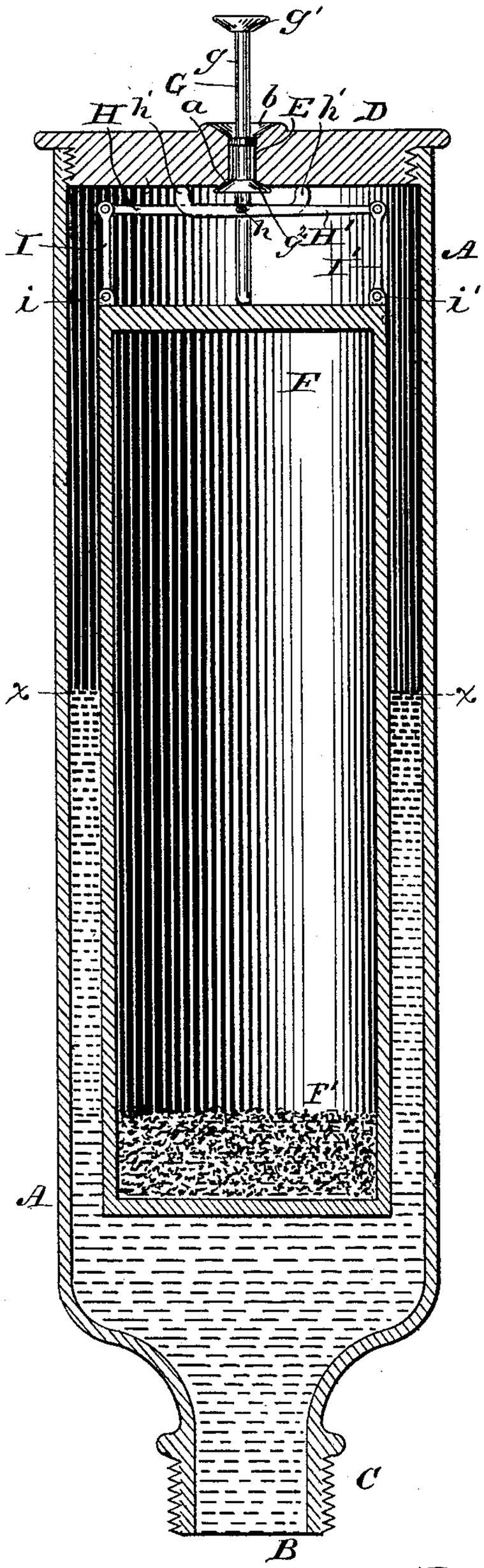
(No Model.)

P. WRIGHT.

SAFETY VALVE FOR ELEVATORS.

No. 389,429. Patented Sept. 11, 1888.



WITNESSES

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SAFETY-VALVE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 389,429, dated September 11, 1888.

Application filed March 26, 1888. Serial No. 268,588. (No model.)

To all whom it may concern:

Be it known that I, PARVIN WRIGHT, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Safety-Valves for Elevators, of which the following is a specification.

The object of my invention is to produce an improved valve adapted to provide an automatic escape for air from the cylinders of hydraulic elevators.

As is well known, much difficulty has been experienced in running elevator-cars evenly and smoothly by reason of the fact that air finds its way into the hydraulic cylinder and, by reason of its pressure, causes the piston to move after the water-supply has been cut off, and thus the elevator-car is given an additional movement. Thus it sometimes happens that when an elevator-car is at the top floor of a building, where it should stop, the air in the cylinder operates the piston to send the car up into the roof. Again, an elevator-car will sometimes drop or fall by reason of the fact that when the valve in the hydraulic cylinder is open to allow the water to escape the compressed air in the cylinder will rush out much faster than the water, thus causing the car to drop suddenly, so as to snap the cable that supports the car and letting it drop to the ground.

My improvements consist of an improved valve adapted to be connected to a hydraulic cylinder and operated by hydraulic pressure to open and shut an escape for air from the cylinder.

The accompanying drawing, illustrating my invention, is a vertical section through my improved apparatus.

A indicates a cup or valve-casing provided with entrance-port B for water or air from the hydraulic cylinder. The port B is formed in a screw-threaded end, C, adapted to secure the casing to the cylinder.

D indicates the top cap of the casing, preferably flanged and screw-threaded, as shown, for attachment to the upper end of the casing. The cap D is provided with a port, E, for the ingress and egress of air. Valve-seats *a b* are formed at the port E on the inner and outer sides, respectively, of the cap D.

F indicates a float, which may be properly weighted with sand, shot, or other material, F′, and is normally held in the position shown in the drawing by the water which enters from the hydraulic cylinder through the port B and normally stands in the cup or casing A at the level *x*, as shown in the drawing. This float may be of any suitable construction.

G indicates the safety-valve, preferably consisting of a valve-stem, *g*, provided with valve-heads g' g^2. The valve-head g' is arranged to open and close the port E at the valve-seat *b*, and the valve-head g^2 is arranged to open and close the port at the valve-seat *a*. The valve-heads are rigidly connected by the valve-stem *g* and move coincidently. The valve-stem is prolonged beyond the inner side of the valve-head g^2 and bears against the top of the float F when the float rises in the cup A. A guide disk or button, g^3, working in the port E, may be placed on the stem between the valve-heads.

A pair of lever-arms, H H′, are pivoted at *h* to the valve-stem *g* below the valve-head *a*. The outer ends of the longer arms of the levers H H′ are pivoted to upright links I I′, which are pivoted at *i i′* to the top of the float F at its edge. The ends *h′* of the shorter arms of the levers H H′ are turned up or curved, as shown, and adapted to bear at times against the inner side of the cap D.

When water comes up into the cup A from the hydraulic cylinder, the float rises. This actuates the levers H H′, and the top of the float F pushes up against the valve-stem *g* and closes the port at *a*. When air comes into the cylinder, the water will run back out of the cup A, and is replaced by the air which bubbles up through it. When the water lowers by reason of the air-pressure on the top of the cup, the float will, by its own weight, drop, causing the levers H H′ to act as above described on the valve G, so as to withdraw it from the valve-seat *a*, thus opening the port E and permitting the air to escape. The valve will remain open until the air is exhausted, and as the water rises again in the cup the float also rises and closes the valve, as above explained. When the water-supply is cut off from the cylinder, there is no pressure on the valve, and it, with the float, will drop and close the port E at *b*, so that no air can enter the cylinder through the cup A.

I claim as of my own invention—

The combination of the casing having the air-port and the entrance or water port, the valve consisting of the stem and the two connected valve-heads for opening and closing the air-port, the float, and the lever-arms having connection at their outer ends with the float, jointed between their ends to the valve-stem, and bearing upward at their inner ends to open the air-port when the float falls, substantially as and for the purpose set forth.

In testimony whereof I have hereunto subscribed my name.

PARVIN WRIGHT.

Witnesses:
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