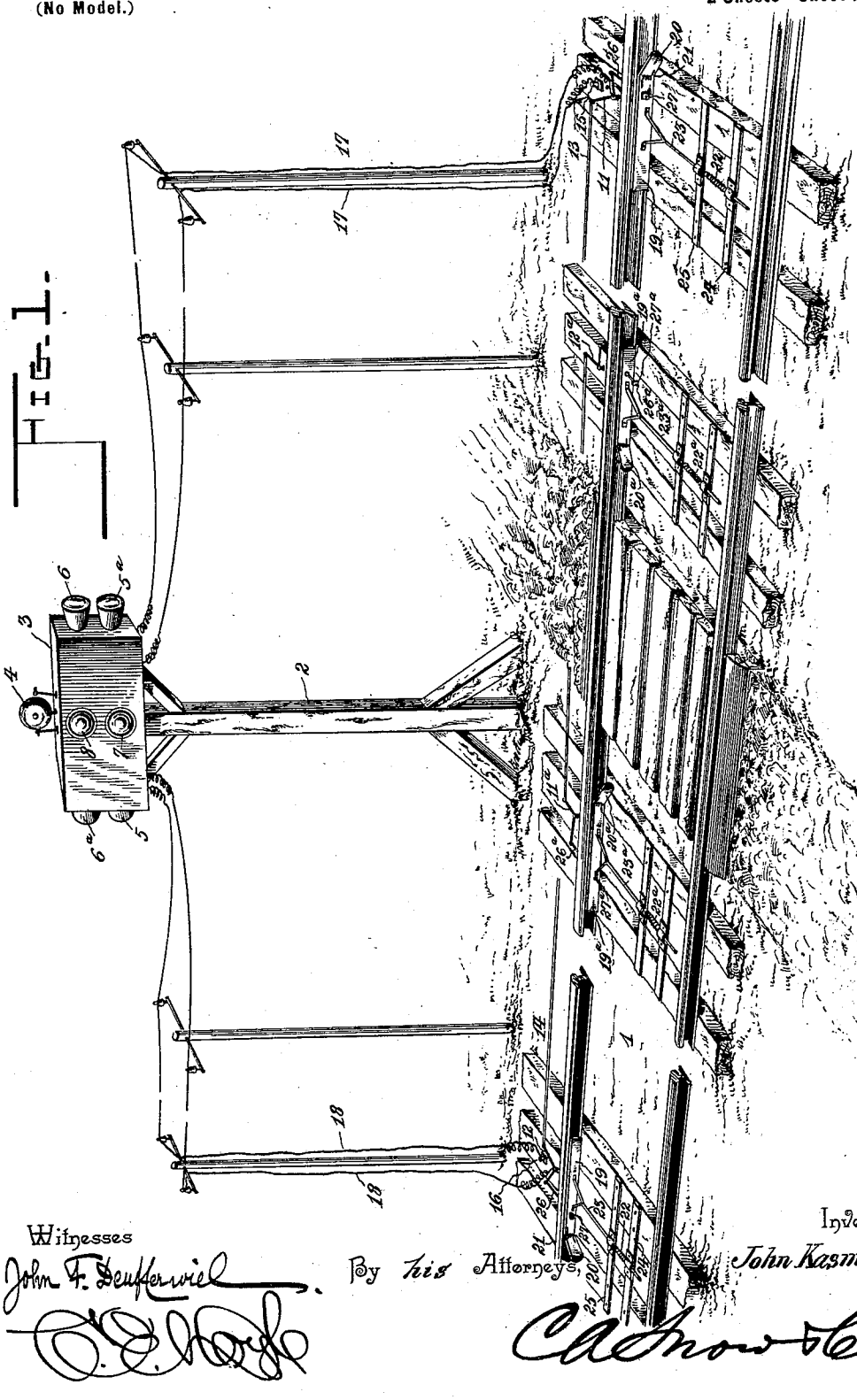
No. 626,704. Patented June 13, 1899.

J. KASMEIER.

RAILWAY SIGNAL.

(Application filed Apr. 27, 1898.)

(No Model.) 2 Sheets—Sheet 1.



