

No. 743,857.

PATENTED NOV. 10, 1903.

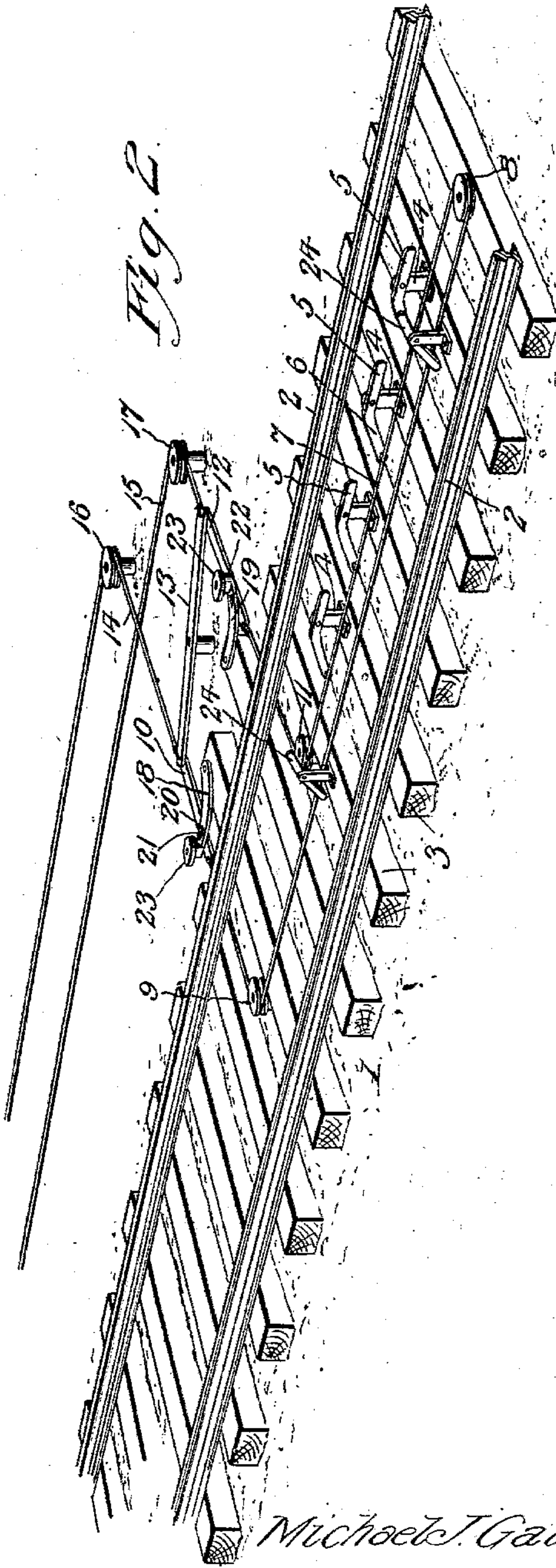
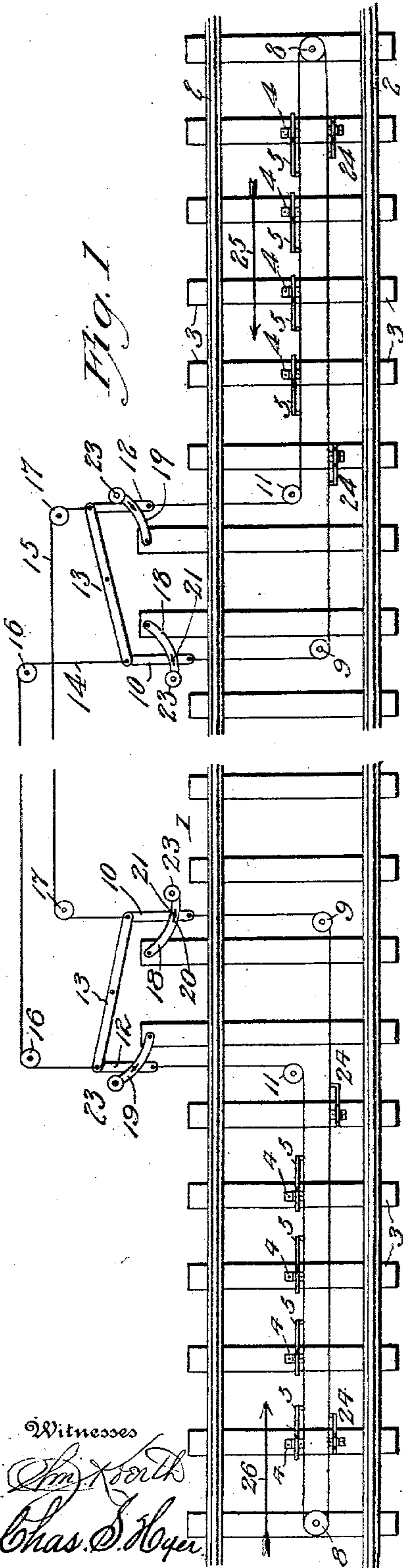
M. J. GALLAGHER.

