(No Model.)

B. & J. SHOECRAFT.

AUTOMATIC BLOCK SYSTEM FOR RAILROADS.

No. 483,479. Patented Sept. 27, 1892.

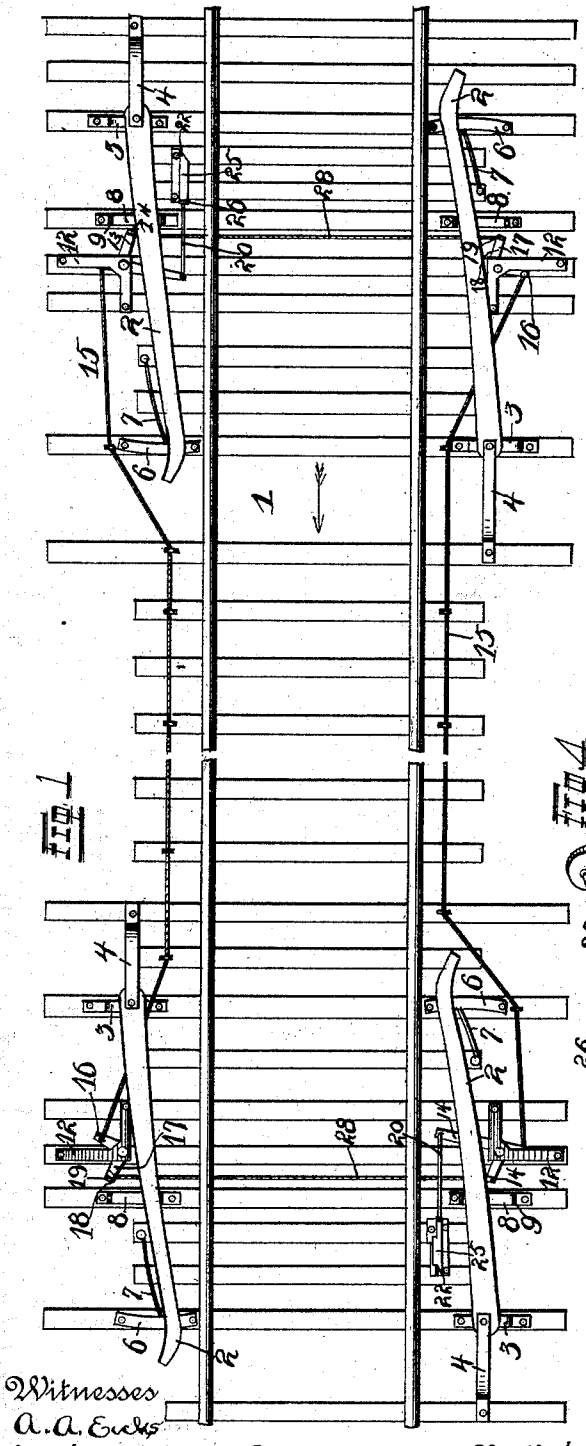

FIG. 1

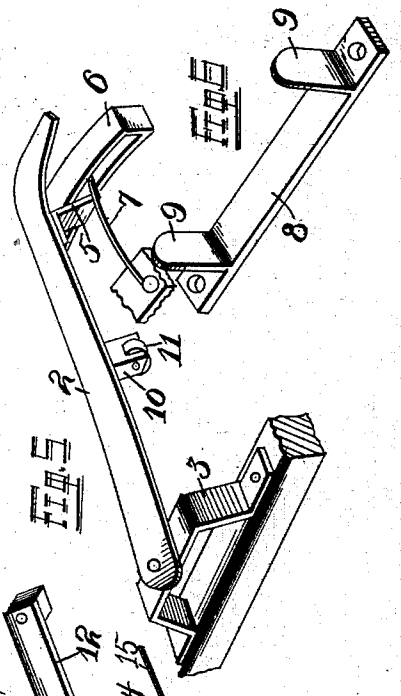

FIG. 5

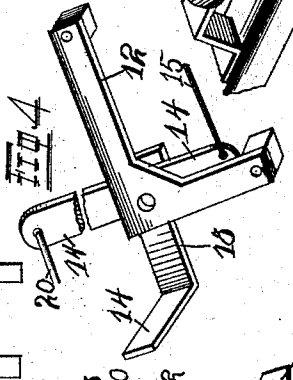

FIG. 4

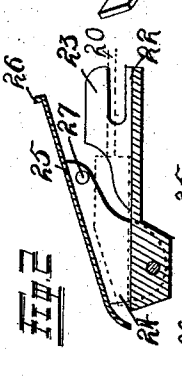

FIG. 2

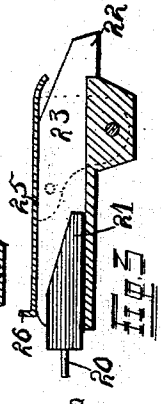

FIG. 3

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UNITED STATES PATENT OFFICE.

