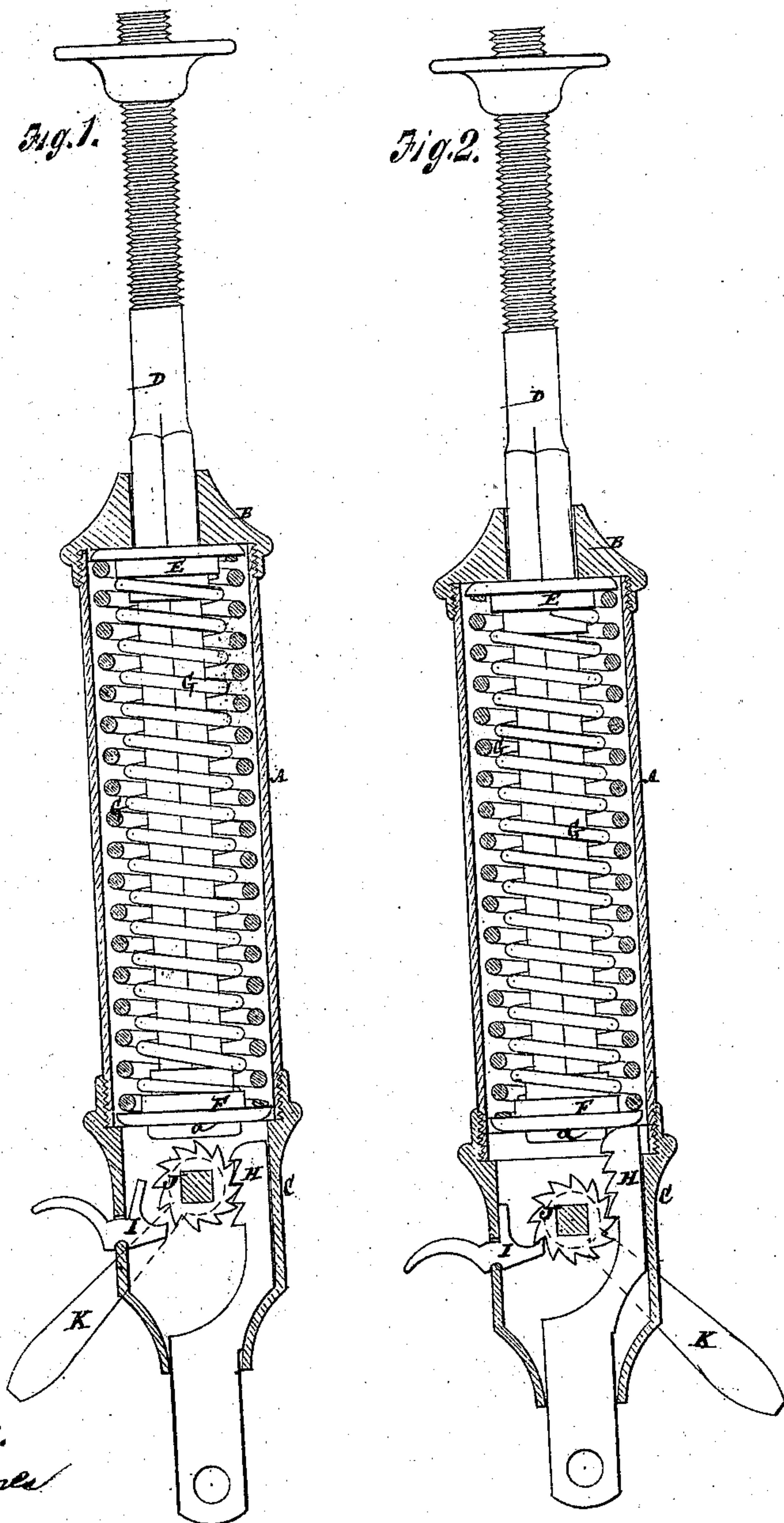


*B. Hathaway,*

*Safety Valve.*

*No. 103,178.*

*Patented May 17, 1870.*



*Witnesses.*  
*Fred. Haynes*  
*R. R. Rabeau*

*Baylies Hathaway*



# UNITED STATES PATENT OFFICE.

BAYLIES HATHAWAY, OF ELIZABETH PORT, NEW JERSEY.

IMPROVEMENT IN SPRING-BALANCE STOP FOR SAFETY-VALVES.

Specification forming part of Letters Patent No. **103,178**, dated May 17, 1870.

*To all whom it may concern:*

Be it known that I, BAYLIES HATHAWAY, of Elizabeth Port, in the county of Union and State of New Jersey, have invented a new and useful Improvement in Spring-Balances, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figures 1 and 2 represent longitudinal sectional views of my improved spring-balance with the working parts in different positions.

Similar letters of reference indicate corresponding parts.

My invention relates to devices for relieving the spring when required, and for locking it when not relieved, applicable to the safety-valves of locomotive-engines, to give relief to the valve when the engine is standing or run onto a siding, or under other conditions requiring relief, and to reload the valve at its original weight after the necessity for such relief has ceased; and it consists in a novel combination of devices for thus controlling the action of the spring-balance, whereby great simplicity is attained, and a rapid and secure operation as regards such adjustment of it secured.

Referring to the accompanying drawing, A represents the box of the balance, having screwed onto its upper end a cap, B, and onto its lower end a box portion, C. Projecting upward through the box A is the rod or stem D, provided at its upper end with one or more regulating-nuts fitting a screw-thread on the stem, and serving as the means of attachment for holding down the lever of the safety-valve, supposing the balance to be applied to such purpose. The lower end of this rod is made with a button, *a*, and fitted so as to loosely slide upon said rod are upper and lower collars, E and F, between which the spring or springs G, that are fitted loosely over the rod, take their bearing within the box A, the upper collar, E, resting against the under side of the cap B, and the lower collar, F, lying upon the button *a*. Thus fitted and applied, the springs, under the influence of the load upon the valve, operate by compression, and every

facility is afforded for taking them out and detachment of the parts generally, when repair or renewal is required.

The balance is connected to the boiler at its lower end by a rack, H, arranged to project up through the lower end of the box portion C, which, when the springs are relieved, is drawn up under a shoulder on the rack, but when the springs are not relieved the balance is locked by a stop or catch lever, I, dropping by its own weight into gear with a ratchet-pinion, J, that has its bearings in the box portion C, and with which the rack H is made to gear.

To relieve the valve the stop-lever I is raised out of gear with the ratchet-pinion J, when the lift by the valve on the rod D causes the balance to be raised or lengthened, causing the box C to take its bearing under the shoulder on the rack, as represented in Fig. 1.

When it is required to return the balance to its normal set or hold upon the valve, the pinion J is turned by a handle or lever, K, till further motion is arrested by any suitable stop, when hold upon the stop-lever I is withdrawn, and the latter falls into lock with the pinion, as represented in Fig. 2.

This is at once a simple and rapid mode of effecting the necessary adjustment, and the rack, pinion, and stop-lever are so fitted within the detachable box portion C as to afford every facility for their insertion or removal; and to this end the stop-lever I is formed with a shoulder, *b*, to secure its lock of the pinion, and is simply fitted through a slot in the box portion C, and hung, free from any fulcrum pin or pivot, to rest by a notch in its under surface on the edge of the slot through which it is fitted.

What is here claimed, and desired to be secured by Letters Patent, is—

The combination and arrangement, relatively to the case of the spring-balance, of the rack H, the pinion J, the lever K, and the stop or catch lever I, essentially as specified.

BAYLIES HATHAWAY.

Witnesses:

WILLIAM HICKS,  
HENRY F. ROBINSON.