SIGNALING DEVICE FOR BLOCK SYSTEMS.

APPLICATION FILED DEC. 19, 1902.

2 SHEETS—SHEET 1.

NO MODEL.



Witnesses
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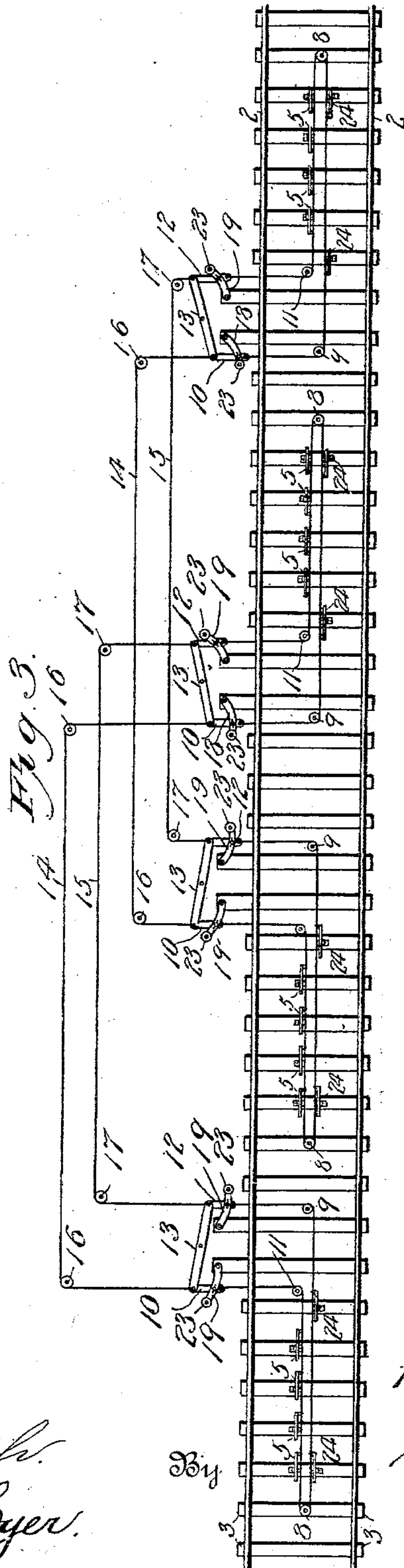
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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SIGNALING DEVICE FOR BLOCK SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 743,857, dated November 10, 1903.

Application filed December 19, 1902. Serial No. 135,926. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL J. GALLAGHER, a citizen of the United States, residing at Hazleton, in the county of Luzerne and State of Pennsylvania, have invented new and useful Improvements in Signaling Devices for Block Systems, of which the following is a specification.

This invention relates to an improvement in devices for giving trains running on a single or double track railroad intimation or notice of the dangerous proximity of an approaching train entering or within the same block or section through the medium of an audible or a visual signal located within an engine-cab and reliably operative by an organization of mechanical devices disposed in the center and at one side of the track on which the train receiving the signal is running.

The invention contemplates the provision of alternate connected mechanical devices located at an intermediate point in a block or section and independent of similar mechanical means at the beginning and termination of the same block whereby an engineer may be duly apprised of the presence in the same block of a second train after he has passed over the signal-actuating mechanism at one terminal of the block or section, particularly in single-track lines.

