

B. BREECK.  
 REVERSING MECHANISM FOR ENGINES.  
 APPLICATION FILED MAY 7, 1909.

942,998.

Patented Dec. 14, 1909.

2 SHEETS—SHEET 1.

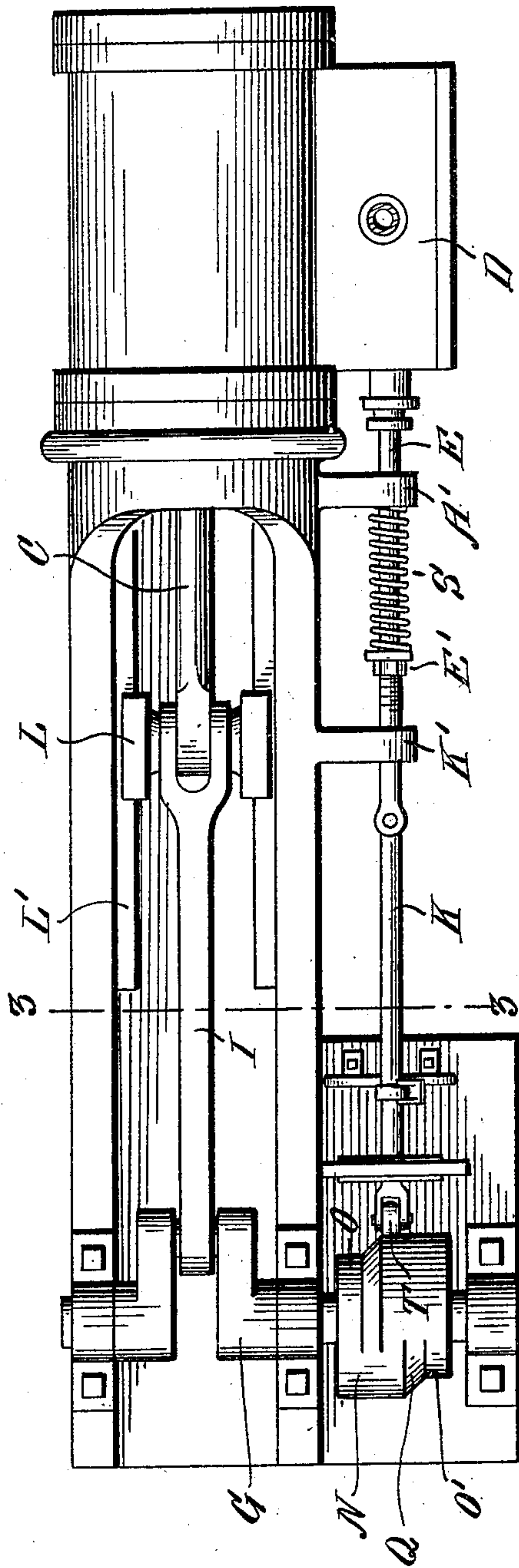


Fig. 1.