BYRON SHOECRAFT AND JUDSON SHOECRAFT, OF ST. LOUIS, MISSOURI.

AUTOMATIC BLOCK SYSTEM FOR RAILROADS.

SPECIFICATION forming part of Letters Patent No. 483,479, dated September 27, 1892.

Application filed March 28, 1892. Serial No. 426,803. (No model.) Patented in Canada February 12, 1892, No. 38,268.

To all whom it may concern:

Be it known that we, BYRON SHOECRAFT and JUDSON SHOECRAFT, of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Automatic Block Systems for Railroads, (for which we have obtained a patent in Canada, No. 38,268, bearing date of February 12, 1892,) of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to improvements in automatic block systems for railroads; and it consists in the novel arrangement and combination of parts, as will be more fully hereinafter described, and designated in the claims.

In the drawings, Figure 1 is a top plan view of our complete invention, showing the various parts composing the same in their normal position. Fig. 2 is a vertical longitudinal section of the device that is adapted to be elevated by a suitable mechanism for sounding an alarm on a locomotive when the same passes the said device. Fig. 3 is a like view showing the same device with the parts in their normal position and in a reversed position to that shown in said preceding figure. Fig. 4 is a perspective view of the lever to which the ends of the connecting wires or ropes are attached and also the support or bearing for the same. Fig. 5 is a perspective view of one of the levers which is struck by the devices carried by the locomotive and the various parts attached thereto for supporting and operating the same in one direction, and Fig. 6 is a perspective view of the combined bearing-plate and stop for limiting the movement of the said lever.

The object of our invention is to absolutely prevent front and rear collisions on railroads; and it consists especially of a system of levers arranged and attached to the cross-ties or other foundation in such a manner that when the locomotive or suitable contrivances carried thereby come in contact with the same suitable devices will be elevated, which will cause an alarm or signal, produced or sounded either upon the locomotive or at a suitable distance forward and rear of said locomotive, whereby an approaching locomotive from either direction is warned in due time and a collision prevented.

The devices are especially constructed to stand the rough usage and jar given them by a locomotive running at a high rate of speed.

Further, our invention is entirely automatic, and when the locomotive has produced a signal or sounded an alarm at a certain distance the said locomotive will again throw back the signal to its normal position.

It will be readily understood that suitable contrivances should be constructed and devised and carried by the locomotive in order to operate the herein-described devices effectually, and such is fully shown and described in an application for patent now pending, Serial No. 417,184, filed January 6, 1892.

Referring to the drawings, 1 represents a single track, which is laid upon a suitable foundation of cross-ties in a well-known manner, and a suitable number of the said ties constructed somewhat longer, to which ties the movable parts of our invention are attached.

In order that the invention may be thoroughly understood and for the sake of elucidation in the description thereof, it would be well to state that the devices which we employ for carrying out the desired results are duplicated on either side of the track, and therefore we shall only proceed to describe one set in detail and afterward their connections with one another and the effect and action one bear upon the other.

2 represents a curved lever, the concave edge of which is located adjacent to the track-rails, and is preferably constructed of thin metal, and may be of any suitable length, in order to prevent a sudden jar to the several parts when the locomotive is running at a high rate of speed. One end of the said lever is movably attached to a metallic bracket 3, and said bracket is fixed in any desirable manner to the projecting portion of one of the cross-ties.

4 represents a brace, one end of which is attached to one of the cross-ties and the other end loosely fixed to the pivotal end of the said lever, whereby the said lever is prevented from working loose or becoming dislodged from its bearings. To the under surface of the free end of the lever is attached an angular plate 5, the lower end of which is located in a metallic guide 6, which guide is fixed to

one of the cross-ties and operates to support and guide the free end of the said lever.

To one end of the cross-ties is attached one end of a spring 7, and the opposite or free end of the said spring normally bears against the said plate 5, which causes the said lever 2 to resume the position as shown after the same has been struck by the mechanism carried by the locomotive.

8 represents a plate, which is provided with two upward projections 9, and said plate is fixed in any mechanical manner to one of the cross-ties.

To the under surface of the lever 2 is secured a bearing 10, and in said bearing is movably attached or located a roller 11, which rests upon the plate 8, acting as a support for the median portion of said lever, and further causing the same to be moved freely when the same is struck or operated, the said extensions 9 limiting the movement of the said lever, as clearly shown in Figs. 5 and 6 of the drawings.

