

No. 750,912.

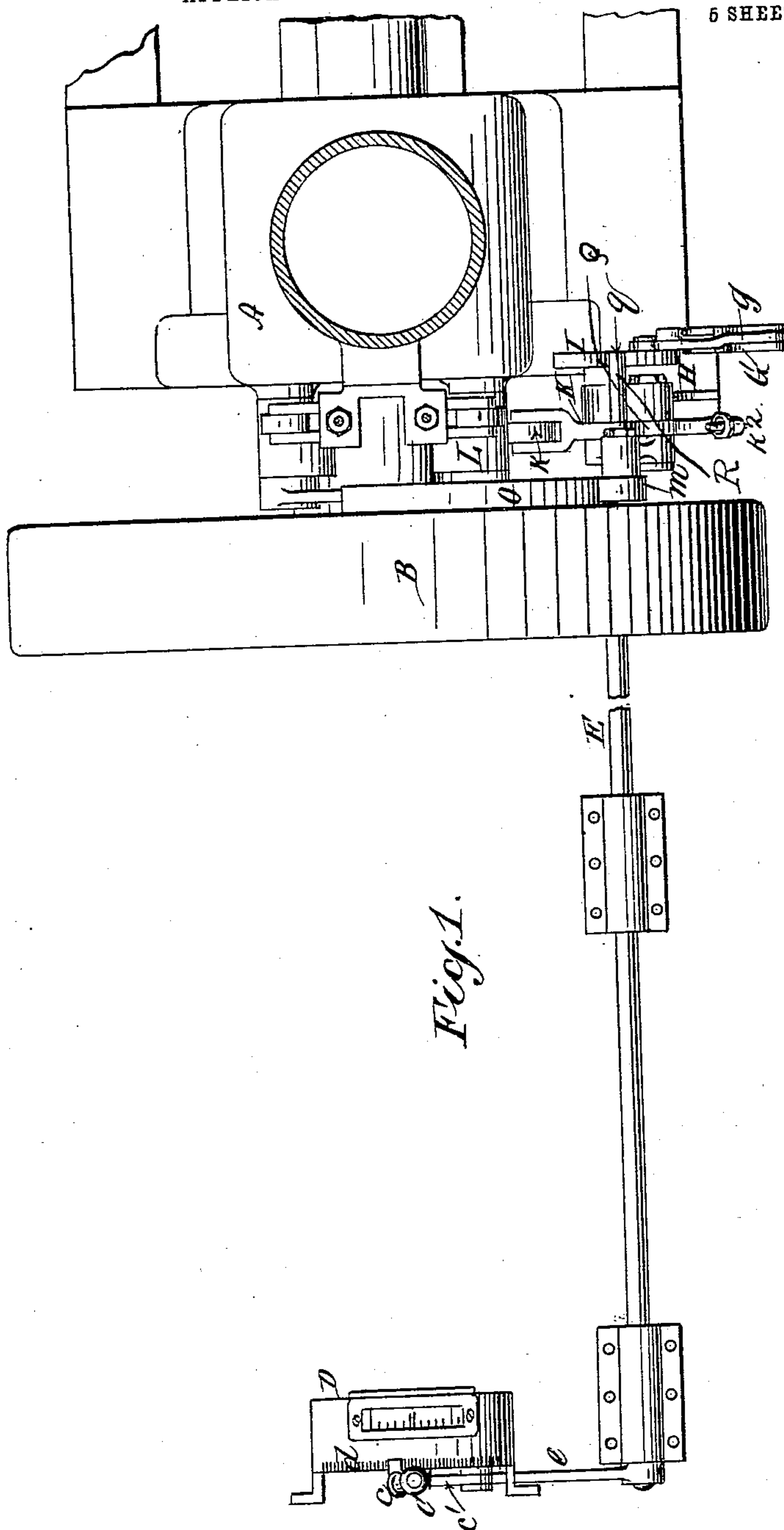
PATENTED FEB. 2, 1904.

W. W. TUCK & A. WASSMANN.
FEED CONTROLLING MECHANISM FOR HYDROCARBON MOTORS.

APPLICATION FILED NOV. 9, 1901.

