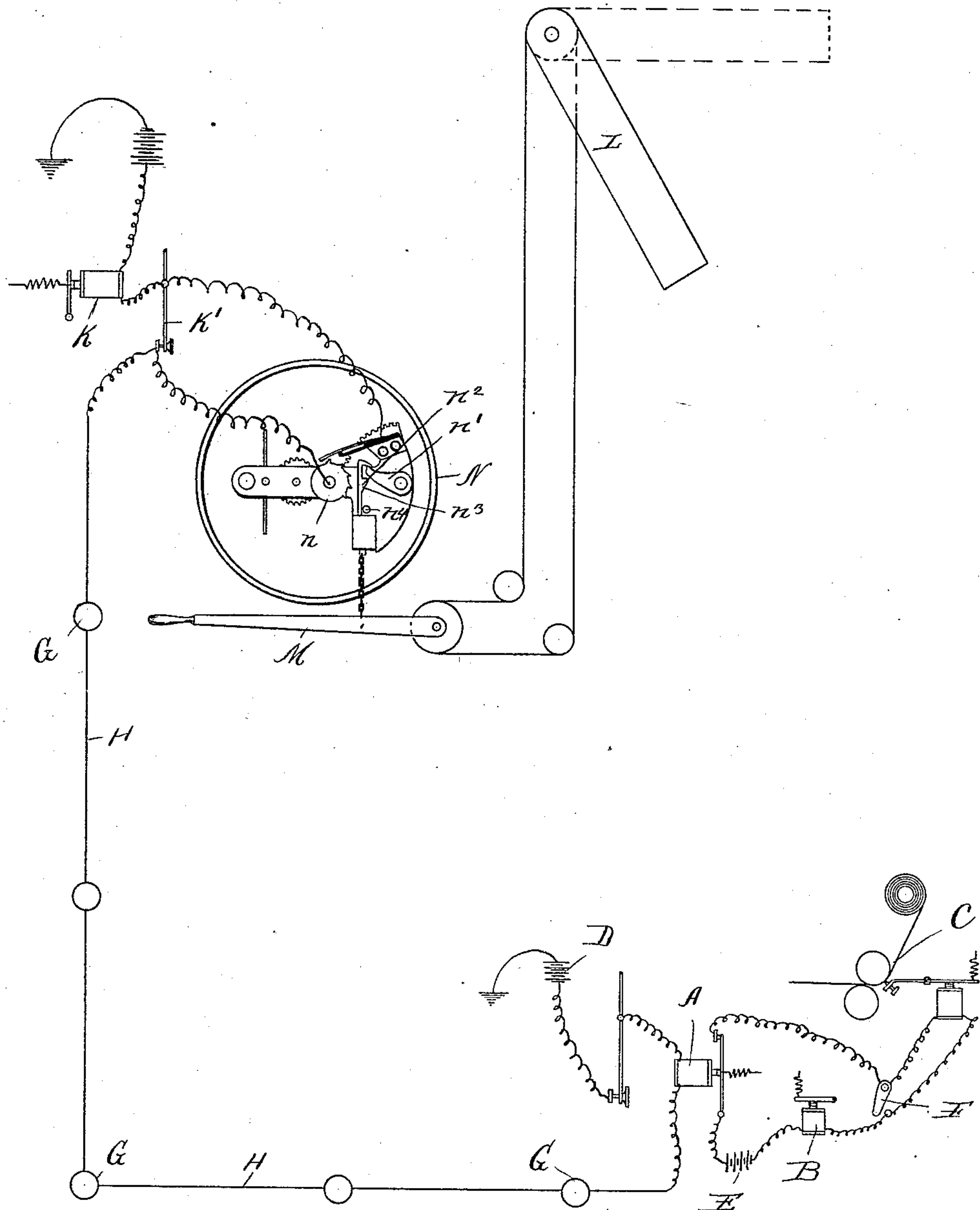


(No Model.)

L. B. FIRMAN.
RAILWAY SIGNAL SYSTEM.

No. 429,899.

Patented June 10, 1890.



Witnesses:
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UNITED STATES PATENT OFFICE.

LEROY B. FIRMAN, OF CHICAGO, ILLINOIS.

RAILWAY-SIGNAL SYSTEM.

SPECIFICATION forming part of Letters Patent No. 429,899, dated June 10, 1890.

Application filed April 15, 1889. Serial No. 307,210. (No model.)

To all whom it may concern:

Be it known that I, LEROY B. FIRMAN, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Railway-Signal Systems, of which the following is a specification.

My invention relates to improvements in railway-signal systems or apparatus.