The invention also contemplates the details of construction and arrangement of the several parts, which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is a top plan view of a single track, showing the improved mechanism arranged to indicate the opposite terminals of a block or section, the track and a part of the mechanism being broken through. Fig. 2 is a detail perspective view of a single track and one set of the signal-imparting devices. Fig. 3 is a top plan view of a track-section, illustrating a block having the improved signal mechanism arranged therein at the beginning and ending of the block and also at an intermediate point.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The numeral 1 designates a track of usual form and including rails 2 and ties 3. Rising from a number of the ties are uprights 4,

having striking-levers 5, pivoted at the upper ends thereof, having downwardly-inclined inwardly-deflected extremities 6, attached to a pull-wire or analogous device 7. The pull-wire or analogous device 7 passes around a horizontally-disposed pulley 8 on one of the ties 3 at a distance from one of the terminal levers 5 and also engages a second horizontally-disposed pulley 9, supported at a distance in advance of the series of levers and from the latter pulley passes out in a plane at a right angle between two of the ties under one rail and is connected to a link 10. The member of the wire or other device 7, which is directly attached to the striking-levers, is passed around a pulley 11 and from the latter extends outwardly in a plane at right angles and is connected to a link 12. The links 10 and 12 are movably attached to the ends of a horizontally-disposed centrally-fulcrumed lever 13, and also connected to the said ends of the lever are motion-transmitting wires 14 and 15, which respectively pass around horizontal pulleys 16 and 17 and located at one side of the track. The motion-transmitting wires 14 and 15 extend any suitable distance from the track devices just explained and in accordance with the length of the block, as clearly shown by Fig. 1, and connect with a similar lever 13 at the end of the block opposite that at which the first-mentioned lever 13 is located. Connected to each of the links 10 and 12 and the adjacent ties are horizontally-disposed actuating-arms 18 and 19, the one end of each arm being pivotally attached to the outer end of the tie adjacent to the link and having a slot 20 therein, through which projects a stud 21, secured to the link, the said slot 20 compensating for the movement of the link in opposite directions to avoid breakage or injury to either of the actuating-arms by sudden contact therewith of a suitable projecting device, preferably carried by the fender of a locomotive. The ends of each of the arms 18 and 19 opposite those pivotally connected to the ties have upstanding projections 22, on which are mounted horizontally-disposed antifrictional rollers 23, and said actuating-arms will be normally disposed so that one will be moved outwardly from and the other located inwardly toward one of the track-rails.

The member of the pull-wire or analogous device 7, arranged parallel with the member of the same secured to the striking-levers 5, is also attached to similarly mounted and constructed striking-levers 24, which are less in number than the levers 5.

The levers 5 and 24 are located in the center of the track, and when elevated will project upwardly a sufficient distance to contact with an actuating means for a bell or other audible signal in an engine-cab and also with a depending device for actuating a visual signal—such as a light, semaphore, or analogous device—also located in the engine-cab, whereby the engineer may be duly notified either in daylight or at night when he reaches and passes over the mechanism set forth. The lower front portion of the catcher on the engine will be cut away or suitably grooved to avoid accidentally striking the levers 5 and 24 when elevated to their highest positions, and, as before indicated, the engine will also be provided on each side with means for contacting with the actuating-arms 18 and 19, said means being preferably carried by the forward wheel-fenders. The signal means and coöperating devices which are actuated by the levers 5 and 24 need not be of any specific or special construction to render the said levers effective in their operation, as many forms of such devices or signals can be used; but one form has been made the subject of a separate invention and application.

As before stated, the improved mechanism is adapted for use either on single or double track railways and, in fact, may be used on any railways having more than two track-beds in contiguous relation, and if a train be running head-on in the direction of the arrow 25, Fig. 1, the projection on the fender of the engine will strike the arm 18, then lying nearest to the one track-rail, and force said arm outwardly and exert a corresponding outward pull on the wire connected to the inner terminal of the link 10, and thereby simultaneously throw all the levers 5 upwardly in position for striking a depending device from the engine-cab to actuate a bell or other audible signal. Simultaneously with this disposition of the levers 5 through the actuation of the arm 18 the other arm 19 will be forced inwardly close to the rail. By the outward movement of the link 10 the motion-transmitting wire 14 will be slackened and the inward movement of the link 12 will exert a tension on the wire 15, which will cause an outward pull to be brought to bear on the link 10 at the opposite terminals of the block and institute an inward throw or movement to the link at the said opposite end of the block and thereby also throw up the levers 5 at said latter block end. The levers 5 thrown up at a distance from those first actuated by the train moving in the direction of the arrow 25 will remain in elevated position until depressed by the same train moving in the direction of the arrow 25 passing out of the