NO MODEL.

6 SHEETS—SHEET 1.



Witnesses:

D. W. Gardner.
John Kinn

Inventors:
William W. Tuck
August Wassmann
By their Attorney
Leo W. Smith

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W. W. TUCK & A. WASSMANN.

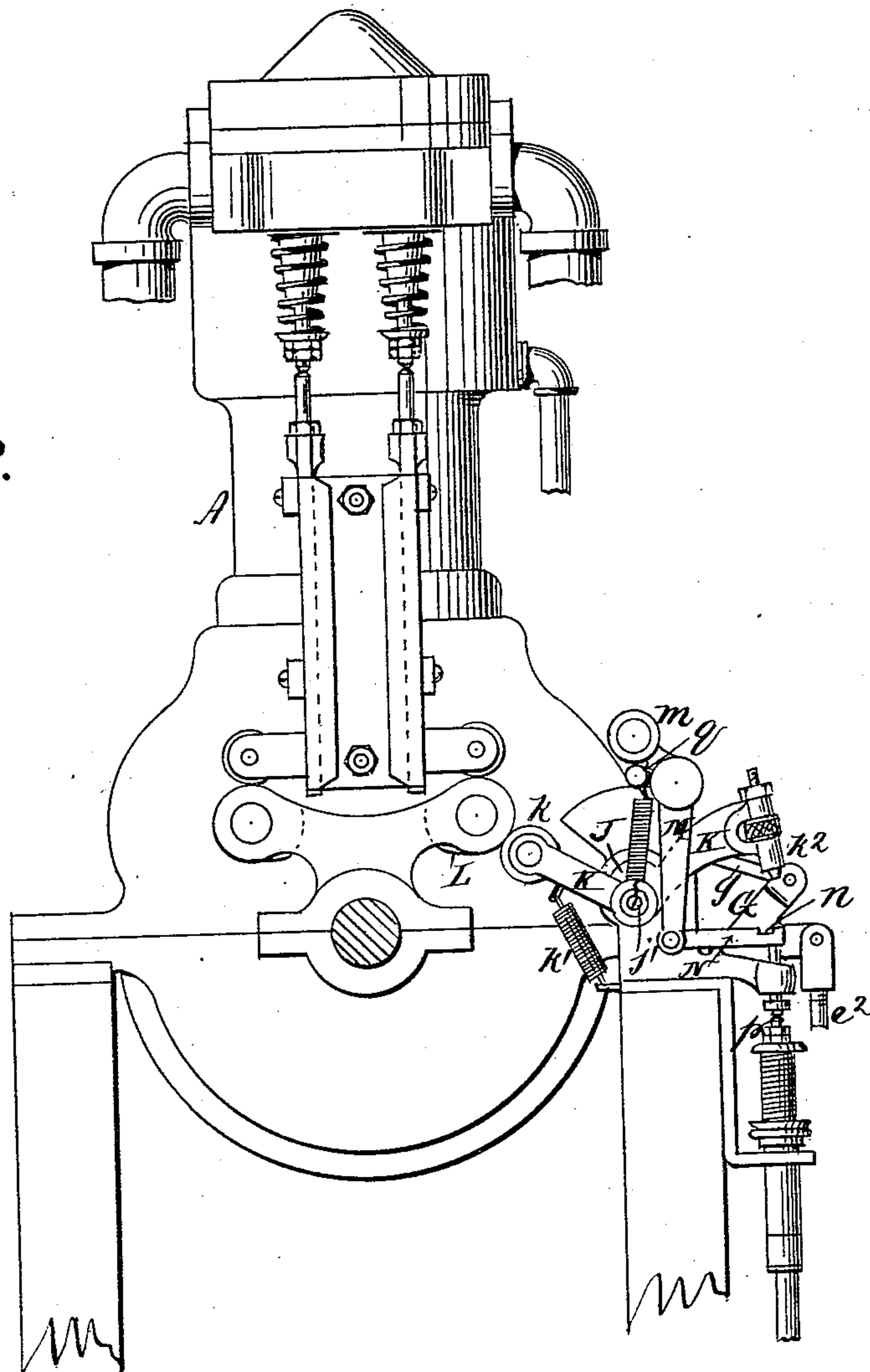
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6 SHEETS—SHEET 2.

