

No. 670,138.

Patented Mar. 19, 1901.

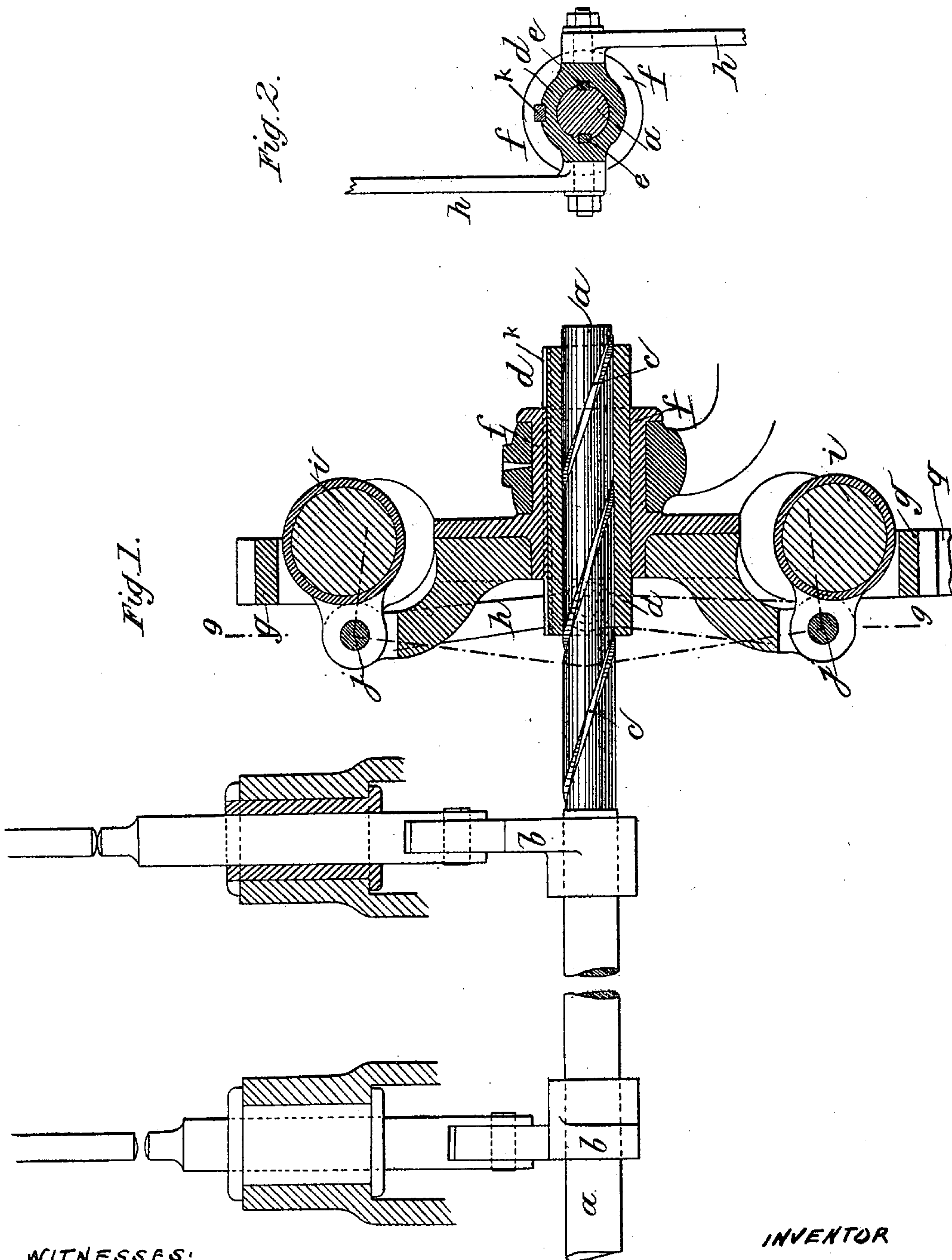
E. L. P. MORS.

SPEED REGULATOR FOR EXPLOSIVE ENGINES.

(Application filed Mar. 8, 1900.)

2 Sheets—Sheet 1.

(No Model.)



WITNESSES:

P. W. Wright.
S. C. Connor

INVENTOR

EMILE LÉON PROSPER MORS

BY

Howman and Howman
HIS ATTORNEYS.

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Fig. 4.

