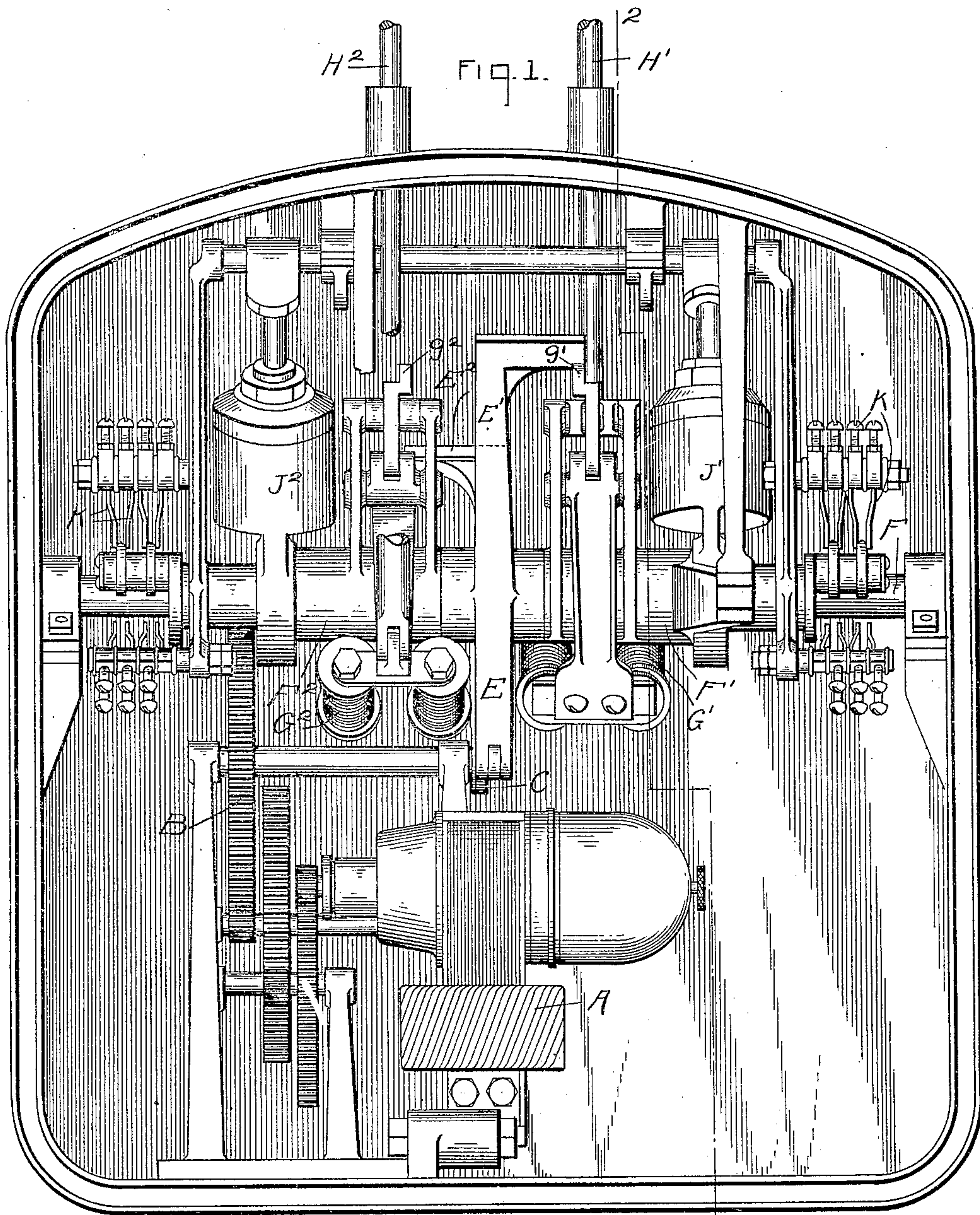


W. V. MOAK.
SIGNAL MECHANISM.
APPLICATION FILED NOV. 18, 1908.

925,123.

Patented June 15, 1909.