NO MODEL.

Fig. 2.



Witnesses:
A. W. Gardner
John K. Korne

Inventors:
William W. Tuck
August Wassmann
By their Attorney
Geo. W. M. Malt

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6 SHEETS—SHEET 3.

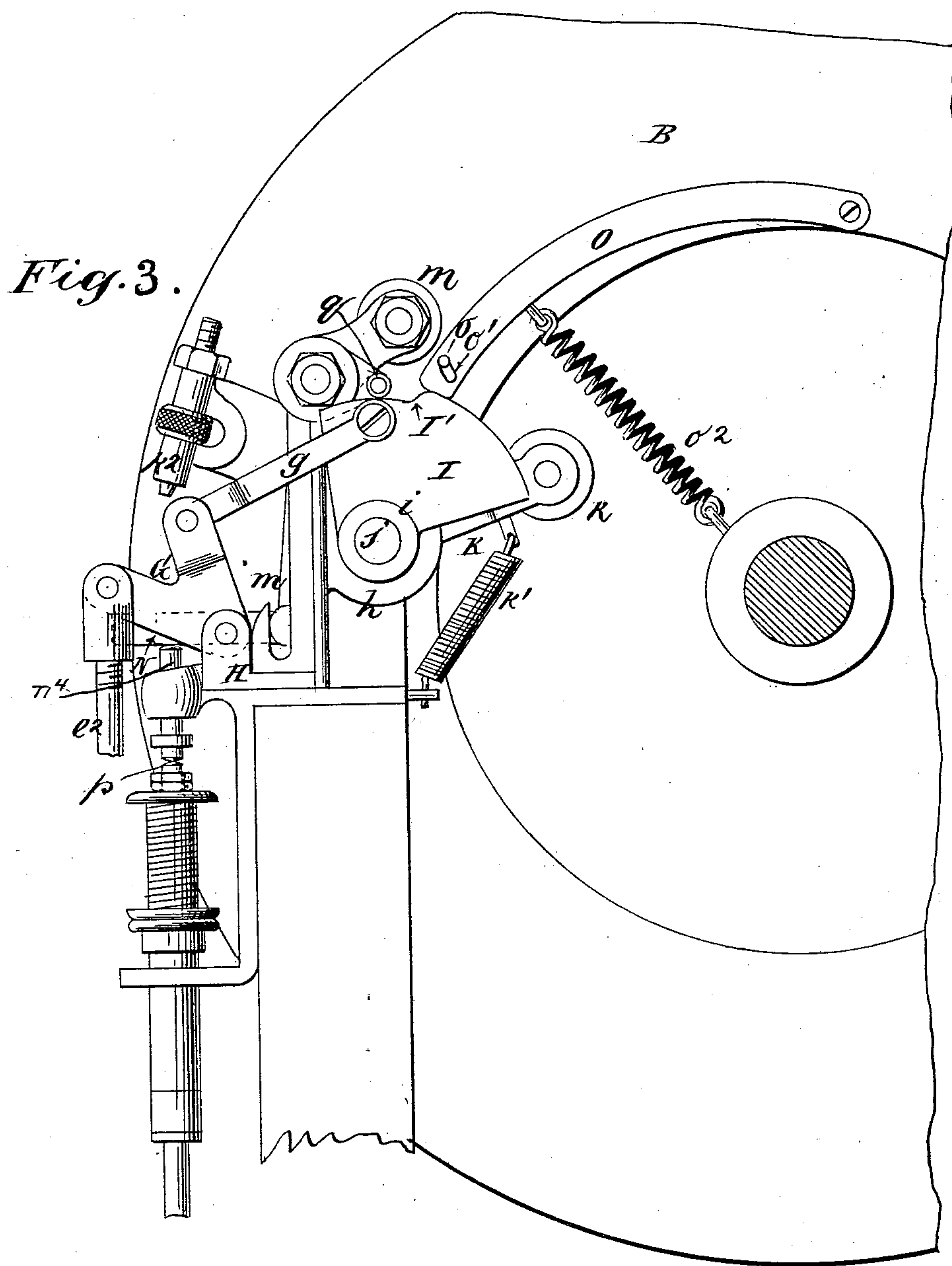
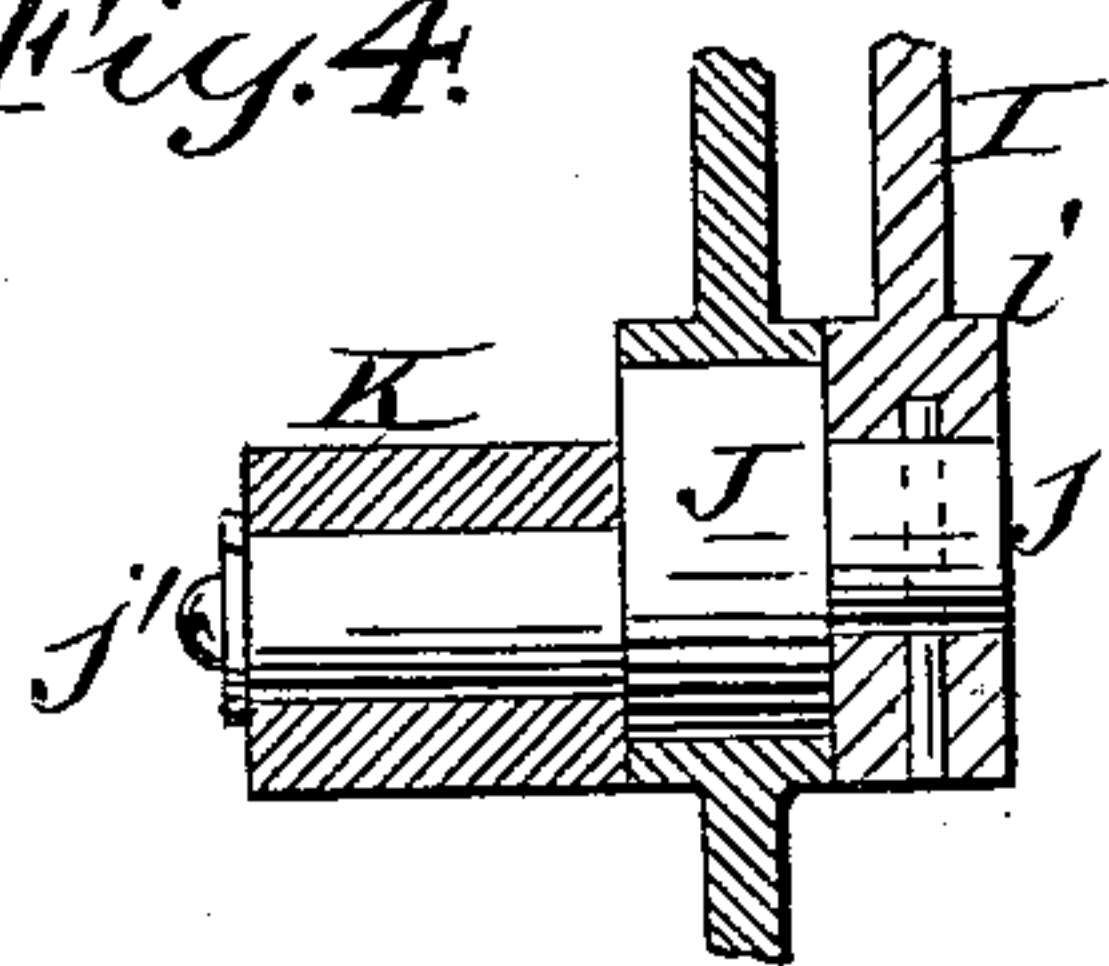


