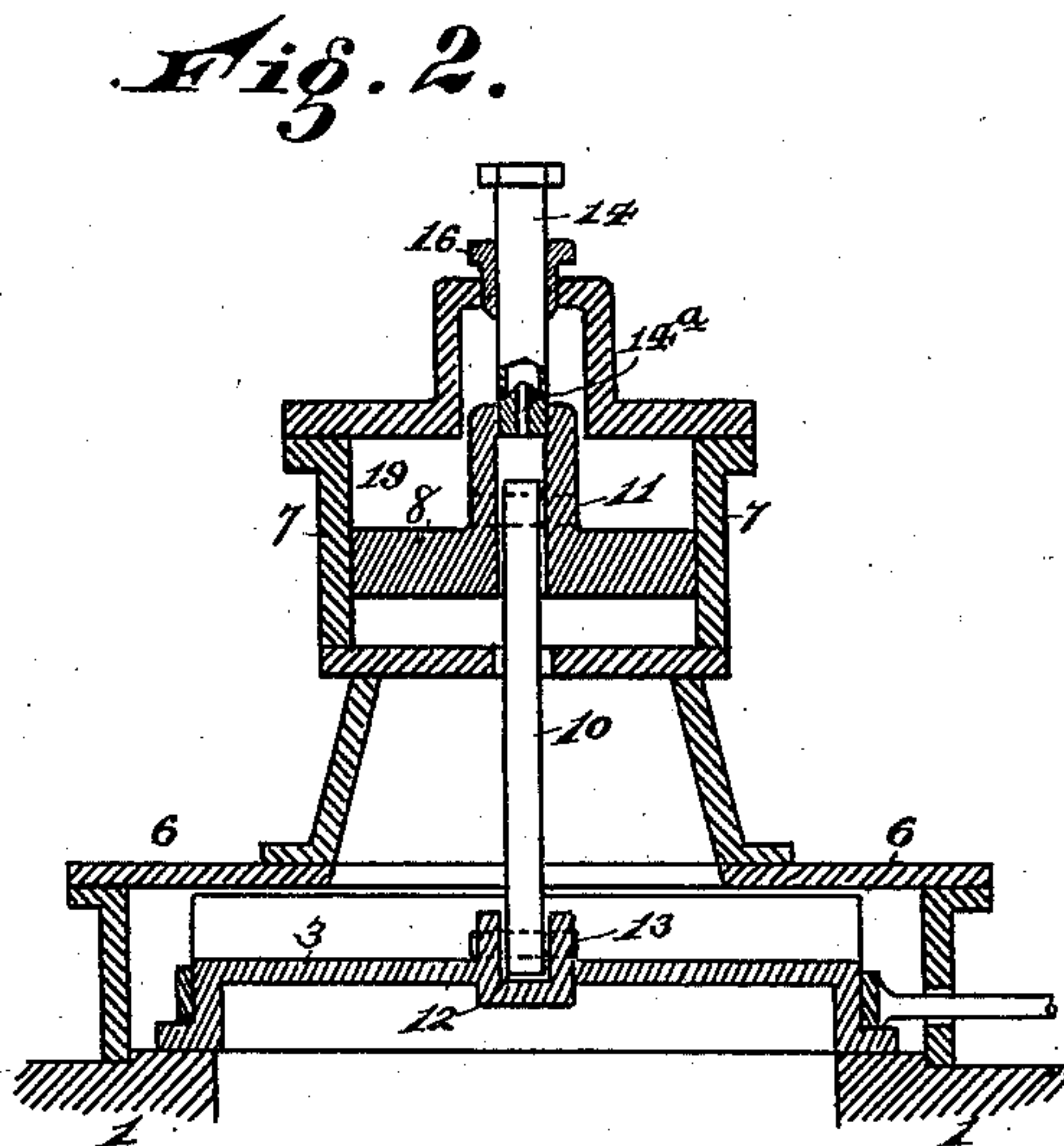
