

No. 870,303.

PATENTED NOV. 5, 1907.

W. J. D. MILLER.  
SPEED GOVERNOR.

APPLICATION FILED MAR. 23, 1907.

FIG. 1-

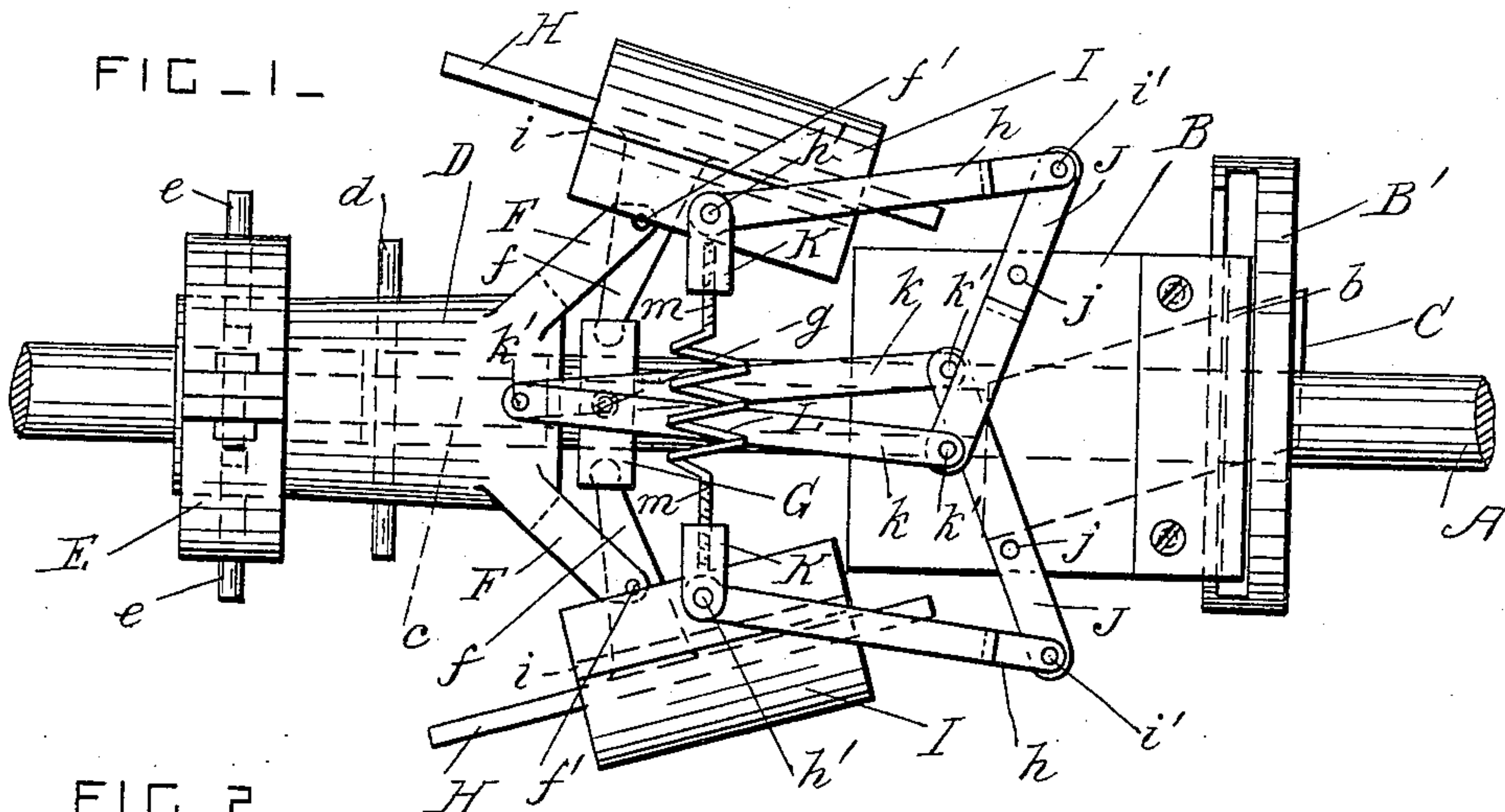


FIG. 2-

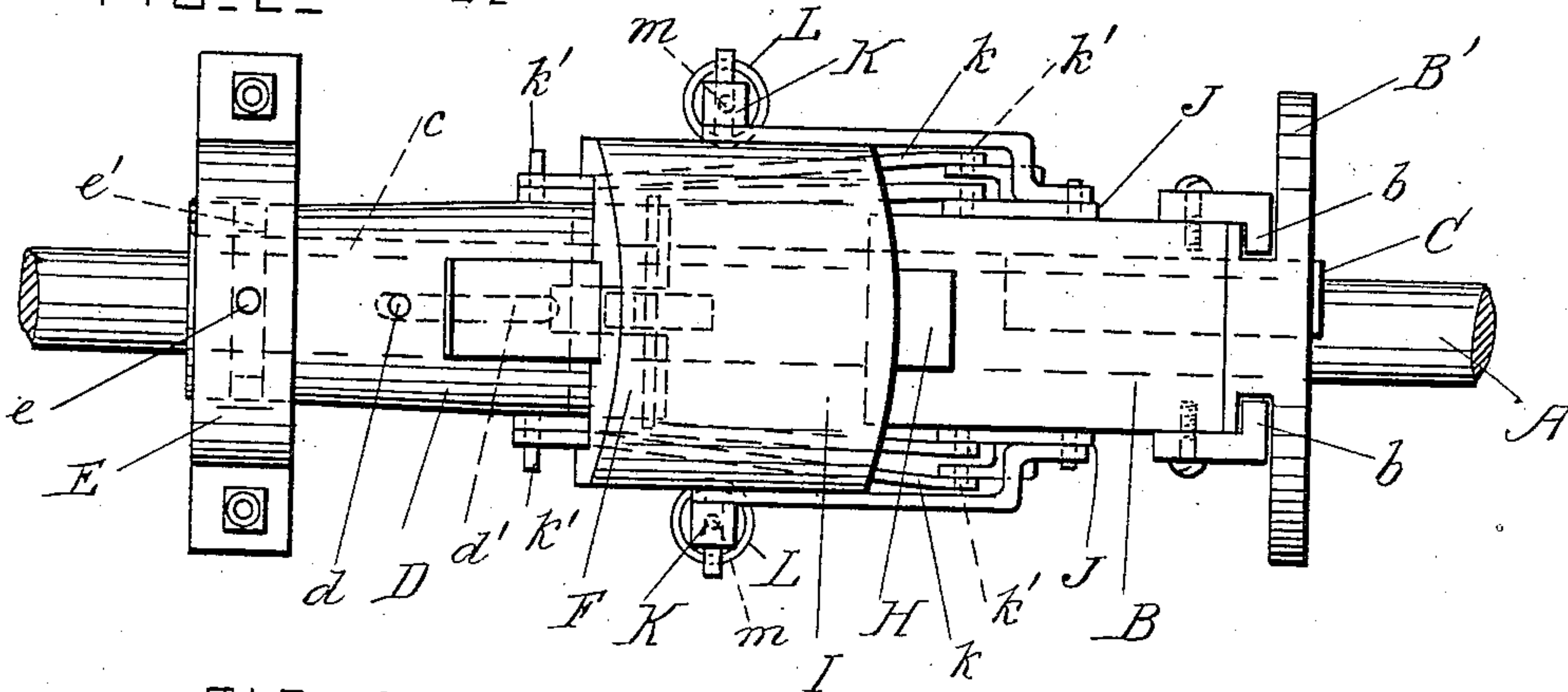