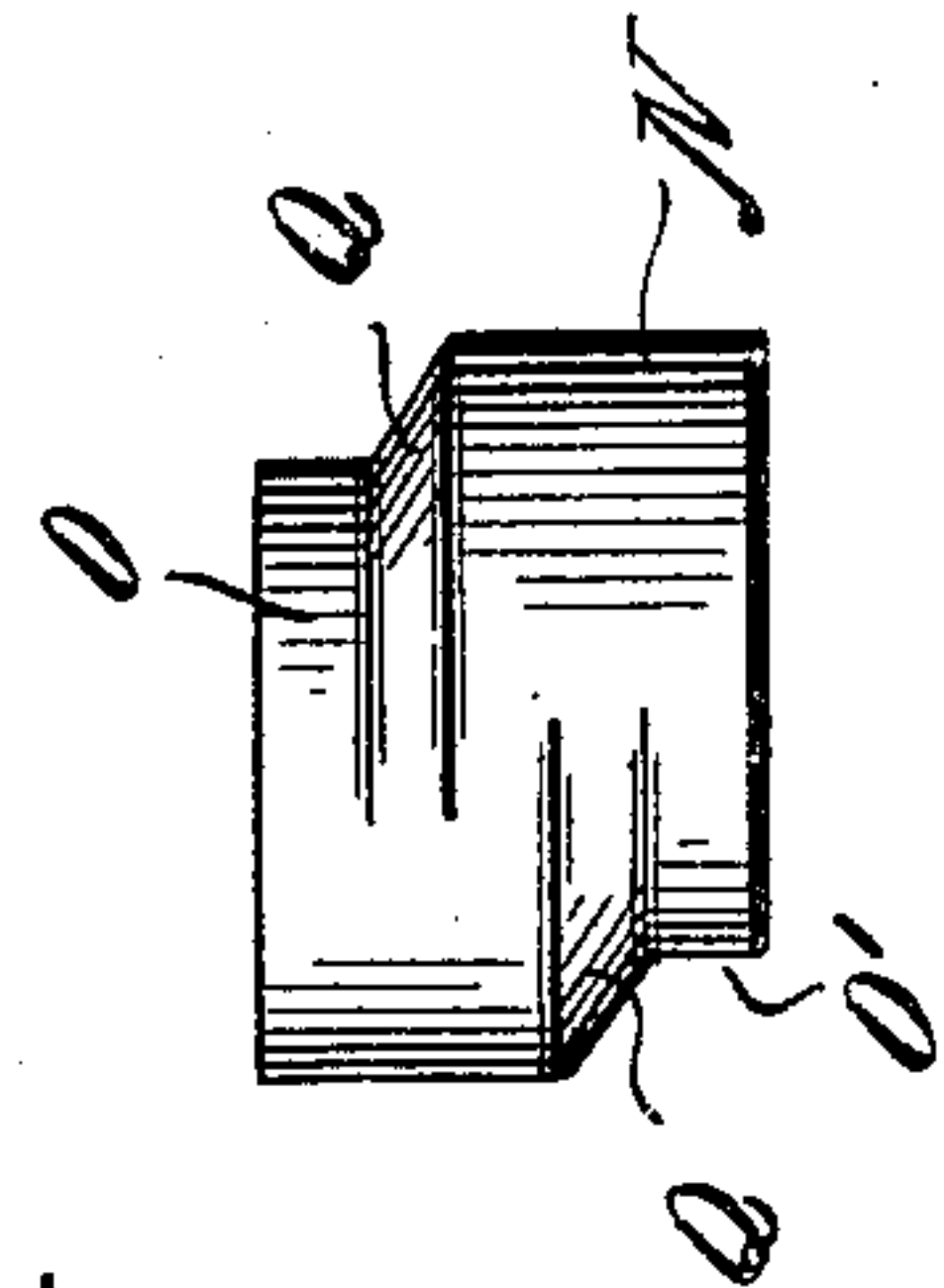
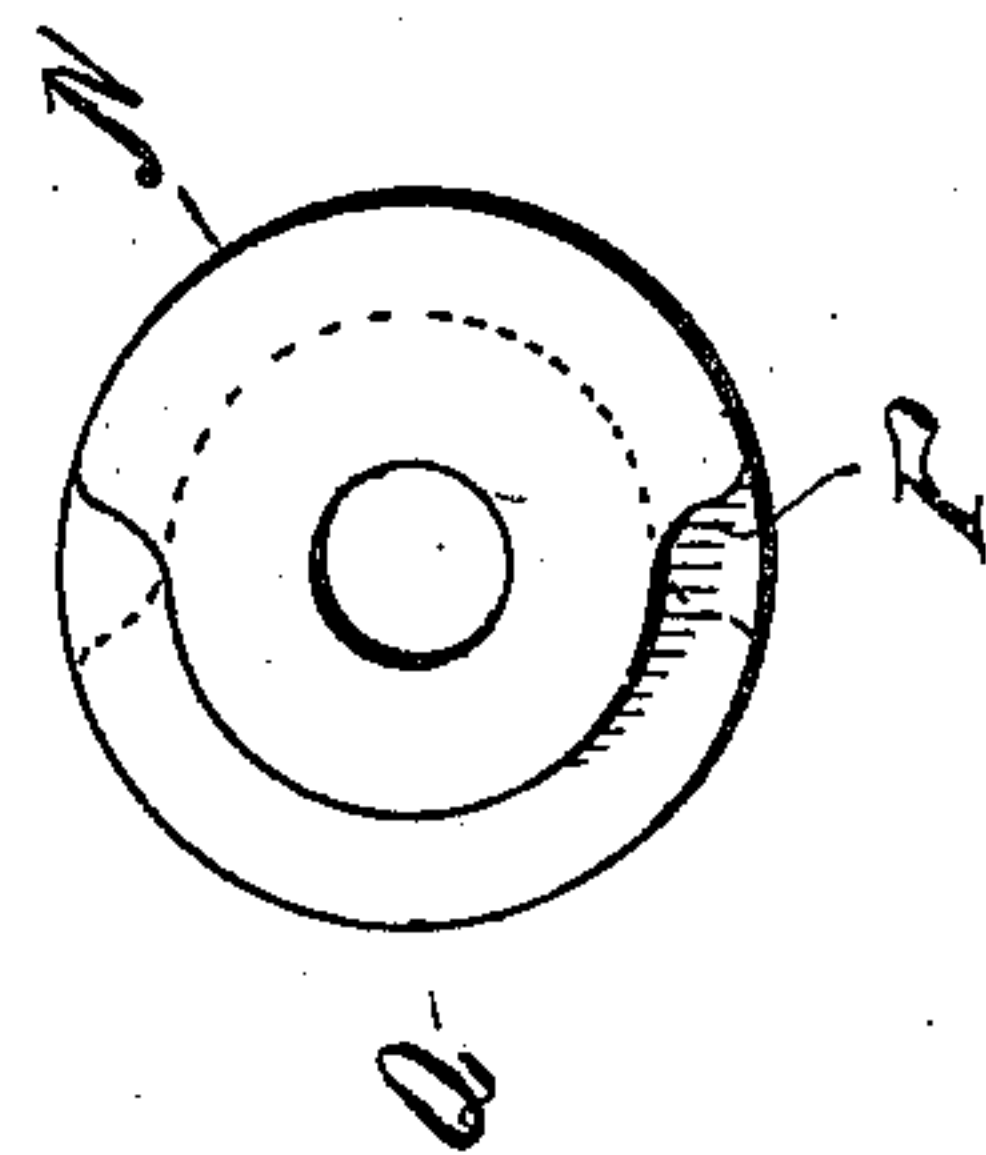