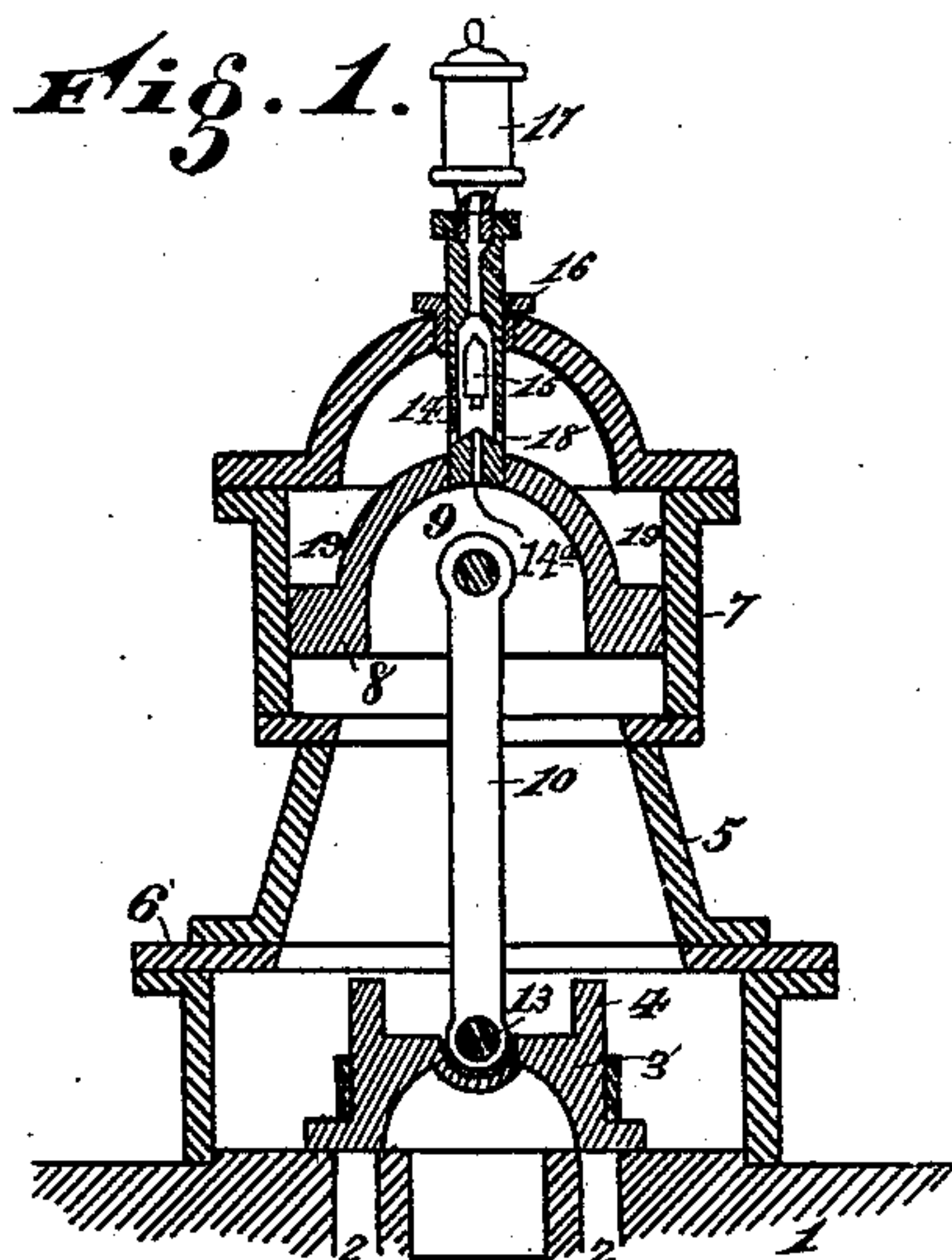