FIG. 3-

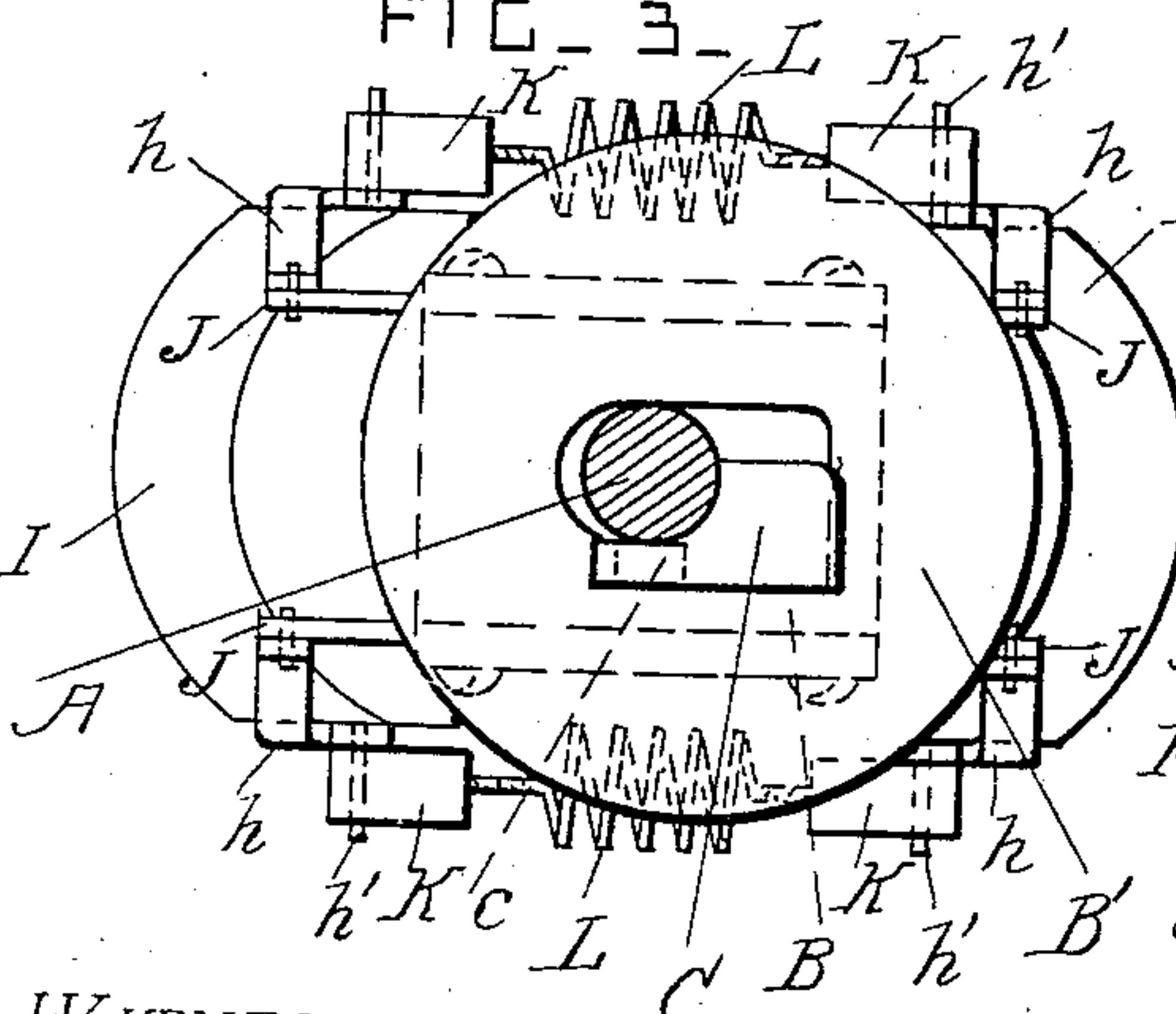
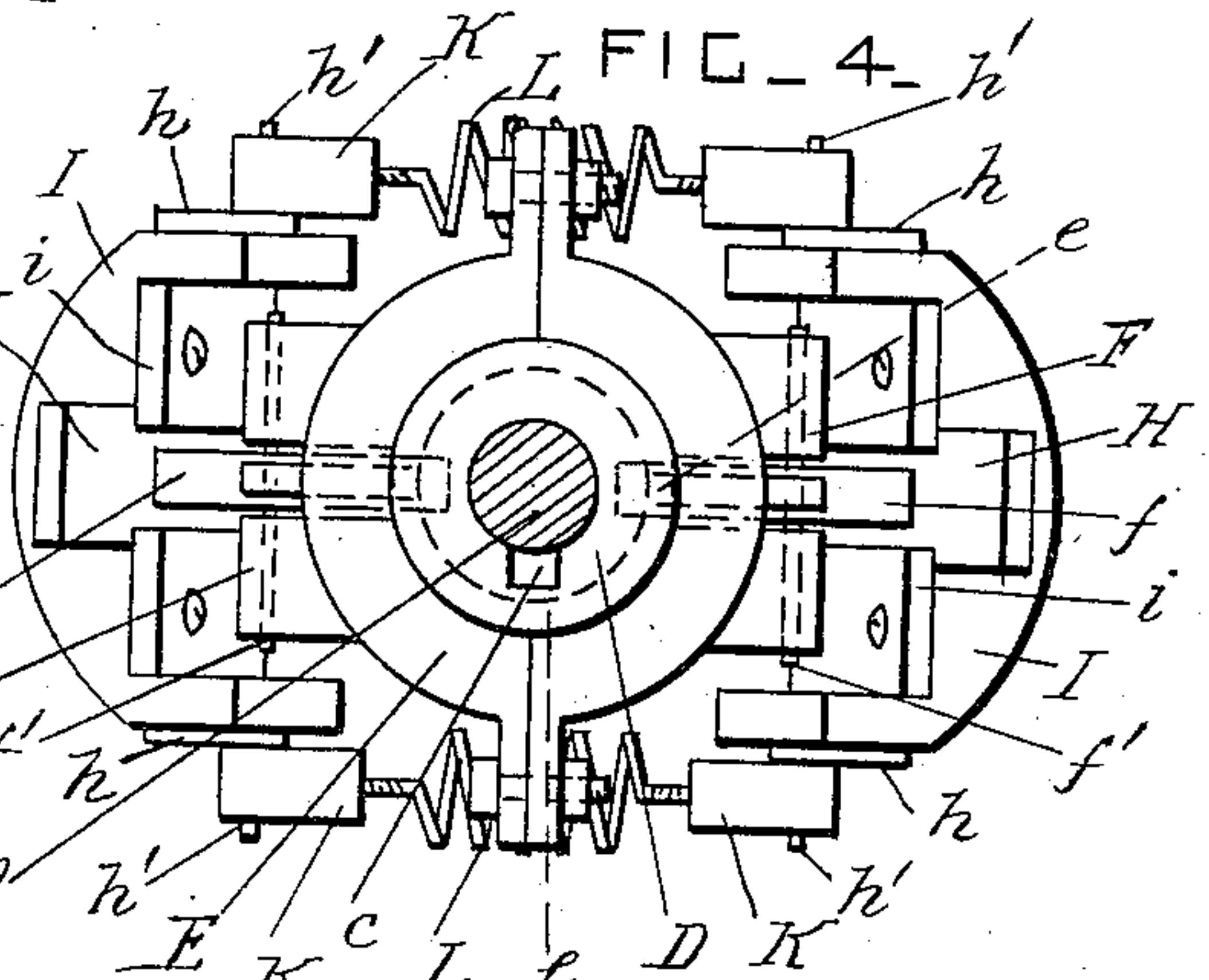


