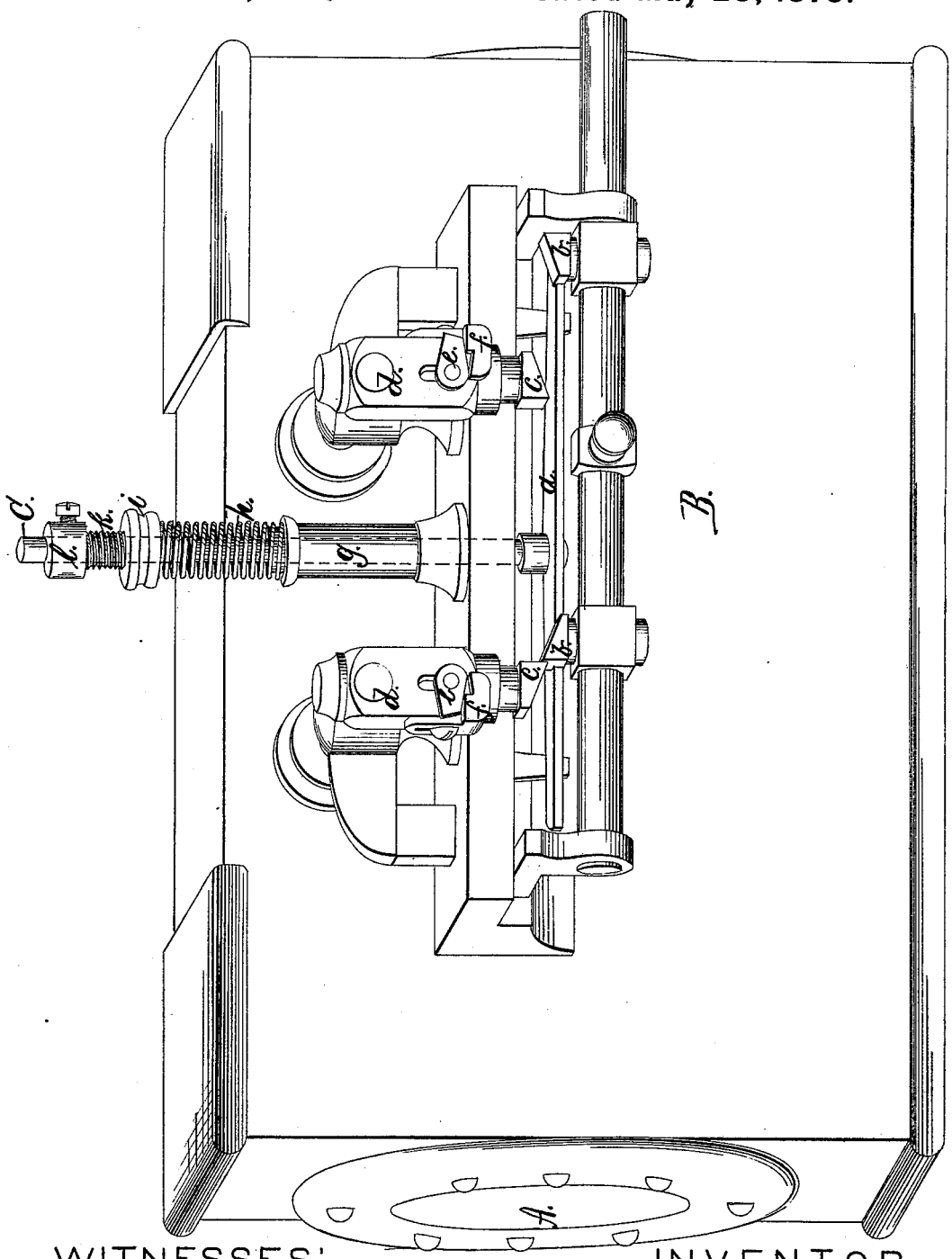
L. C. MASON.

Valve-Gear for Engines.

No. 204,351. Patented May 28, 1878.



WITNESSES:

Joseph A. Miller Jr.

William L. Boef

INVENTOR.

Lowell C. Mason

by Joseph A Miller

Attorney.

UNITED STATES PATENT OFFICE.

LOWELL C. MASON, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN VALVE-GEARS FOR ENGINES.

Specification forming part of Letters Patent No. **204,351**, dated May 28, 1878; application filed April 25, 1878.

To all whom it may concern:

Be it known that I, LOWELL C. MASON, of the city and county of Providence, and State of Rhode Island, have invented certain new and useful Improvements in Steam-Engines; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification.

The drawing represents the improvement in perspective view, the governor-rod being shown in broken lines.