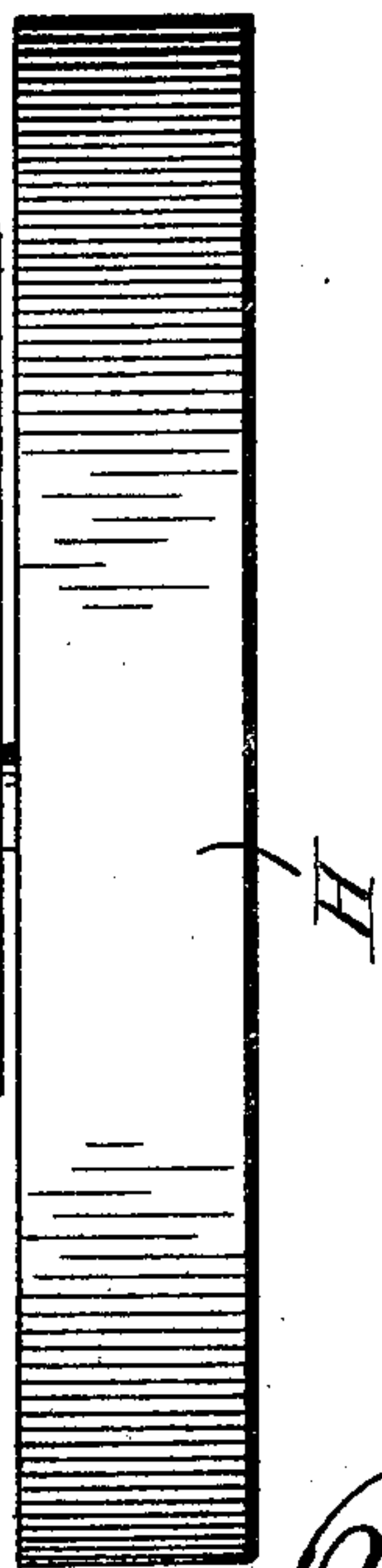


