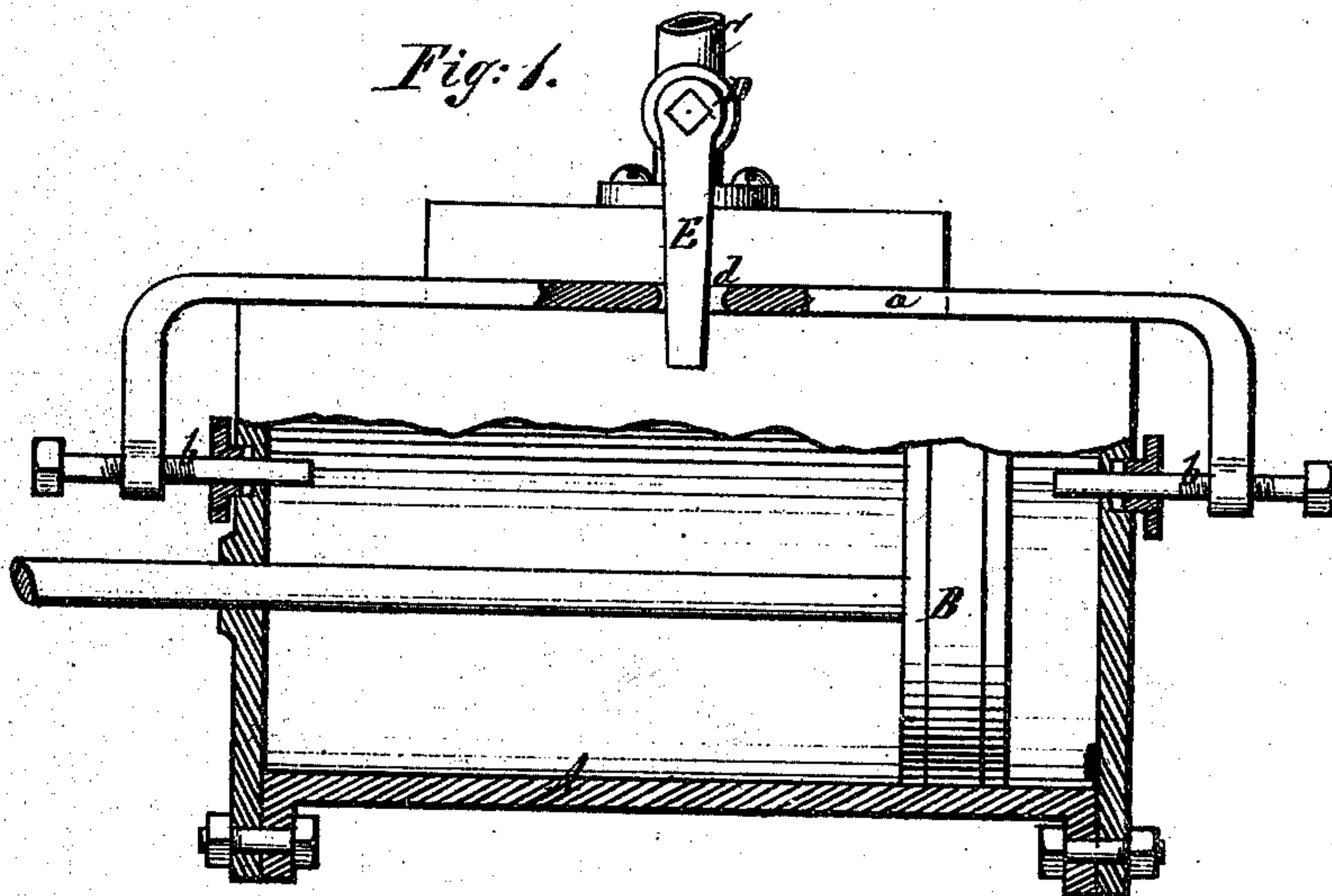
