

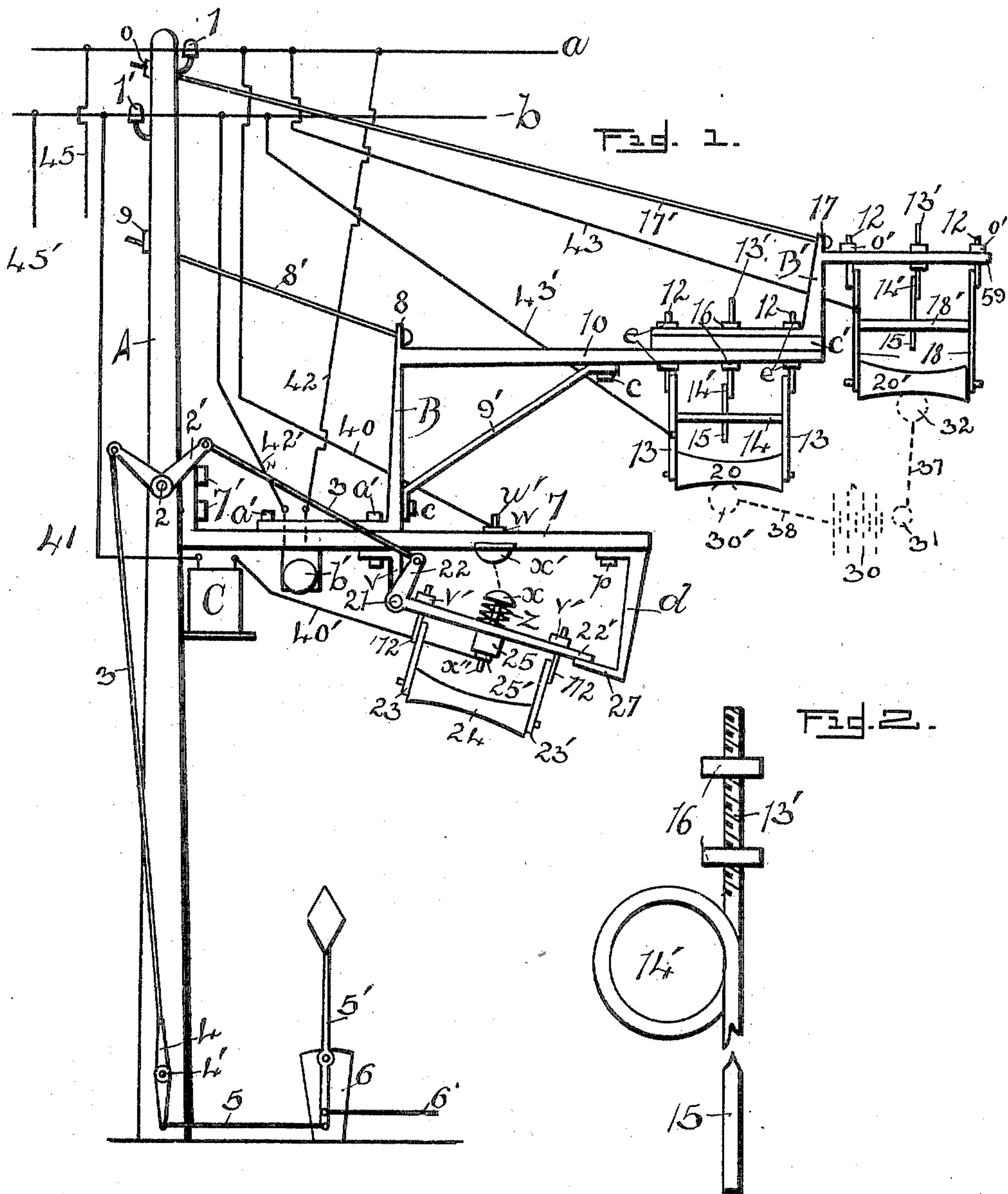
No. 817,293.

PATENTED APR. 10, 1906.

J. S. ANDERSON.
AUTOMATIC RAILROAD SIGNAL.

APPLICATION FILED DEC. 26, 1905.

