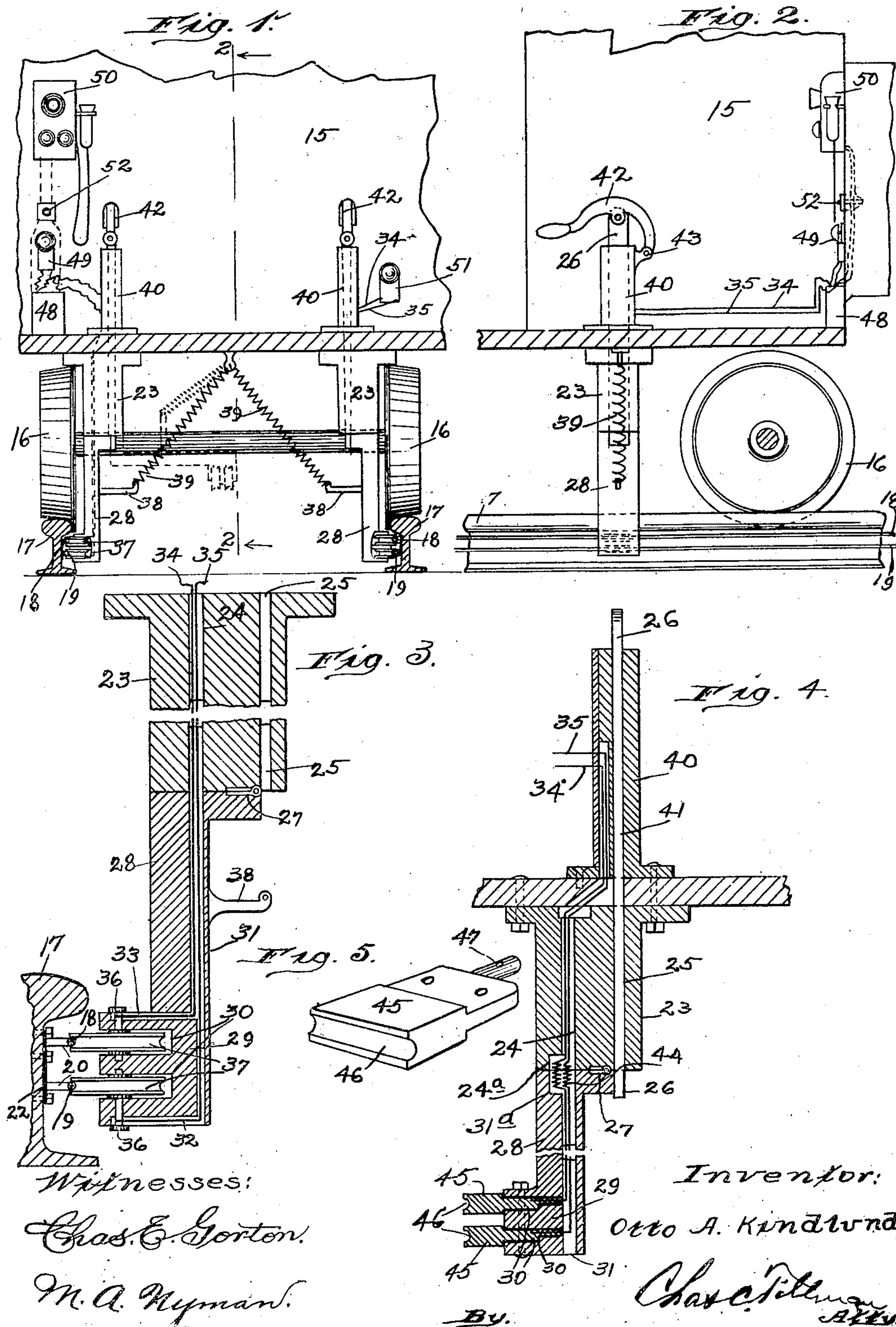


PATENTED AUG. 14, 1906.