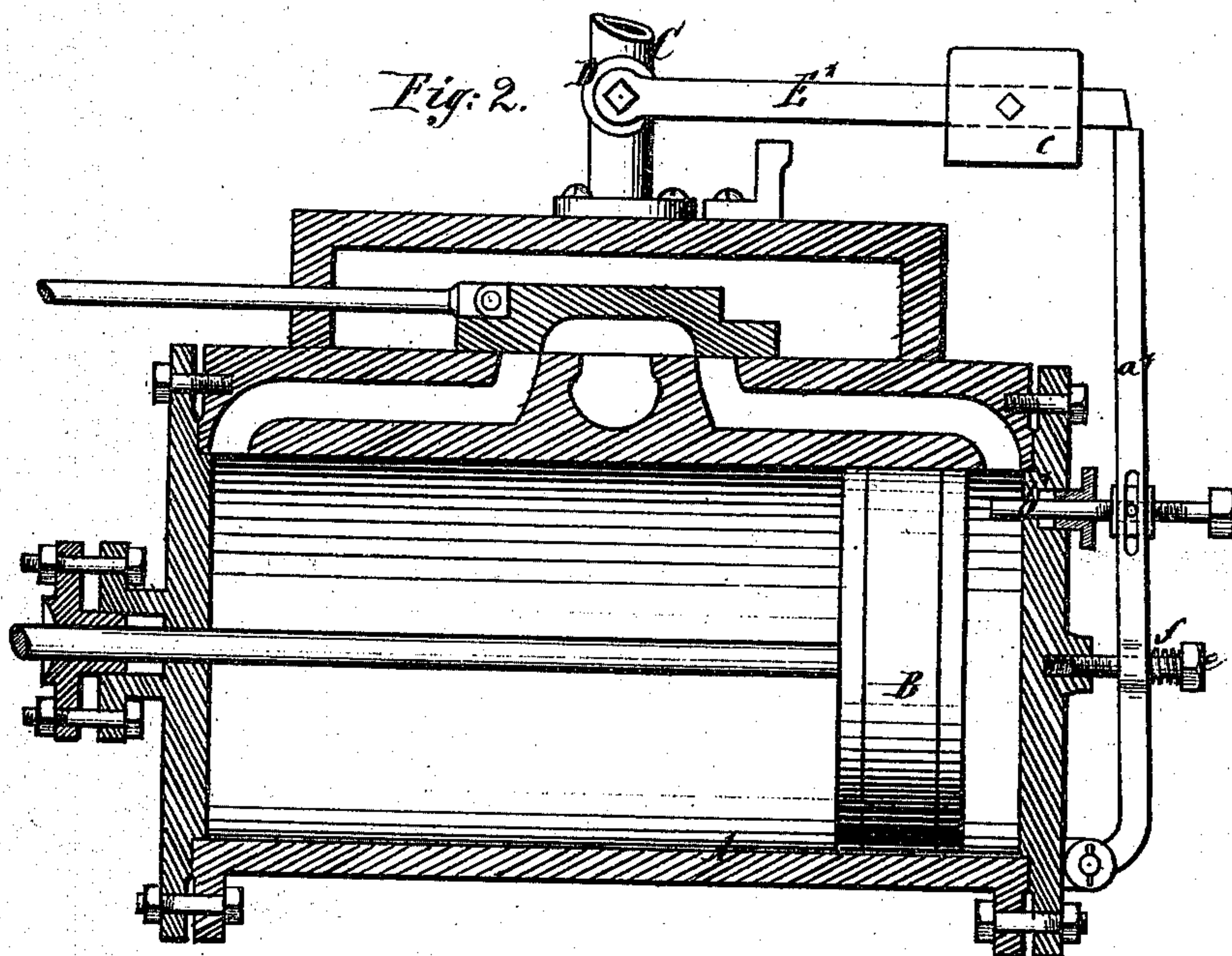


