No. 775,479. PATENTED NOV. 22, 1904.

J. W. SHATTUCK.

AUTOMATIC RAILWAY SIGNAL SYSTEM.

APPLICATION FILED MAY 31, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

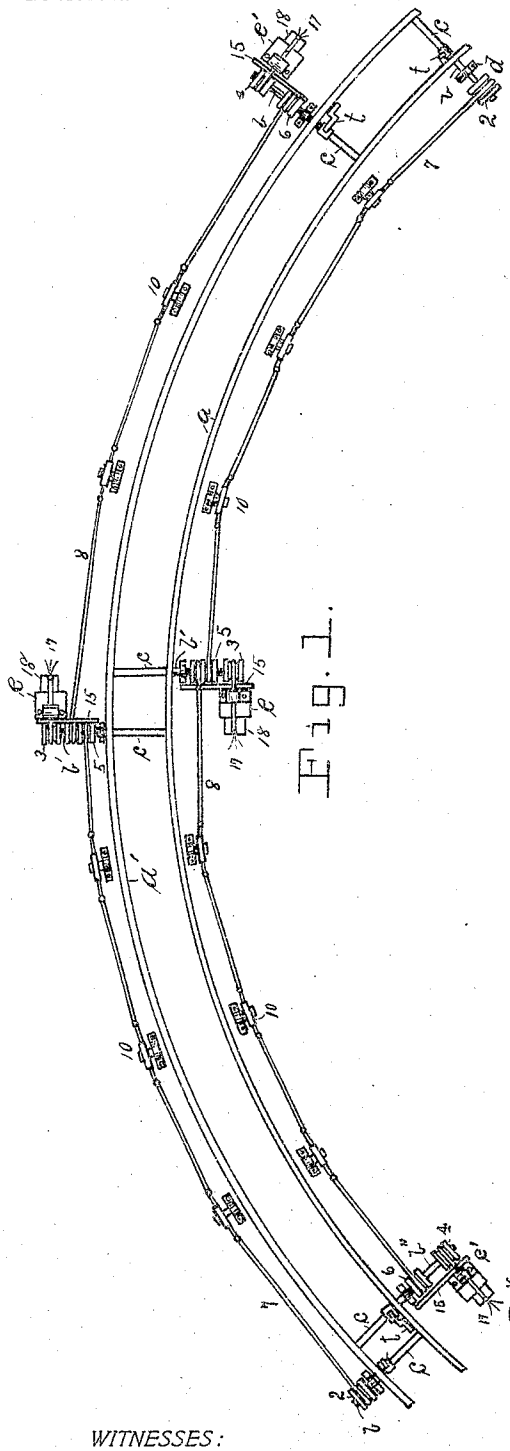

Fig. 1.