2 SHEETS—SHEET 1.



WITNESSES:
D. D. Sues
C. B. Berger

INVENTOR
James S. Anderson
By Geo. W. Sues. Attorney

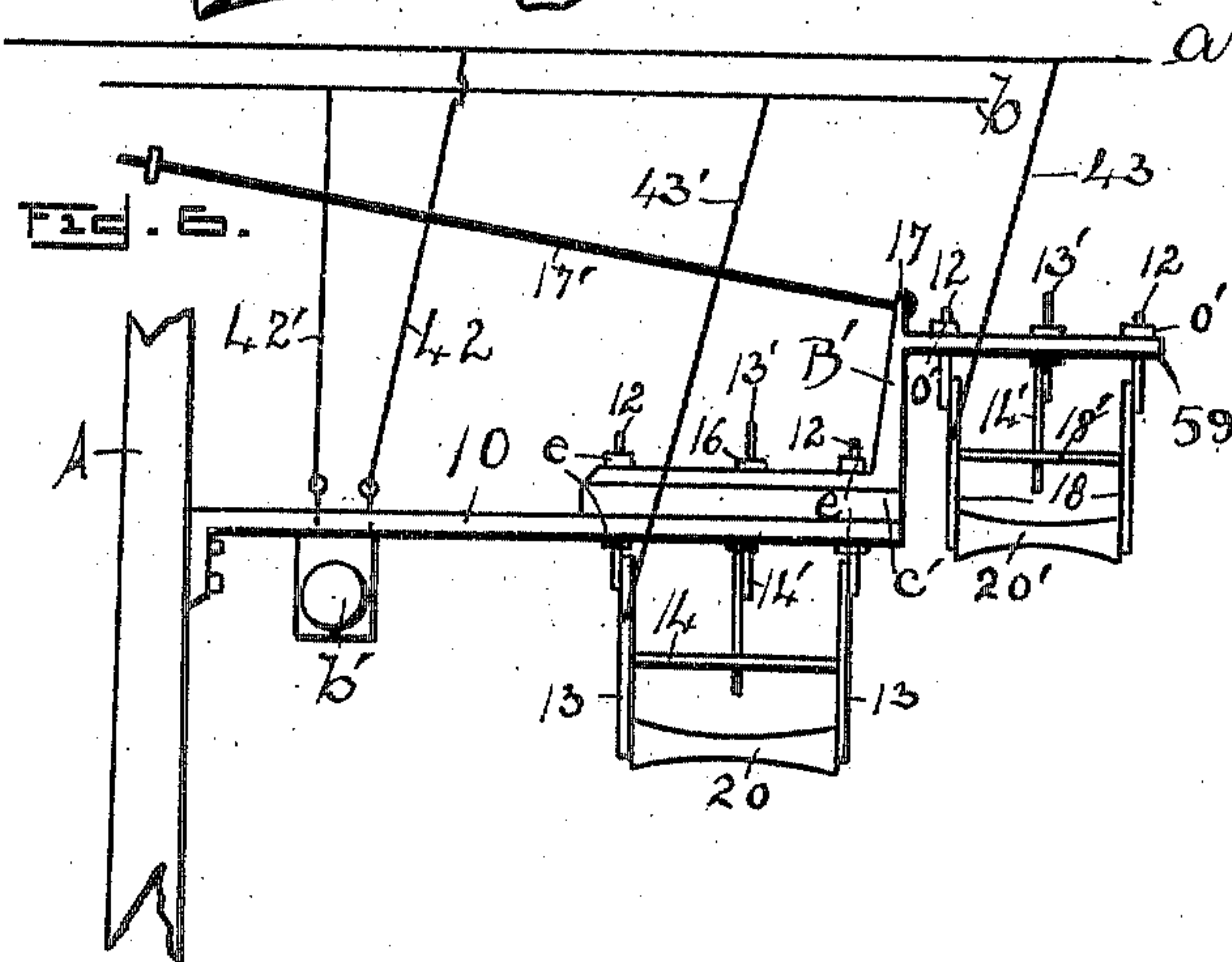
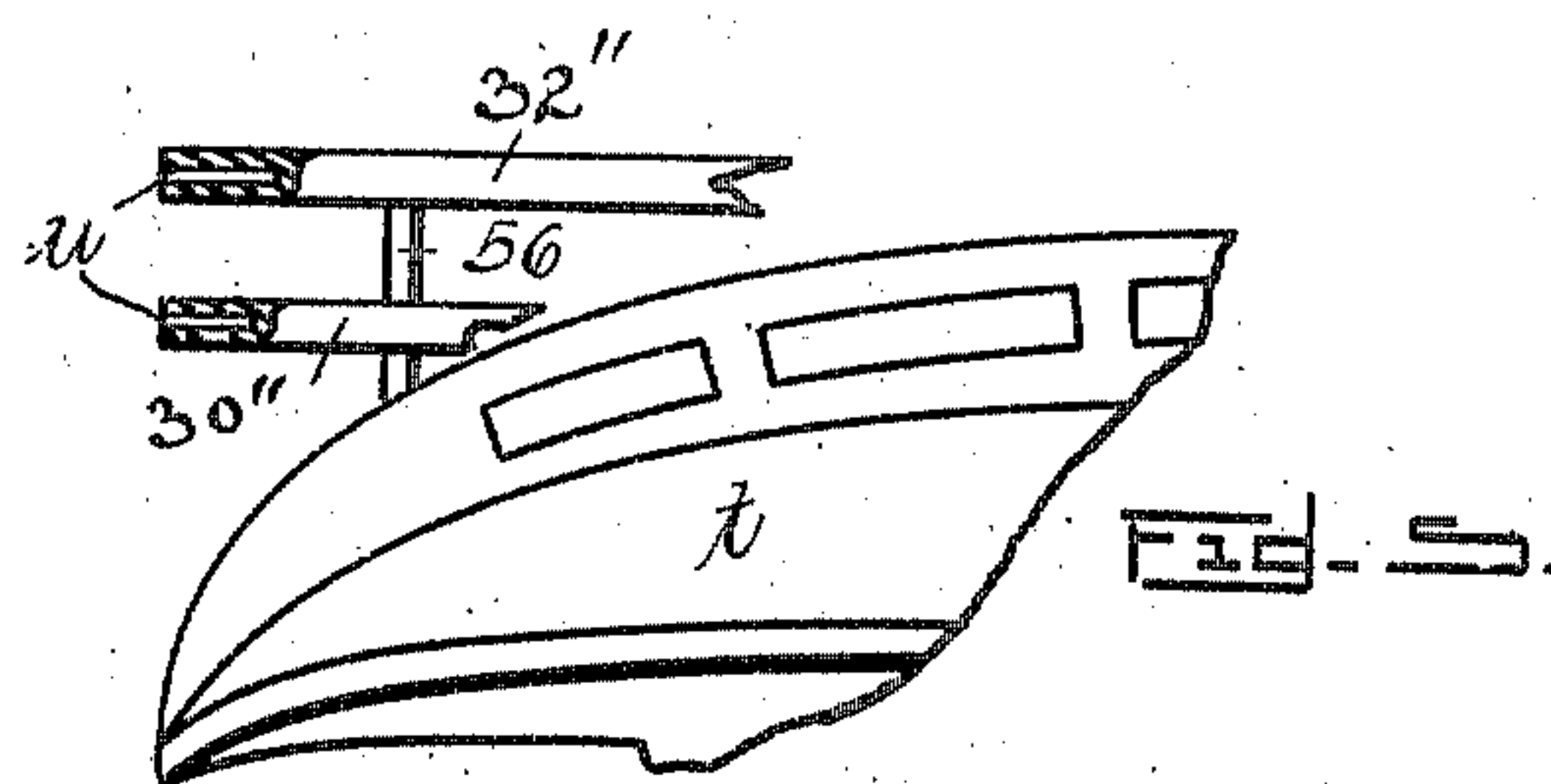
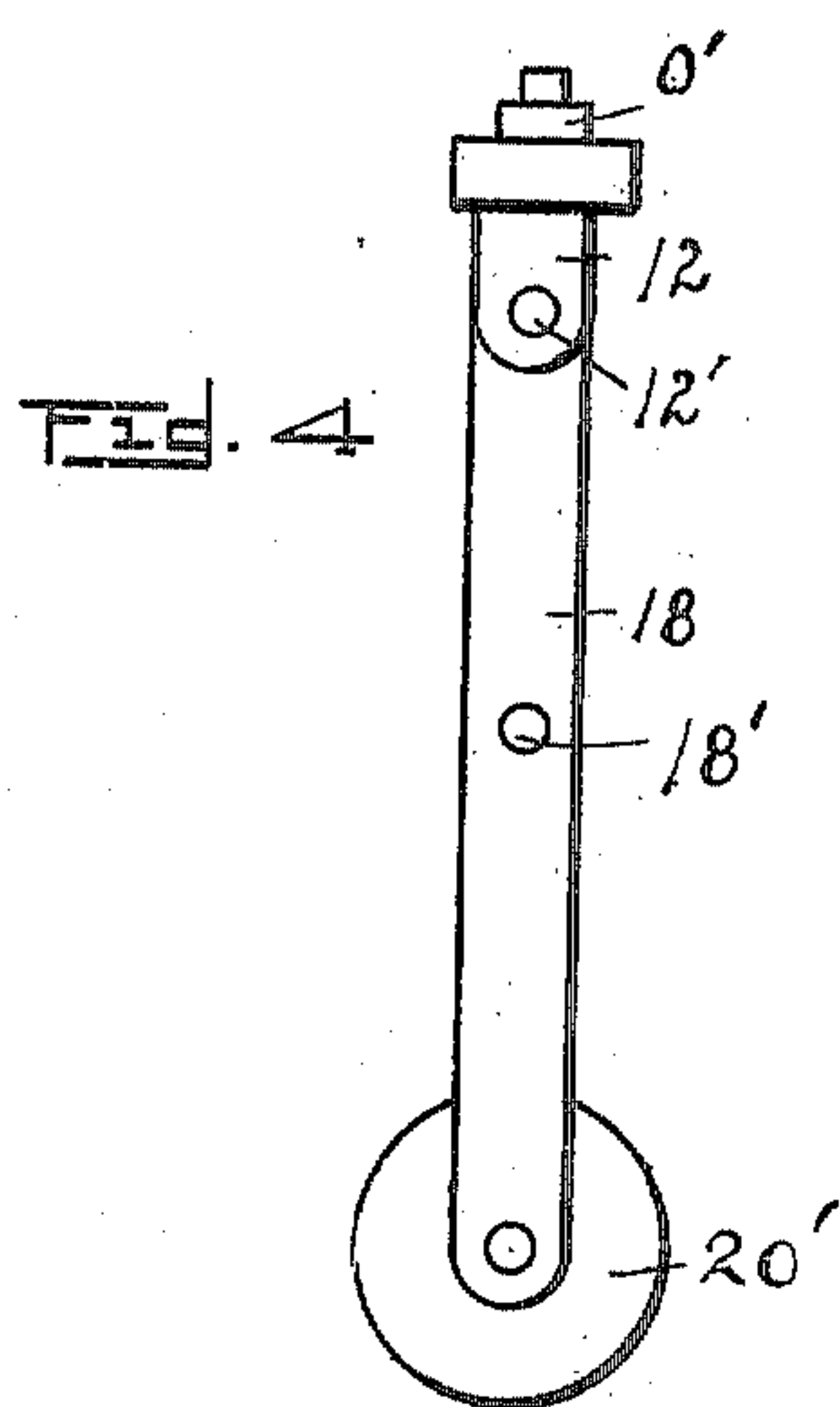
