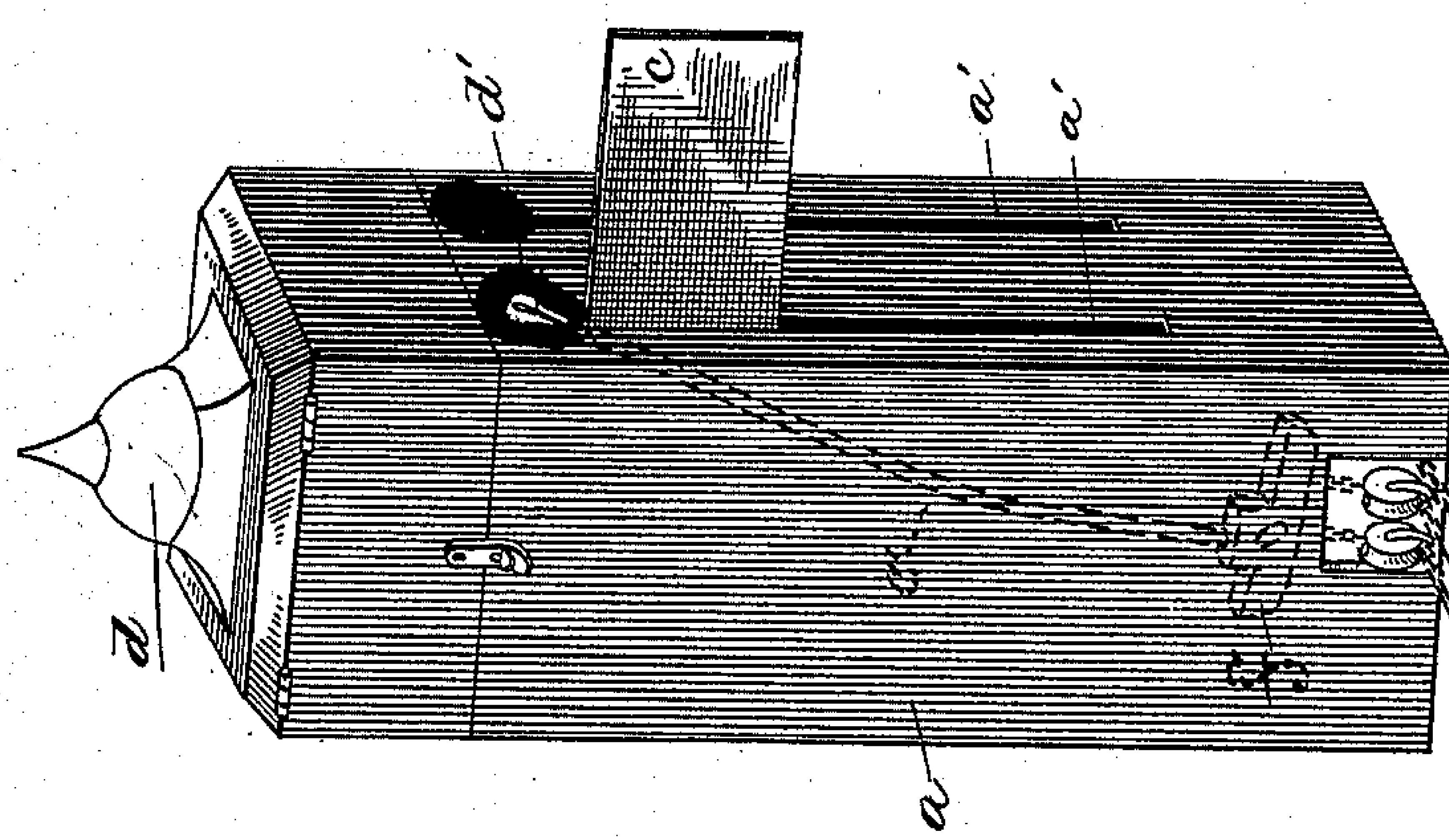
(No Model.) 2 Sheets—Sheet 1.

J. T. CARTER.

AUTOMATIC RAILWAY SIGNAL.

No. 402,398. Patented Apr. 30, 1889.