block or by another train entering the block in the direction of the arrow 26, and if a train move in the direction of the arrow 26 the engineer of the same will receive a signal from the upstanding levers 5 and be thereby notified that a train is within the block coming in the opposite direction and give him ample time to slow down or come to a stop and utilize the usual means of track-signaling by flag or otherwise to notify the engineer of the train coming in the opposite direction of the presence of the second train in the block. If two trains are moving in the same direction and one enters the block before the other, the engineer of the first train will set the levers 5 so that the engineer of the rear train on reaching the block will receive a signal through the medium of the upstanding levers that a train is within the block ahead of him. This block-signaling system is particularly useful on single-track lines and as thus far explained is in its simplified form; but to render collisions, either head-on or rear, impossible the arrangement shown by Fig. 5 is preferred, and consists in disposing the signal mechanism in operative relation to a track-bed at the beginning of each block as well as the end of the same and also at an intermediate point, the intermediate mechanism of contiguous blocks being connected similarly to the mechanism at the beginning and ending of the blocks, so that in the event that a train after entering a block sets the signaling mechanism and passes the same and another train coming from an opposite direction depresses the levers 5 by contact with the same at the opposite end of the block the engineer first entering the block will be apprised of the entrance into the same block of the second train by the set condition of the intermediate mechanism, which will have been operated by the second train entering the block before reaching the one end of the latter and while in a contiguous or successive block.

The mechanism at each end of the block and also the similar mechanism located at points intermediate of the ends of the block will be connected for simultaneous operation, so that if said mechanism be actuated from either extremity the corresponding mechanism at the opposite terminal will be at once set to give the signal in an engine-cab. A plurality of the levers 5 is used in each instance, so as to give a successive signal or a continuous ringing of a bell within the cab and insure direction of attention to the same.

The levers 24 are auxiliary in their use to the levers 5 and may at times be omitted; but these levers efficiently serve to actuate a light-signal at night in addition to the bell-signal operated by the levers 5, the one lever 24 first turning the light-signal in one position, and the other lever turning such signal in another position, such as bringing a white and red light alternately into view. These levers 24 normally stand upwardly and are depressed when the levers 5 are elevated, as

it will not be necessary in all instances to have the double signal.

The improved device will be found exceptionally useful and will avert serious accidents by collision, and it will be understood that changes in the disposition of the parts may be made at will without departing from the spirit of the invention.

A material advantage in the improved signaling mechanism is that the parts thereof are of similar formation at each end of the block, and the cost of manufacture is thereby minimized in view of the fact that in applying the said mechanism it is only necessary to reverse certain of the parts to render the same equally applicable at either end of a block or to accommodate the intermediate arrangement shown by Fig. 3.

Having thus fully described the invention, what is claimed as new is—

1. In a signal mechanism for block systems, a plurality of signal-levers located within a track and connected for simultaneous operation to give a repeated operation of a signaling device, the said levers being arranged in

series at opposite terminals of a block, and means for raising and depressing the levers in an automatic manner.

2. A plurality of signaling-levers located within a track and connected for simultaneous operation to give a repeated operation of a signal device, and means for raising and depressing the said levers in an automatic manner.

3. In a block-system-signaling mechanism, the combination of a series of striking-levers at opposite terminals of a block, means for connecting said levers for simultaneous operation, a pair of actuating-levers also connected to said striking-levers, a lever movably attached to each pair of actuating-levers, and means for connecting the levers movably secured to the actuating-levers.

In testimony whereof I affix my signature in presence of two witnesses.

MICHAEL J. GALLAGHER.

Witnesses:

SYLVESTER HOGAN,
JAMES F. GALLAGHER.