3 SHEETS—SHEET 1.



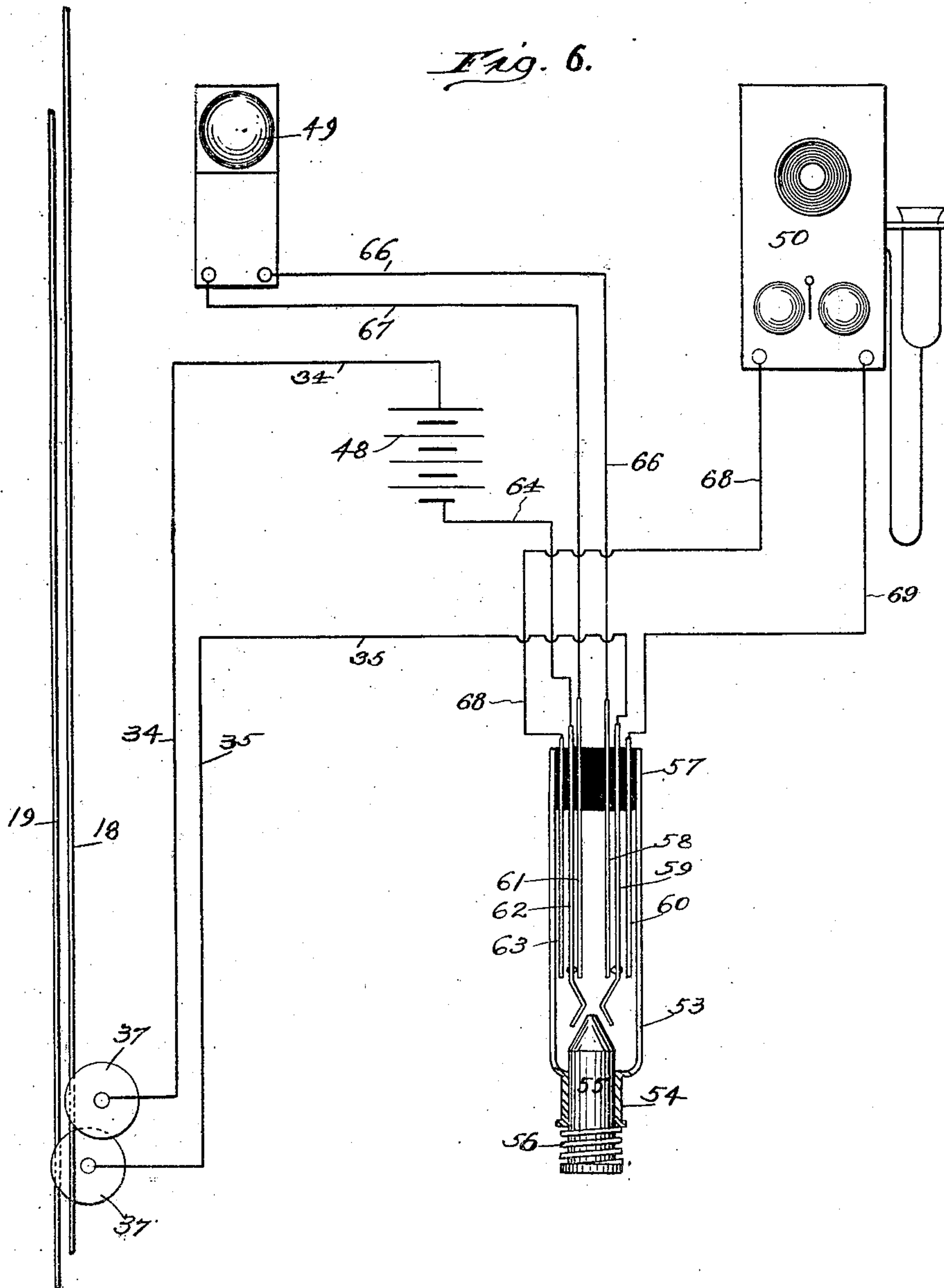
No. 828,855.

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O. A. KINDLUND.
RAILWAY SIGNALING APPARATUS.