(No Model.)

A. THOMSON.
BALANCED SLIDE VALVE.

No. 361,382.

Patented Apr. 19, 1887.



Attest

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UNITED STATES PATENT OFFICE.

ARCHIE THOMSON, OF CHATTANOOGA, TENNESSEE.

BALANCED SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 361,382, dated April 19, 1887.

Application filed October 8, 1886. Serial No. 215,707. (No model.)

To all whom it may concern:

Be it known that I, ARCHIE THOMSON, a resident of Chattanooga, in the county of Hamilton and State of Tennessee, have invented certain new and useful Improvements in Counter-Balanced Slide-Valves, of which the following is a specification.

My invention relates to an improved slide-valve movement.

10 The object of my invention is to provide a counter-balance piston connected to the valve by a link, so that the pressure upon the supplemental piston above the valve will relieve a portion of the pressure of the steam upon the 15 valve.

The various features of my invention will be fully set forth in the description of the accompanying drawings, making a part of this specification, in which—

20 Figure 1 is a vertical longitudinal section of my improvement; Fig. 2, a transverse central section of the same.

1 represents the cylinder of a steam-engine; 2, the steam-ports leading from the valve to 25 the cylinder.

3 represents the valve working across the orifices of the ports 2.

4 represents ledges projecting from the side of the valve.

30 5 represents a cylinder supported upon the top of the steam-chest 6, and supporting a supplemental piston-cylinder, 7.

8 represents a supplemental piston working in a cylinder, 7.

35 9 represents an arch or recess formed in the piston to receive the link 10, which is secured thereto by pin 11.

12 represents the recess formed in the crown of the valve, in which the lower end of the 40 link projects.

13 represents a pin for securing the link 10 to the valve 3.

14 represents a supplemental stem rigidly secured to the top of the piston 8, so that the 45 said stem 14 will act as a guide. This guide prevents the wearing and the tendency of the piston 8 to tip or cant, which would cause the link-movement to bind. I have made this guide-stem 14 hollow, and place therein a check- 50 valve, 15, so as to serve as an oiler.

16 represents a stuffing-box for the stem 14 to move in without leaking steam.

The stem 14 not only extends through the stuffing-box 16, but at its lower end the stem extends through the arched part 9 of the piston 8. The part of the stem passing through 55 the arched part of the piston is pierced with a vertical passage, 14^a, so that oil can pass from the hollow stem upon the link-joints, thus oiling the link-joints, as well as the valve and 60 piston.

Steam is admitted into the steam-chest, lifts off its seat the piston 8, and tends to raise the valve 3; but as in practice the area of the valve is larger than the piston, it will not usually 65 lift the piston off the seat.

I have found by experiment that, notwithstanding the difference in area, there is a tendency of the valve to rise, caused by shocks, jars, reversing, &c. To overcome this tendency, I have provided the longitudinal guides or flanges 4 at the opposite sides of the valves, and which are projected up close to the cover of the steam-chest, so as to prevent any tendency of this valve rising. The check-valve 15 75 is held closed whenever the steam is admitted into the steam-chest. When the steam is cut off, the valve drops, and oil may be admitted from the oil-cup 17, to pass down upon and oil the valves. 80

18 represents an orifice pierced in the stem 14, so as to admit the oil down into the chamber 19, to oil the supplemental piston 8. The link 10 may be slotted, so that when the steam is not in, the valve will move without working 85 the link.

I claim—

1. The combination of the valve-chest, the arched piston 8, the slide-valve 3, having its sides provided with the longitudinal flanges 9c 4, extending upward adjacent to the cover of the valve-chest, and the link 10, connecting the arched piston and valve, substantially as described.

2. The combination, with the valve-chest, 95 the cylinder 7, having the stuffing-box 16, the slide-valve 3, the arched piston 8, and the link-connection 10, of the hollow stem 14, extending through the stuffing-box and through the arched part of the piston, and having the ver- 100

tical passage 14^a and lateral passages 18, for oiling the link-joints, the slide-valve, and the piston, substantially as described.

3. In combination with the steam-chest having a cover, the supplemental piston 8, the link 10, and the valve 3, provided with projecting flanges 4, working adjacent to the steam-chest cover to prevent the valve rising, substantially as described.

In testimony whereof I have hereunto set to my hand this 5th day of October, 1886.

ARCHIE THOMSON.

Witnesses:

ROBERT ZAHNER,
M. E. MILLIKAN.