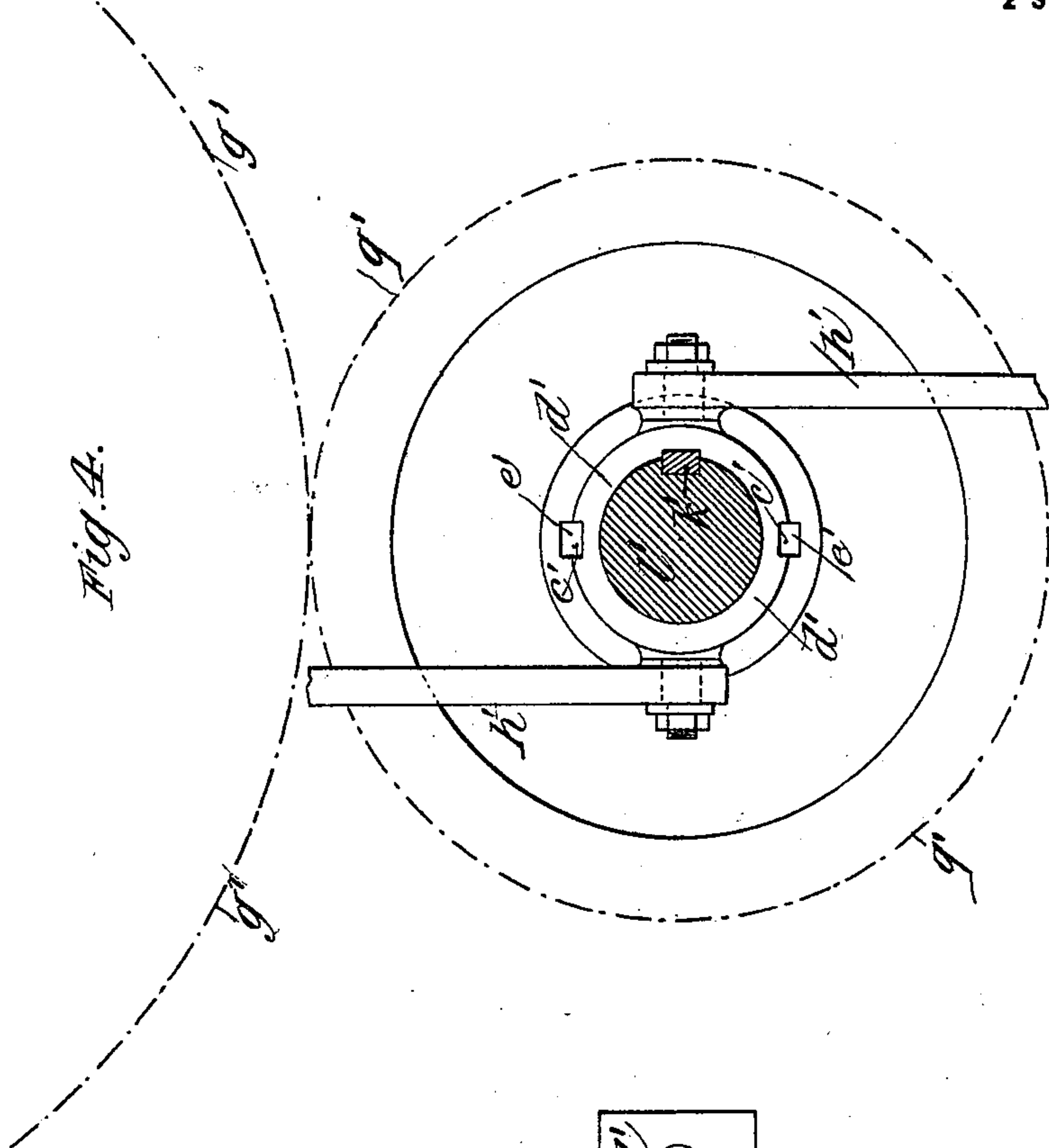
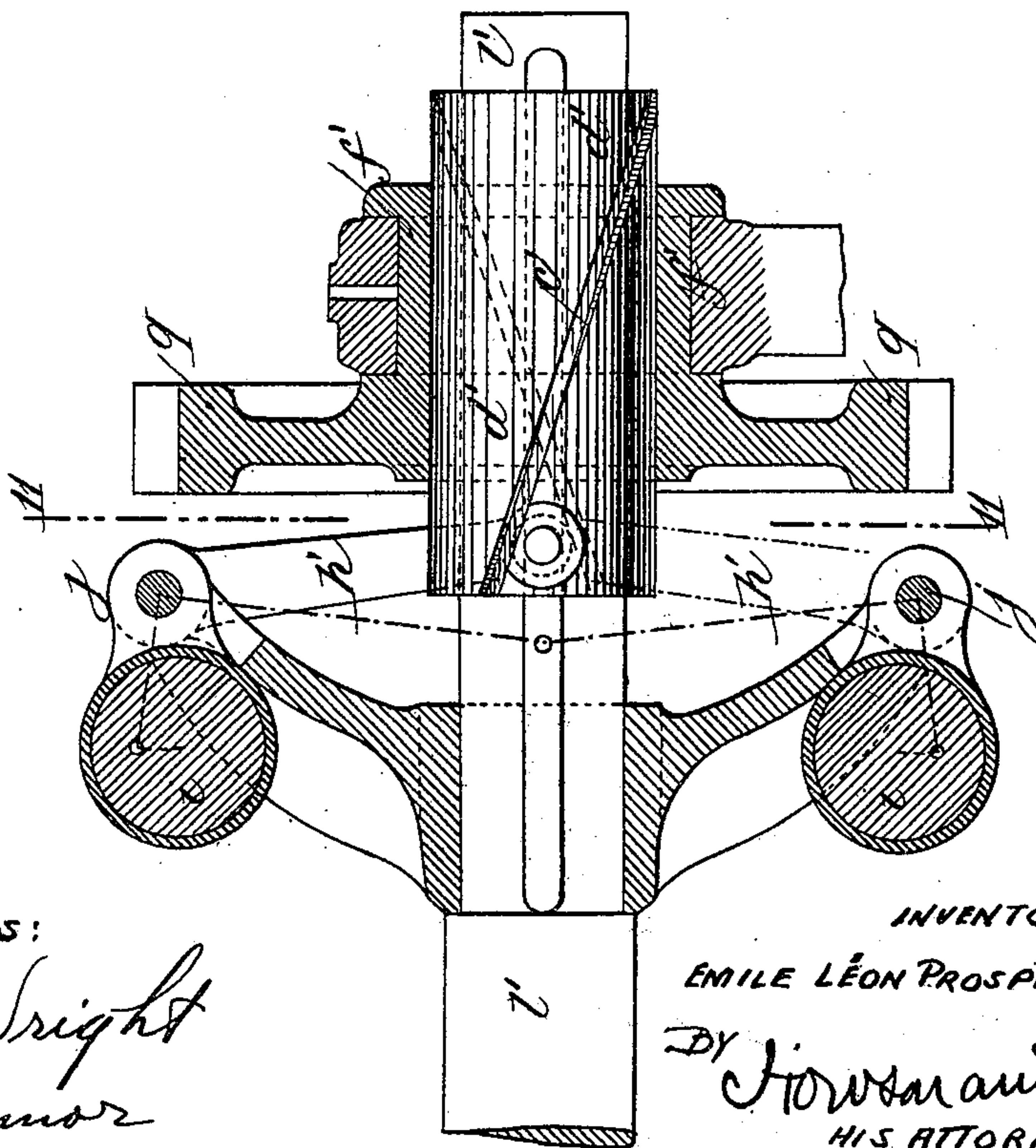