APPLICATION FILED DEC. 27, 1905.

3 SHEETS—SHEET 2.



Witnesses:

Chas. E. Gorton.
M. A. Nyman.

Inventor:

Otto A. Kindlund.

By: Chas. E. Gorton Atty.

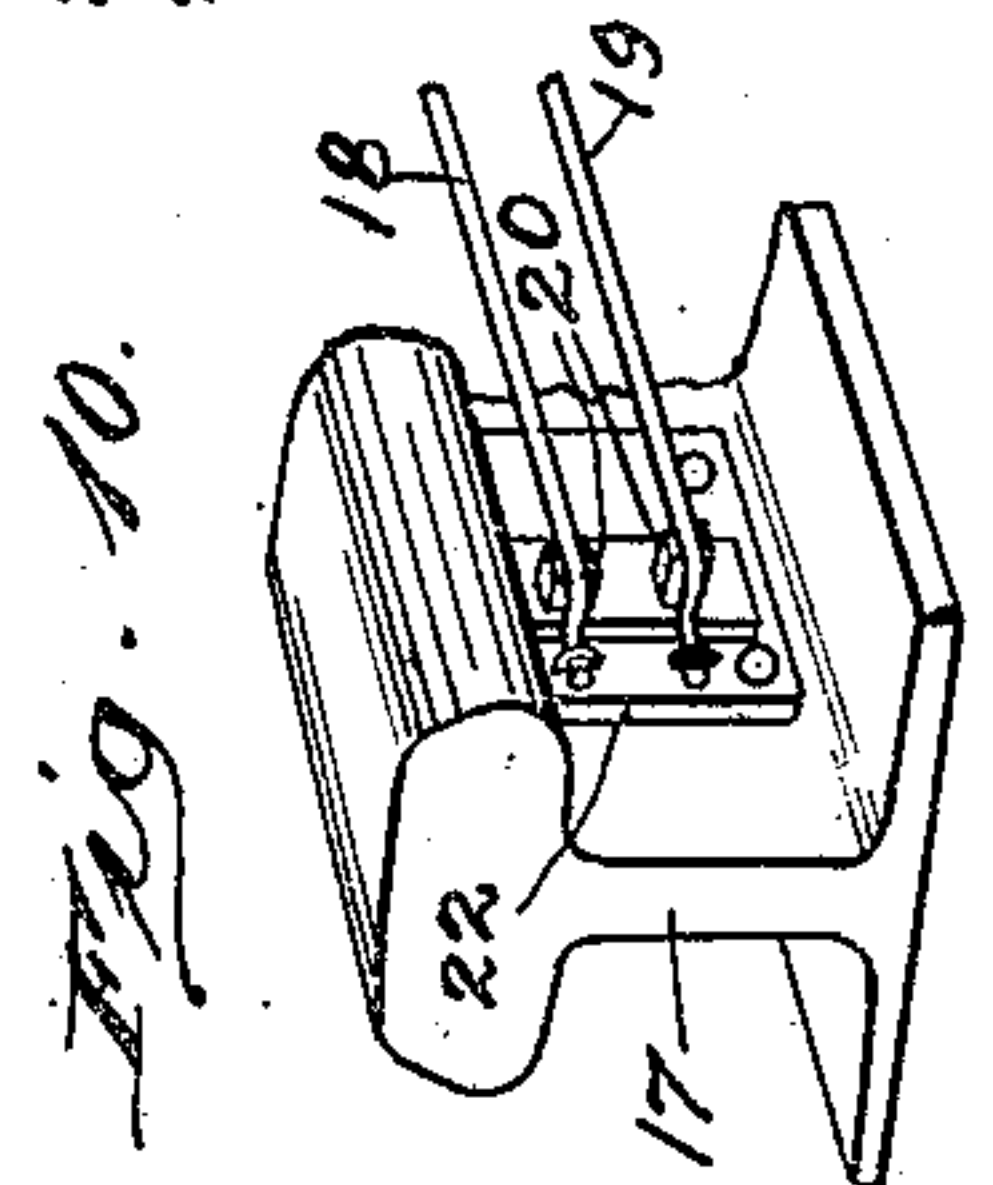
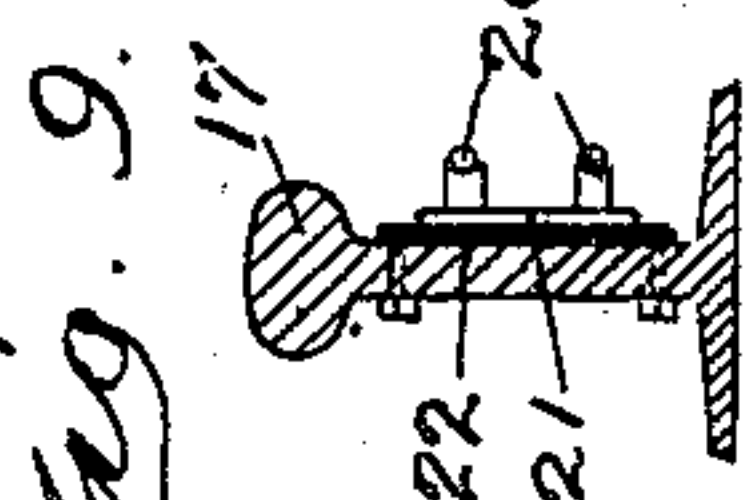
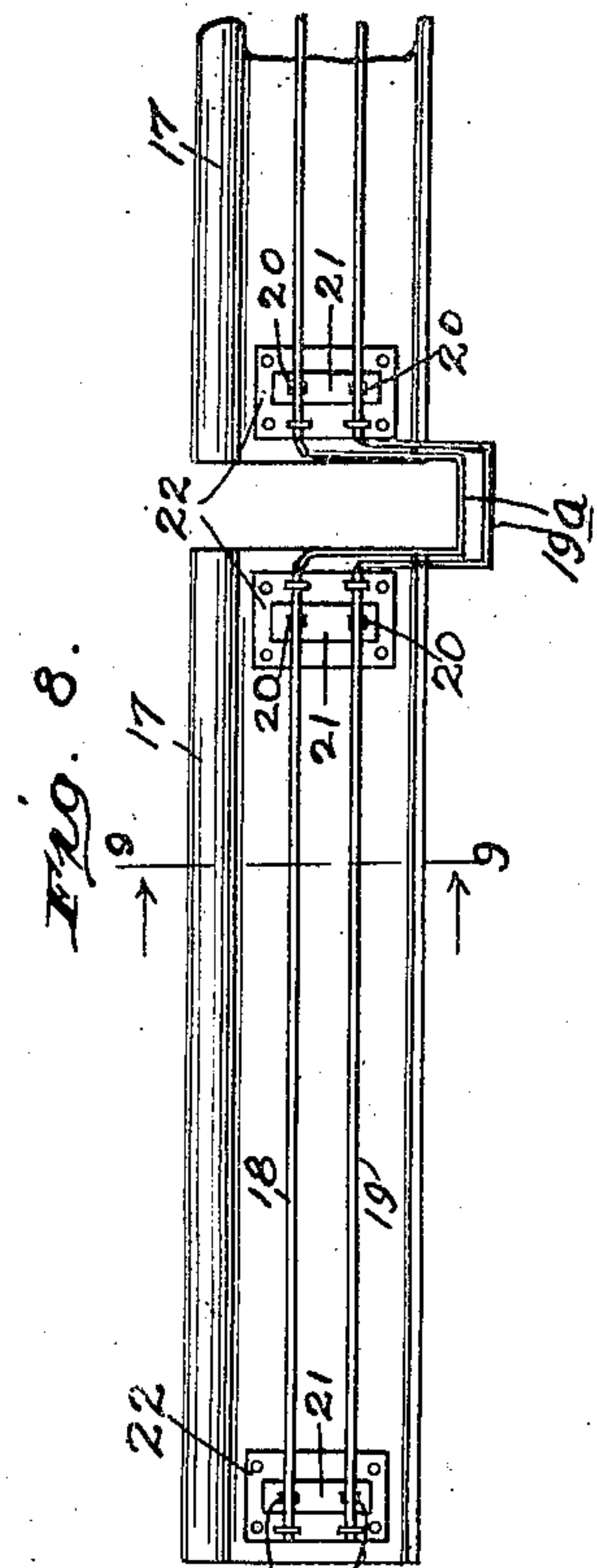