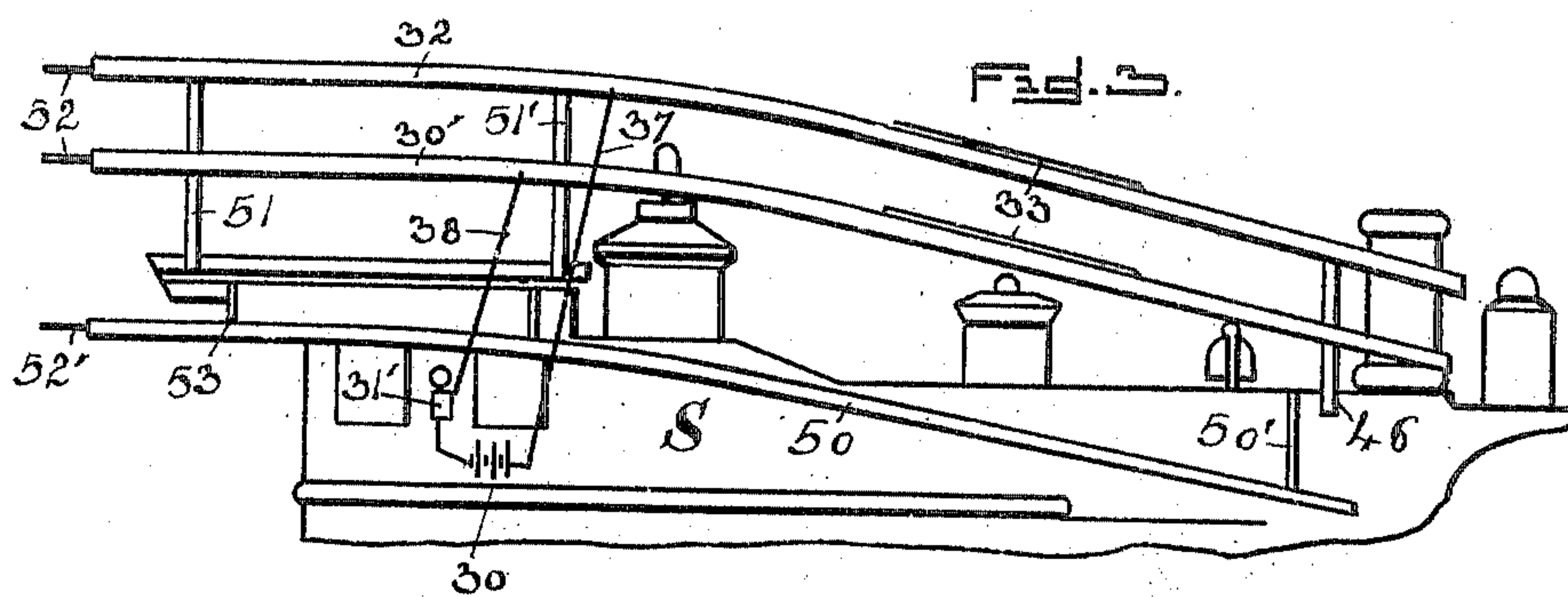
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UNITED STATES PATENT OFFICE.

