

(No Model.)

2 Sheets—Sheet 1.

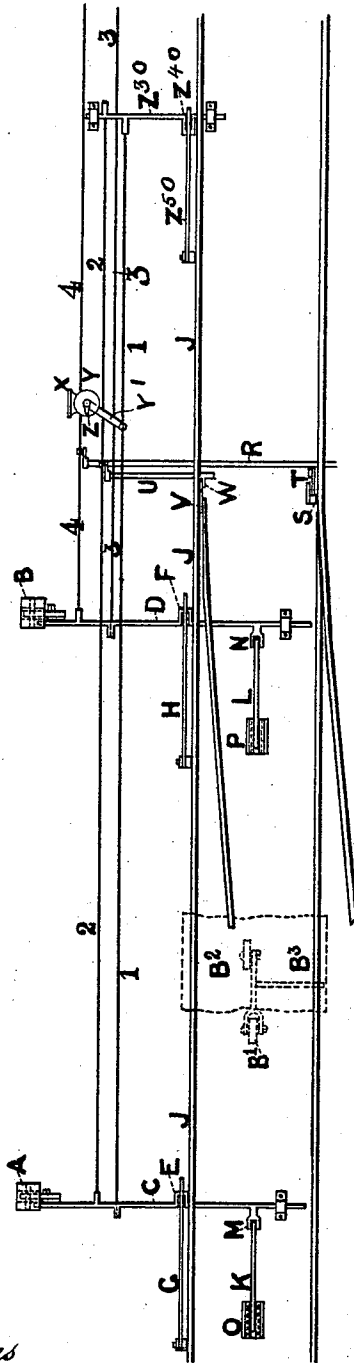
G. H. WOOD.

SELF ACTING RAILWAY SIGNALING APPARATUS.

No. 528,454.

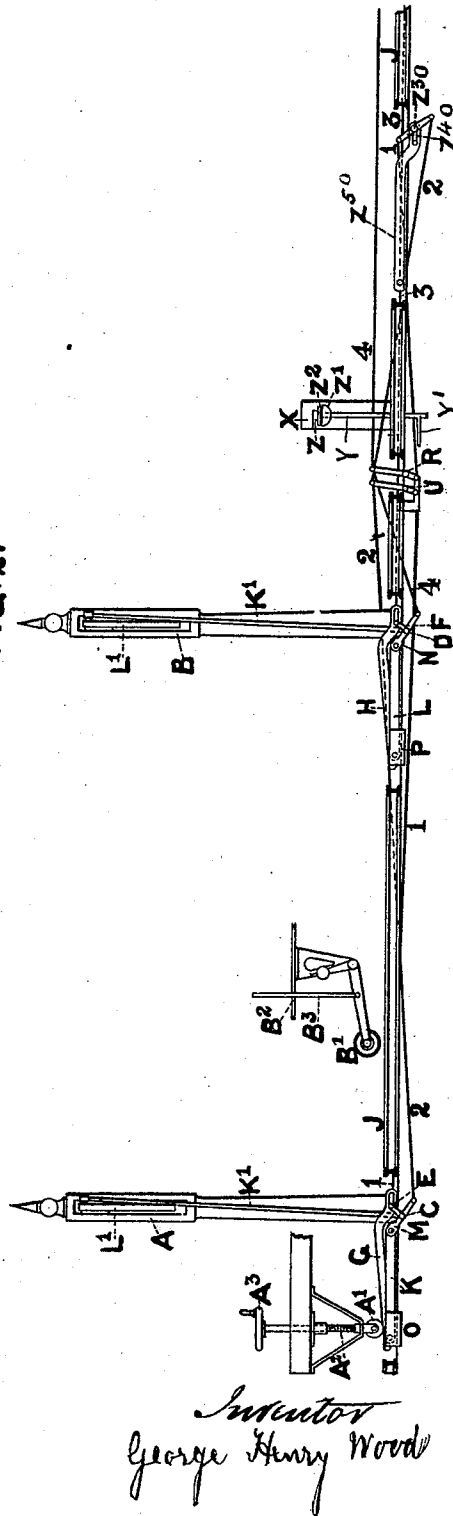
Patented Oct. 30, 1894.

Fig. 1.



Witnesses
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Inventor
George Henry Wood

(No Model.)