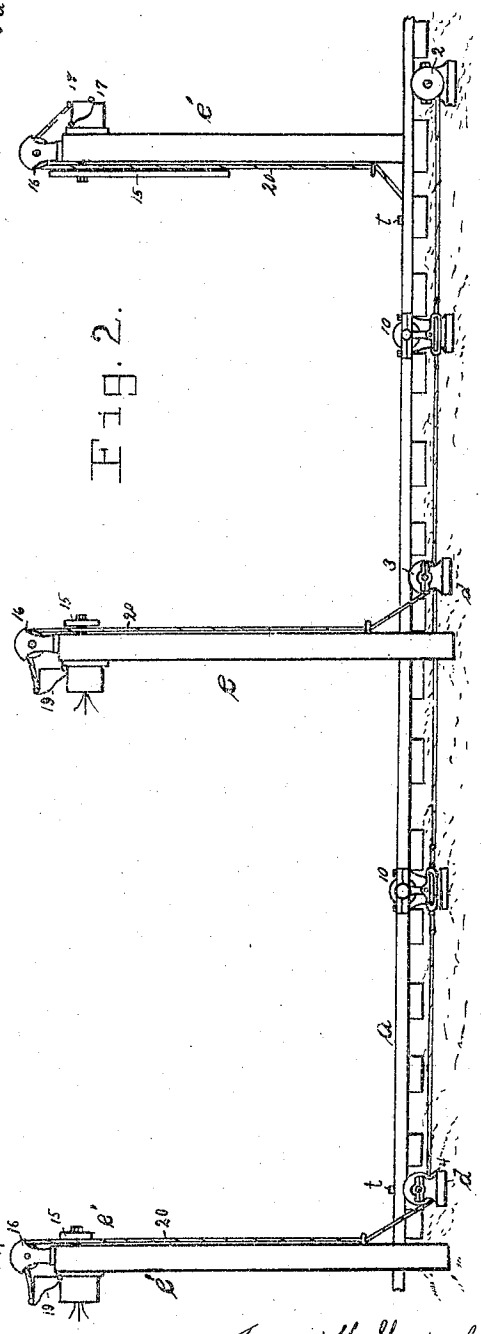

Fig. 2.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

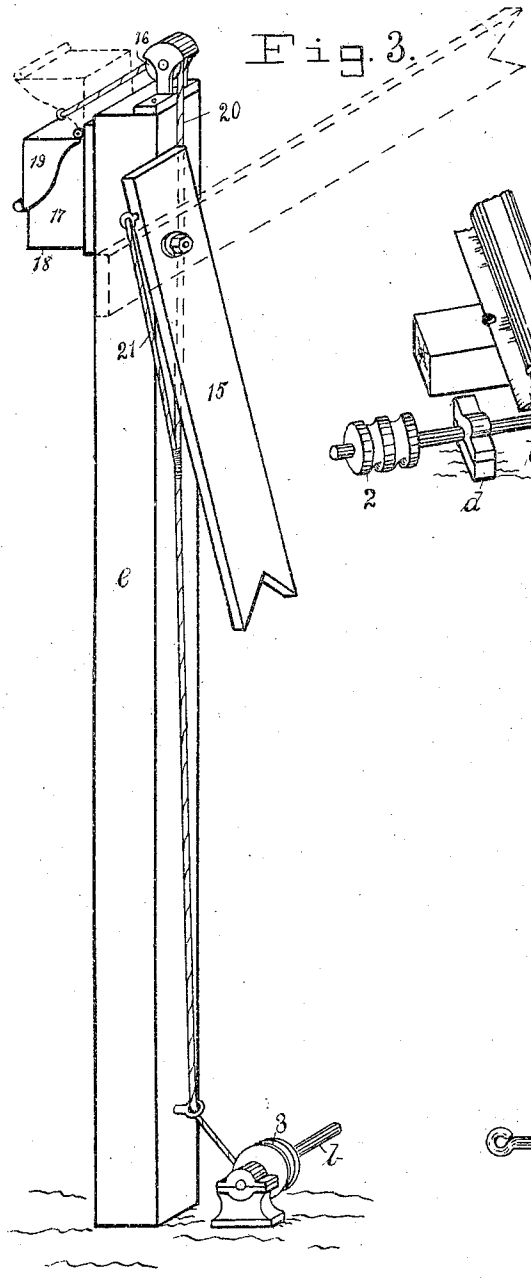


Fig. 4.

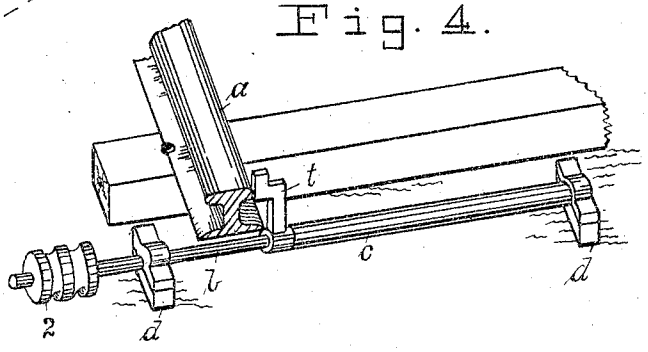
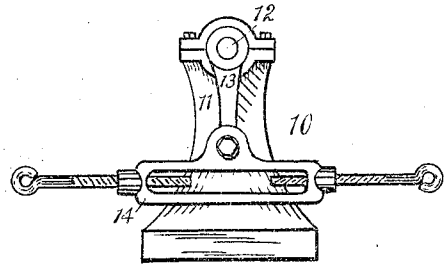


Fig. 5.



WITNESSES:
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No. 775,479. Patented November 22, 1904.

UNITED STATES PATENT OFFICE.

JAMES W. SHATTUCK, OF HUTTON, INDIANA.

AUTOMATIC RAILWAY SIGNAL SYSTEM.