JAMES S. ANDERSON, OF AMES, NEBRASKA.

AUTOMATIC RAILROAD-SIGNAL.

No. 817,293.

Specification of Letters Patent.

Patented April 10, 1906.

Application filed December 26, 1905. Serial No. 293,299.

To all whom it may concern:

Be it known that I, JAMES S. ANDERSON, a citizen of the United States, and a resident of Ames, in the county of Dodge and State of Nebraska, have invented certain new and useful Improvements in Automatic Railroad-Signals, of which the following is a description.

The object of my invention is to provide a locomotive and connected cars, as well as electric street-cars, with a bell adapted to be used in connection with an electric signal system so arranged that if two trains or cars approach one another a circuit is formed to actuate a bell within each locomotive or the car to form an audible alarm, while an audible alarm in the form of a bell will be rung at each crossing as the train or cars approach, while at predetermined points upon the side of the track will be placed audible alarms which will be sounded to warn and give notice of the approach of a car or train; and my invention comprises certain arrangements of instrumentalities, as will be described more fully hereinafter and finally pointed out in the claims.

In the accompanying drawings I have shown in Figure 1 an elevation of one of my triple signal-posts. Fig. 2 shows an enlarged broken detached detail of one of the frame-holdingsprings as used in my invention. Fig. 3 shows the broken upper portion of a locomotive equipped with the contact-making rails as used in my invention. Fig. 4 shows a side view of one of the swinging roller-holding frames. Fig. 5 discloses a broken top view of a car equipped with the contact-making rails, showing the sockets to insure electric connection, while Fig. 6 shows a broken detached detail of one of the double signal-rollers as used in my invention.