Fig. 3.

WITNESSES:

*Wm. F. Koye*  
*A. L. Koye*

Fig. 4.

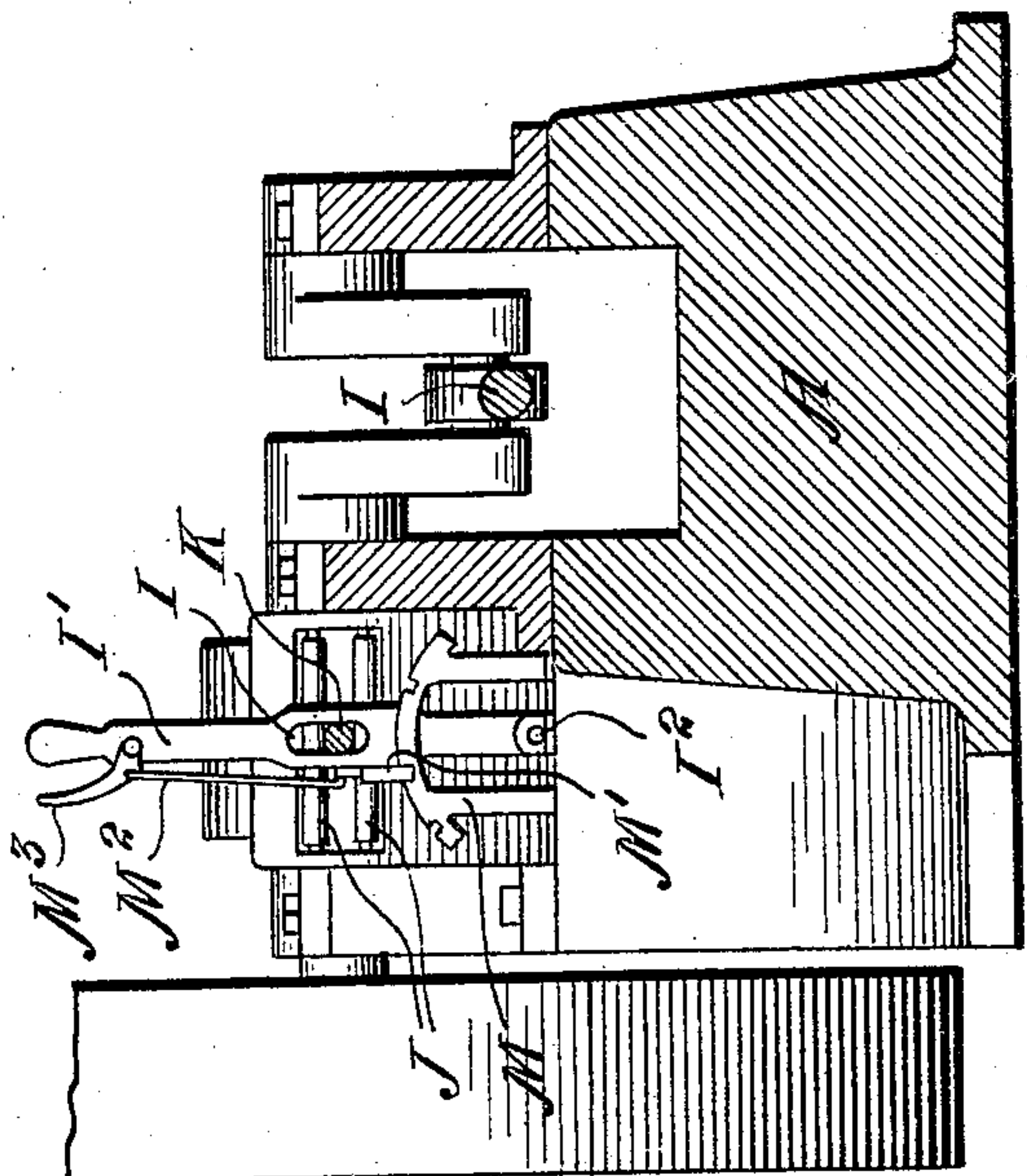
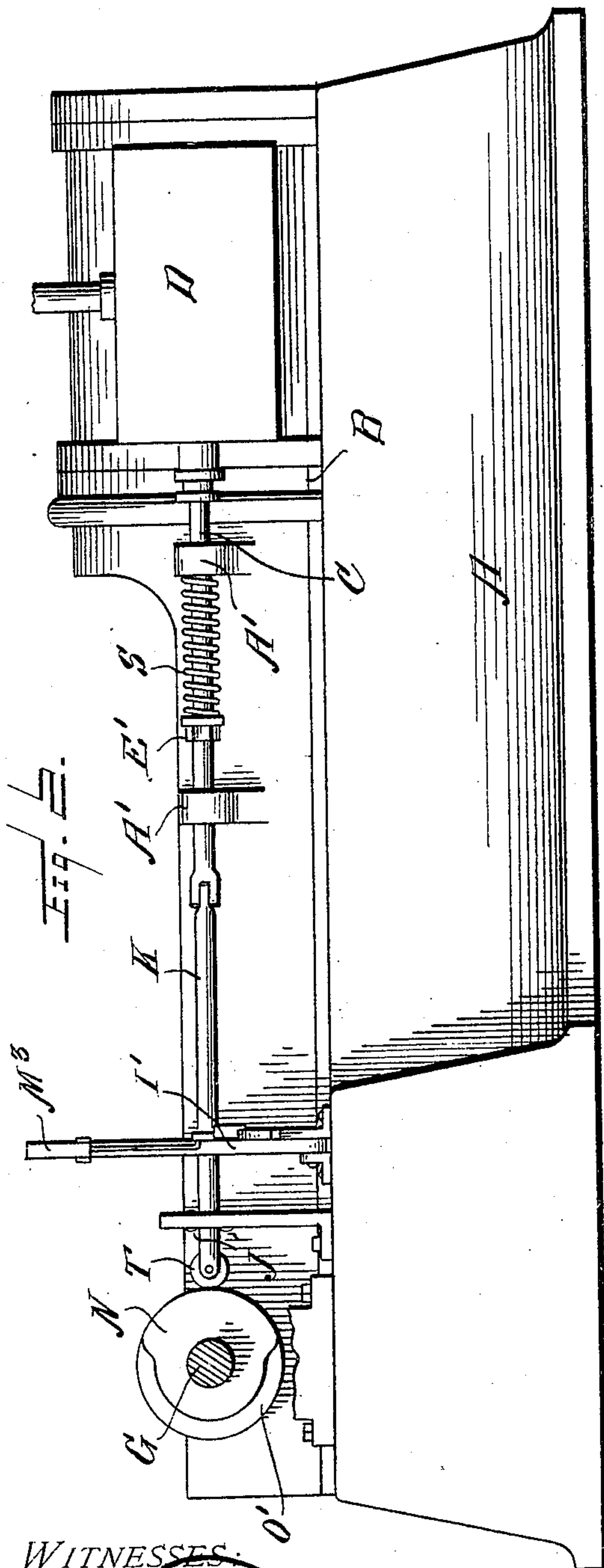


INVENTOR,  
 Bernard Breeck,  
 BY *Franklin H. Hough*  
 Attorney

B. BREECK.  
 REVERSING MECHANISM FOR ENGINES.  
 APPLICATION FILED MAY 7, 1909.

942,998.

