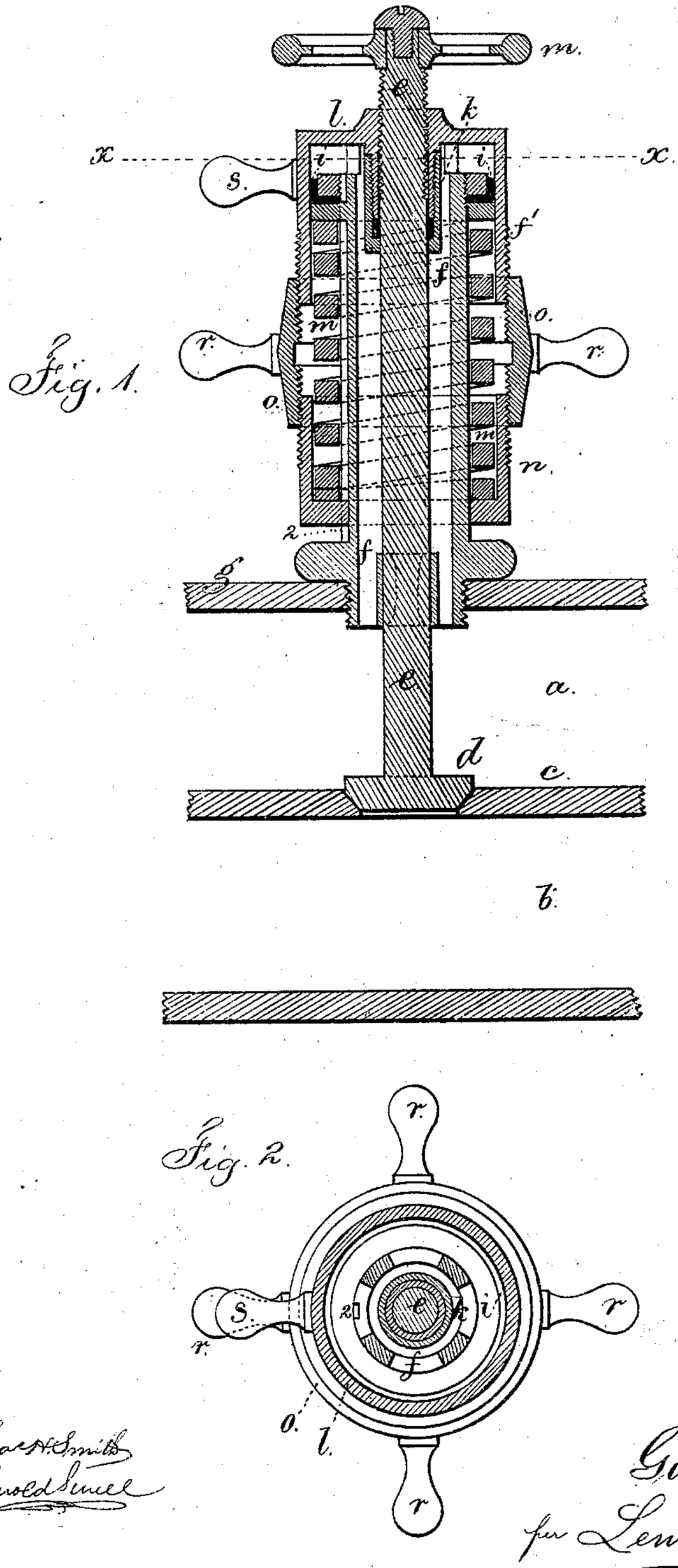
G. J. ORR.

Relief-Valves for Fire Engines.

No. 151,045. Patented May 19, 1874.

Fig. 1.



Witnesses

Chas. F. Smith

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UNITED STATES PATENT OFFICE.

GILBERT J. ORR, OF NEW YORK, N. Y.

IMPROVEMENT IN RELIEF-VALVES FOR FIRE-ENGINES.

Specification forming part of Letters Patent No. **151,045**, dated May 19, 1874; application filed April 28, 1874.

To all whom it may concern:

Be it known that I, GILBERT J. ORR, of the city and State of New York, have invented an Improvement in Relief-Valves for Steam Fire-Engines, of which the following is a specification:

Valves for fire-engines have been made to operate automatically when the pressure of water in the hose increases in consequence of the flow through the same being checked, such valve operating to open a return water-way between the supply and delivery chambers of the pump.

My improvement is made for the purpose of removing the spring from the water-chamber, and thereby lessening the risk of injury to such spring, and, at the same time, I dispense with the piston that has been used to move the valve.

In the drawing, Figure 1 is a vertical section of the valve and operative mechanism, and Fig. 2 is a sectional plan at the line *x x*.

The water-ways *a* and *b* of the pump are separated by the partition *c*, in which is an opening for the valve *d* that is upon a spindle, *e*, passing up through guides in the tube *f*, which tube *f* is screwed into an opening in the outer casing *g* of the pump. The spindle *e* passes through a packing-gland, *k*, and is made with a screw-thread acting in the cap *l*, and a hand-wheel, *m*, is provided, and these parts are substantially similar to the ordinary relief-valve, as the valve *d* is raised or lowered to open or close the opening in the partition *c* by turning the hand-wheel *m*, screw-stem *e*, and valve. In the normal position the inside of the cap *l* rests upon the upper end of the tube *f*, and the cap extends down around the tube *f* in the form of a short tube, *f'*, and a packing, *i*, is interposed between *f* and *f'*. Around the tube *f* is a spring, *m*, of rubber or wire helix. I have shown the latter, and this spring is received within the sliding socket *n* that surrounds the tube *f*, and is kept from turning, but allowed to slide endwise by a key and slot, 2. Upon the exterior surfaces of *f'* and *n* screw-threads are cut in opposite directions, and these are connected by the sleeve *o*, that is made with right and left handed internal screw-threads, and handles *r* on the outside are employed to revolve the sleeve, and thereby draw the socket *n* toward the cap *l* and compress the spring *m*, or the reverse, and a handle, *s*, serves to hold the cap *l* and its tube *f'* and prevent their turning when the sleeve *o* is being revolved.

At the upper end of the tube *f* are notches or holes that allow the water to press against the entire under side of the cap *l*, so that whenever the pressure in the delivery water-way *a* is sufficient in its action upon the inside of said cap to raise the cap *l* and the valve *d* against the action of the spring, the water-way is opened for the return of the water to the induction side of the pump. In so doing the head *l* is moved away from the end of the tube *f*, and it returns to the same when the valve *d* is closed. The valve *d* can be operated by hand by revolving the wheel *m*, so as to raise or close the valve in the ordinary manner.

By this construction the spring is incased and outside the water-tube, and the parts are in place for the ordinary use as a relief-valve.

The spring can be adjusted by revolving the sleeve *o*, so as to set the valve to open automatically at any desired pressure.

I claim as my invention—

The packing *i*, spring *m*, socket *n*, and adjusting-sleeve *o*, in combination with the cap *l*, tube *f*, screw-stem *e*, and valve of the ordinary relief-valve, as and for the purposes set forth.

Signed by me this 24th day of April, A. D. 1874.

GILBERT J. ORR.

Witnesses:

GEO. T. PINCKNEY,

CHAS. H. SMITH.