In carrying out the aim of my invention, I use a plurality of telephone or telegraph poles, which are set along the side of a suitable railway-track at predetermined distance—as, for instance, an eighth of a mile apart. These poles are next equipped with bracket-supported insulators 1 and 1', as shown in Fig. 1, adapted to receive and support two ordinary electric conductors extending from one end of the track to the other where my system is used. Each pole A along the line is equipped with a bracket 10, as shown in Fig. 6, to which bracket is secured an electric bell b', forming the audible alarm at that pole, this electric bell being of any approved

and desirable construction and from one binding-post of which extends the connecting-wire 42, leading to the electric conductor a, while from the remaining post is led the connecting-wire 42', secured to the remaining electric conductor b, so that at each pole is provided an audible alarm. Secured to the bracket 10 is an arm B', approximately L-shaped and provided with the horizontal extension 59 and the ear 17. The foot portion of this L-shaped arm is perforated at three points, as is also each bracket 10, so that suitable eyebolts 12 may be carried through the brackets 10 and the arms B', these eyebolts then being secured by means of suitable nuts e. Interposed, however, between the brackets 10 and arms B', as shown in Fig. 6, is a block of insulating material c'. The arm B' is also made of insulating material, so that there will be no electric connection between the bracket 10 and the arm B'. The nuts e, working upon the eyebolts 12, securely fasten the arm to the bracket, as shown.

Held by the eyebolts 12, as shown in side view in Fig. 4, are the frame-bars 13, pivotally held by means of a suitable pin 12', and these frame-bars are connected by means of a perforated cross-bar 14, into the perforation of which bar extends the end 15, as shown in Fig. 2, of a suitable holding-spring, which is provided with the loop 14', so that the frame-bars 13 are pivotally held in a pendent position. Any power directed against these swinging frames will have to be against the tension of these springs. These springs, as shown in Figs. 1 and 2, are provided with the two nuts 16, so that the spring may be given proper adjustment and be held in the right position. Held within the lower ends of these swinging frames are the receiving-rollers 20, as shown in Figs. 1 and 5, these rollers 20 being in electric connection with one of the frame-bars 13, so that a connecting-wire 43' may be carried to one of the line-wires, as b. Secured to the horizontal frame member 59 of each pole is a similar swinging roller-holding frame comprising the frame-bars 18 18, held by means of the eyebolts 12, secured by means of the nuts o', as shown in Fig. 4. The frame-bars 18 are connected by means of the perforated cross-bar 18', into which is also carried the end of one of the holding-springs 13', so that these transmitting-roller-holding frames are also held in a pendent condition by means of a suitable spring, as shown. Held between the frame-

bars 18 is a transmitting-roller 20' in an electric connection with the frame-bars 18. A connecting-wire 43 extends from the transmitting-frame 18 to the line-wire *a*, as shown in Fig. 6.

In Fig. 1 I have shown the arrangement of the swinging receiving-roller frame 13 and the transmitting-roller frame 18 as secured to a switch-stand. This Fig. 1 shows what I term a "triple signal-post," as I use three rollers, while arranged along the line a pole with but two rollers is necessary, as shown in Fig. 6.

The road being equipped with the poles A, as shown in Fig. 6, each locomotive—for instance, as shown in Fig. 3—will have to be provided with two contact-making rails, as the rail 32, adapted to come in contact with and engage the transmitting-roller 20', while the contact-making rail 30' will be adapted to come into engagement and form a contact with the receiving-roller 20. These contact-making rails 32 and 30' are secured to the locomotive at any suitable point, preferably near the outer edge upon the side upon which poles are positioned. The rails are held by means of suitable bars 46, 51', and 51, secured in any suitable manner to the locomotive. At the point where the rail is adapted to first come in contact with the pendent spring-held rollers I provide the rails with a preferably rubber strap 33 to somewhat lessen the shock of the impact of the rapidly-moving contact-rails when they come into engagement with the receiving and transmitting rollers. Within the cab of each locomotive is positioned and audible alarm 31' in the form of a suitable electric bell connected to a battery 30, from which a wire 37 is secured to the contact-making rail 32, while the remaining post of the electric bell is an electric wire leading to the contact-making rail 30'. Now should a locomotive so equipped start along the track it would at every determined point come in engagement by means of its contact-making rails 30' and 32 with the rollers 20 and 20', so that a circuit would be formed—as shown in Fig. 1, for instance, where in dotted outline is disclosed the position of the rails 30' and 32 in engagement with the transmitting-roller 20 and receiving-roller 21, so that a complete circuit is made for the time being during which the rails are in contact with the rollers to ring the alarm *b'* at the pole. Now should one locomotive approach another from the rear or head on as soon as both locomotives come simultaneously into contact with a set of transmitting and receiving rollers a complete circuit will be formed, one locomotive to the other, to ring both alarms 31 within each cab. In order to prolong the time of contact between the contact-making rails and rollers, the whole train of cars, whether it be freight or passenger coaches, is provided with a set

