

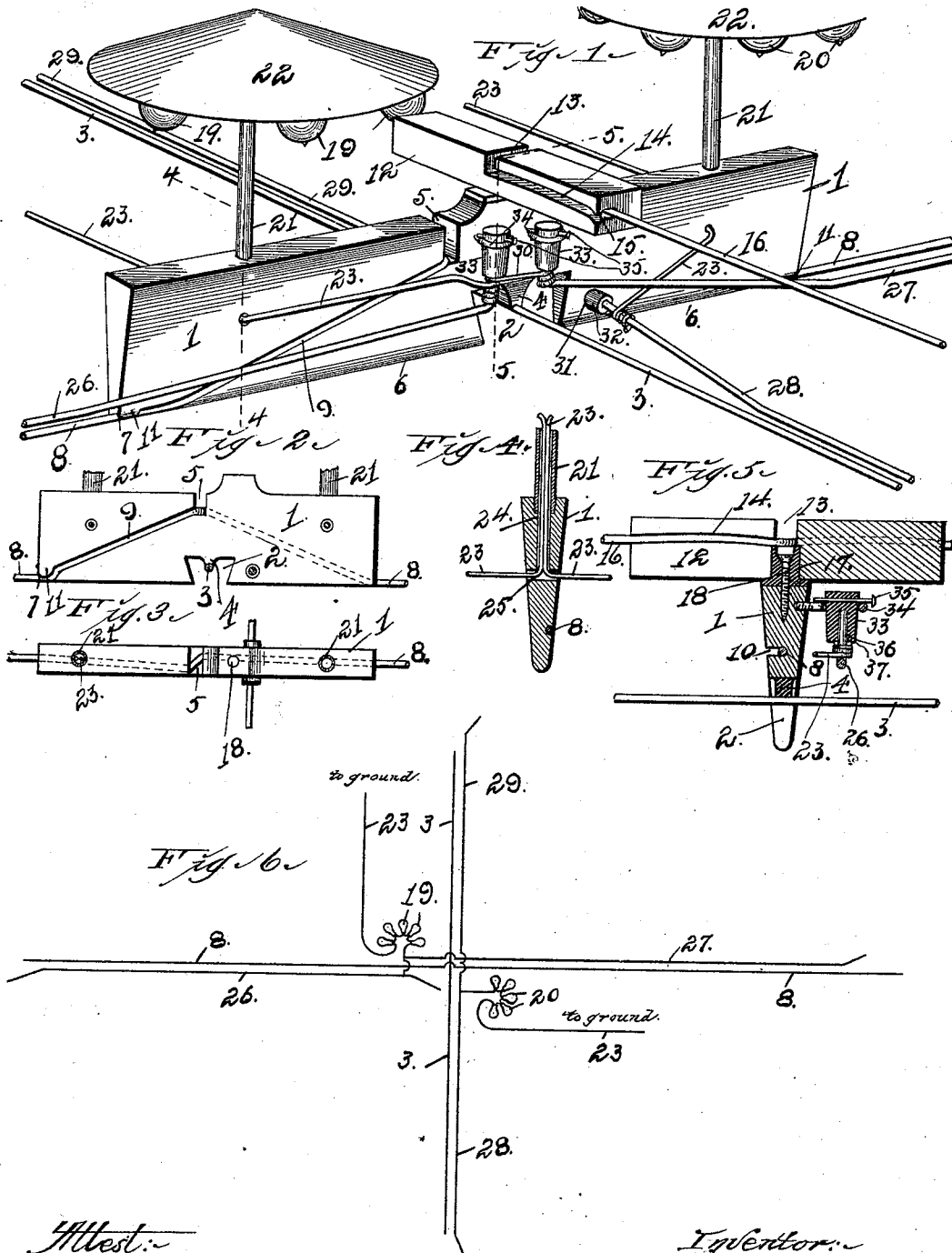
(No Model.)

2 Sheets—Sheet 1.

D. W. SMITH.
ELECTRIC SIGNAL FOR RAILWAY CROSSINGS.

No. 529,759.

Patented Nov. 27, 1894.