Fig. 3.



WITNESSES:

P. W. Wright
S. L. Connor

INVENTOR

EMILE LÉON PROSPER MORS

BY *Howson and Howson*
HIS ATTORNEYS.

UNITED STATES PATENT OFFICE.

EMILE LEON PROSPER MORS, OF PARIS, FRANCE, ASSIGNOR TO SOCIÉTÉ ANONYME D'ELECTRICITÉ ET D'AUTOMOBILES MORS, OF SAME PLACE.

SPEED-REGULATOR FOR EXPLOSIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 670,138, dated March 19, 1901.

Application filed March 6, 1900. Serial No. 7,517. (No model.)

To all whom it may concern:

Be it known that I, EMILE LEON PROSPER MORS, a subject of the King of Belgium, and a resident of Paris, France, have invented certain new and useful Improvements in Governors for Hydrocarbon-Motors, of which the following is a description.

This invention relates to governing mechanism for hydrocarbon-motors, and is particularly designed for use in motor-vehicles, and has for its object means for advancing or retracting the position of the cams and the cam-shaft for operating the valves, &c., in relation to the position of the piston in the explosion-chamber, and thus to regulate either the quantity of explosive mixture to be admitted, the degree of exhaust of the exploded gases, or the time of ignition, or all of these means for varying the power, and therefore the speed, as will be readily understood.

In the following description and the accompanying drawings I have shown but the cam-shaft, the cams, and the levers operated thereby of an ordinary hydrocarbon-motor with my improved governor applied thereto, that being all that is necessary for a proper understanding of my invention.

In the accompanying drawings, Figure 1 is a sectional view of my improved governor. Fig. 2 is a section taken on line 9 9, Fig. 1. Fig. 3 is a sectional view of a modified form of governor located on the driving-shaft instead of the cam-shaft, and Fig. 4 is a section on line 11 11 of Fig. 3.