3 SHEETS—SHEET 1.



WITNESSES:

M. Ray Taylor.
J. Ellis Allen

INVENTOR:

WILLIAM V. MOAK

BY *Allen S. Davis*
ATTY

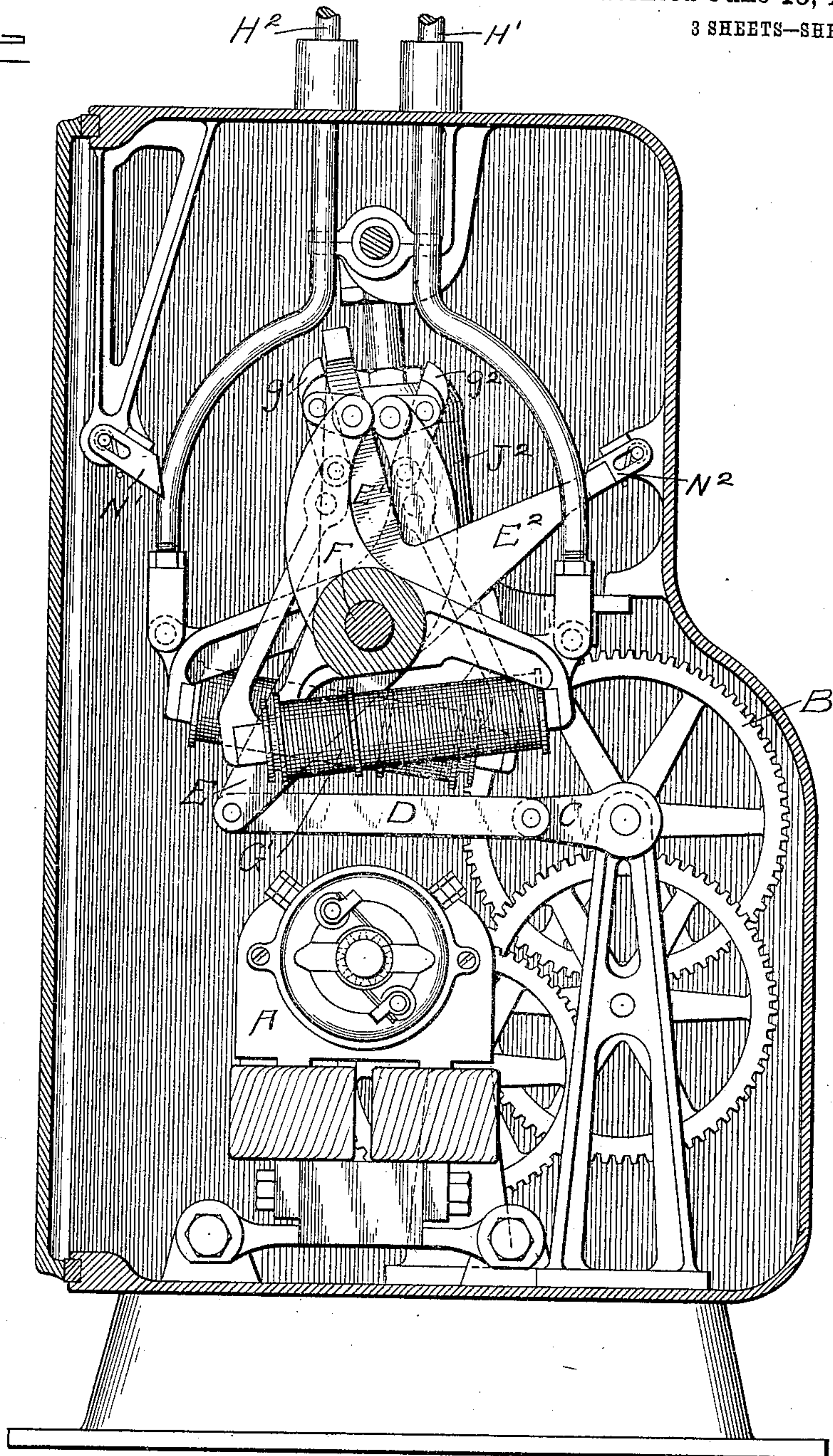
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3 SHEETS—SHEET 2.

Fig. 2



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3 SHEETS—SHEET 3.