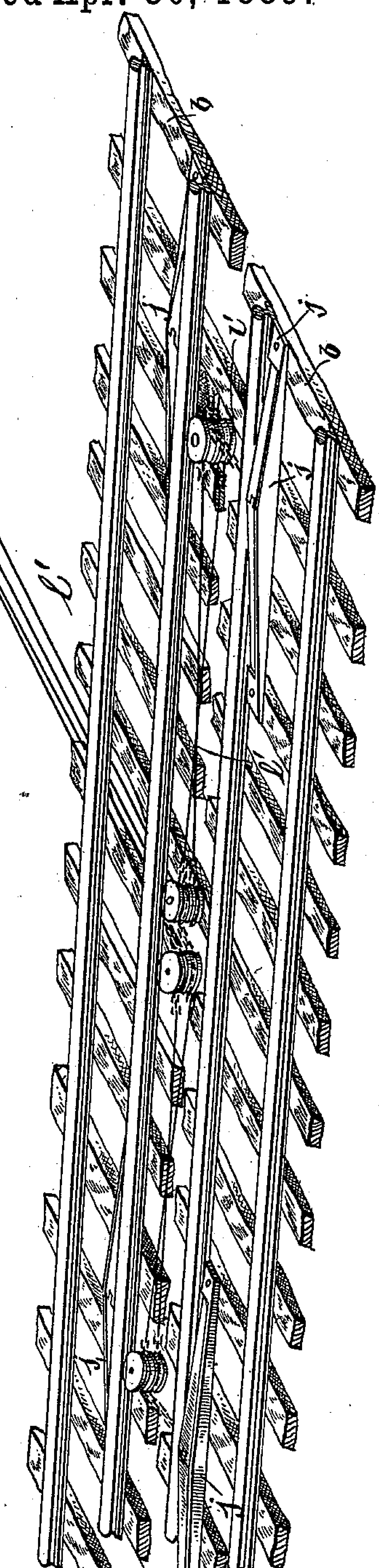


Fig. 1.