of contact-making rails 30 and 32, as shown in Fig. 5, these rails being provided with suitable sockets *u*, into which the plugs 52 from the rails 30' and 32 extend, so as to increase the likelihood of the two approaching trains simultaneously engaging two sets of rollers to close the circuit to ring the bells within both the cabs. When this circuit is formed, it of course rings the bells upon the poles in circuit as well. These signal-poles, it has been stated, must be placed near enough to one another so that should the trains approach one another in such a manner that no complete circuit is formed the engineer will be able to hear the audible alarm upon the poles ahead of him or to the rear of him, thus giving warning of the approach of another train.

Now should a train or locomotive equipped with my apparatus be switched upon a siding an automatic circuit-closing device will be operated to close a circuit to actuate the audible alarm at the post nearest the switch, as well as close the circuit at one end. Referring to Fig. 1, for instance, the pole A, such as has been described and is used along the entire line and which is provided with the usual bracket-held insulators 1 and 1', hold the line conductors *a* and *b*. The pole nearest the switch-stand 6, for instance, is provided with a bracket 7, secured to the pole by means of the bolts 7', and to this bracket 7 is secured an ear *v* approximately of its ends, while at the end I secure a stop-bar *d*, secured by means of the bolt *p*, and this stop-bar *d* is provided with the inwardly-projecting lip 27, upon which lip rests the forward end of the bar 22'. This rock-bar is secured, by means of the pin 21, to the ear *v* and is provided with the crank-bar, which may be rocked upward and downward. Secured to the pole at a suitable point is a bell-crank 2', held by means of the pin 2, and extending from this bell-crank to the crank-bar 22 is a connecting-rod 3, while from the remaining ing member of the bell-crank depends a connecting-rod 3'. Near the lower end and secured to the pole A is a lever 4, held by means of the pin 4', and this lever 4 is pivotally held in a vertical position, so as to receive at its upper end the pendent connecting-rod 3'. The switching-lever 5' is provided with the connecting-rod 5, secured to the lower end of the lever 4, so that when this switch-lever is actuated to throw the switch the bell-crank 2' is rocked. Extending from the switch 5' is an ordinary connecting-bar 6', secured to any ordinary switch. Secured to the crank-bar 22' are two bolts 112 112, holding what I call a "switch-roller" 24 by means of the bars 23 23'. This roller, however, is not pivotally held, the members 23 and 23' being securely fastened to the bolts 112. Secured to the crank-bar 22' is an insulation-block 25, through which passes a contact-maker *x* in the form of a bar *x'*,

provided with the head forming a button, as shown, and the stop member 25, which may be threaded or otherwise secured upon the stem x'' . A spring z is interposed between the button x and the bar 22', so that this button x is forced outward under spring tension. Secured to the bracket 7, so as to come in engagement with the contact-maker x , is a second contact-maker x' , provided with the stem u' , held by the stop w , this contact-maker x' also being suitably insulated from the bracket 7. Secured to the pole near one of these switch-operated crank-bars is a suitable battery C, from which extends an ordinary connecting-wire 41, led to the line-wire b , for instance, while from the opposite pole of the battery is a connecting-wire 40', secured to the contact-maker x , as shown in Fig. 1. Led from the remaining contact-maker x' is an ordinary connecting-wire 40, led to remaining line-wire a , so that the line-wires a and b may be closed in bringing together the contact-makers x and x' . Secured to the bracket 7 is an ordinary alarm-bell b' , from which extends an electric conducting-wire 42', led to the line-wire b , while extending from the opposite post of this bell is an electric conductor 42, led to the remaining wire a , so that whenever a circuit is closed by means of these contact-makers x and x' the alarm b' will be rung. In order to secure the frame member holding the transmitting-rollers 20' and the receiving-roller 20, I use the bracket B, the foot of which is secured by means of suitable bolts a' and which is provided with an extension 10 exactly similar to what I use at points between the switch-stand and the arrangement of which has already been described. In order to hold these receiving and transmitting rollers, however, as they project out farther than those used at the switch-stand, I use an additional stay-rod 8', provided with the nut 9 and passing through an ear 8, and an additional bracket 9', held by the bolts c , as shown in Fig. 1. Now as long as the switch remains open there will be a contact formed between the buttons x and x' , so that as soon as an approaching locomotive comes in electric contact with the rollers 20 or 20' the other open end of the circuit will be closed to ring the alarm within the cab, as well as the alarm at the post, notifying the approaching train, as well as the train upon the siding in that the alarm b' is rung.