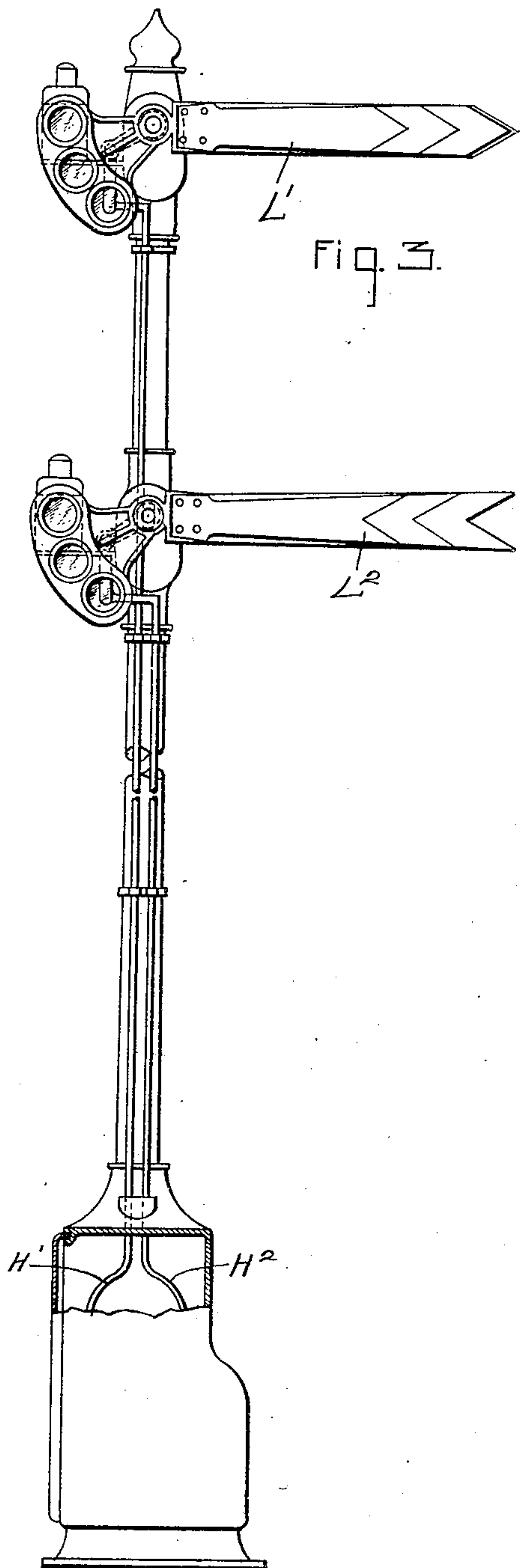


Fig. 3.