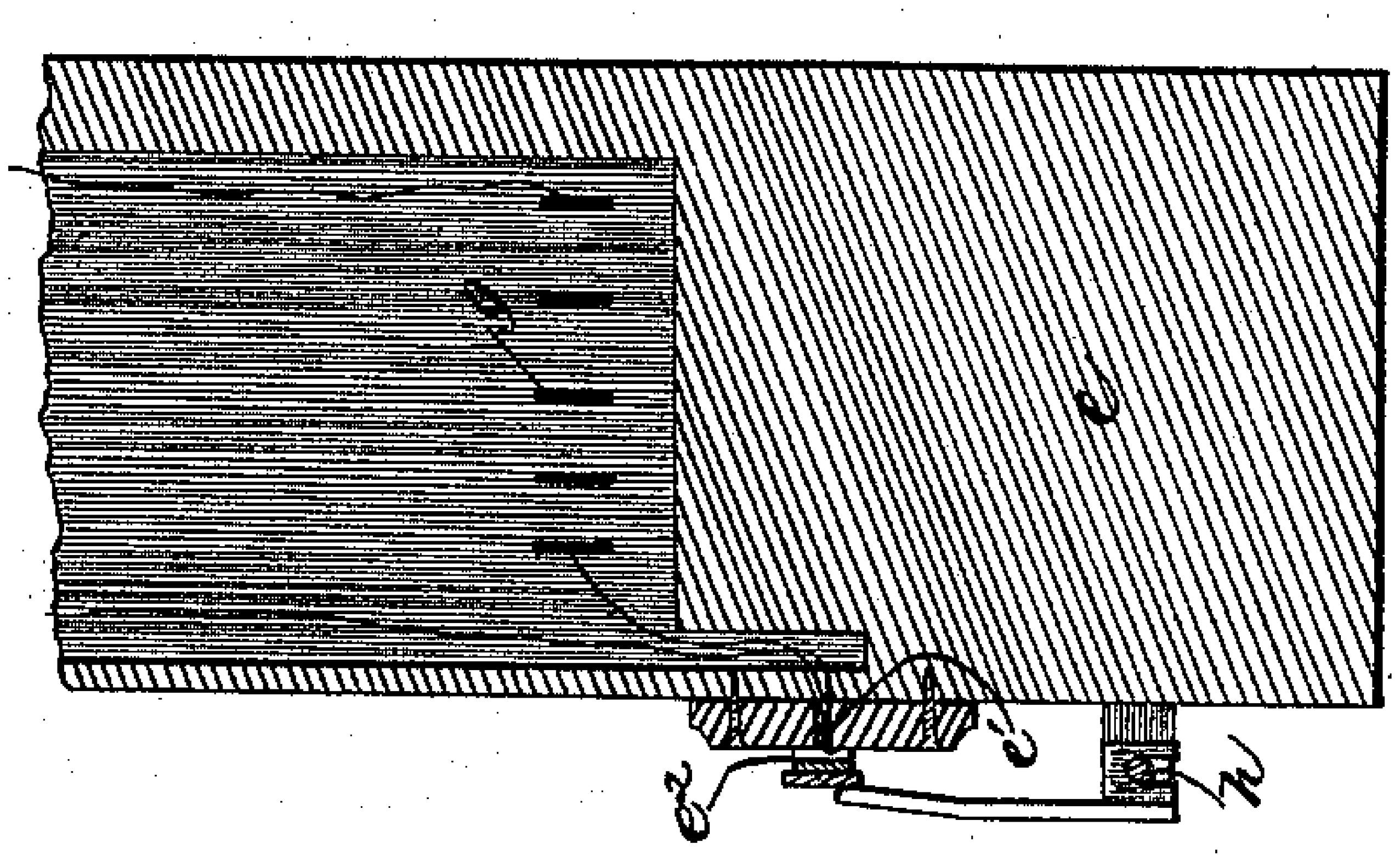


Fig. 4.

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INVENTOR,
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(No Model.) 2 Sheets—Sheet 2.

J. T. CARTER.

AUTOMATIC RAILWAY SIGNAL.

No. 402,398. Patented Apr. 30, 1889.