Attest:
M. P. Smith
Arthur A. B. Smith

Inventor:
Daniel W. Smith
By Higdon & Higdon Longan.
Attys

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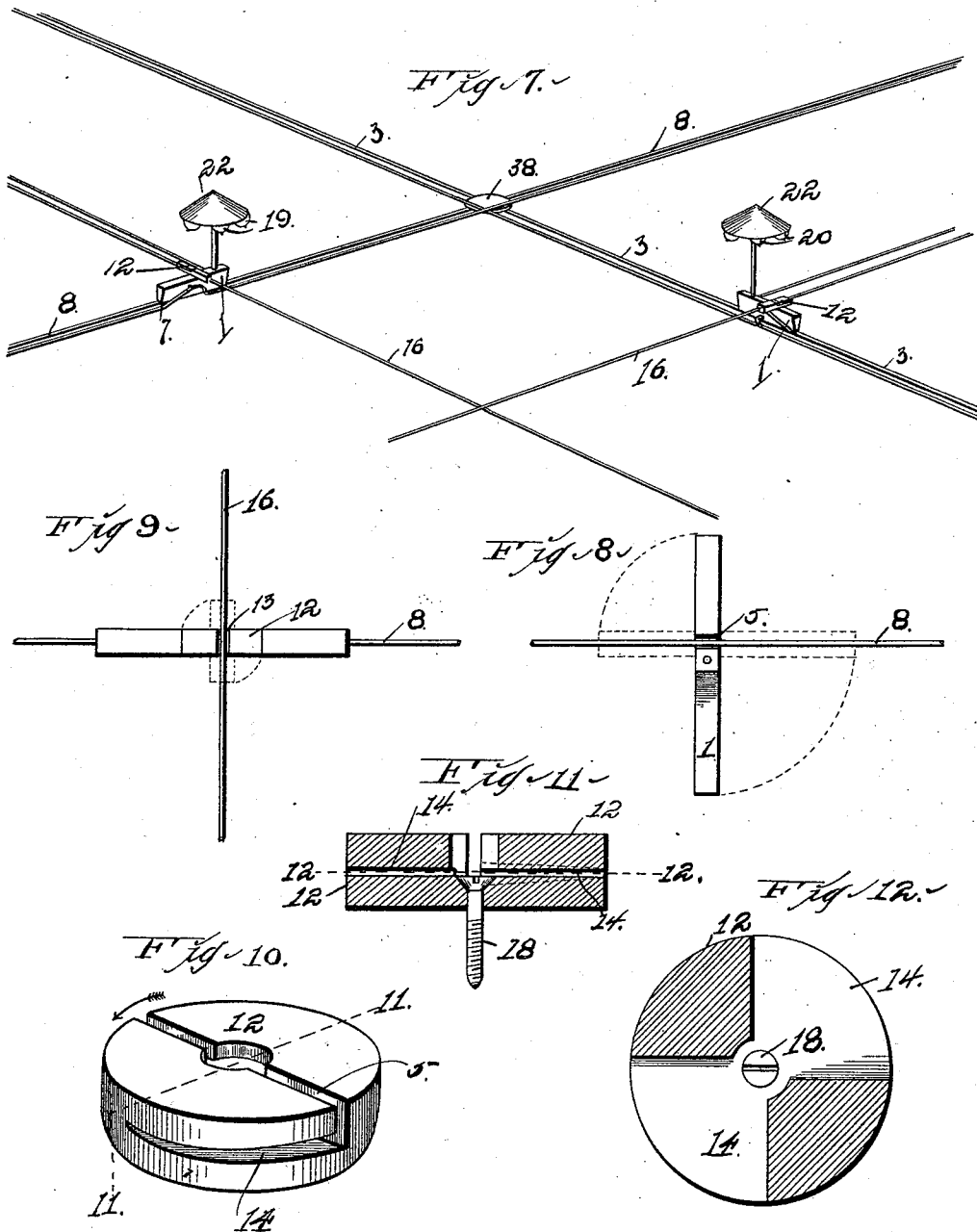
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Inventor:
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UNITED STATES PATENT OFFICE.