Fig. 4.



Witnesses:

D. W. Gardner.
Frank E. Roach

Inventors:

William W. Tuck
August Wassmann
By their Attorney
Geo. W. Mott

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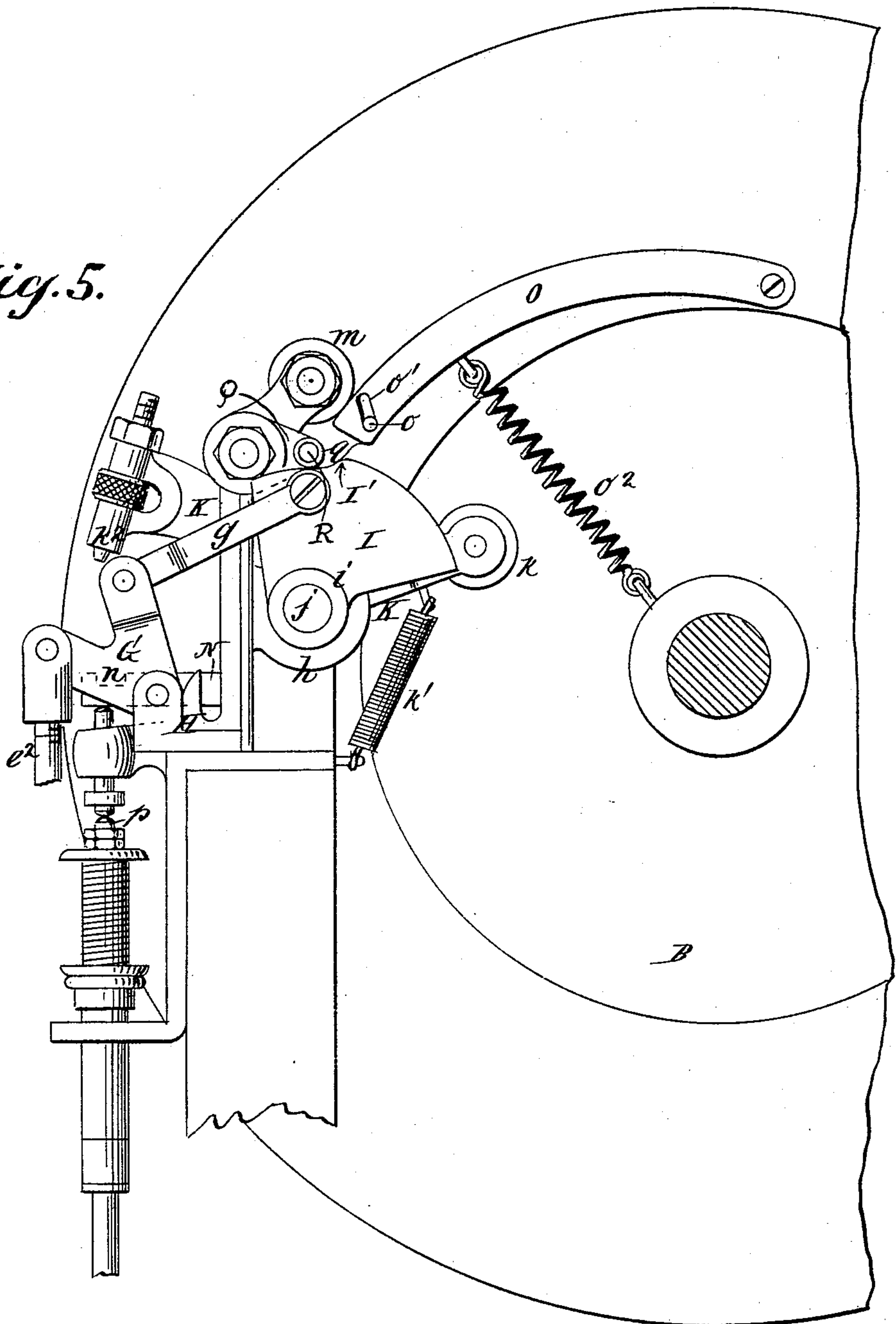
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NO MODEL.

5 SHEETS—SHEET 4.

Fig. 5.



Witnesses:
D. W. Gardner.
John Kien.

Inventors:
William W. Tuck
August Wassmann
By their Attorneys
Geo. W. Wright

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PATENTED FEB. 2, 1904.