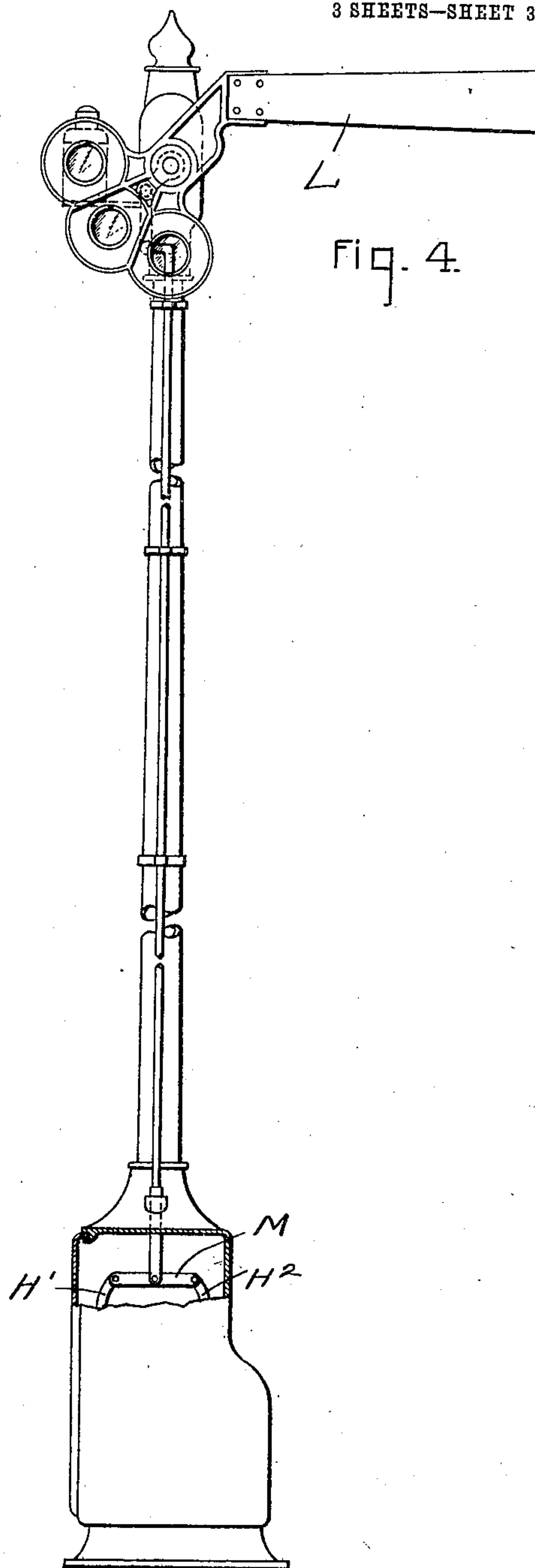


Fig. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM V. MOAK, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

SIGNAL MECHANISM.

No. 925,123.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed November 18, 1908. Serial No. 463,198.

To all whom it may concern:

Be it known that I, WILLIAM V. MOAK, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Signal Mechanisms, of which the following is a specification.

My invention relates to signal mechanisms, and its object is to provide a novel, simple and reliable mechanism for operating a three-position signal or a two-arm two-position signal from a single motor.

My invention consists in the combination of a pair of independently movable signal actuating members, a reciprocating member serving as a common driving member for both signal actuating members, means for clutching the reciprocating member to the signal actuating members alternately upon its movement in opposite directions, means for retaining the signal actuating members in the positions to which they are moved by the reciprocating member, and a rotary motor so connected to the reciprocating member that a unidirectional rotation of the motor produces a reciprocating movement of the member.

My invention will best be understood by reference to the accompanying drawings, in which—

Figure 1 shows a side elevation of a signal mechanism arranged in accordance with my invention; Fig. 2 shows a rear elevation of the same, in cross section on the line 2—2 of Fig. 1; Fig. 3 shows the application of my signal mechanism to a two-arm signal; and Fig. 4 shows its application to a one-arm three-position signal.

In the drawings A represents an electric motor which drives through suitable speed-reducing gearing a gear B. This gear carries a crank C. A connecting rod D connects the crank C with a longer crank E, which forms one arm of a three-arm lever, which serves as a reciprocating driving member for the signal connecting rods. The other two arms of this lever are shown at E¹ and E². The lever is mounted on the shaft F, and may be either loose or fast on this shaft. Loose on the shaft F on opposite sides of the three-arm lever are the sleeves F¹ and F². These sleeves carry the clutch or slot mag-

nets G¹ and G², respectively, which control fingers or pawls g¹ and g², which are adapted to engage projections on the arms E¹ and E², respectively, of the three-arm reciprocating lever. Also connected to the sleeves F¹ and F² are the signal actuating rods H¹ and H², which, as shown in Fig. 3, may be connected to the arms L¹ and L² of two separate signals, which may be home and distant signals as indicated or may both be home signals, or the rods may be connected in the well known manner through a floating lever M or its equivalent to a one-arm three-position signal, as shown in Fig. 4. Dash-pots J¹ and J² are arranged to retard the downward movement of the actuating rods H¹ and H², and contacts K are provided for controlling the circuits of the motor and slot coils.

The parts are shown in the position occupied when the signal or signals stand at danger position. When motor A is energized, the rotation of the gear-wheel B draws connecting rod D toward the right, as viewed in Fig. 2, and moves the arm E¹ of the three-arm reciprocating lever toward the left. If the slot magnet G¹ is energized, the projection on the end of arm E¹, engaging the finger or pawl g¹ which is held rigid by the slot magnet, rocks the sleeve F¹ so as to raise the rod H¹, and thereby to clear the home signal, or to shift the signal from danger to caution, as the case may be. When the signal has been moved to the proper position, the finger or pawl g¹ has passed just beyond the spring catch N¹ which, regardless of the continued engagement of the arm E¹ with the pawl g¹, prevents the signal actuating rod H¹ from falling, as long as the magnet G¹ is energized. The motor circuit is, of course, opened when or shortly before the signal reaches its proper position. The length of crank C and arm E is so proportioned that the gear B has made half a revolution during the above operation. Now if the motor is again energized, the continued rotation of gear B in the same direction shifts the connecting rod D back toward the left, as viewed in Fig. 2, and returns the three-arm lever toward the position shown. When raising the signal actuating rod H¹, the arm E² has been carried beyond the pawl g², so that as this arm is returned toward the position shown