DANIEL W. SMITH, OF ST. LOUIS, MISSOURI, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF TWO-THIRDS TO ALFRED BEVIS AND CHARLES H. LONGSTRETH, OF SAME PLACE.

ELECTRIC SIGNAL FOR RAILWAY-CROSSINGS.

SPECIFICATION forming part of Letters Patent No. 529,759, dated November 27, 1894.

Application filed September 10, 1894. Serial No. 522,557. (No model.)

To all whom it may concern:

Be it known that I, DANIEL W. SMITH, of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Electric Signals for Railway-Crossings, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in electric signals for railway crossings, and consists in the novel construction, combination and arrangement of parts, hereinafter described and designated in the claims.

The object of my invention is to provide an improved electric signal for the crossings of street railways of all kinds and railways operated by steam, or other motive power, whether of the single or double track form, whereby illuminated signals will be displayed at the road crossings, which signals are connected to a trolley or supply wire extending along the track, the signal wire extending closely adjacent and parallel with the trolley or supply wire but electrically separated therefrom, and in condition to be connected to the trolley wire and maintained in connection therewith by the passing trolleys during the approach of the vehicle which carries the trolley, there being a separate signal wire on each side of the crossing point and extending a suitable distance from said point.

A further object of my invention is to reduce the expense of maintaining signals at railway crossings, and simplify the mechanical and electrical connections of the conductors at such points, so that said conductors may be quickly placed in position and removed when repairs are necessary.

Referring to the drawings: Figure 1 is a perspective view of an overhead trolley wire crossing having my invention applied thereto. Fig. 2 is a side elevation of my improved crossing-clamp detached. Fig. 3 is a plan view of said crossing-clamp. Fig. 4 is a sectional end elevation of the same on the line 4—4 of Fig. 1. Fig. 5 is a sectional end elevation on the line 5—5 of Fig. 1. Fig. 6 is a diagrammatic view of the electrical connections. Fig. 7 is a perspective view of two in-

tersecting trolley wires supposed to belong to two separate railway corporations, illustrating the manner of mounting and connecting a separate signal for each railway line to operate independently of the signal of the other line. Fig. 8 is a plan view of the crossing-clamp, illustrating the manner of operating the same in securing the trolley wire thereto. Fig. 9 is a plan view of the same in proper position upon the trolley wire and illustrating the manner of securing the guy-wire to the guy-wire clamp. Fig. 10 is a detail view in perspective of the guy-wire clamp in a slightly modified form. Fig. 11 is a section through the same on the line 11—11 of Fig. 10. Fig. 12 is a sectional plan view of the same on the line 12—12 of Fig. 11.

1 indicates the crossing-clamp, which may be made of any suitable material and is provided at a point about midway of its length and upon its under edge with a recess or depression 2, through which passes the trolley wire 3 of an intersecting road, and in case said clamp is not made of insulating material, a suitable body of insulation 4 is located in said depression and secured to said trolley wire, as shown in Figs. 1, 2 and 5. This body of insulation is tapered downward, so that its lower end is of the same size as the said trolley wire, whereby the trolley-wheel (not shown) carried by the car or other vehicle may pass under it, or over it. Of course in the ordinary overhead systems the trolley-wheel will pass under it, but in case of a conduit electric railway, the crossing-clamp shown in Fig. 1 will be inverted so the trolley-wheel will pass over it.

Formed in the edge of the crossing-clamp 1 at a point about opposite the recess 2 is a lateral recess or depression 5, the corners of which are sharp or angular for a purpose that will be hereinafter mentioned.

The edge 6, of the clamp 1, which is opposite the edge in which the recess 5 is formed, is rounded and at the outer ends of said rounded edge is formed a depression 7 for the reception of the trolley wire 8 of the intersecting line, and formed in one of the vertical sides of said clamp is a groove or depression 9, which extends obliquely from the

depression 7 to one side of the depression 5 in the opposite edge of said clamp, and formed in the opposite side of the latter and extending obliquely from the other side of said depression 5 to the depression 7 on that side of the clamp is another oblique groove 10 similar to the one first mentioned, so that when it is desired to secure the clamp to the trolley wire, or vice versa, all that is necessary is to place said wire in the lateral depression 5 in the manner shown in Fig. 8, then turn said clamp to the position indicated by dotted lines in said figure and as shown in solid lines in Fig. 9, and said wire will be bent laterally and be made to engage the groove 9 on one side of said clamp and the groove 10 on the opposite side thereof and engage in the recess 7 at the ends of said clamp, and the lug or projection 11 and the side of said recess or depression 7 will securely retain said trolley wire in position.

