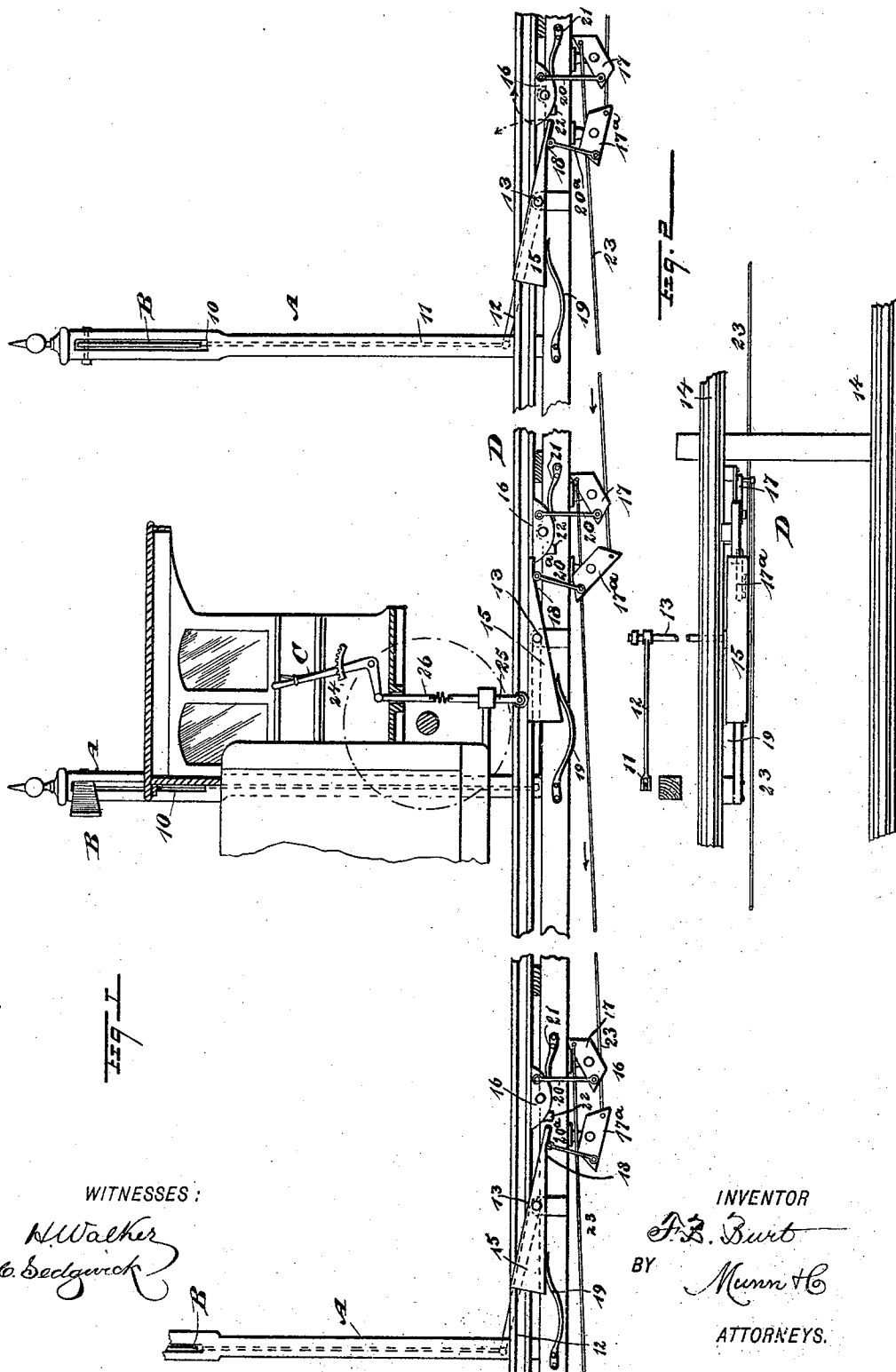


(No Model.)

F. B. BURT.
BLOCK SIGNAL FOR RAILWAYS.

No. 493,228.

Patented Mar. 7, 1893.



WITNESSES:

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BLOCK-SIGNAL FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 493,228, dated March 7, 1893.

Application filed May 17, 1892. Serial No. 433,372. (No model.)

