

F. L. DODGSON.
RAILWAY SIGNAL.
APPLICATION FILED APR. 23, 1904.

974,864.

Patented Nov. 8, 1910.

Fig. 1.

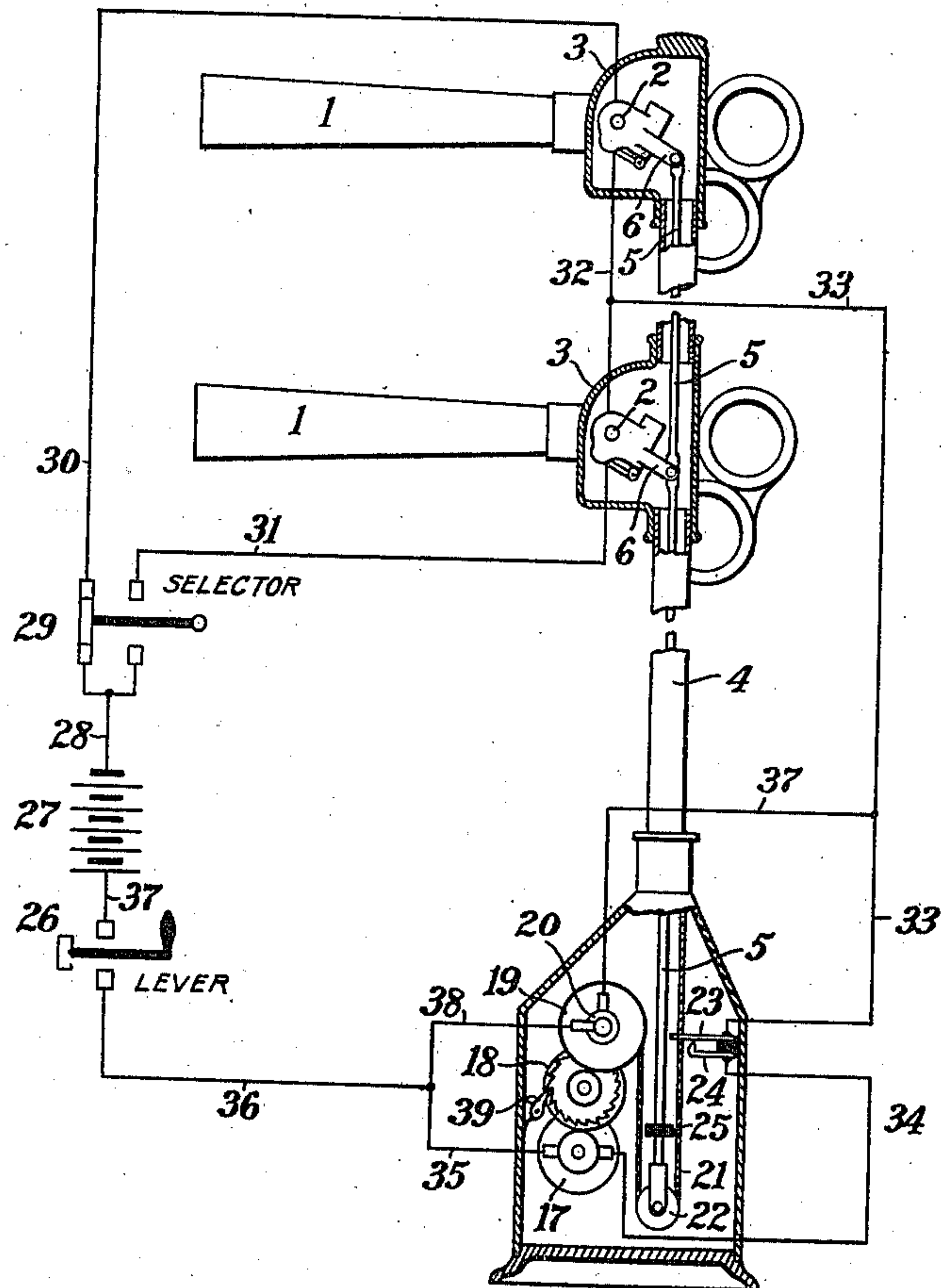
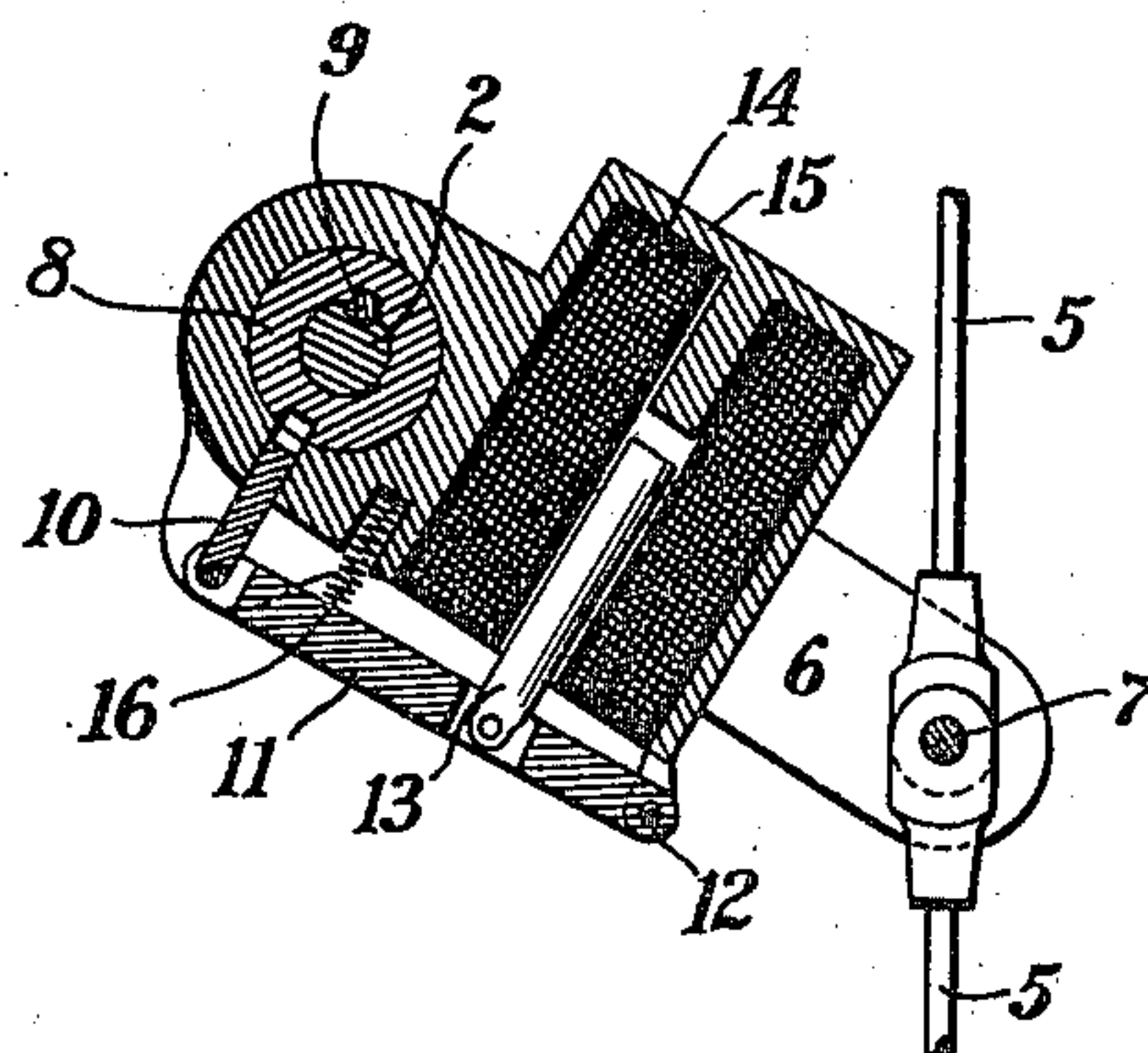