2 Sheets—Sheet 2.

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FIG. 3.

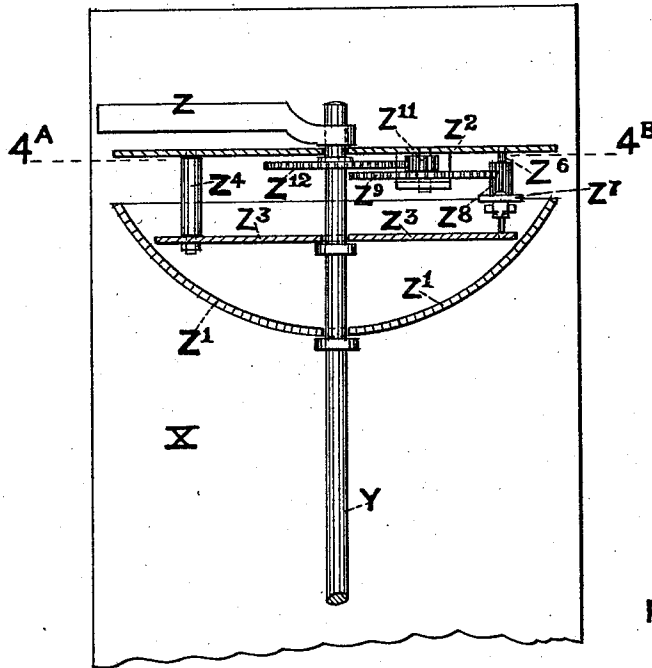


FIG. 5.

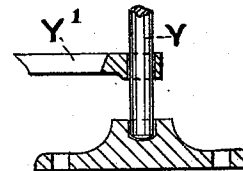
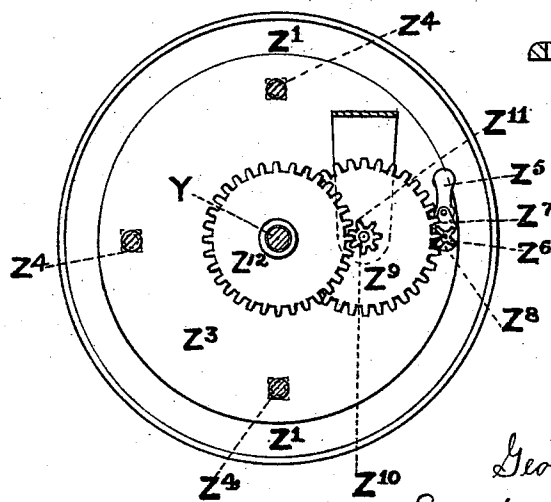


FIG. 4.



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UNITED STATES PATENT OFFICE

GEORGE HENRY WOOD, OF NEAR HARROGATE, ENGLAND.

SELF-ACTING RAILWAY SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 528,454, dated October 30, 1894.

Application filed October 13, 1892. Serial No. 448,837. (No model.) Patented in England October 15, 1891, No. 17,580.

To all whom it may concern:

Be it known that I, GEORGE HENRY WOOD, a subject of the Queen of Great Britain, residing at Lund House Green, near Harrogate, in the county of York, England, have invented a new and useful Self-Acting Railway Signaling, Point-Locking, Indicating, and Bell-Ringing Apparatus, of which the following is a specification, and for which I have obtained a patent in Great Britain, No. 17,580, dated October 15, 1891.

This invention has reference to combined, automatic or self-acting railway signaling, point locking, indicating and bell ringing apparatus.

The objects of my invention are to automatically actuate by the movement of the train the signal arms (hereinafter referred to as visual signals), to control the locking and unlocking of the points, to indicate and ring a bell in whichever direction a train passes, or is due to pass, so as to provide for the safety of a train entering one section of the line by preventing through such automatic apparatus a second train entering such section before the first train has cleared it, the said automatic apparatus acting upon the whistle of the engine of the second train so as to give an "audible" signal and arrest the driver's attention to the state of the visual signals (when the line is blocked) which are placed at "danger" by a train entering a section, and at "clear" by such train leaving the section.

My invention consists in the features of construction and novel combinations of devices hereinafter more particularly described and claimed.