The invention consists, first, in the peculiar and novel manner in which the reciprocating tappets are regulated so as to bear more or less on the faces of the hinged latches, and thus regulate the admission of the steam to the engine; second, in the application of a coiled spring, a screw-thread, and adjusting thumb-nut to the governor-rod, so that the resistance to the governor can be regulated and the speed of the engine varied by the adjustment of the thumb-nut; third, in the arrangement, with the hinged latches, of a hinged latch and adjustable pawls, by which these latches are retained in their raised position when by any means the governor fails to depress the reciprocating tappets, and thus prevent injury to the engine.

In the drawing, A represents the steam-engine cylinder; B, the casing of the same; C, the governor-rod, to the lower end of which the bar *a* is secured, which passes under a lip or projection on the beveled heads of the reciprocating tappets *b*, and thus lifts the same when, by the slowing of the speed, the governor raises the governor-rod C, and with it the bar *a*, and allows the tappets to fall, when, by increased speed, the governor depresses the bar *a*.

Instead of falling by gravity, the tappets *b* may be so connected with the bar *a* that they will be raised and lowered by the same positively, the main point of difference in this arrangement over those previously used being the absence of springs in the tappets *b*, which are raised by the governor, instead, as heretofore, depressed against the force of a spring, which, by the variation of tension, increased the resistance as the tappets were lowered.

c c are the drop-latches, loosely supported in the hinged sleeves *d d*, which are, in their turn, secured to the rocker-shaft or valve-stem. *e e* are hinged latches secured to a pin passing from the shank of the upper latches *c c* through a slot in the sleeve *d*. The hinged latch *e* rises and falls with the latches *c c* when the tappet *b* passes under the same and swings on the pin by which it is supported, the end resting on the adjustable pawl or toe-piece *f*, which is secured to the sleeve *d* by a screw passing through a slot, and may thus be adjusted so that when the latches *c c* are raised to a fixed height the latch *e* will fall into the recess in the toe-piece *f* and hold the latches *c c* suspended, and thus prevent the reciprocating tappets *b* from interfering with the latches *c c*, and consequently from opening the steam-ports, and cause the engine to stop for want of steam. All racing and running away of the engine are thus prevented, and, no matter what happens to the governor or to the mechanism used to drive the governor, the speed of the engine cannot be increased beyond a fixed limit, and no injury can result.

The governor-rod C, connected with the bar *a*, is forced up by a coiled spring, *h*, surrounding the rod and resting on the standard *g*. The force with which the spring acts on the rod is regulated by the thumb-nut *i*, turning on the screw-sleeve *k*, which is secured to the governor-rod C by the clamp *l*. The governor must therefore overcome the resistance of the spring *h* before the tappets *b* can be lowered and less steam admitted to the engine; and as this resistance can be regulated by the thumb-nut *i*, it is apparent to those versed in the art that the speed of the engine can be varied by adjusting the thumb-nut. The speed is increased by screwing the nut down and increasing the resistance of the spring, or decreased by turning the nut in the opposite direction, without any change or adjustment of the other parts of the engine.

When by any cause the governor ceases to act on the rod C, the spring *h* raises the same, and with it the tappets *b*, which, in their reciprocation, raise the latches *c c* until the latch *e* enters the depression in the toe-piece *f*, and the valve mechanism ceasing to operate, the engine stops; and when it is to be started again the latches *e e* are removed and the latches *c c* suspended, as shown in the drawing.

The whole construction is simple. All the parts are in view and easily understood. They can be easily regulated while the engine is running, and are not liable to get out of order.

The only spring used is the coiled spring *h*, which is subject to only slight variation by the governor, and is readily adjustable, so that the speed of the engine can be adjusted with the greatest nicety.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with the tappets *b b*, of the bar *a*, secured to the governor-rod, and arranged to lift the tappets, substantially as and for the purpose set forth.

2. The combination, with the latches *c c*, of the adjustable toe-piece *f* and the latch *e*, arranged to sustain the latches, substantially as and for the purpose set forth.

3. The combination, with the governor-rod C, of the coiled spring *h*, thumb-nut *i*, screw *k*, and clamp *l*, arranged to regulate the resistance against a governor, substantially as described.

4. The combination, with the governor-rod C, provided with the bar *a*, arranged to raise the tappets *b*, and the spring *h* and thumb-nut *i*, of the hinged latches *c c*, the latch *e*, and toe-piece *f*, the whole arranged to detach the valve-gear and stop the engine by the action of the spring *h*, substantially as and for the purpose set forth.

LOWELL C. MASON.

Witnesses:

JOSEPH A. MILLER,

JOSEPH A. MILLER, Jr.