FIG. 4-



WITNESSES:

Wm. H. Bates

James M. Spear

INVENTOR

William J. D. Miller

BY

Herbert W. Jenner

Attorney



# UNITED STATES PATENT OFFICE.

WILLIAM J. D. MILLER, OF HILLSBORO, MISSOURI.

## SPEED-GOVERNOR.

No. 870,303.

Specification of Letters Patent.

Patented Nov. 5, 1907.

Application filed March 23, 1907. Serial No. 364,190.

*To all whom it may concern:*

Be it known that I, WILLIAM J. D. MILLER, a citizen of the United States, residing at Hillsboro, in the county of Jefferson and State of Missouri, have invented certain new and useful Improvements in Speed-Governors; 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.

10 This invention relates to governors for steam engines; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a side view of the governor. Fig. 2 is a side view showing the governor turned around one quarter from the position shown in Fig. 1. Fig. 3 is an end view looking at the eccentric. Fig. 4 is an end view looking at the reversing sleeve.

A is the driving shaft of an engine, and B is a guide-block rigidly secured thereon.

20 B' is an eccentric which is slidable crosswise of the shaft A in guides b carried by the block B.

C is an inclined reversing-plate which is slidable longitudinally in the guide-block B and which engages with slots in the eccentric B'. A rod c projects from the plate C, and affords a means for sliding it longitudinally. When the plate C is slid longitudinally to its full extent it reverses the slide-valve of the engine by moving the center of the eccentric across the center of the shaft in the well known manner, and when the plate is slid to a less extent it varies the cut-off of the valve by changing the length of its stroke.

30 D is a support consisting of a sleeve which is slidable on the shaft A and which has a slot in which the rod c is slidable. A pin d passes crosswise through the sleeve and is slidable in a slot d' in the shaft, so that the reversing sleeve D is constrained to revolve with the shaft. This sleeve may be splined to the shaft, or connected to it in any other approved manner.

40 E is a reversing-collar provided with pins e which engage with a circumferential groove e' in the reversing-sleeve D. This collar affords a means for sliding the sleeve, and it is engaged by a reversing-lever of any approved construction.

45 The sleeve E is provided with forked arms F, and f are the governor-arms or levers which are pivoted to the arms F by pins f'. At one end the arms f engage pivotally with a collar G which slides upon the shaft A, and which is secured to the rod c by a screw g. At their outer ends the arms f are provided with longitudinal bars H.