Referring to Figs. 1 and 2, *a* is the cam-shaft, and *b* cams thereon, and *g* is the gear-wheel, secured to the governor, by which the governor and cam-shaft are rotated. One end of the cam-shaft has formed on it one or more helicoidal grooves *c c*, (two in the present instance.) On a hollow cylinder or sleeve *d*, by means of a bushing *f*, turning in suitable bearings, I mount an ordinary ball-governor having balls *i i*, pivoted at *j j* and carrying levers *h h*, the ends of which are fastened to the sleeve *d*. This sleeve is prevented from turning rotarily with respect to the governor by a key *k*, but is free to slide lengthwise. The end of the cam-shaft having the grooves *c c* is fitted into the interior of the

sleeve *d*, and projections or feathers *e e* in the sleeve fit in said grooves, as shown in Fig. 2.

In operation at normal speed the balls and their levers *h h* will occupy a position between the two positions shown in full and in dotted lines on Fig. 1, and the shaft, sleeve, and governor will rotate together, and the cams *b* will come into contact with their levers at normal positions with reference to the then present position of the motor's piston. Should the speed unduly increase, the levers *h* will be thrown to the right and carry the sliding sleeve *d* with them, thus causing the projections *e* to slide in the grooves and turn the shaft *a* in excess of the rotary motion otherwise given it. Thus the position at which the cams operate in relation to the position of the piston will be changed or regulated to diminish the speed again. It will readily be understood how on a diminution of speed the cams *b* will be adjusted in the opposite direction.

The main object of this invention is of course to turn the cam-shaft at stated times to throw the cams ahead or behind their normal working position and for the moment add to or subtract from the regular rotation of the cam-shaft. The example above described shows this accomplished by mounting the governor mechanism directly on the cam-shaft; but it will be obvious that this might be accomplished were it so mounted on the driving-shaft and suitable gearing interposed capable of being thrown ahead or behind the rotary speed at stated times for the object desired.

In Figs. 3 and 4 I have shown my invention applied to a driving-shaft of a motor, with the object in view of advancing or retarding the position of the gear-wheel *g'*, (shown in dotted lines,) which is mounted on the cam-shaft. *l'* is the driving-shaft, having a governor mounted thereon. In this modification I secure the governor-levers *h' h'* direct to a sleeve *d'*, having a groove *c'*, which sleeve is permitted to slide, but not rotate, on the driving-shaft *l'* by a key *k'* between the shaft and the sleeve. In a suitable bearing and mounted on the cylinder or sleeve *d'* I mount a gear-wheel *q'*, engaging with the

toothed wheel g' of the cam-shaft. Projections e' on the interior of the gear-wheel q' and its bushing f' occupy positions in the grooves c' , so that upon the sliding of the sleeve d' and the consequent action of the grooves on these projections the gear-wheel will be advanced or retarded at that instant in relation to the rotary motion otherwise imparted to the driving-shaft l' .

I claim as my invention—

1. A governor mechanism for engines, comprising cams and a cam-shaft, movable in a rotary direction only, a governor, a suitable bearing for the governor also mounted to rotate only, a sliding sleeve between the governor and the cam-shaft, helicoidal grooves and projections fitted into such grooves, connecting the cam-shaft and the sleeve whereby the cam-shaft is advanced or retarded upon the sliding of the sleeve.

2. A governor mechanism for engines comprising cams and a cam-shaft, movable in a rotary direction only, a ball-governor having arms, a suitable bearing for the governor but also mounted to rotate only, a sleeve, connected to the arms of the ball-governor, and adapted to rotate with it but movable lengthwise to it, a helicoidal groove and a projection to fit therein between the sleeve and the cam-shaft, as and for the purpose set forth.

3. A governor for engines, comprising a cam-shaft and a ball-governor having a bushing both mounted in suitable bearings, and adapted to move in a rotary direction only, a sliding sleeve within the governor-bushing and adapted to slide therein but turning rotarily with the governor-bushing, one end of the cam-shaft within said sliding sleeve and a helicoidal groove and a projection to fit therein between the sleeve and the cam-shaft, said sleeve adapted to be operated by the ball-governor to cause it to slide, substantially as described.

4. A governor mechanism for engines comprising a cam-shaft having helicoidal grooves, a sleeve with projections to fit in the grooves on the cam-shaft, a governor mounted on the sleeve, levers connecting the governor-balls with the sleeve, said sleeve being secured against turning rotarily to the governor but free to slide lengthwise independently of the governor.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EMILE LEON PROSPER MORS.

Witnesses:

GUSTAVE DUMONT,
EDWARD P. MACLEAN.