Pivotally mounted upon the crossing-clamp 1 is a guy-wire clamp 12 made of any suitable material, preferably in the form of a rectangular block having a transverse recess 13 in its upper side and a longitudinal groove 14 in its opposite vertical sides. The groove 14 on one side of said guy clamp extends from the transverse recess 5 to one end of said clamp and a like groove 14 in the opposite side of said clamp extends from said recess 5 to the opposite end of said clamp. The said clamp is thus grooved on opposite sides for a portion of the length of each of said sides. At the outer end of the groove 14 on each side of said clamp 12 is a lug or projection 15 which extends into said groove for the purpose of retaining the guy-wire 16 in said groove at said point and for obviating its accidental displacement. When it is desired to secure the guy-wire 16 in the guy-clamp 12, or to secure the latter to the guy-wire, all that is necessary is to place the said wire in the transverse recess 5 of said clamp while said parts occupy the position at a right angle to each other, and then turn said clamp as indicated in Fig. 9 until it occupies a position parallel with said wire, and the lugs or projections 15 at the ends of the grooves 14 will securely retain the parts in the position just described. (See Fig. 1.)

In case it is desired to insulate the guy-clamp 12 from the crossing-clamp 1, I locate a body of insulation 17 between the said two clamps and pass a common screw or bolt 18 through said body of insulation into the upper edge of the crossing-clamp 1. (See Fig. 5.) However, any common means may be employed for securing the guy-clamp to the crossing-clamp.

The grooves 14 in the guy-clamp 12 are preferably slightly curved upward as shown in Fig. 5, as I have found that by so doing the wire will be held more securely against longitudinal movement in the clamp during use.

In Figs. 10, 11 and 12, I have illustrated the wire clamp 12 in a slightly modified form, the

same being there shown circular in plan view, and having the transverse recess 5 and the opposite grooves 14 extending in opposite directions from opposite ends of said transverse recess, the only substantial difference being that the said grooves 14 in the device shown in Figs. 10, 11 and 12 are tapered from one end to the other, so that the wire will be securely held in position by the converging walls of said grooves when the device is turned in the direction indicated by the arrow in Fig. 10.

It is obvious that I may use the clamp 12 for any suitable purpose and in any suitable position for holding a wire in position, and I have found that it is a very convenient and efficient ceiling block or rosette in wiring buildings, as it can be quickly attached and detached.

19 indicates a series of signal electric lamps for use in connection with the trolley wire 8, and 20 indicates a similar series of lamps for use in connection with the trolley wire 3. Of course I may make use of only one lamp for each trolley wire. These lamps may be located adjacent the crossing in any common manner, but they are preferably located as herein shown mounted upon a tubular standard 21 secured upon the upper edge of the crossing-clamp 1 and surmounted by a suitable shade or reflector 22 with one series of lamps at one side of the trolley wire 3 and the other series of lamps at the opposite side of said trolley wire.

The standards 21 preferably have their lower ends threaded into the upper edge of said clamp 1, and the conductors 23 of said lamps extend through the bore of said standards, and have their upper ends connected to said lamps in the usual manner. Said conductors 23 pass downward through a vertical passage 24 in said clamp and pass outward through a lateral passage 25, and one of them marked "to ground" is to be connected to the ground in any common manner.

26 indicates the signal-wire for the trolley wire 8 and said signal-wire extends parallel with the said trolley wire and closely adjacent the same for a suitable distance, but is electrically separated therefrom.

27 indicates the signal-wire for the trolley wire 3 on the opposite side of the crossing, and which is arranged in a manner similar to the signal-wire 26.