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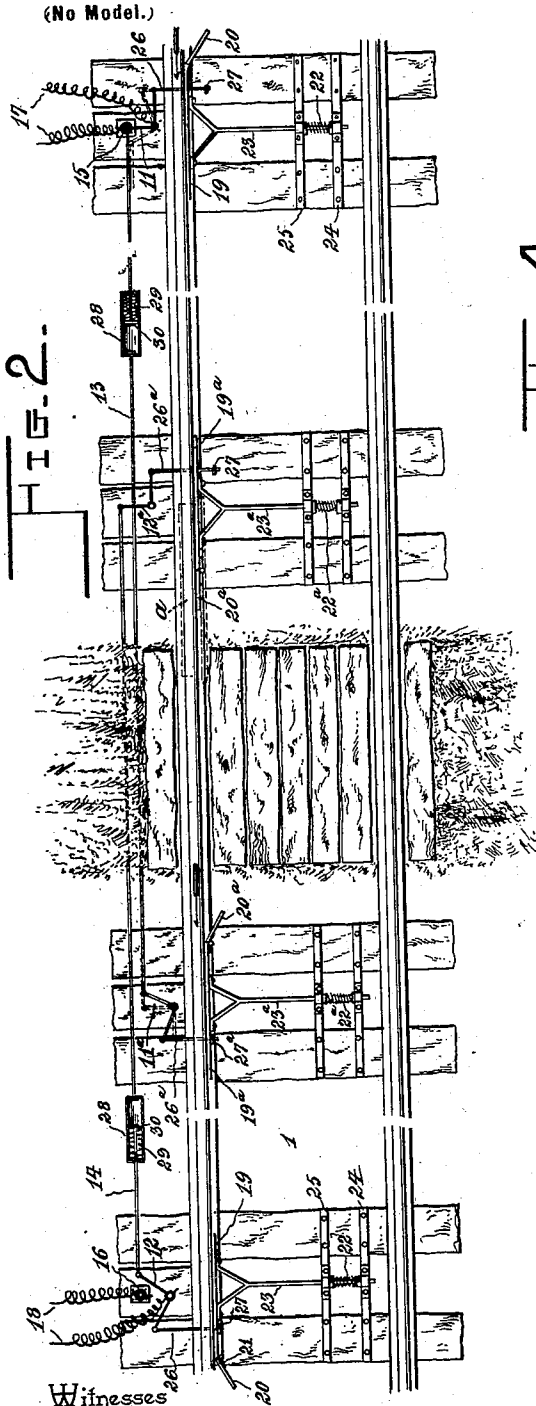

FIG. 2.

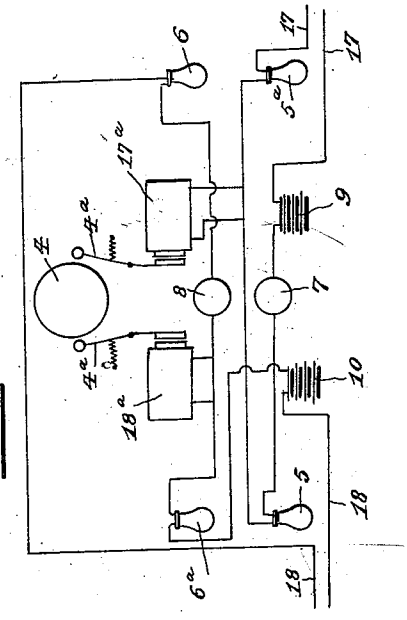

FIG. 4.

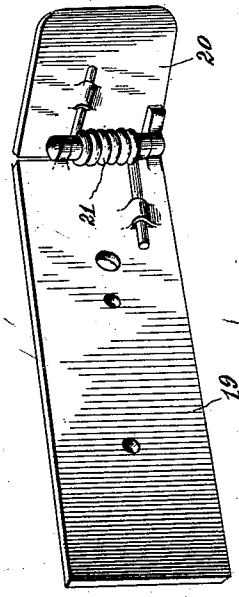

FIG. 3.