Fig. 2.



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TO GENERAL RAILWAY SIGNAL COMPANY, OF GATES, NEW YORK, A CORPORATION
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RAILWAY-SIGNAL.

974,864.

Specification of Letters Patent.

Patented Nov. 8, 1910.

Original application filed March 27, 1903, Serial No. 149,841. Divided and this application filed April 23, 1904. Serial No. 204,655.

To all whom it may concern:

Be it known that I, FRANK L. DODGSON, a citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Railway-Signals, of which the following is a specification.

This invention relates to electrically-controlled railway signals, particularly those of the semaphore type.

The object of the invention is to produce a simple and compact mechanism by which a plurality of semaphores arranged one above another upon a single mast or support may be actuated alternatively by a single actuating mechanism.

To this end the invention consists in a signal mechanism in which a common actuating rod extends from the electric motor, or other electrically-controlled actuating mechanism, to the several semaphores or signals, while electrically-controlled connections of the kind hereinafter described are interposed between this rod and the several semaphores to permit them to be selectively coupled to the rod so as to be actuated thereby.

In connection with this mechanism there is also a circuit breaker operating to cut out the current from the motor after the actuating movement of the rod has been completed and without regard to the operation of the selective mechanism.

In the accompanying drawings: Figure 1 is a partly diagrammatic view showing the signal mechanism in side elevation, and showing also the electrical connections of the apparatus; and Fig. 2 is a vertical sectional view, on an enlarged scale, of one of the selector-clutches.