To all whom it may concern:

Be it known that I, FRANK B. BURT, of the city, county, and State of New York, have invented a new and useful Improvement in Block-Signals for Railways, of which the following is a full, clear, and exact description.

My invention relates to an improvement in block signals, and has for its object to provide a means whereby signals may be operated under the block system with accuracy and dispatch over a road of any length; and another object of the invention is to provide a trip mechanism at each block which will be connected with the signal of that block and the signal of the block in advance.

It is a further object of the invention to construct this mechanism in a most simple, durable and economic manner, and to provide for its expeditious and positive operation, the mechanism to be brought into action by a trip mechanism carried by a car or by the engine of a train.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in both the views.

Figure 1 is a longitudinal vertical section through a portion of the track, illustrating the application of the block signal system thereto, the said figure also representing in vertical section a portion of the engine cab which carries the trip mechanism; and Fig. 2 is a plan view of a portion of the track and the complete signal actuating mechanism of one block.

In each block, any desired distance within the block, but preferably at the entrance thereof, a signal post A, is located at one side of the track, in which signal post a signal B, is pivoted; and the signals when not in their display position are folded in slots 10, produced in the respective posts to receive the signals. The signals are ordinarily pivoted in the posts near one end, and back of the pivot of each signal a link or chain 11, is secured, and these links or chains at their lower ends are connected with crank arms 12, the

said arms being rigidly fastened to shafts 13, journaled in any suitable or approved manner, the inner ends of which shafts extend between the rails 14 of the track D.

The mechanism adapted to set the signals is located at any point between the rails of the track; in the drawings the said mechanism is illustrated as placed much nearer one rail than the other. An independent mechanism is provided for each signal, but the mechanisms for actuating the signals are connected, the connections being made in such manner that after one setting mechanism has been passed and acted upon and the signal set upon the block, when the train passes from that block and enters another, the signal appertaining to the block upon which the train is entering will be set, and the signal in the block from which the train has passed is carried automatically to its concealed position, thus indicating that that particular block is open.

Each mechanism for operating a signal consists of the following parts: A lever 15, adapted to be acted upon by the passing train; a lock lever 16, adapted for engagement with the lever 15, which latter may be termed the setting lever, a rocker arm 17 which is in communication with the lock lever, and a second rocker arm 17^a in communication with the setting lever. The setting lever 15, is preferably made flat upon the top, and when the top portion is in its horizontal position it is some distance below the top of the rails of the track. The under face of the setting lever, however, is preferably beveled, as indicated at 18 in Fig. 1, and its thicker end is pressed by a spring 19, the spring normally acting when the thinner end is free, to press the latter named end downward and the thicker end upward, this position being shown at the right and left in Fig. 1. The larger end of the lever, or that which is spring pressed, points in the direction the train is to travel, as is likewise shown in Fig. 1.

The lock lever is fulcrumed at or near its center and is preferably semi-circular, its flat face being upward and its cylindrical face downward. This lever is connected at one end with one end of the rocker arm 17 by means of a link 20; and at the end of the lock lever to which the link 20, is connected

the lever is pressed by a spring 21, which exerts a constant upward pressure thereon.

The link 20 emanating from the lock lever connects with said lever at its rear end but connects with the forward end of the rocker arm 17. The forward end of the rocker arm 17^a, and the rear end of the setting lever 15, are connected by a link 20^a. The forward end of the lock lever 16, is limited in its downward movement by a stop 22, and when the lock lever is in engagement with this stop its top is in a horizontal position.

As has heretofore been stated, the mechanism for actuating the switches in each block is identical in construction. The connections between the mechanisms of the blocks is effected in the following manner: A wire 23, connects the rear end of the rocker arm 17 of the first block with the rear end of the rocker arm 17^a of the next block, and this connection is repeated from one block to another, as shown best in Fig. 1. The setting lever 15 of each block is adapted to be manipulated or forced down at its spring-controlled end through the medium of the lever C, located in the cab of the engine and provided with a shoe at its lower end, the lever being located as intimated, in the engine of the train or in any predetermined car; or any equivalent of the shoe and lever may be employed. In the drawings the lever is designated as 24, and is of the elbow pattern, while the shoe carries a friction roller to engage with the setting lever, and said shoe 25, is connected with the elbow lever through the medium of a sectional rod 26, the sections of the rod being spring controlled or united.