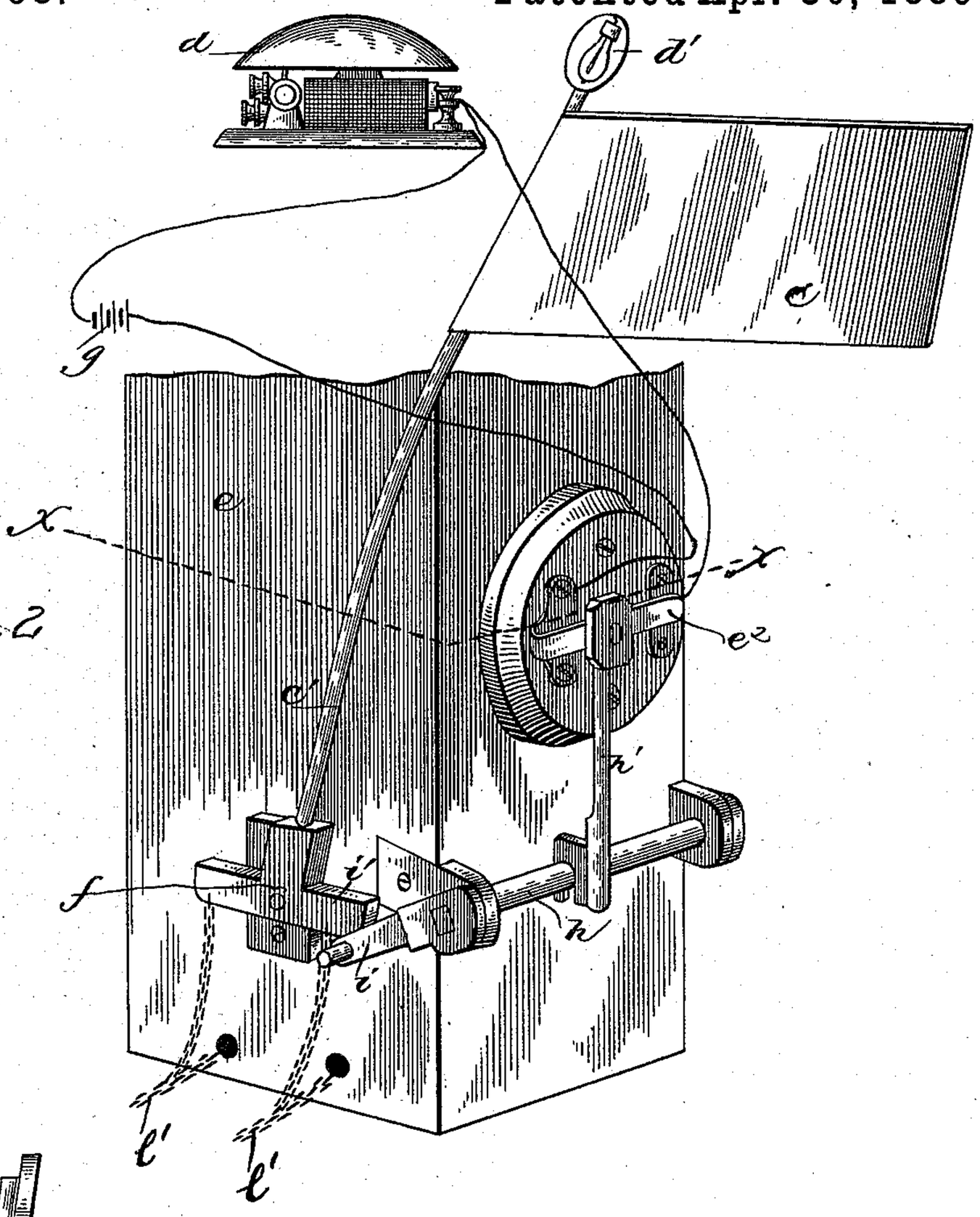

Fig. 2.

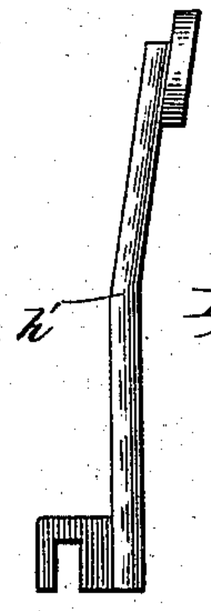

Fig. 5.

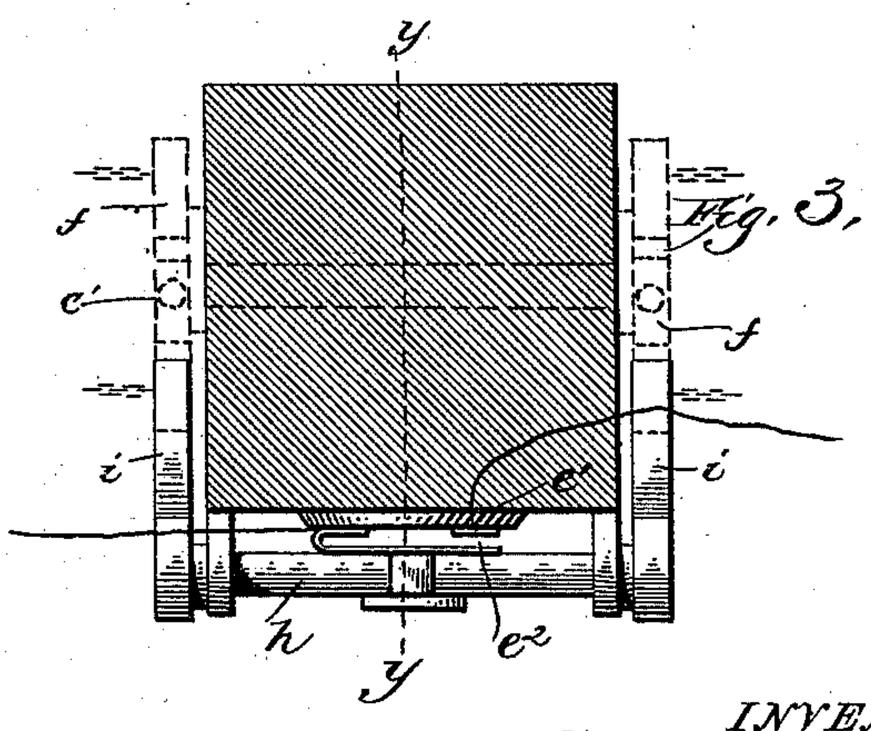

Fig. 3.

WITNESSES,

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UNITED STATES PATENT OFFICE.

JOHN T. CARTER, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF TO FRANK J. HILBERT, OF SAME PLACE.

AUTOMATIC RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 402,398, dated April 30, 1889.

Application filed November 8, 1888. Serial No. 290,283. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. CARTER, of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Railway-Signals; 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 letters of reference marked thereon, which form part of this specification.

My invention relates to an improvement in railway-signals, and more particularly to danger-signals, especially adapted for use along a railway line at street-crossings, &c.; and my invention consists in certain novel features of construction and combinations of parts, more fully described hereinafter, and particularly pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a perspective view of a portion of a railway-track, showing one of the signal-boxes located at a street-crossing and the operating mechanism on the track and the connections. Fig. 2 is a detail perspective view of the interior mechanism of the signal-box by which the visual and audible signals are simultaneously operated. Fig. 3 is a cross-section on line $x\,x$, Fig. 2. Fig. 4 is a partial vertical longitudinal section of the main support in the signal-box in the plane $y\,y$, Fig. 3. Fig. 5 is a detail elevation of the weighted hammer or tongue which operates the circuit-closer.