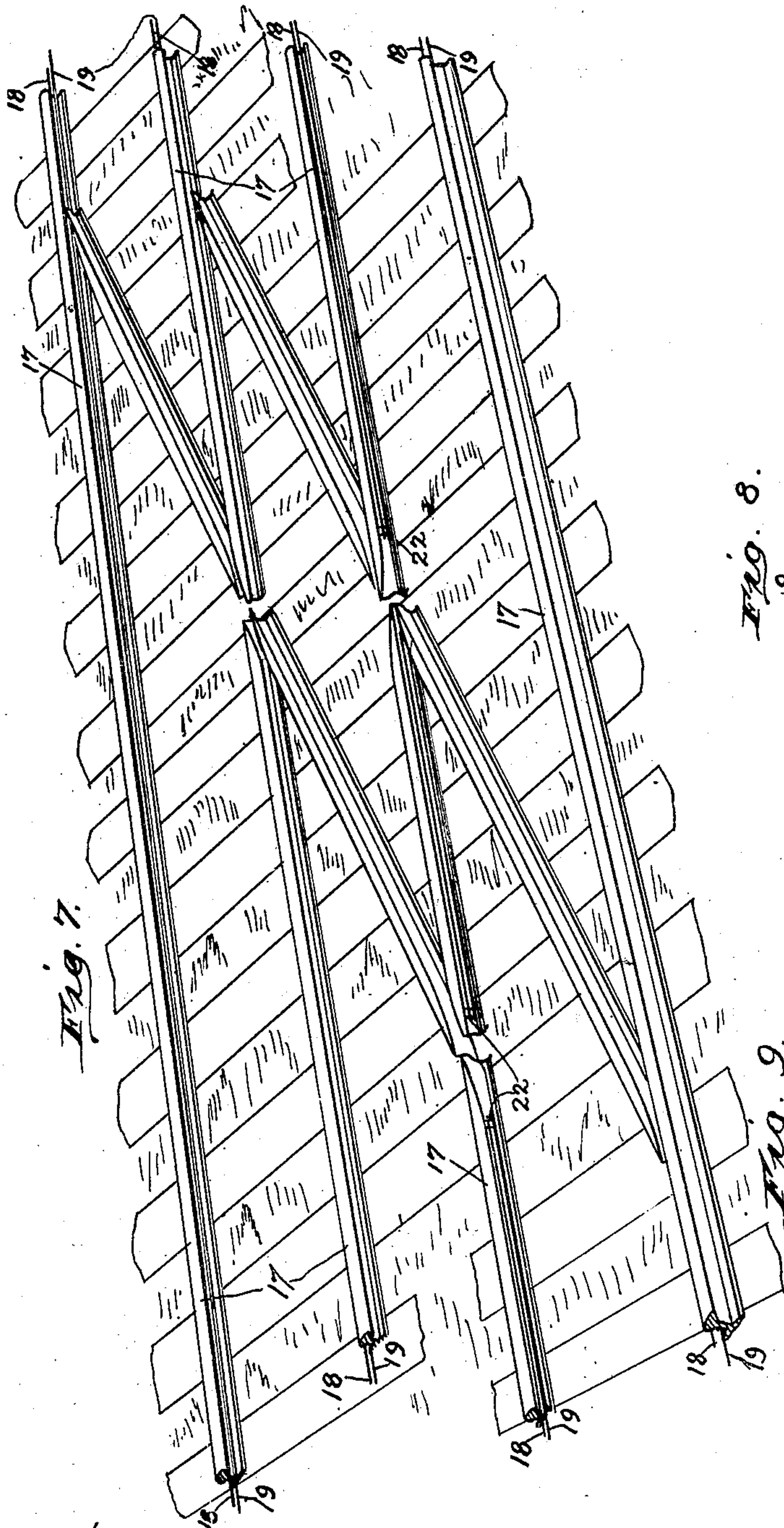
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3 SHEETS—SHEET 3.