The operation is as follows: Let it be supposed that a train has left one block and the signal of that block still remains set, that is, in a horizontal position; the moment that the train enters the next block, the intermediate one shown in the drawings, the setting lever 15, is pressed downward by the shoe of the cab lever C, and the rear or free end of the setting lever is thereby carried to an upper or horizontal position. In being carried upward the forward end of the rocker arm 17^a connected with that lever, is carried in the same direction, and the rear end of the arm is rocked in a forward direction, thus exerting forward tension upon the wire 23 connecting the rocker arm 17^a with the rocker arm 17 of the block just passed; and the forward movement of the wire 23 will draw the rear end of the rocker arm 17 forwardly, carrying its forward end downwardly and rearwardly, and this movement of the rocker arm 17, will draw the rear end of the lock lever 16 downward against the tension of its spring 21 and will throw the forward end of the said lock lever upward, thus releasing the rear end of the setting lever 15, permitting its spring 19 to throw the setting lever to its normal position, that is, with its rear end downward, and in so doing the crank arm 12 attached to the shaft 13 upon which the setting

lever is secured is thrown upward, and the chain or link 11, connecting the crank arm 12 with the signal B, is relieved from tension and the signal arm drops downward into the slot 10 of the signal post by reason of its own weight, thus showing that the first block is open for traffic. In the meantime, as the setting lever in the block in which the train is located is pressed downward at its rear end its forward end in being carried upward carries up with it the free end of the lock lever 16; and when a disengagement between these two levers is effected, the lock lever is returned to its normal or horizontal position by its spring 21, and the rear end of the setting lever will be supported upon the top of the lock lever. As the rear end of the setting lever is carried upward, the crank arm 12, connected with the shaft to which the setting lever is attached will be rocked downward, and will exert downward tension upon the link or chain 11 connected with it, and will thereby raise the signal block B to its horizontal or display position, and the signal will remain in this position until the train has entered the next block, when the signal will be lowered in the manner first described in its operation.

It will be observed that this system of block signals is exceedingly simple, that there is comparatively nothing to get out of order, and that the signal will remain set in the block while the train is in the block, and that when the train leaves the block, in setting the signal of the block it enters the signal of the block it leaves is taken down or concealed.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a block signal, the combination, with a signal and a rock shaft journaled between the rails of the track and adapted to raise and to lower the signal, of a setting lever, spring-pressed at one end and fixed upon the rock shaft, a lock lever adapted for engagement with the free end of the setting lever, one end of the lock lever being spring-controlled, rocker arms or bars fulcrumed one beneath the lock lever and the other beneath the setting lever and having link connections therewith, the said rocker arms having a wire or chain connection, the rocker arm actuated by the setting lever in one block being connected with the rocker arm actuated by the lock lever connected with the next block, substantially as shown and described.

2. In a block signal, the combination, with a rock shaft, a signal and a connection between the rock shaft and the signal, whereby the latter may be raised or lowered, of a setting lever secured upon the rock shaft and spring-controlled at one end, the lever being somewhat wedge shaped in general contour and a spring pressing upon its wider end, a lock lever adapted to be engaged by the narrower end of the setting lever, the lock lever being spring-controlled at one end and essen-

tially semi-circular in general contour, rocker arms, one having link connection with the setting lever and the other having a link connection with the lock lever, and a wire or chain connection between the rear end of the rocker arm in one block actuated by the setting lever, and the rear end of the rocker arm in the next rear block actuated by the lock lever of that block, substantially as and for the purpose specified.

3. In a block signal, the combination, with two blocks, each of which is provided with a signal, a rock shaft connected with each signal, and a spring-controlled setting lever attached to the rock shaft and beveled at its free end, of a mechanism located in each block, each of said mechanisms consisting of a lock lever centrally pivoted in rear of the

free end of the setting lever, one end of the lock lever being spring controlled and the other end being guided by a stop device and one end of the setting lever being also spring-controlled, rocker arms located respectively beneath the spring-controlled end of the lock lever and the free end of the setting lever, and a chain or wire connection between the rear end of the rocker arm in one block actuated by the setting lever and the rear end of the rocker arm in the next rear block, the latter rocker arm being actuated by the lock lever of the rear block, substantially as and for the purpose specified.

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Witnesses:

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