12 represents a right-angular-shaped bearing, which is secured to two of the cross-ties by means of suitable bolts, and movably secured to the median portion thereof is a lever 13, having three arms 14, one of which is bent at right angles and projects a suitable distance upward and is adapted to be struck by the convexed edge of the said lever 2 when the same is moved. To one of the arms 14, or to that farthest from the rails, is attached one end of a metallic rope or wire 15, which leads over suitable pulleys or like contrivances to a suitable distance and is attached to the arm 16 of the right-angular lever 17, located on the same side of the track as the devices above referred to. The said right-angular lever 17 is not provided with a third arm; but the arm 18 of said lever is provided with an upwardly-projecting extension 19, which is adapted to be struck or moved by its appropriate lever 2 for causing the signal or the devices previously elevated to be lowered to their normal positions to be operated by the next locomotive.

Referring back to the construction of the lever 13, at the top left-hand corner of Fig. 4, 20 represents a rod, one end of which is movably attached to one of the arms 14 of the said lever, and to the opposite end of the said rod is attached a wedge-shaped block 21, Fig. 3, which block is adapted to be moved in two directions and within a suitable device, hereinafter mentioned and described, for elevating the signal.

22 represents a metallic box, which is provided with two sides 23, and loosely fixed to the bottom of the same are the extensions 24 of the movable plate 25. The said plate is limited in its movement, in order that the same shall be elevated always to a like position, and the free end thereof is provided with a lip 26, which is adapted to be struck by a suitable device carried by a locomotive for sounding an alarm in the cab of the same.

27 represents a rounded projection, which is fixed to the extensions 24 of the said plate 26 and is adapted to be struck by the wedge-shaped block 21 when the same is moved, causing the said plate to be elevated, as shown in Fig. 2.

Having given a general description of the construction and operation of the several movable parts comprising our invention, we will now refer again to the lever 17 and its connection with the remaining mechanism.

28 represents two short ropes, one end of which is attached to the arms 18 of the levers 17 and are passed under the rails and their opposite ends attached to one of the arms 14 of the levers 13, whereby a movable connection is made between the devices located on the two sides of the track.

From the foregoing description it will be seen that when any one of the levers 2 is operated the others are unaffected; but the remaining mechanism is operated in like manner by the movement of any one of said levers.

The ropes 15 are of any length, depending upon the distance of the levers 2, and may be provided with turnbuckles or other like contrivances for taking up all slack therein.

The ropes 15 and 28 may be one rope, as they are practically so arranged that both of the said ropes are operated simultaneously. To the top of the levers 2 may be attached plates, which will cover the several minor parts located below the same, and thereby act as a covering for protecting said parts from the weather, dirt, or other accumulation.

Should a locomotive be running in the direction as shown by arrow in Fig. 1, the lever 2, located at the upper right-hand corner of said drawings, would be struck, causing the two plates 25, located on the two sides of the track, to be simultaneously elevated, and as the locomotive proceeds the lever 2, located on the same side of the track, will be struck, causing the said plates to fall and assume their normal position.

The levers on the opposite side of the track are located in a reversed direction and are arranged to be operated by a locomotive running in the opposite direction and having the same effect upon the plate 25 when struck by said locomotive.

Having fully described our invention, what we claim is—

1. In an automatic signal device for railroads, the combination, with a laterally-yielding lever, of a casing provided with a hinged section, a wedge-shaped slide working in said casing and adapted to elevate said hinged section, and devices for connecting the lever and slide, substantially as and for the purpose set forth.

2. In an automatic signal device for railroads, the combination, with a laterally-yielding lever, of an angle-lever provided with an upwardly-projecting arm adapted to be engaged by said yielding lever, a second angle-

lever having one of its members connected with the first angle-lever and another of its members connected with a signal-operating device, substantially as and for the purpose set forth.

3. An automatic signal device for railroads, consisting of levers 2 and adapted to be operated by the passing locomotive, a roller fixed to the under surface of the same and adapted to move upon a suitable plate provided with stops for controlling the movement of said levers, a guide for the free ends of said levers, a spring or other device for causing the said levers to resume their normal positions, levers, such as 13 and 17, also movably attached to one side of the track and adapted to be operated by said levers 2, a rope or wire, such as 15, for connecting the said levers 13 and 17, a rod, such as 20, attached to one arm of the said lever 13 and carrying a wedge-shaped block 21, and a plate, such as 25, having a lift 26 formed thereon and adapted to be elevated by the said block, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

BYRON SHOECRAFT.
JUDSON SHOECRAFT.

Witnesses:
C. F. KELLER,
ALFRED A. EICKS.