50 I are the governor-weights which are provided with guides i so that they are slidable longitudinally on the bars H.

55 J are four levers which are arranged in pairs and which are pivoted to the guide-block B by pins j. The outer ends of these levers are connected with the

governor-weights by rods h and pins i' and h', the pins h' being arranged at the middle parts of the governor weights. The inner ends of the levers J are connected with the reversing sleeve D by rods k and pins k'. K are blocks which are pivoted to the governor-weights by the said pivot pins h'. L are helical springs provided with stems m at their ends. These stems are provided with right and left hand screwthreads, and they engage with screwthreaded holes in the said blocks. The tension of the springs is adjusted by revolving them by hand on their own axes, but any other approved means may be provided for adjusting the tensions of the springs and thereby varying the sensitiveness of the governor.

70 When the engine valve is not on the center, the pins h' come to one side of the pivot pins f' and the governor-arms f. When the shaft A is revolved rapidly the governor-weights are moved from their normally inclined positions by centrifugal force, and the pins h' are moved outwardly about the pins f' as centers. This motion turns the governor-arms f on their pivot pins, and they slide the collar G and the reversing-plate C so that the eccentric is moved to a limited extent crosswise of the shaft, and the travel of the valve and its cut-off is thereby varied so as to reduce the supply of steam to the cylinder. When the speed of the engine is reduced, the springs L move the governor-weights and the arms f in the reverse direction so that the supply of steam is increased.

85 When the reversing-sleeve D is slid upon the shaft to reverse the eccentric, the pins h' come on the other side of the pivot pins f' of the governor-arms f, and the governor-weights are inclined in the reverse direction. In this position the governor-weights operate the same as hereinbefore described, so that the supply of steam to the cylinder is varied and controlled by the governor in a similar manner whether the engine is arranged to run forward or backward.

95 What I claim is:

1. In a speed governor, the combination, with a driving-shaft, a guide-block secured thereon, an eccentric slidable on the said guide-block, and a longitudinally slidable reversing-plate for moving the said eccentric crosswise of the said shaft; of a support which revolves with the said shaft, governor-arms pivoted to the said support and operatively connected at one end with the said reversing-plate, spring-pressed governor-weights carried by the other ends of the said arms, levers pivoted to the said guide-block, and rods connecting the ends of the said levers with the said governor-weights and support respectively.

100 2. In a speed governor, the combination, with a driving-shaft, a guide-block secured thereon, an eccentric slidable on the said guide-block, and a longitudinally slidable reversing-plate for moving the said eccentric crosswise of the said shaft; of a support which revolves with the said shaft, means for sliding the said support longitudinally to reverse the engine, governor-arms pivoted to the said support and operatively connected at one end with the said reversing-plate, guide-bars carried by the outer ends of 105 110 115



the said arms, spring-pressed governor-weights slidable on the said bars, levers pivoted to the said guide-block, and rods connecting the ends of the said levers with the said governor-weights and support respectively.

- 5 3. In a speed governor, the combination, with a driving-shaft, a guide-block secured thereon, an eccentric slidable on the said guide-block, and a longitudinally slidable reversing-plate for moving the said eccentric crosswise of the said shaft; of a support which revolves with the said shaft, 10 governor-arms pivoted to the said support and operatively connected at one end with the said reversing-plate, guide-bars carried by the outer ends of the said arms, governor-weights slidable on the said bars, pivots at the middle portions of the said weights, springs arranged between the 15 said pivots, means for sliding the said support to move the pivots of the governor-arms from one side of the said pivots to the other, levers pivoted to the said guide-block, rods connecting the outer ends of the said levers with the said pivots, and rods connecting the inner ends of the said 20 levers with the said support.

4. The combination, with a driving-shaft, and a revers-

ing mechanism mounted thereon and provided with a longitudinally slidable reversing-sleeve; of a reversible speed-governor operatively connected with the said reversing mechanism and having the arms of its governor-weights 25 pivotally supported by the said reversing-sleeve.

5. The combination, with a driving-shaft, and a reversing mechanism mounted thereon and provided with a longitudinally-slidable reversing-plate and a longitudinally slidable reversing-sleeve; of a reversible speed-governor provided with governor-arms which are pivotally supported 30 by the said sleeve, means for sliding the said sleeve independent of the said governor, and means for pivotally connecting the said governor-arms with the said plate so that the said plate is slid by the said governor independent of 35 the said reversing-sleeve.

In testimony whereof I have affixed my signature in the presence of two witnesses.

WILLIAM J. D. MILLER.

Witnesses:

GEO. F. DELF,  
HENRY DIPPEL.