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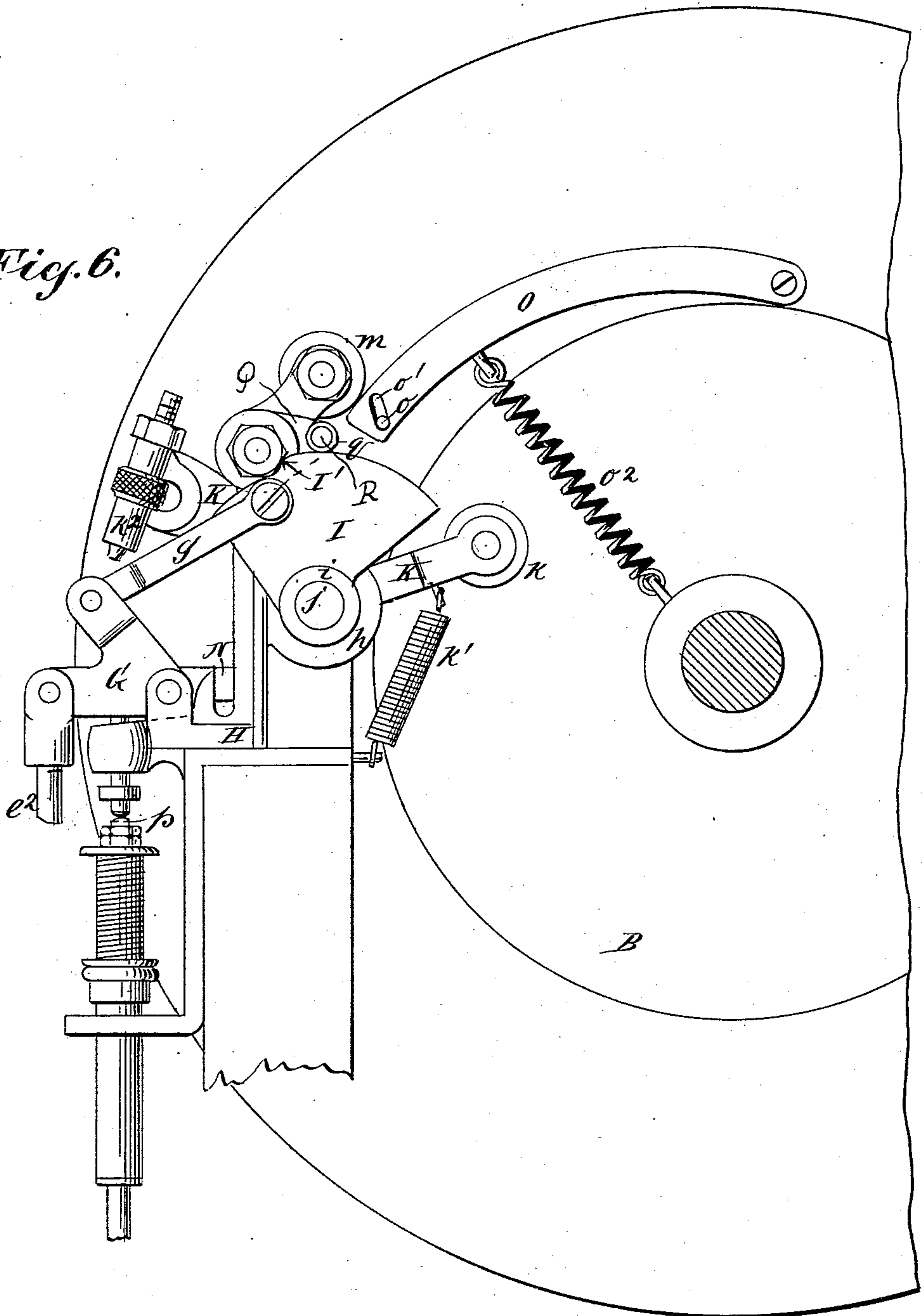
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NO MODEL.

5 SHEETS—SHEET 5.

Fig. 6.



Witnesses:
A. W. Gardner.
John T. H. H.

Inventors:
William W. Tuck
August Wassmann
By their Attorney,
Geo. W. H. H.

UNITED STATES PATENT OFFICE.

WILLIAM W. TUCK, OF RICHMOND HILL, AND AUGUST WASSMANN, OF
ASTORIA, NEW YORK.