In the annexed drawings illustrating the invention—Figure 1 is a plan of a portion of a railway showing the application of my improved automatic signaling, point-locking, indicating and bell ringing apparatus. Fig. 2 is a partly sectional side elevation of the same, showing portions of a railway car on the track. Fig. 3 is an enlarged partly sectional side elevation of the indicator with mechanism for sounding a bell or gong. Fig. 4 is a sectional plan on the line 4^A—4^B of Fig. 3. Fig. 5 is a sectional side elevation of a step or bearing for the indicator upright to work in.

Referring first to Figs. 1 and 2, the letter A

designates a visual signal situated at any convenient or required distance from the similar station signal B. In connection with the signals A and B are rock shafts C and D having cranks E and F to which levers G and H are connected at one end while said levers are each pivoted at the other end to one of the track rails J in position to be depressed by a roller or other device carried by a passing car or locomotive.

The rock-shafts C and D are supported at one end on the permanent way and are connected at the other end with rods K', Fig. 2, for operating the semaphores or arms L' of the signals A and B.

My audible signaling arrangement consists of levers K and L, Figs. 1 and 2, pivoted at one end to lugs M, N, on the rock-shafts C D and working at the other end in slide boxes O and P located on the permanent way. These levers K and L are adapted to be automatically thrown into position to act on a roller or similar device carried by a locomotive and connected with a rod through which the whistle may be operated on a passing train.

R is a rock-shaft extended across the track and having an arm T to which the pointlocking block S is pivotally connected.

U is a shorter rock-shaft for working the other point locking block V which is pivotally connected to an arm W of said rock-shaft.

Adjacent to the station signal B is an indicator and bell ringing apparatus X comprising an upright rock-shaft Y having an arm Y', Fig. 5, on its lower end and carrying an indicator arm Z, Figs. 1, 2, and 3, on its upper end. An inverted dome-shaped gong or bell Z' is loosely supported on a shoulder of the shaft Y below a superposed plate Z² through which the said shaft is also passed. Within the inverted dome Z' is a plate Z³ connected by pins or bolts Z⁴, Figs. 3 and 4, to the plate Z² which is immediately below the indicator arm. The hammer Z⁵, Fig. 4, for striking the dome, bell or gong Z', is attached to a link Z⁷ carried upon the spindle Z⁶ of a pinion Z⁸, Figs. 3 and 4, gearing with a spur-wheel Z⁹, having on its spindle Z¹⁰ a pinion Z¹¹ meshing with a spur wheel Z¹² upon or connected with the upright shaft Y.

Z³⁰, Figs. 1 and 2, is a rock-shaft having a

crank arm Z^{40} to which a lever Z^{50} is connected at one end, its other end being pivoted to the rail J, as shown.

1 is a wire extended from rock-shaft C to rock-shaft Z^{30} and connected with the arm Y' of shaft Y for working the arm Z of the indicator. 2 is a similar wire passing from rock-shaft C to rock-shaft Z^{30} and connected to the point locking rock-shaft U for working the block V.

3 is a wire passing from rock-shaft D to another indicator and bell ringing apparatus, not shown, which is exactly like the indicator and bell ringing apparatus X, already described. This wire 3 also passes forward to a rock-shaft similar to Z^{30} , and to which a lever, like Z^{50} is connected.

4 is a wire extended from rock-shaft D to rock-shaft R and working the point locking block S. This wire 4 also passes forward to the rock-shaft (similar to Z^{30}) to which wire 3 is connected.

The last vehicle, or guards-van, of each train is provided with a runner, or roller A', Fig. 2, carried by a vertically movable screw-shaft A² operated from the vehicle by means of a hand wheel A³, or otherwise, in such manner as may be best adapted to the vehicle on which the runner is carried and so that the said runner can be held away from the track or be lowered into position to come in contact with the levers G, H, and Z^{50} when required.

B', Fig. 2, is a small wheel or roller arranged on a pivotal supporting arm beneath the foot board B² of the engine, and B³ is a vertical rod connected to the said roller supporting arm and communicating with the locomotive whistle. This wheel or roller B' is arranged to be acted on by the hereinbefore described levers K and L when said levers are in a raised position, as presently explained.