Witnesses:
Chas. E. Gorton
M. A. Nyman.

Inventor:
Otto A. Kindlund.
By *Chas. E. Gorton* Att.

UNITED STATES PATENT OFFICE.

OTTO A. KINDLUND, OF CHICAGO, ILLINOIS.

RAILWAY SIGNALING APPARATUS.

No. 828,855.

Specification of Letters Patent.

Patented Aug. 14, 1906.

Application filed December 27, 1905. Serial No. 293,442.

To all whom it may concern:

Be it known that I, OTTO A. KINDLUND, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railway Signaling Apparatus, of which the following is a specification.

This invention relates to improvements in an apparatus to be used in connection with railways for giving alarms or signals when two trains are located on the same track and for permitting communication between said trains while they are in motion or at rest, thus affording means for the prevention of collisions; and it consists in certain peculiarities of the construction, novel arrangement, and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

The principal object of the invention is to provide an apparatus of the above-named character which shall be comparatively simple and inexpensive in construction and use, the parts of which shall be so arranged as to automatically give an alarm on each of the trains or cars at the instant they are both located on the same track whether they are moving in the same or opposite directions or whether one or both of the trains or cars are at rest.

Other objects and advantages of the invention will be disclosed in the subjoined description and explanation.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is a cross-sectional view of a portion of the cab of a locomotive or motor-car, showing it mounted on wheels resting on the rails of a track. Fig. 2 is a view, partly in section and partly in elevation, taken on line 2 2 of Fig. 1 looking in the direction indicated by the arrows. Fig. 3 is an enlarged vertical sectional view of one of the supports for the contacting devices for the electric conductors on the railway-rails, showing it shortened for the convenience of illustration. Fig. 4 is a similar view showing a modification in the construction of the support, as well as in the contacting devices, and also illustrating a supporting device for one of the operating-levers. Fig. 5 is a detached perspective view of one of the modified forms of the contacting devices. Fig. 6 is a diagrammatical view

showing the electric connections between the conductors on the rails and an alarm-bell and telephone and also showing a switch for controlling the electric current. Fig. 7 is a perspective view of a portion of two railway-tracks, showing the switch therefor and the arrangement of the electric conductors on the main rails thereof. Fig. 8 is an inner face view of portions of two alined rails, showing the manner of connecting the conductors at their adjacent ends. Fig. 9 is a cross-sectional view taken on line 9 9 of Fig. 8; and Fig. 10 is a perspective view of a portion of one of the rails, showing the means for supporting the conductors thereon.

Like numerals of reference refer to corresponding parts throughout the different views of the drawings.

In order to carry out my invention in practice, it will be understood that the locomotive-cab or motor-car or a car of each train should be equipped with certain devices hereinafter to be described; but as their equipments will be identical it is only necessary to describe the construction and arrangement of the parts for one of them, in the following description.

The reference-numeral 15 designates a portion of the cab of the locomotive or a part of a motor-car or other car, either of which may be of the ordinary or any preferred construction and, as usual, is mounted upon wheels 16, which travel on rails 17 in the ordinary manner. Each of the rails 17 of the track has supported on its inner surface in parallelism, one above the other, two electric conductors 18 and 19, which may extend the entire length of the track, and at breaks, such as at crossings and switches, may be turned down below the base of the rails, as shown at 19^a in Fig. 8 of the drawings. These conductors rest in the grooved outer ends of laterally-extending projections 20 on plates 21, which rest on suitable insulating material 22, interposed between them and said rails and secured to the inner surfaces of the rails, as will be clearly understood by reference to Figs. 3, 8, and 10 of the drawings.

