon said flange and

said sleeve-nut, an adjusting-nut surrounding said part and provided with screw-threads engaging with screw-threads in the interior wall of said sleeve-nut, there being
5 lugs upon said part adapted to strike against said adjusting-nut to limit the motion of said part, substantially as described.

3. The combination of a casing provided with a valve-seat, a valve adapted to seat
10 thereon, a Bourdon tube fixedly connected to one of said parts and adjustably connected

to the other of said parts, a spring tending to counteract the straightening of said tube, and means for directly adjusting the tension of said spring, substantially as described. 15

In testimony whereof we sign this specification in the presence of two witnesses.

CHARLES A. SULLIVAN.
EDWARD J. WOODISON.

Witnesses:

MAY E. KOTT,
CHARLES F. BURTON.