The general character of the system is as follows: A signal-box, *a*, is placed at a point where a street crosses the tracks *b*, and in such position that it can be seen by all on the street approaching the track. The signal-box is provided with one or more suitable movable visual signals and with an audible signal or alarm, so that when a train is approaching upon either track a visual signal will be conspicuously displayed and the alarm will be sounded. The signaling apparatus is operated by suitable trips located on each track a suitable distance from and upon each side of the crossing, so that the train as it approaches will operate the signals by depressing the trip, located on the track and connected with the signals by the usual connections, and after the train passes the crossing it will depress the trip upon that side and throw the apparatus to its normal position and operate the same to withdraw the visual signal and stop the sounding of the alarm.

The signal-box *a* is of any desirable construction, but is preferably inclosed, as shown, and provided in its side toward the street with the vertical slots or openings $a'\,a'$, through which the visual signals *c* extend when there is a train approaching. An electric gong or other audible alarm is located on or near the signal-box. A main frame or vertical post, *e*, is located in the signal-box and supports the signal mechanism. Each visual signal preferably consists of a flag or semaphore, *c*, secured to the upper portion of and carried by a vertical swinging rod, c', centrally secured at its lower end to a T-piece or horizontal lever, *f*, pivoted at its center to one side of the post *e* to swing in a vertical plane upon its pivotal point, so that when one free end of the lever is drawn down the rod c' will swing inwardly and withdraw the semaphore into the signal-box; but when the opposite free end of the lever is drawn down the rod c' is swung in the opposite direction, and the semaphore will extend out through one of the slots a' and give warning to all persons passing along the street. The upper end of the swinging rod c' is weighted, as shown, to assist the same in its movements and to render it quick and sure when operated, and the weight d' upon its upper end is preferably hollow and provided with openings, and a lamp—such as an incandescent electric lamp—is located therein. Thus it will be seen that the signal is serviceable after dark, for when the train approaches the rod will be swung outwardly with the semaphore and its upper end will extend outside of the signal-box, so that the light can be seen anywhere upon the street. If an electric lamp is used, the current can be supplied from a main line supported by the telegraph-poles.

A battery, *g*, is located in the signal-box or any other suitable location, and one of its poles is directly connected with the magnets

of the alarm and the other with a stationary contact-point, e', upon the front side of the post e, and the magnets are also electrically connected with a movable contact-point, e^2, consisting of a plate-spring secured to the post and extending over and normally located a distance from the stationary contact e'. Thus it will be seen that to sound the alarm the spring-plate e^2 must be pressed into contact with point e'. A rocking shaft or rod, h, extends across the front side of the post, and is journaled thereon beneath the circuit-closer and about opposite the levers or T-pieces carrying the swinging visual signals. A tongue, arm, or hammer, h', is centrally and rigidly secured to the rock-shaft and extends upward from the same and opposite the spring-plate of the circuit-closer, and this arm is weighted upon its upper end and adapted, when the shaft h is rocked in one direction, to swing inward and force the spring-plate into contact with the stationary contact and close the circuit and ring the bell, and when the shaft is released the weighted end of the arm will cause it to swing outward, carrying with it the shaft and allow the spring-plate to spring out to its normal position.

The shaft is rocked to close the circuit by the lugs i, rigidly secured to and extending inward from the shaft beneath the ends of the levers f, which are depressed when the visual signals are displayed. The lugs i loosely engage the under surfaces of the ends i' of the levers f, which are somewhat rounded, and of course when the same are drawn down the lugs i are forced down and the shaft h rocked to throw the arm h' inward, and when the lever f is rocked in the opposite direction the arm h' will assume its normal position, as before mentioned.

Where there is a double railroad-track, a similar lever, f, and visual signals are located upon each side of the post e, and are independently operated, one by trains on the "up" track and the other by trains on the "down" track; but they both operate upon the one shaft h, as it is provided with lugs i i, located beneath each lever f.

The signal is operated by the car-wheels passing over trips j—such, for instance, as described in my application No. 297,224, filed January 22, 1889—located upon the track or tracks a suitable distance from and on each side of the crossing, and each trip is connected with one end of a lever, f, by connections l'. Thus when a train approaches the crossing the wheels will depress the trip, and thereby draw down one end of the lever f through the medium of connection l', and throw out the visual signal and sound the alarm, and when the train has passed the crossing the trip j on the down side of the same is operated, thereby drawing down the opposite end of lever f, withdrawing the signal, stopping the ringing of the bell, and returning the trip on the up side to its normal position. The trips j j upon the other track operate in a similar manner, only the trip which operates the signals is on the opposite side of the crossing from the corresponding one of the other track.