Mounted on the lower surface of the bottom of the cab or car 15, near each of its sides, is a depending bracket 23, each of which is provided with vertical channels 24 and 25, the former being for the reception of electric conductors and the latter for an operating lever or bar 26, as will be presently explained. The brackets 23 are secured to

the bottom of the cab or car at proper points, so that their outer surfaces will be in a vertical line near the inner surfaces of the rails 17. Each of the brackets 23 has secured to its lower end, by means of hinges 27, a depending arm 28, which may be of any suitable size, form, and material, but preferably has at its lower end an enlargement 29, which is provided in its outer portion with two horizontal recesses 30, in which are located the contact devices for the conductors 18 and 19 on the rails of the track. Each of the arms 28 is provided with a vertical channel 31, which communicate with the channels 24 of the brackets 23 and are also for the reception of electric conductors. Leading horizontally from the lower portion of the channel 31 are channels 32 and 33, through which the conductors 34 and 35, located in the channels 24 and 31, will pass, which conductors are secured at their lower ends to shafts 36, vertically journaled in the enlargement 29 on each of the arms 28, each of which shafts has mounted thereon a grooved wheel 37 to contact with the conductors on the rails. Each of the arms 28 has an inwardly-extending projection 38, to which is secured one end of a spring 39, the other end of which is secured to the bottom of the cab or car at about midway between its sides. Located on the upper surface of the bottom of the cab or car, directly above each of the brackets 23, is an upright 40, each of which has a vertical channel 41 to register with the channels 25 in said brackets and are also for the reception of operating-bars 26, each of which is loosely connected to the middle portion of a curved handle 42, which is pivotally connected at one of its ends to a lug 43 on the upper end of each of said uprights.

In Fig. 4 of the drawings I have shown a modification in the construction of the supports for the contacting devices, which consists in forming the lower portion of the channel 24 in the bracket 23 with a recess 24^a and the upper portion of the channel 31 in the arm 28 with a recess 31^a to receive coils 44 on the conductors 34 and 35, which must necessarily yield in order to allow the arms to be turned on their hinges. I have also shown in Fig. 4 a modification in the construction of the contacting devices for the conductors on the rails, each of which consists of a metallic shoe or plate 45, having in its outer edge a groove 46 and on its inner portion an apertured projection 47, to which the conductors 34 and 35 are connected at their lower ends. These modified contacting devices are located in horizontal recesses 30, as are the wheels 37 in the other construction. Located at a suitable point at one side of the cab or car is a battery 48, which is in electric connection with an alarm-bell 49 and which battery is also in electric connection, through suitable conductors and contacting devices,

with the conductors 18 and 19 on the rails on one side of the track. Electrically connected to the battery 48 is a telephone 50, which is mounted at one side of the cab or car, on the other side of which is a battery 51, which is in electric connection, through the conductors 34 and 35 and contact devices, with the wires 18 and 19 on the rails on the side of the track under the last-named battery. In the circuit connecting the telephone 50, battery 48, and alarm-bell 49 is a switch 52, which consists of a casing 53, having at one of its ends a tubular portion 54, in which is located a push-pin 55, around the outer portion of which is secured a spring 56, employed for retracting it. Located longitudinally in the casing and separated from each other by means of insulated material 57 are a series of springs 58, 59, 60, 61, 62, and 63, which project from the insulated end of the casing, as is clearly shown in Fig. 6 of the drawings. Leading from one terminal of the battery 48 to the upper contact device 37 is the conductor 34, and leading from the other terminal of said battery is a conductor 64, connected with the central contact-spring 62 at one side of switch 52. With the central contact-spring 59 at the other side of switch 52 is connected the conductor 35, leading to the lower contact device 37, communicating with track-conductor 19. The central contact-springs 62 and 59 at opposite sides of switch 52 are normally in communication with inner contact-springs 61 and 58, respectively, which have connection with conductors 67 and 66, leading to the terminals of the alarm device 49, which is thus normally in circuit with battery 48 and track-conductors 18 and 19, so as to permit said alarm to be sounded when the circuit is closed between said track-conductors. The lower end of the central switch-springs 62 and 59 have reverse inclines to be engaged by the tapered end of button 55, whereby when said button is pressed endwise said central springs 62 and 59 are moved out of contact with the inner springs 61 and 68 to cut the circuit connections of alarm 49 with battery 48 and conductors 18 and 19 and simultaneously to make communication from said central springs 62 and 59 to the outer springs 63 and 60 at opposite sides of the switch 52 and with which are connected the respective conductors 68 and 69, leading to and from the terminals of the telephone 50, whereby it will be seen that the telephone is cut in circuit with battery 48 and track-conductors 18 and 19 immediately upon breaking the circuit connections of alarm 49.