FEED-CONTROLLING MECHANISM FOR HYDROCARBON-MOTORS.

SPECIFICATION forming part of Letters Patent No. 750,912, dated February 2, 1904.

Application filed November 9, 1901. Serial No. 81,706. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM W. TUCK, residing at Richmond Hill, and AUGUST WASSMANN, residing at Halletts Point, Astoria, Queens county, and State of New York, citizens of the United States, have invented certain new and useful Improvements in Feed-Controlling Mechanism for Hydrocarbon-Motors, of which the following is a specification sufficient to enable others skilled in the art to which the invention appertains to make and use the same.

Our improvements relate to mechanism for regulating and controlling the feed-supply of hydrocarbon fuel to marine motors of the class in which the combustion of vaporized hydrocarbon and the expansion of the gases generated thereby is utilized against a reciprocating piston.

The object of our invention is to render the feed-controlling mechanism more delicate in operation as well as more accurate and delicate in adjustment and also to provide for its control by hand from the bow of the boat when the motor is situated in the rear of the boat, as is usually the case.

The invention consists in the special arrangement of parts hereinafter described and claimed, although we do not confine ourselves to the identical construction shown, since various modifications and mechanical expedients may be resorted to without departing from the spirit and intent of our invention.

In the accompanying drawings, Figure 1 is a plan of a motor and of our improved controlling apparatus. Fig. 2 is an elevation of the front of the engine and the feed-controlling apparatus, taken inside the fly-wheel. Fig. 3 is a sectional elevation, upon an enlarged scale, taken in front of the motor and looking toward the rear of the fly-wheel, the segmental governor being in its normal position. Fig. 4 is a vertical longitudinal section through the pivot of the oscillating cam. Fig. 5 is a similar view showing the segmental governor in action. Fig. 6 is a similar view showing the parts thrown out of engagement with the segmental governor.

A represents a kerosene or any other hydrocarbon motor, of which B is the fly-wheel. 50

C is the controlling-lever by which the oil-feeding mechanism is regulated. This lever is provided with a hand-pawl *c*, which engages with a segmental rack *d* upon the casing of the indicator D. The controlling-lever C is 55 formed with an arm *c'*, to which is pivotally connected a rod, the opposite end of which is pivotally connected to the rocker-arm *e* upon the rock-shaft E.

It is to be understood that the oil-controlling lever C and indicator D are arranged at the bow of the boat in which the motor A is used, so that the engine may be controlled entirely from that point, if desired, and the exact position of the apparatus and feed be ascertained 65 at a glance.

The rear end of the rock-shaft E is formed with a rocker-arm, which is connected, by means of a rod *e'*, with the bell-crank lever G, pivotally supported on the bracket H, secured 70 to the framework of the engine. The bell-crank lever G is connected by a pitman *g* to the rocker-cam I, the hub *i* of which is journaled in the concentric bearings *h*, formed on the bracket H for its reception. Rigidly secured to and extending through the hub *i* and beyond the journal *h* is a trunnion *j*, the other end of which carries an eccentric disk J, below the center of which projects a stud *j'*. 75

On the eccentric stud *j* is pivotally supported a cam rock-lever K, upon the inner end of which is mounted the contact-roller *k*, which is thrust against the cam L on the way-shaft by means of the spring *k'*, which is rotated as 85 by the means set forth in our concurrent application filed herewith, Serial No. 78,675. The other end of the cam rock-lever carries the contact-point *k''*.

A rock-lever M, pivotally supported upon the bracket H, carries at its lower end the controlling-slide N and at its upper end the contact-roller *m* for engagement with the segmental governor O upon the fly-wheel B. This segmental governor O is limited in motion by a stop *o* within a slot *o'* and is held in its retracted position against centrifugal force by 95

spring o^2 . The controlling-slide N rests upon a vertically-disposed pin n^4 , which rests loosely upon the upper end of the oil-pump piston-rod p , and it is formed with a recess n .