SPECIFICATION forming part of Letters Patent No. 775,479, dated November 22, 1904.

Application filed May 31, 1904. Serial No. 210,326. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. SHATTUCK, a citizen of the United States, and a resident of Hutton, in the county of Vigo and State of Indiana, have invented certain new and useful Improvements in Automatic Railway Signal Systems; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form part of this specification.

My invention relates to that class of railroad-signals whereby trains moving in either direction along the track will operate one set of signals ahead of said train, thereby giving notice in advance of its approach, while another signal located parallel to the first-mentioned set and upon the opposite side of the track will be operated by an approaching train coming from the direction opposite to that of the first-mentioned train. Thus two trains approaching each other upon the same track will give each other notice of their approach by automatically operating their respective signal system a long way in advance. This signal system is adapted for use upon straight-away tracks, but particularly designed to warn conflicting trains approaching each other upon sharp curves and at other similar dangerous and obstructed points, railway-crossings, &c.

The system comprises a double set of both light and semaphore signals, and consists of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan of a railway-track laid in a curve and showing the relative position of the signal system to the track. Fig. 2 is an elevation of a track with my signal system mounted thereon. Fig. 3 is a detail view of a signal-post and its attachments. Fig. 4 is a detail of a trip-lever and attachments. Fig. 5 is a detail view of a slack-adjuster.

Similar characters of reference refer to similar parts throughout the several views.

The letter A indicates a section of a railway-track the different rails of which are designated for the purpose of definite explanation by the letters *a* and *a'*.

The letters *b*, *b'*, and *b''* indicate strong metallic movable shafts which are incased in tubular cases *c* for the purpose of protecting said shafts from dirt, ice, and other obstructing matter. The shafts *b*, *b'*, and *b''* are mounted transversely of the track A at points distant one from the other depending upon the length of track to be protected by my signal system and the location thereof. Said shafts are mounted upon suitable bearing-blocks *d*, which are stationed below and outside of the rails of the track in such position that the shafts will lie below the upper surface of and between adjacent ties. The two end shafts *b* and *b''* are provided with strong metallic trip-arms *t*, which are keyed or otherwise firmly attached to said shafts immediately inside the rail *a* and so close thereto that the flange of a car-wheel running thereon will strike said trip-levers if they stand in an upright position and force them down to a horizontal position below said wheel. Said shafts are coupled together, as hereinafter set forth, in such manner that when the trip-lever of *b* is upright the trip-lever of *b''* will lie horizontally, and vice versa.

Grooved wheels or pulleys 2, 3, and 4 are mounted upon the extreme or projecting ends of the shafts *b*, *b'*, and *b''*, respectively, outside of the rail *a*. A double-grooved wheel or pulley 5 is mounted upon the shaft *b'* just within the said wheel or pulley, upon the extreme end thereof, and a single-grooved wheel or pulley 6 is mounted upon the shaft *b''* just within the wheel or pulley 4 thereon. One end of a strong cable or wire 7 is attached to the pulley 2 and the other to one groove of pulley 5, while a similar cable or wire 8 is similarly attached to the other groove of the pulley 5 and the pulley 6, respectively. At any desired number of intervals along said cables or wires 7 and 8 are stationed slack-adjusters 10, consisting of any suitable form of stand 11, the shaft 12, mounted upon said stand, the crank-arm 13, and the threaded swivel 14, as shown in Fig. 5, for the purpose of taking up slack and properly stretching said cables or wires.

The letters *e* and *e'* indicate signal-posts stationed adjacent to and in line with the pulleys 3 and 4, respectively, and which are provided each with a semaphore-signal arm 15, a pulley 16, mounted upon the tops of said posts, and signal-lamps 17, mounted at the upper end of said posts and throwing their lights in the direction traveled by the train operating the same, as hereinafter set forth. Said lamps consist of an open-faced box 18, within which any suitable and approved lamp or light is placed, and a movable hood 19, which is hinged to the top of the box 18 and adapted when closed to cover the face of the box 18, and consequently conceal the light therein. Cables or wires 20 are attached to the hoods 19 and extend over the pulleys 16 upon the posts to the corresponding pulleys near the base thereof, pulleys 3 and 4, to which they are attached, and cables or wires 21 are attached one end to the rear ends of the semaphore-arms 15 and the opposite ends to the cables or wires 20, whereby they are actuated and in turn actuate or elevate the semaphore-arms 15. The said various cables or wires are connected up and so adjusted in the grooves upon their respective pulleys that the partial revolution of the initial pulleys will impart, through said cables or wires, a like revolution to all pulleys so connected, and consequently a pull upon the cables or wires connected with and adapted to actuate or elevate said semaphore-arms and upon the cables or wires adapted to open the hoods of said lamps. A system of shafts, pulleys, cables, and signals similar to the one above described is mounted upon the opposite side of the said track and is adjusted to operate in the opposite direction and to throw its light in the direction opposite to that in which the aforesaid lights are thrown and adapted to be operated by the wheels of a train moving upon said track in the direction in which its said signal-lights are thrown.