The action of the signal apparatus is as follows: On the runner A', depressing the lever G, the semaphore of the visual signal A is put at danger, and the lever K of the audible signal is raised, so that should another train follow before the last vehicle of the first train has depressed the lever Z^{50} , so as to clear the line as hereinafter explained, the lever K would operate the whistle of the second train, and attract the driver's attention to the signal A being at danger. By the depression of the lever G, the lever Z^{50} is raised by means of the wire 2, which also operates the rock shaft U, thereby causing the point locking block V to be withdrawn, the wire 1 at the same time turning the indicator X, and causing the bell Z' to ring. The first train goes forward to the next visual signal B, depresses the lever H, and raises the lever L in the same manner, so as to be in position to actuate the whistle or audible signal on a following train. On depression of the lever H, the point locking block S is withdrawn by means of wire 4, connecting the shafts D and R. The train then passes forward to the lever Z^{50} , and on the runner A', depressing the said lever Z^{50} ,

the lever G is raised, so lowering the arm of the signal A, and putting the line at clear; the lever H being raised in a similar manner through depression of the next lever Z^{50} farther on the line.

My invention may also be worked by hand when required, by means of a loose lever connected with or fixed to the upright of the indicator, so that such indicator or upright is caused to operate the rock-shafts and the levers connected therewith in the required manner.

The object of locking and unlocking the points separately as described, is to obtain a double check upon a train following one before it. In the old system both points are locked together and both points, or the rail ends, are moved from the signal box together, while in my apparatus the points are locked or unlocked separately, but are moved together from the signal box.

Now suppose a train is passed from the signal A to the signal B, and when it gets past B it is required to shunt it on to the "branch line" the points of which are indicated in Fig. 1. The condition of affairs is this: A is at danger and B at danger, both having been put at danger by the train to be shunted. Both the locking blocks are withdrawn and the points free to be moved. On a train arriving at A before the train to be shunted has been shunted, the driver's attention is called to the fact that a train is standing on the line before him, and that the signal A is at danger. If he gets past A, then he is stopped by B, and knows that the points are unlocked. This, therefore, gives a double check, and greatly increases the safety of the system.

What I claim as my invention is—

1. The combination with the visual signals A and B, of the rock-shafts C and D connected with said signals and provided with cranks E, F, and lugs M, N, the levers G H pivotally connected to the track rail J and to the cranks E F and adapted to be depressed by a passing train to rock the shafts C D and operate the signals A B, the slide boxes O P, the levers K L working at one end in said boxes and connected at the other end with the lugs M N of the rock-shafts C D, the said levers K L being automatically raised, by operation of the visual signals, into position to operate an audible signal on a following train, the cranked rock-shaft Z^{30} having a lever Z^{50} pivotally connected therewith and with the track rail J, the wires 1 and 2 connecting the rock-shafts C and Z^{30} , and the wires 3 and 4 adapted to connect the rock-shaft D with another rock-shaft, such as Z^{30} having a lever such as Z^{50} , substantially as and for the purposes described.

2. The combination with the visual signals A and B, of the cranked rock shafts C and D connected with said signals and provided with levers G H through which said rock-shafts are actuated by a passing train to set

the visual signals to danger, the levers K L, connected with said rock-shafts and adapted to be raised, by operation of the visual signals, into position to operate an audible signal on a following train, the rock-shafts R, O, having arms T W, respectively, connecting with point locking blocks S, V, cranked rock shaft Z³⁰ provided with lever Z⁵⁰, indicator and bell ringing apparatus X, and the wires 1, 2, 3 and 4, all arranged and adapted to operate, substantially as and for the purposes described.

3. The combination of the visual signals A B having semaphore arms L', the crank-rock shafts C D and Z³⁰, provided with levers G H and Z⁵⁰ through which said shafts are successively operated from a passing train, the rods K' connecting the shafts C D with the semaphore arms, the point locking rock shafts R, U, the blocks S V connected with

said shafts R U, the levers K L connected with the shafts C D and adapted to be raised by operation of the visual signals, into position to operate an audible signal on a following train, bell-ringing apparatus X, the wires 1 and 2 connecting the rock-shaft C with the rock shaft Z³⁰ and with the bell ringing apparatus X and point locking rock shaft U, and the wires 3 and 4 adapted to connect the rock-shaft D with the other point locking rock-shaft R and with another rock shaft such as Z³⁰ having a lever such as Z⁵⁰, all substantially as and for the purposes described.

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

GEORGE HENRY WOOD.

Witnesses:

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F. W. HAINES,

Both of Royal Exchange, Leeds.