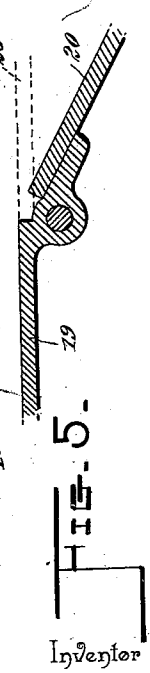

FIG. 5.

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UNITED STATES PATENT OFFICE.

JOHN KASMEIER, OF FLORENCE, ALABAMA.

RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 626,704, dated June 13, 1899.

Application filed April 27, 1898. Serial No. 678,975. (No model.)

To all whom it may concern:

Be it known that I, JOHN KASMEIER, a citizen of the United States, residing at Florence, in the county of Lauderdale and State of Alabama, have invented a new and useful Railway-Signal, of which the following is a specification.

My invention relates to railway-signals, and particularly to that class wherein electricity is employed as the means of communication between the parts; and the object in view is to provide such a combination and arrangement of parts as to insure the prompt and efficient operation of both audible and visible signals without the use upon the train of any battery or other coöperating member of the apparatus.

A further object of the invention is to provide a simple construction and arrangement of parts whereby the actuation of the trip by the wheels of an approaching train will cause the simultaneous ringing of a signal-bell and the exposure of a signal-light, and also to provide means whereby a series of lights indicating, respectively, "danger" and "safety" for exposure in opposite directions upon the track will be shown for the benefit of the engineer and of others near or in the path of the train.

A further object of the invention is to provide such a construction and arrangement of trip and resetting mechanism as to insure the setting of the signaling apparatus and the return of the parts to their normal positions without manual intervention.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a signaling apparatus constructed in accordance with my invention. Fig. 2 is a plan view of the track mechanism, showing one of the switches set to operate the signaling device and indicating in dotted lines the position of a wheel in traversing the intermediate reversed trip. Fig. 3 is a detail view of one of the trips detached. Fig. 4 is a diagram showing the circuit connections. Fig. 5 is a detail sectional view of the joint between the members of the trip.

Similar numerals and letters of reference indicate corresponding parts in all the figures of the drawings.

In the drawings I have represented a portion of a railway-track 1 intersected by a highway-crossing, and adjacent to the point of intersection I arrange a signal-post 2, supporting a casing 3, in connection with which are arranged certain audible and visible signaling devices which it is my object to actuate electrically, so as to simultaneously ring the signal-bell 4 and produce "danger" and "safety" lights 5 5^a or 6 6^a for exposure, respectively, from and toward the approaching train and also to produce highway signal-lights either at 7 or 8. These audible and visible signaling devices, however, which are connected with suitable secondary batteries 9 and 10 or equivalent means, are controlled by track mechanism, which in the construction illustrated includes bell-crank switch-levers 11 11^a and 12 12^a. The switch-levers have arms disposed approximately perpendicular to the lines of the track-rails and the pairs of levers are connected for simultaneous movement—the lever 11 to its companion lever 11^a and the lever 12 to its companion lever 12^a—by means of connecting-rods 13 14, consisting of "dead" wires or the equivalents thereof.

The main switch-levers 11 and 12 operate in connection with contact-points 15 and 16, and each switch-lever, with its contiguous contact-point, is in circuit with the signaling device, including the source of energy, such as a battery or the equivalent thereof. In the construction illustrated the circuit-wires 17 are connected, respectively, to the switch-lever 11 and the contact-point 15, whereby when the switch-lever is brought into operative relation with said contact-point the circuit is closed through the battery and signaling device to sound the audible and illuminate the visible signals. In the same way the circuit-wires 18 are connected, respectively, to the switch-lever 12 and the contact-point 16 for an analogous purpose, and it will be understood that the switches may be arranged at any desired distance upon opposite sides of the point of intersection of the crossing or highway with the railroad-track.