Patented Dec. 14, 1909.  
 2 SHEETS—SHEET 2.



WITNESSES:

*Wm. F. Royce*  
*a. L. Hough*

INVENTOR

*Bernard Breeck,*  
 BY *Franklin D. Hough*  
 Attorney



# UNITED STATES PATENT OFFICE.

BERNARD BREECK, OF VEVAY, INDIANA.

REVERSING MECHANISM FOR ENGINES.

942,998.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed May 7, 1909. Serial No. 494,678.

*To all whom it may concern:*

Be it known that I, BERNARD BREECK, a citizen of the United States, residing at Vevay, in the county of Switzerland and State of Indiana, have invented certain new and useful Improvements in Reversing Mechanism for Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marks thereon, which form a part of this specification.

This invention relates to new and useful improvements in reversing mechanism for steam and other engines and comprises a simple and efficient apparatus whereby the usual slide valve of an engine may be quickly and positively operated to allow the full force of the steam to act upon the piston, thus dispensing with the usual mechanism actuated by cams for regulating the admission of steam to the cylinder.

My invention consists further of various details of construction and combinations and arrangements of parts which will be hereinafter fully described and then specifically defined in the appended claims.

I illustrate my invention in the accompanying drawings, in which:—

Figure 1 is a top plan view of an engine equipped with my improved reversing apparatus. Fig. 2 is a side elevation of the apparatus. Fig. 3 is a sectional view on line 3—3 of Fig. 1. Fig. 4 is an enlarged detail view of a valve actuating member, and Fig. 5 is an end view of the member shown in Fig. 4.

Reference now being had to the details of the drawings by letter, A designates the base of the engine upon which the usual steam cylinder B is mounted and provided with a piston to which the connecting rod C is fastened, and D designates a steam chest in which the usual slide valve is mounted said valve being adapted to supply steam alternately to the opposite ends of the cylinder and also to control the exhaust. E designates a stem to said slide valve and guided in apertures in the projections A' upon the frame of the engine.

G designates the crank shaft of the engine to which the fly wheel H is fixed and I designates a pitman pivotally connecting

the crank shaft with the cross-head L which reciprocates upon the parallel longitudinal guide strips L', shown clearly in Fig. 1 of the drawings.

Fixed to the crank shaft is my improved valve-actuating member, designated by letter N. Said member is provided with two semi-circular tracks, designated by letters O and O', said tracks terminating in the moderately abrupt inclined or curved end walls P. It will be noted that each of said semi-circular tracks, which are oppositely disposed with relation to each other, is of less diameter than the diameter of the member N and a cylindrical track space intervenes between the two tracks and each of the latter has an inclined marginal wall Q, as shown clearly in Figs. 1 and 4 of the drawings.