It should be observed that when the trip on the up side of the track from the crossing is depressed it simultaneously throws out a visual signal and sounds an alarm, and the signal is not withdrawn nor the alarm stopped until the trip upon the opposite side of the crossing is depressed.

It is not considered necessary to set forth the great utility and many advantages of the herein-described device, as they are obvious.

The peculiar distinctive electric signal is not claimed herein *per se*, but merely as the element of the entire system, as the same forms the subject-matter of an application filed January 22, 1889, Serial No. 297,225.

It is also evident that various changes might be made in the form and arrangement of the various parts described without departing from the spirit of my invention; hence I do not wish to limit myself to the precise construction herein set forth.

What I claim is—

1. In a railway-signal, the combination of a signal-box, a movable semaphore normally located therein, an audible alarm, a rocking shaft to sound the alarm, a vertically-swinging lever pivoted within the box and carrying the semaphore and adapted to display or withdraw the same and simultaneously rock said shaft to start or stop the alarm, and a trip connected with the lever and located on the track and operated by a passing train, substantially as described.

2. In a railway-signal, the combination of a movable semaphore, a gong, an electric circuit including the gong, a circuit-controller in the circuit, a lever to simultaneously display the semaphore and operate the circuit-controller to close the circuit and sound the gong, and mechanism connected with said lever and operated by a passing train, substantially as described.

3. A railway-signal comprising a centrally-pivoted lever movable in a vertical plane, an upwardly-extending rod carried by and swinging with said lever, a semaphore carried by the upper portion of said rod, an inclosing signal-box, whereby, when one arm of the lever is depressed, the semaphore is displayed, and when the other arm is depressed the semaphore is withdrawn, and mechanism for operating the lever, substantially as described.

4. In a railway-signal, the combination of a signal-box, a lever pivoted therein and movable in a vertical plane, an upwardly-extending swinging rod carried by and moving with the lever, a weight upon the upper end of said rod, a semaphore carried by the upper portion of the rod and displayed when the rod is swung in one direction and withdrawn when the same is swung in the opposite direction, and a trip located on the track and connected with said lever, substantially as described.

5. A railway-signal comprising a signal-box,

a lever centrally pivoted in the box to swing in a vertical plane, a swinging rod secured at its lower end to said lever and extending upwardly from the same and counterbalanced at its upper free end, a semaphore carried by the upper portion of said rod and adapted to be displayed when the lever and rod are swung in one direction and to be withdrawn when the same are swung in the opposite direction, and a pair of trips located upon opposite sides of a railway-crossing and connected, respectively, with the opposite free ends of said lever, substantially as described.

6. A railway-signal comprising a signal-box, a vertical support therein, a lever pivoted at its center to said support to swing in a vertical plane, a swinging rod carried by the lever and counterbalanced at its upper end, a semaphore carried by the upper portion of the rod, an electric circuit including a gong and circuit-controller, a rock-shaft mounted on said support to close or open the circuit and operated by said lever, and trips located on a track and connected with the opposite ends of said lever, substantially as described.

7. A railway-signal comprising a T-lever pivoted to swing in a vertical plane, a swinging rod secured at its lower end centrally to the same and weighted at its upper end, a visual signal carried by the upper portion of the rod, and a pair of trips located upon a railway-track and connected, respectively, with the opposite ends of said lever to swing the rod in opposite directions, substantially as described.

8. A railway-signal comprising a rod mounted to swing in a vertical plane, a hollow apertured counterbalancing-weight upon its upper end, a signal lamp or light within the weight, a signal-box, and mechanism upon the track to swing the rod to display or withdraw the signal-light, substantially as described.

9. A railway-signal comprising a signal-box, a counterbalanced rod mounted at its lower end in the box upon a lever to swing in a vertical plane, a lamp or light carried by the upper end of the rod, a flag or similar signal carried by the upper portion of the rod, and mechanism upon the track connected with the lever to swing the rod and display or withdraw the signals, substantially as described.

10. A railway-signal comprising a movable visual signal and an audible alarm, an electric circuit including the alarm, a circuit-closer, and mechanism located upon the track and operated by a passing train to simultaneously operate the visual signal and audible alarm, substantially as described.

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

JOHN T. CARTER.

Witnesses:
MURRAY HANSON,
WILLIAM H. BERRY.