In mounting my signal system along a railway-track the shafts bearing the trip-arms are so adjusted that the trip-arm of the initial or first shaft will stand perpendicular when normal and the trip-arm upon the last shaft will lie horizontal, and the connecting-cables between said shafts are so wound upon the respective pulleys that the depression of one trip-arm will elevate the corresponding trip-arm at the opposite end of the system, and vice versa. Hence the depression of the normally upright initial trip-arm by a moving train will raise the normally depressed trip-arm at the opposite end of the system, which will be in turn depressed by the approaching train, thereby restoring the initial trip-arm and the entire system to normal position after the train has passed. It is apparent, therefore, that two trains approaching each other from opposite directions upon a track equipped with my signal system will operate their respective set of signals and warn each other of their approach; also it is apparent that by simply providing a double set of signal-lamps and semaphore-signals properly adjusted upon posts at the intersection trains approaching each other upon tracks at track-crossings may be similarly warned one by the other. I do not specify any one form of light to be utilized by my system, but reserve the right to use any suitable and approved form or make of lamps or light, and it is apparent that a system of electric lamps may be adapted to my system by making minor alterations in the same, and I reserve the right to make such minor alterations as may be necessary to adapt different forms of lights, both fuel and electric, to my system, which may be made without departure from the general principle of the invention. I have described my system with but two sets of signals; but it is apparent that as many similar signals may be installed in the system as may be necessary to meet all requirements, which will vary with the nature of the track to be protected and the surrounding land and other environment.

Having described my invention, its operation and purpose, what I claim as new and useful, and desire to protect by Letters Patent, is—

1. In an automatic railway signal system, the combination with the rails of a railway-track, of a double-signal system consisting of a double set of incased shafts *b*, *b'* and *b''* mounted transversely of the track and bearing trip-levers *t* adapted to be operated by passing car-wheels, the pulleys or grooved wheels 2, 3, 4, 5, and 6, mounted upon said shafts, the cables 7 and 8 attached to the pulleys upon the shafts *b*, *b'* and *b''*, and adapted to transmit motion from one shaft to another, the slack-adjusters 10 stationed at intervals throughout the length of the cables 7 and 8, the posts *e* and *e'* adjacent to the projecting ends of the shafts *b'* and *b''* and provided with the lamps 17, semaphore-signal arms 15 and the cables 20 and 21 connecting the lamps 17 and signal-arms 15 with the pulleys 3 and 4, all substantially as described and for the purpose set forth.

2. In an automatic railway signal system, the combination of a railway-track, with the double-signal system consisting of a double set of shafts *b*, *b'* and *b''* mounted transversely of the track, the trip-levers *t* mounted upon the two end shafts of each set, and adapted to operate, alternately, the cables 7 and 8, connecting said shafts and adapted to transmit motion from one shaft to another, the slack-adjusters mounted at intervals along said cables, the pulleys 2, 3, 4, 5 and 6 mounted upon the extreme projecting ends of said shafts and adapted to actuate said cables 7 and 8, signal-posts *e* and *e'* adjacent to and in line with the pulleys 3 and 4 respectively, the lamps 17 and signal-arms 15, mounted upon said posts, the

cables 20 and 21 adapted to connect the said lamps and signal-arms with the pulleys 3 and 4 and to actuate the same, said two sets of signals being adjusted to signal in opposite directions from each other, all substantially as described and for the purpose set forth.

In testimony that I claim the foregoing as my own I have affixed my signature in the presence of two witnesses.

JAMES W. SHATTUCK.

Witnesses:
GEORGE M. DAVIS,
JOHN S. JORDAN.