*A. S. Cameron,*

*Governor.*

*No. 112,416.*

*Patented Mar. 7. 1871.*



*Witnesses:*  
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# UNITED STATES PATENT OFFICE.

ADAM S. CAMERON, OF NEW YORK, N. Y.

## IMPROVEMENT IN GOVERNORS FOR DIRECT-ACTING ENGINES.

Specification forming part of Letters Patent No. 112,416, dated March 7, 1871.

*To all whom it may concern:*

Be it known that I, ADAM S. CAMERON, of the city, county, and State of New York, have invented a new and Improved Governor for Direct-Acting Engines; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which drawing—

Figure 1 represents a sectional side view of this invention. Fig. 2 is a similar view of a modification thereof when the mechanism is arranged for stopping the supply of steam whenever the steam-piston approaches closely one of the cylinder-heads.

Similar letters indicate corresponding parts.

This invention relates to a mechanism by which the supply of steam to the steam-cylinder of a direct-acting engine is either partially or wholly cut off by the action of the piston on a tappet extending into the cylinder whenever the speed of the piston exceeds a certain limit, and consequently, in the absence of a crank, said piston is carried by its momentum closer to the cylinder-head than desirable, and thereby the piston is effectually prevented from slamming against the cylinder-head, and all danger of having the cylinder-heads knocked out, if the engine is suddenly relieved of its load, is avoided. This object is effected by a lever which is secured to the spindle of the throttle-valve, and the position of which is controlled by that of a tappet or tappets extending through either one or both cylinder-heads, or through the sides of the cylinder, in such a manner that, whenever the piston strikes the tappet, the throttle-valve is either partially or wholly closed.

In the drawing, the letter A designates the steam-cylinder of a direct-acting engine, which is fitted with a piston, B, and to which steam is admitted through the pipe C in the ordinary manner.

The supply of steam to the cylinder is regulated by means of the throttle-valve D, and on the spindle of this throttle-valve I have mounted a lever, E, which may either be in a vertical position, as shown in Fig. 1, or in a

horizontal position, as shown in Fig. 2. The end of the lever E, Fig. 1, extends through a slot, *d*, in a yoke, *a*, in the ends of which are secured two tappets, *b*, extending through the cylinder-heads, as shown.

Whenever the speed of the piston exceeds a certain limit, so that the same by its momentum will be carried closer up to either of the cylinder-heads than desirable, the tappet in said head will be forced out, the yoke caused to turn the lever E, and the throttle-valve is partially or wholly closed. In this case the tappets are made to extend through the cylinder-heads to such a distance that the piston will just touch them when it travels at its mean speed; but as soon as the speed of the piston increases the tappets will be actuated, and the throttle-valve is partially closed at the end of each stroke, and remains thus while the engine is taking steam during the succeeding stroke.

It is obvious that the form or construction of the throttle-valve used in the above-described mechanism may be changed in various ways. For instance, a simple slide might be used, provided with a hole to open and close the supply of steam to the cylinder. This slide might be provided with hooks at its ends to connect with the tappets.

In some cases it may be sufficient to use only one tappet, *b\**, extending through one of the cylinder-heads, and a lever, *E\**, placed in a horizontal position, as shown in Fig. 2. This lever is loaded by a weight, *c*, and the stop *a\** is hinged at the bottom end, and placed in such a position that its top end may be brought under the outer end of the lever *E\**.

In the stop *a\** is secured the tappet *b\**. If the piston strikes the inner end of the tappet, the stop is forced out and the lever *E\** drops down so as to close the throttle-valve and to shut off the steam. The tappet *b\** is made adjustable in the stop *a\**, so that it can be made to extend to a greater or lesser distance into the cylinder, and thereby the stop mechanism can be accommodated to the desired maximum speed of the piston.

To keep the stop *a\** in the proper position, a guide-pin, *e*, is provided, which also prevents said stop from swinging out any farther than required to release the lever *E\**, and a spring,



*f*, presses against the stop to counteract the pressure of the steam on the inner end of the tappet, which has a tendency to force the stop *a*\* out.

This stop mechanism effectually prevents the piston from doing any injury in case the engine is suddenly released of its load.

What I claim as new, and desire to secure by Letters Patent, is—

The mechanism, substantially as herein described, for regulating or stopping the supply

of steam to the steam-cylinder of a direct-engine, according to the greater or smaller speed of the piston, by the action of said piston against a tappet or tappets extending in the interior of the cylinder, said tappet or tappets being connected with or acting on the throttle-valve, in the manner substantially as set forth.

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Witnesses:

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