In the railway-signal system heretofore generally in use, with the ordinary main circuit employed for general telegraph purposes, and wherein a separate main wire or circuit is not employed in or for a special block-signal system, it is customary for the train-dispatcher to telegraph his orders from his office to the attendant at some distant station, directing him, for example, to set the semaphore or other railway-signal to hold all trains, or some particular train, for the purpose of making a meeting-point for other trains going in the opposite direction. The attendant, leaving his key open to hold the circuit, usually sets the semaphore or signal and then telegraphs back "all right." Sometimes, however, he fails to set the semaphore at once, and with the intention of doing so after having received the necessary train order he telegraphs back "all right," and then his attention being called to some other matter—as, for example, the selling of a ticket—he finally forgets to set the semaphore or signal at all, so that accidents may occur. Consequently, with this old system the train-dispatcher cannot always be absolutely certain that his orders have been received and obeyed.

The object of my invention is to provide a system or means for use in connection with the ordinary main circuit employed for general telegraph purposes, whereby all uncertainty may be avoided and whereby also the train-dispatcher may be at once informed that the semaphore or signal is set the moment after it has been done.

My invention consists in the means I employ to accomplish this result—that is to say, it consists in the combination, with the ordinary main circuit used for general telegraph purposes and connecting a train-dispatcher's station with a signal or semaphore station, and having included therein the usual

transmitting and receiving instruments, of a railway signal or semaphore or its operating-lever and a signal-box which is set in operation by the movement of the semaphore or its operating-lever, and which serves to transmit the name or number of the station to the receiving-instrument at the train-dispatcher's office, so that the train-dispatcher will know that the semaphore at any particular station is set the moment it is done.

In the accompanying drawing, which forms a part of this specification, I have shown a diagram view of a system or apparatus embodying my invention.

In the drawing, A represents the transmitting-instrument at the train-dispatcher's office; B, the sounder; C, the register; D, the main-line battery; and E, the local battery for operating the sounder and the register. F is a switch for cutting out the register when desired. G G represent the stations along the line H. K represents the instrument at one of the stations G, and L a semaphore or other railway-signal having an operating lever or arm M. All these parts are of the ordinary construction now commonly in use and need no detailed description, as their construction and operation are well known to those skilled in the art.

N represents the electric signal box or device, which may be of any ordinary construction now commonly in use. This signal-box is connected in the main circuit H, and it has a signal-wheel n , adapted to transmit the number, name, or some suitable signal indicating the name or number of the station at which the semaphore is located. The operating-arm n' of this signal-box is connected to the operating-lever M of the semaphore by any suitable means—as, for example, by a sliding pawl or hook n^2 , having a cam n^3 , which engages a pin n^4 , and thus releases the operating-arm n' when it has been pulled down by movement of the semaphore-lever M.

The operation of my system is as follows: The train-dispatcher telegraphs his order to the attendant at one of the stations G, directing him, for example, to set the signal or semaphore. The attendant at the signal-station, after receiving the order, leaves the key K' of his instrument open, so that the electric

current will pass through the signal-box N, which allows the circuit to be opened and closed by the signal-wheel *n*, and then goes to the lever M and operates the semaphore, thus at the same time moving the operating-arm *n'* of the signal-box N, so that the signal-box at once transmits back to the train-dispatcher the number or name of the station at which the semaphore or signal has thus been set, while the key K' is still open. In this way the train-dispatcher is at once informed the moment that the railway-signal has been set, and there is consequently no chance for any uncertainty or mistake. In case the train-dispatcher does not receive back the signal transmitted by the signal-box, he knows by such fact that his orders have not been executed and will of course repeat them. The message or signal transmitted by the signal-box N when the semaphore or other signal is operated, may be received at the train-dispatcher's station by the sounder B, or by the register C, one or both, or other suitable receiving-instrument.

I claim—

1. The railway-signal system comprising the ordinary main circuit used for general

telegraph purposes and a train-dispatcher's station with a series of signal or semaphore stations, a transmitting and receiving instrument at the train-dispatcher's station included in said main circuit, and a receiving-instrument, a semaphore, and an automatic signal-box included in said main circuit and having an operating-arm connected with the semaphore and operated thereby at each semaphore-station, substantially as specified.

2. The railway-signal system in which are combined the ordinary main circuit used for general telegraph purposes, connecting a train-dispatcher's station with a series of signal or semaphore stations, and automatic signal-boxes included in said circuit and located one at each semaphore-station and connected and operated by the semaphores of the stations, and transmitting and receiving instruments included in said main circuit at both the train-dispatcher's station and the signal or semaphore stations, substantially as specified.

LEROY B. FIRMAN.

Witnesses:

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