The crank-bar 22' is gravity-actuated, so that said bar is normally in engagement with the lip 27, though, if desired, a spring could be interposed between the crank-bar 22' and the bracket 7, and so also in place of a connecting-rod 3 could a pliable connection be used, so that should a spring-held switch be used a train approaching from the siding to enter upon the main line the crank-bar 22' would be raised upward to close the circuit-

wire, permitting the car to enter the main track, as is usual, for instance, in track equipment in connection with electric suburban traffic.

As shown in Fig. 3, the locomotive S is provided upon one side with a contact-rail 50, adapted to come into engagement with the switch-roller 24, though, as has been set forth, this roller is also actuated upward when the switch is thrown.

The instrumentalities are simple of construction and are readily operated.

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

1. In a signal of the character described, the combination with a suitable pole, of two electric conductors supported by said pole, a bracket extending from said pole, an electric bell secured to said bracket, a connecting-wire extending from each post of said bell, one connecting-wire being led to one of said conductors the remaining connecting-wire being led to the other electric conductor, a pivotally-held receiving-roller connected to said bracket, a connecting-wire extending from said receiving-roller to one of said electric conductors, a spring to normally hold said receiving-roller in a pendent condition, an arm supported by said bracket, but insulated therefrom, a pendent pivotally-held transmitting-roller supported by said insulated arm, a spring to normally hold said transmitting-roller in a pendent position, a connecting-wire leading from said transmitting-roller to the remaining electric conductor so that the receiving-roller is connected to one electric conductor and the transmitting-roller to the other electric conductor, a contact-making rail carried by a suitable car adapted to come into contact with said receiving-roller, a second contact-making rail carried by said car adapted to come into contact with said transmitting-roller, a battery-provided electric bell within said car, a connecting-wire led from one post of said last-mentioned electric bell to said first-mentioned contact-making rail, and a second connecting-wire led from the remaining post of said last-mentioned electric bell to said last-mentioned contact-making rail.

2. In a device of the character described, the combination with a suitable pole, of two electric conductors supported by said pole, a bracket extending from said pole, an ear supported by said bracket, a stop-bar depending from said bracket, a rock-bar pivotally secured to said ear, and held by said stop-bar, a bell-crank pivotally secured to said pole, a connecting-rod extending from one end of said bell-crank to said rock-bar, a pivotally-held lever secured to said pole, a connecting-rod extending from the remaining end of said bell-crank to the upper end of said lever, said lever being adapted to be normally

held in a vertical position, a bar extending
from the lower end of said lever and being se-
cured to the lever of a suitable switch, a con-
tact-making button secured to said bracket, a
5 connecting-wire extending from said button
to one of said electric conductors, a spring-
pressed button secured to said rock-bar and
adapted to come into contact with said first-
mentioned button, a suitable battery, a con-
10 necting-wire extending from one post of said
battery and being secured to said spring-
pressed button, a frame secured to said rock-
bar, a roller secured within said frame, and a
connecting-wire extending from the remain-
15 ing post of said battery and being led to one
of said electric conductors said connecting-
wires being so arranged that said last-men-
tioned connecting-wire is secured to one of
said electric conductors while said connect-

ing-wire extending from said first-mentioned 20
button, is secured to the remaining electric
conductor, all arranged substantially as and
for the purposes set forth.

3. In a device of the character described,
the combination with a plurality of cars, of 25
two distinct contact-making rails secured to
each car all of said contact-making rails be-
ing in electric connection, the rails upon the
first car being curved downward and being
provided with a buffer such as a rubber cush- 30
ion all arranged substantially as and for the
purposes set forth.

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

JAMES S. ANDERSON.

Witnesses:

VICTOR SEITZ,
WM. E. SMILS.