From the foregoing and by reference to the drawings it will be seen and readily understood that when the levers or bars 26 are in their normal positions, as shown in Figs. 1, 2, and 4 of the drawings, the lower ends thereof will contact with the inner surfaces

of the upper ends of the arms 28, thereby holding the same in vertical positions, so that their contact devices will rest against the conductors 18 and 19 on the rails. If for any reason—for instance, if there is snow or other obstructions on the track—it is desired to raise the arms 28, this can be done by a slight upward movement of the handles 42, which will raise the bars 26 out of contact at their lower ends with the upper ends of the arms 28; when the springs 39 will turn the same inwardly on their hinges, so as to assume the positions shown by dotted lines in Fig. 1 of the drawings. When the said arms are in their lowered positions, it is apparent that the instant two cabs or cars are on the same track and within the zone of influence they will be electrically connected and that an alarm on the bell 49 will be automatically sounded in each of the cabs or cars, for it will be understood that the electric current will pass from one of the cabs through the upper conductor 18, from thence through the upper contact device 37 or 45, from thence through the conductor 34 to the battery 48, and from thence through the conductors 64, contact-springs 62 and 61 at one side of switch 52, and conductor 67 to the alarm 49, and from thence through the conductor 66, contact-springs 58 and 59 at the other side of switch 52, and thence by way of conductor 35 and lower contact device 37 or 45 to track-conductor 19, and from thence by a reverse course through the similar parts of the other cab or car. When the circuit is thus completed, the alarm on both cabs or cars will be sounded, and if the engineers or persons on the cabs or cars desire to communicate with one another the push-button 55 of the switch 40 may be pressed inwardly, so as to force the springs 59 and 62 into contact with the springs 60 and 63, respectively, which operation will cut out the alarm 49 and simultaneously throw the telephone 50 into circuit, so

that it may be used on either or both of the cars. 45

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a railway signaling apparatus, the combination with the rails, of a pair of electric conductors mounted on each of the same, a wheeled cab or car mounted on the rails, contact devices for each pair of said conductors carried by the cab or car, a telephone, a battery, and an electric alarm mounted on the cab or car in electric connection with the contact devices for one pair of said conductors, a switch to throw the telephone in and out of circuit, another battery mounted on the cab or car in electric connection with the contact devices for the other pair of said conductors, substantially as described. 55

2. In a railway signaling apparatus, the combination with the rails, of a pair of electric conductors mounted on one of the same, a wheeled cab or car mounted on the rails, a channeled bracket secured to the lower surface of the bottom of the car, an arm hinged to the lower end of said bracket, contact devices mounted on the lower portion of said arm, a channeled upright mounted on the upper surface of the bottom of the car so that its channel will register with that of said bracket, a bar or lever located in said channels and projecting through the channel of the bracket, a handle pivotally secured to the upper end of the upright and loosely secured to the upper end of the bar, a spring connected at one of its ends to the arm and at its other end to the bottom of the car, a battery and an electric alarm mounted on the cab or car in electric connection with the contact devices, substantially as described. 65 70 75 80

OTTO A. KINDLUND.

Witnesses:

CHAS. C. TILLMAN,
M. A. NYMAN.