The invention is applicable to the operation of any number of semaphores arranged one above another, but in Fig. 1 two such semaphores 1, 1 are illustrated. These semaphores are mounted in the usual manner upon horizontal rock-shafts 2 which are journaled in casings 3 constituting portions of the hollow signal mast 4. The common actuating rod 5 is arranged in vertical position, and is pivotally connected at 7, adjacent to each semaphore-shaft, to the end of an arm 6 which is loosely journaled upon

the corresponding shaft. Between the arm 6 and the shaft is interposed a sleeve 8 secured to the shaft by a key 9, and this sleeve has a notch, as shown in Fig. 2, which is adapted to be engaged by a sliding bolt 10 mounted in the arm 6. The bolt 10 is pivoted to the end of a lever 11, the other end of the lever being pivoted to a projection from the arm at 12. The bolt 10 and lever 11 are actuated by means of a magnet comprising a solenoid 14 mounted in an enlargement or casing 15 integral with the arm 6. The solenoid acts upon a core or armature 13 which is pivoted to the lever 11. A spring 16 normally maintains the parts in the position of Fig. 2, in which the bolt 10 is out of operation and the arm 6 is free to swing about the semaphore-shaft when moved by the rod 5. When either of the solenoids is energized by electric current, however, the mechanism just described operates to fix the arm 6 to the semaphore-shaft, so that when the rod 5 is raised the shaft is rocked by the arm and thus the corresponding semaphore is depressed to clear position. The magnets are connected with the external circuits by any ordinary or suitable flexible connections, which are not particularly illustrated as they are familiar to those skilled in the art.

The mechanism for raising the actuating rod 5 may be of any ordinary or suitable form. In Fig. 1 it is illustrated diagrammatically as comprising an electric motor 17 connected, through gearing 18 and an electric clutch 20, with a winding drum 19. A cord or chain 25 is connected with the drum at one end, passes thence beneath a pulley 22 at the lower end of the rod 5, and then upwardly, being secured at its upper end to the frame of the mechanism. When the motor 17 is energized the parts just described operate to raise the rod 5, and a pawl-and-ratchet device 39 acts to maintain the rod in raised position as long as the electric clutch 20 is energized. At the end of the upward movement of the rod, as above described, the circuit through the electric motor is cut out by means of a circuit-breaker comprising a spring finger 23 and a fixed contact 24 normally engaged by the spring finger. A collar 25 on the rod 5 is arranged in position to engage the spring

finger at the upper end of the movement of the rod 5 so as to lift the finger from the fixed contact and thus break the circuit.

The signal-controlling circuit may be controlled in any required manner, but in Fig. 1 I have indicated a circuit-controller 26 comprising part of, or connected with, what is commonly known as the lever mechanism for manual control of the signals. The signal mechanism is energized by a signal battery 27, and when the lever is operated to close the circuit at 26 current flows from the battery through a wire 28 to a circuit-controller designated on the drawing as a "selector." This selector may be operated in any convenient manner, either manually or by connection with a switch or other traffic-controlling device. From the selector the current flows either through a wire 30 to the selector-magnet of the upper semaphore, or through a wire 31 to the selector-magnet of the lower semaphore. From the selector-magnet the current passes through a wire 32 and a common return wire 33 to the circuit-controller 23, and thence through a wire 34 to the motor 17. From the motor the current returns through wires 35 and 36, and through the circuit-controller 26 and a wire 37 to the battery, thus completing the circuit. The motor now operates to raise the actuating-rod 5, and thus to throw to clear position whichever one of the semaphores is operatively connected with the rod by its magnetic clutch.

At the same time that the motor is operating as above described the electric clutch 20 is maintained in operation by current flowing from the wire 33 through a shunt circuit comprising a wire 37, the electric clutch and a wire 38. The operation of the circuit-breaker 23 does not cut out the electric clutch, and, therefore, as long as the circuit is maintained closed at the lever the semaphore is held in clear position, through the operation of the pawl-and-ratchet mechanism 39 and the electric clutch. When the circuit is broken at the lever, however, the

electric clutch is deenergized and it permits the winding-drum 19 to rotate freely, thus permitting the descent of the actuating-rod 5 under gravity and at the same time deenergizing the selector-magnet which was previously operative, and allowing the semaphore to go to danger position in response to its own bias.

This application is a division of my co-pending application Serial No. 149,841, filed March 27, 1903.

What I claim is:—

1. In a railway signal, an operating mechanism, a transmitting rod actuated thereby, a series of pivoted blades arranged at different distances along said rod, a separate electric clutch for each blade comprising a part attached to said rod, and an electric connecting device on the pivot of said blade for connecting said part therewith.

2. In a railway signal, a motor, a transmitting rod actuated thereby, a plurality of signal arms, an electric clutch at each arm for connecting said transmitting rod and said arm, means for operating any one clutch without operating any other clutch, and means for breaking the motor circuit after a movement of a signal arm.

3. Signal mechanism having, in combination, a plurality of semaphores pivotally mounted one above another, a common transmitting-rod arranged in substantially vertical position, connections between each semaphore and the rod including an arm and an electric clutch, means for energizing the clutches selectively to connect either of the semaphores with the transmitting-rod through the corresponding arm, an actuating mechanism for moving the rod vertically to operate such semaphore, and a circuit controller moved in correspondence with the movements of the rod to control the operation of the actuating mechanism.

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Witnesses:

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