Mounted upon the track-rail contiguous to each switch-lever is a trip-plate 19, adapted

for bodily movement toward and from the line of the track-rail and having upon its front or operative end a movable or flexible tongue 20. In the construction illustrated this tongue consists of a plate-section hinged to the body portion of the trip and normally held deflected or in an oblique position with relation to the line of the track-rail by means of an actuating-spring 21; but the tension of the actuating-spring is such that a wheel traversing the trip in an opposite direction to that indicated by the several arrows located contiguous to the tracks in the drawings will cause the folding of the trip-tongue to a position parallel with the track-rail, as indicated at *a* in dotted lines in Fig. 2, without moving the trip with relation to the rail. When, however, a wheel approaches the front or tongue end of the trip, the flange thereof passes between said tongue and the line of the rail and forces the body of the trip outwardly or from the rail, said wheel-flange passing between the planes of the track-rail and the trip. The trip is yieldingly held in its normal position with relation to the line of the track-rail by means of an actuating-spring 22, coiled upon a stem 23 of the trip, said stem being disposed transversely with relation to the track and in guides 24 and 25, supported, for instance, by ties of the railway-track. The opposite ends of the spring 22 preferably bear against the guide 24 and a suitable collar or projection on the stem.

The connection between the trip-plate and the switch-lever is secured by means of a trip-rod 26, extending from that arm of the switch-lever which is approximately parallel with the track-rail to and through the track-rail and is loosely connected with the trip. This loose connection is secured by extending the trip-rod through the trip-plate and providing it at its inner end with a head 27, whereby when the trip-plate is deflected or moved from its normal position with relation to the track-rail and in opposition to its actuating-spring 22 it bears against the head 27 of the trip-rod, and thereby communicates tensile strain to the rod and turns the switch-lever to its operative position in engagement with the contact-point to complete the circuit. In the drawings, Fig. 2, the switch-lever 11 is shown in its signaling or closed position. After the movement of the trip-plate by means of the wheel-flange the release of the plate is immediately followed by the return thereof to its normal position; but the switch-lever remains in its set position in engagement with the contact-point, and thus maintains the circuit closed after the first wheel of the train has come in contact therewith. The succeeding movements of the trip-plate by means of the following wheels of the train do not affect the switch-lever.

Between the main switch-levers 11 and 12 are located the above-mentioned auxiliary switch-levers 11^a and 12^a, each of the auxiliary switch-levers being arranged upon the opposite side of the crossing from the main switch-lever, with which it is connected by the dead wire 13 or 14, and preferably contiguous to said crossing. These auxiliary switch-levers, however, do not operate in connection with contact-points and are not in circuit with the signaling devices. Those arms of said intermediate switch-levers which are approximately perpendicular to the line of the track-rails are connected, respectively, with the main track-rail switch-levers by the wire 13 or 14, and those arms of the switch-levers which are approximately parallel with the track-rails are connected by switch-rods 26^a, headed as at 27^a, with the intermediate or auxiliary trip-plates 19^a, the latter being yieldingly held in place by means of springs 22^a, coiled upon stems 23^a, and otherwise constructed substantially as hereinbefore described in connection with the main switch devices, including the flexible or yielding trip-tongues 20^a. The trips which are in connection with the auxiliary switch-levers are arranged, respectively, in the same positions as the main trips or as the trips which operate the connected switch-levers. In other words, the auxiliary trip mechanism which is in connection with the switch-lever 11^a is turned in the same direction or faces in the same direction as the main trip which is in connection with the switch-lever 11, and the same relation exists between the trips which are connected, respectively, with the main switch-lever 12 and the auxiliary switch-lever 12^a. Thus as a train after passing the trip mechanism in connection with the switch-lever 11 approaches the crossing its wheels pass idly over the trip-plate at the near side of the crossing, as indicated in dotted lines in Fig. 2; but when the first wheel of the train comes in contact with the auxiliary trip at the far side of the crossing it moves the trip-plate in opposition to its actuating-spring 22^a, and thereby turns the auxiliary switch-lever 11^a from the position shown in full lines in Fig. 2 to that indicated in dotted lines in the said figure, and thus communicates motion to the main switch-lever 11 to restore that to its normal position, as indicated in dotted lines in Fig. 2.