5 The construction and operation of the engine A, cam L, cam rock-lever K, with its contact-point k^2 , the rock-lever M, controlling-slide N, and of the centrifugal governor upon the contact-roller m will be readily under-
10 stood. If the speed attained exceeds a certain limit, the governor-segment O will be thrown out by centrifugal force until it comes in contact with the roller m at each rotation, thereby retracting the controlling-slide N more or less
15 and modifying the stroke of the contact-point k^2 until finally if the speed attained is excessive the governor-segment will protrude sufficiently to retract the controlling-slide N until the recess n is brought onto the contact-point
20 k^2 and the pump will cease to act. The essential difference between the present construction and that disclosed in our application, Serial No. 78,675, hereinbefore referred to, is that in this case we have introduced the cam L and
25 connections by which the apparatus may be regulated by the controlling-lever C, situated in the bow of the boat. Thus, for instance, if the cam I is drawn outward it will throw the stud j' , upon which the cam rock-lever K is
30 mounted, inward, thereby raising the contact-roller k and causing the cam L to feed the oil later than when the stud j' is in its normal position.

The cam I is in peripheral contact with a
35 roller q upon an arm Q, resting loosely on the bolt R, so that when the cam I is drawn outward, as above described, its inclined surface I' will encounter and throw upward the roller q into contact with the upper arm of the rock-
40 lever M, thereby throwing the contact-roller m out of the range of the centrifugal governor O and allowing it to remain there until the position of the cam I is reversed. Under these conditions it will be seen that the
45 engine is free to run at the highest attainable speed, for when the parts are in the position seen in Fig. 6 the slide N is thrown to such an extent that its recess n is beyond the line of movement of the contact-point k^2 and the pump
50 is operated; but when the parts assume the position seen in Fig. 5 the slide N is moved so that the recess is in position to receive the said contact-point and the pump is thrown out of operation.

55 What we claim as our invention, and desire to secure by Letters Patent, is—

1. In feed-controlling mechanism for hydrocarbon-motors, the combination of the fly-

wheel, its segmental centrifugal governor O, having curved slot o' , a stop o working in said 60 slot, the cam rock-lever K, and connections, the rock-lever M, and connections, the cam I, linked to the bell-crank lever G, said bell-crank lever G, being connected through the medium 65 of the connecting-rods and rock-lever E, the controlling-lever C, the whole arranged and operating substantially in the manner and for the purpose set forth.

2. In feed-controlling mechanism for hydrocarbon-motors, the combination of the fly- 70 wheel B, the segmental centrifugal governor O, the rock-lever M, pivotally mounted, a notched slide carried by the lower end of said lever, a roller carried by the upper end of said lever, the loose arm Q, carrying the contact- 75 roller q , and the cam I, movable beneath said roller q to lift the same, by the operation of which the contact-roller m , is thrown out of the line of action of the centrifugal governor, substantially as herein set forth. 80

3. The combination with a pivotally-mounted segmental centrifugal governor and a spring acting thereon, of means for limiting the move- 85 ment of said governor, a rock-shaft, a bell-crank lever connected with said rock-shaft, a rocker-cam connected with the bell-crank lever and having its hub journaled in an eccentric bearing, an eccentric disk carried by said hub, a stud on said disk, a cam rock-lever pivotally 90 mounted on said stud, a contact-roller carried by said lever in the path of said cam, a rock-lever, a slide carried thereby and a roller carried by said rock-lever for contact with the cam, all substantially as shown and described.

4. The combination with a pivotally-mounted 95 segmental centrifugal governor and a spring acting on the same near its free end, of means engaging the governor for limiting its movement, a rock-shaft, a bell-crank lever connected with said rock-shaft, a rocker-cam connected 100 with the bell-crank lever and having its hub journaled in an eccentric bearing, an eccentric disk carried by said hub and having a stud, a cam rock-lever pivotally mounted on said stud, a rock-lever, a slide carried thereby, a contact- 105 roller carried by the cam rock-lever in the path of said cam, a roller carried by the rock-lever for contact with the cam, a loosely-mounted arm, a roller q carried thereby, in the path of the cam, and a contact carried by the rock- 110 lever, all substantially as shown and described.

WILLIAM W. TUCK.
AUGUST WASSMANN.

Witnesses:

D. W. GARDNER,
JOHN KIRN.