Pivotally connected to the stem E of the slide valve is a rod K which passes through an elongated slot I formed in the operating lever I', which latter is pivoted at I<sup>2</sup> upon the frame of the apparatus. The rod K passes between the two anti-friction rollers J, J, which are provided to reduce the amount of friction between the parts to a minimum. A notched segment member M is fastened to the frame of the apparatus and a spring-pressed pawl M' is adapted to engage one or another of the notches of said segment to hold the lever in an adjusted position. A rod M<sup>2</sup> is pivotally connected to the pawl M' and in turn to the hand-operated lever M<sup>3</sup>, whereby the pawl may be readily released from the segment when it is desired to swing the lever in one direction or the other. The end of the rod K is forked and has an anti-friction wheel T journaled therein which is adapted to contact with the member N and reduce friction to a minimum. In order to allow said wheel T to move freely against the inclined surfaces Q, said wheel is preferably oval shaped upon its circumference. Mounted upon a threaded portion of the slide valve stem E is a nut E'; and a coiled spring S is mounted upon said stem E and interposed between one of the guide arms A' and said nut, the office of said spring being to normally hold the anti-friction wheel T in contact with the member N so that a reciprocating movement may be imparted to said stem E through the medium of the connecting rod K pivoted thereto.

In operation, when the parts are in the



position shown in Fig. 1 of the drawings, and it is desired to drive the engine in one direction, for instance forward, the operator, by swinging the operating lever I' to the left, will cause the rod K to move therewith and the anti-friction wheel T will come opposite and in contact with the track O, the spring S causing the stem E to be withdrawn from the steam chest, thereby opening the port into the outer end of the cylinder, which will cause the piston to be driven toward the opposite end thereof. The moment the anti-friction wheel T comes in contact with the track O which extends about half the circumference of the member N, the full force of the steam is allowed to act upon the piston and the moment the latter approaches its limit in one direction, the steam is quickly cut off from one end of the cylinder and the port opened upon the opposite side of the piston to allow the latter to be driven back in the opposite direction, the cylinder exhausting in the usual manner. When it is desired to stop the engine, the operator by swinging the lever I' to the position shown in Fig. 3 of the drawings will cause the anti-friction roller to travel upon the circumference of the member N intermediate the tracks and hold the slide valve from operation. In the event of it being desired to reverse the engine, the operator by throwing the lever I' to the extreme right or toward the fly wheel may cause the anti-friction wheel T to contact with the track O' which will actuate the slide valve so as to allow steam to enter the steam cylinder to reverse the movement of the piston.

The spring S is mounted between the nut E' and the projection A', said nut being adjustable to regulate the tension of the spring which will cause the slide valve to act at different speeds and thus regulate the speed of the engine.

What I claim to be new is:—

1. A valve gear for engines comprising, in combination with a cylinder, a cut-off valve with a stem attached thereto, a member adapted to be actuated by a crank shaft and provided with semi-circular tracks of

less diameter than the diameter of said member and terminating in curved shoulders, a rod pivotally connected to the stem of the cut-off valve, an anti-friction wheel carried by said rod, a pivotal lever having a slot therein through which said rod passes and adapted to move the rod laterally, and a spring adapted to hold the anti-friction wheel upon said rod in contact with said member.

2. A valve gear for engines comprising, in combination with a cylinder, a cut-off valve with a stem attached thereto, a member adapted to be actuated by a crank shaft and provided with semi-circular tracks of less diameter than the diameter of said member and terminating in curved shoulders, a rod pivotally connected to the stem of the cut-off valve, an anti-friction wheel carried by said rod, a pivotal lever having a slot therein through which said rod passes and adapted to move the rod laterally, a coiled spring mounted upon the stem of the slide valve, an adjusting nut mounted upon the threaded portion of said stem and between which and a projection of the frame of the apparatus said spring is adapted to bear.

3. A valve gear for engines comprising, in combination with a cylinder, a cut-off valve with a stem attached thereto, a member adapted to be actuated by a crank shaft and provided with semi-circular tracks of less diameter than the diameter of said member and terminating in curved shoulders, a rod pivotally connected to the stem of the cut-off valve, a pivotal lever having a slot therein through which said rod passes and adapted to move the rod laterally, anti-friction rollers mounted one above and one below said rod and adapted to bear against the latter, an anti-friction wheel journaled in the forked end of said rod, and a spring adapted to hold said anti-friction wheel in contact with said member.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

BERNARD BREECK.

Witnesses:

A. L. HOUGH,

FRANKLIN H. HOUGH.