In order to avoid straining or jarring of the track mechanism by reason of the sharp contact of the wheels of rolling-stock with the trips, each connecting-rod 13 14 is provided with a cushioning device consisting of a tube 28, connected to the extremity of one section of the connecting-rod, (the latter being divided at this point,) and a cushion-spring 29, arranged in said tube, which acts as a guide, and coiled upon the adjacent end of the other section of the connecting-rod, the last-named section being headed, as shown at 30, to bear against the spring.

The signaling device illustrated in the drawings includes two different circuits, respectively in connection with the circuit-wires 17 and 18, and in each circuit is a suitable source

of energy, such as the battery 9; a plurality of road-lights 5 and 5ª, respectively indicating "danger" and "safety" and so constructed as to produce red and white illuminations, the former being visible upon a track in the direction in which the train is moving and the other in the direction from which the train is coming, whereby a warning is given on the track in front of the train, while the engineer of the train is advised by the white light that the mechanism is in operation and that the track is clear; a highway-signal, such as that indicated at 7 and designed to show in opposite directions upon the highway to warn pedestrians and others of the approach of a train, and an audible signal, such as a bell, of which the hammer 4ª is actuated by a coil or electromagnet, the electromagnets in the circuits with the conductors being respectively designated by the numerals 17ª and 18ª. These parts are preferably connected so as to arrange the light-signals in the main circuit with the batteries and the circuit-wires, while the coils or electromagnets are in shunt-circuits in connection with the main circuits, respectively; but it will be understood that various methods of connecting the members of the signaling apparatus may be adopted in connection with an apparatus embodying the essential features of the apparatus disclosed and that various other changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. A railway signaling apparatus having opposite terminal groups of lights, each including a danger-light and safety-light, exposed in line with a track, laterally-exposed danger-signal lights, for exposure in line with a track-intersecting highway, one of the lateral danger-lights, and one each of the terminal danger and safety lights, being arranged in a common circuit with a source of energy, as a battery, and a signal-bell having operating devices included in circuit, respectively, with each group of signal-lights, in combination with a circuit-closer, and track mechanism arranged in the paths of rolling-stock traversing the track, for actuating the circuit-closer, to close the circuit through either of the groups of signal-lights, substantially as specified.

2. A railway signaling apparatus having signaling devices arranged in circuit with a source of energy, circuit-closers, each consisting of connected main and auxiliary bell-crank switch-levers, in circuit with said source of energy, and a movable trip operatively connected with each of the switch-levers for successive actuation by the wheels of rolling-stock, substantially as specified.

3. A railway signaling apparatus having signaling devices in circuit with a source of electrical energy, a circuit-closer including main and auxiliary switch-levers connected for simultaneous operation, movable trips arranged in operative relation with the track-rail, for deflection by the wheels of rolling-stock, and yieldingly held in their normal positions in the path of such wheels, and sliding connections between said trips and the switch-levers, substantially as specified.

4. In an electrical signaling apparatus for railways, the combination with connected switch-levers, of movable trips arranged in operative relation with a track-rail and provided with yielding tongues normally disposed obliquely to the track-rail in the path of the wheels of rolling-stock, said trips being yieldingly held in their normal positions and yieldingly connected, respectively, with the switch-levers for moving the latter in opposite directions, substantially as specified.

5. In an electrical signaling apparatus for railways, the combination with connected switch-levers, of movable trips having plates yieldingly held in operative relation with a track-rail, pivotal spring-actuated tongues carried by said trip-plates and normally disposed obliquely with relation to the line of the track-rail, and sliding connections between said trip-plates and the switch-levers, substantially as specified.

6. In an electrical signaling apparatus for railways, the combination with connected switch-levers, of movable trip-plates arranged parallel and in operative relation with the track-rails and having spring-actuated stems whereby they are yieldingly held in their normal positions, flexible tongues extending obliquely from the front ends of said trip-plates and deflected from the line of the track-rail for engagement by the wheels of rolling-stock, and trip-rods connected respectively with the switch-levers, extending through the trip-plates for independent sliding movement, and terminally headed to bear against said trip-plates, whereby motion may be communicated from the trip-plates to the trip-rods for actuating the switch-levers, substantially as specified.

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

JOHN KASMEIER.

Witnesses:
W. S. CARMADAY,
H. D. SMITH.