in Fig. 2, it engages the finger g^2 ; and if the magnet coils G^2 are energized the sleeve F^2 is moved on the shaft F , so as to raise the signal actuating rod H^2 . By this rod the distant signal is cleared or the signal is moved from caution to clear, as the case may be. When the movement of the signal is completed, the gear B has completed another half revolution, returning it from the position shown, the circuit of motor A is broken, and pawl g^2 has been brought to a position just beyond the catch N^2 , which catch serves to hold the signal actuating rod H^2 raised, as long as magnet G^2 remains energized, regardless of the position of the three-arm lever.

I do not desire to limit myself to the particular construction and arrangement of parts here shown, but aim in the appended claims to cover all modifications which are within the scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. In a signal mechanism, an electric motor, a rotary member driven thereby, a second member, operative connections between said members whereby unidirectional rotation of the first member produces a reciprocating movement of the second, a pair of independently movable signal-actuating members, a pair of electromagnetic clutch mechanisms adapted when energized to clutch said second member to said signal-actuating members respectively upon the movement of said second member in opposite directions, and means for retaining said signal-actuating members in the respective positions to which they are moved by said second member.

2. In a signal mechanism, an electric motor, a rotary member driven thereby, a second member, operative connections between said members whereby unidirectional rotation of the first member produces a reciprocating movement of the second, a pair of independently movable signal-actuating members, a pair of electromagnetic clutch mechanisms adapted when energized to clutch said second member to said signal-actuating members respectively upon the movement of said second member in opposite directions, and means controlled by said clutch mechanism for retaining said signal-actuating members in the respective positions to which they are moved by said second member.

3. In a signal mechanism, a pair of independently movable signal-actuating members, a reciprocating member serving as common driving member for both signal-actuating members, means for clutching said reciprocating member to said signal-actuating members alternately upon the movement of said reciprocating member in opposite direc-

tions, means for retaining said signal-actuating members in the respective positions to which they are moved by said reciprocating member, a rotary motor, and connections whereby the unidirectional rotation of said motor produces the reciprocating movement of said member.

4. In a signal mechanism, a pair of signal-actuating members and a common driving member therefor, each capable of reciprocating movement on a common axis independently of the other two, means for clutching said driving member to said signal-actuating members alternately upon the movement of said driving member in opposite directions, means for retaining said signal-actuating members in the positions to which they are moved by said driving member, a rotary motor, and connections whereby the unidirectional rotation of said motor produces a reciprocating movement of said driving member.

5. In a signal mechanism, a pair of independently movable signal-actuating members, a reciprocating member serving as common driving member for both signal-actuating members, means for clutching said reciprocating member to said signal-actuating members alternately upon the movement of said reciprocating member in opposite directions, means controlled by said clutching means for retaining said signal-actuating members in the respective positions to which they are moved by said reciprocating member, a rotary motor, and connections whereby the unidirectional rotation of said motor produces the reciprocating movement of said member.

6. In a signal mechanism, a pair of signal-actuating members and a common driving member therefor, each capable of reciprocating movement on a common axis independently of the other two, means for clutching said driving member to said signal-actuating members alternately upon the movement of said driving member in opposite directions, means controlled by said clutching means for retaining said signal-actuating members in the positions to which they are moved by said driving member, a rotary motor, and connections whereby the unidirectional rotation of said motor produces a reciprocating movement of said driving member.

7. In a signal mechanism, an electric motor, a rotary member driven thereby, a second member, a crank and connecting rod connection between said members, the crank on the first member being shorter than the crank on the second whereby a unidirectional rotation of the first member produces a reciprocating movement of the second, a pair of independently movable signal-actuating members, a pair of clutching mechan-

isms adapted to clutch said second member
to said signal-actuating members respec-
tively upon the movement of said second
member in opposite directions, and means
5 for retaining said signal-actuating members
in the positions to which they are moved by
said second member.

In witness whereof, I have hereunto set
my hand this 16th day of November, 1908.

WILLIAM V. MOAK.

Witnesses:

BENJAMIN B. HULL,
HELEN ORFORD.