28 indicates one of the signal-wires for the trolley wire 3 of the line which crosses the trolley wire 8, and 29 the signal-wire for the trolley 3 on the opposite side of the crossing from the signal-wire 28. All the signal-wires are arranged substantially alike.

The signal-wires 26 and 27 are connected at a point above the trolley-wire 3 by means of a short wire 30, and the signal-wires 28 and 29 are preferably connected by being formed integral and passing through a transverse aperture 31 in the clamp 1.

If desired, a body of insulation 32 may sur-

round the signal wire 28 at a point where it passes through said aperture 31, for the purpose of electrically separating said wire from said clamp.

5 The lamps 20 of the trolley wire 3 have one of their conductors 23 connected to the signal-wire 28 at a point closely adjacent the crossing-clamp 1. (See Fig. 1.) The lamps 19 of the trolley wire 8 have one of their con-
 10 ductors 23 connected to the short wire 30 of the signal-wires 26 and 27 at a point closely adjacent said crossing-clamp 1, so that if a vehicle with a trolley-wheel approaches the crossing from either direction on the trolley
 15 wire 8, the lamps 19 will be illuminated, while if the trolley-wheel approaches the crossing from either direction on the trolley wire 3, the lamps 20 will be illuminated. By reason
 20 of the signal-wires extending a distance from the crossing, this illumination will take place a considerable period of time before the vehicle carrying the trolley-wheel reaches the crossing and persons will be correspondingly
 25 warned of the approach of the vehicle.

The inner ends of the signal-wires 26 and 27 are preferably secured to the crossing-clamp 1 by means of a pivotal connection, so that said wires may be swung outward without
 30 breaking them and without detaching them from the said clamp, when it is desired to attach or detach the trolley-wire 8, or the clamp itself. There are two of these pivotal con-
 35 nections shown, one for each of the signal wires 26 and 27. They may be composed of a body of insulation 33, preferably circular in cross-section and loosely mounted in a suit-
 40 able bearing 34 which embraces said body and is attached to the side of the crossing-clamp 1 at a point in a plane above the trolley wire, so that said body may freely turn in
 45 said bearing. A pin or bolt 35 is passed transversely through the upper portion of said body of insulation just above said bearing, so that its ends project on opposite sides of
 50 said body and rest upon said bearing to support said body in proper position. Formed in one end of said body of insulation 33 is a longitudinal bore or socket 36, in which is se-
 55 cured a vertical metallic pin 37, the lower end of which projects a distance below said body of insulation, and the adjacent trolley wire, the adjacent conductor 23 and the short wire 30 are connected to said pin. (See Fig. 5.)

In Fig. 7 I have shown two crossing-clamps, each of which is located a distance from the crossing-point and each having an independent signal connected to it, so that each line may operate its signal without using the cur-
 60 rent of the other line, as it sometimes happens that crossing lines are controlled by rival corporations, and, in such cases, it is essential that each line operate independent signals.

In Fig. 7, the numeral 38 indicates the common crossing usually located at the intersec-
 65 tion of two trolley wires. The remaining parts in Fig. 7 are constructed in the manner already described.

The operation is as follows: The trolley or contact device carried by the car runs upon the signal-wires 26, 27, 28 and 29 as the car
 70 approaches the crossing point, and the said wires will thereby be electrically connected to the trolley wires or conductors by being brought into contact therewith in a manner
 75 well understood. This will cause the signals to be illuminated and cut out at the proper time. They will normally be cut out and un-
 80 lighted. The manner of attaching the crossing guy-wire clamps and detaching them has already been described.

What I claim is—

1. An electric crossing-signal, comprising a bare conductor to be engaged by the trolley of a moving vehicle, a crossing bare conduc-
 85 tor arranged at an angle with respect to said first mentioned conductor, signal wires located parallel and adjacent to said conduc-
 90 tors but electrically separated therefrom and extending a distance on each side of the crossing point, so that a trolley approaching the crossing in either direction on either of said
 95 conductors may operate a signal, a signal connected to said signal-wires, and a crossing-clamp having locking grooves or recesses se-
 100 cured to one of said conductors solely by frictional contact and detachable therefrom by revoluble movement, substantially as herein specified.

2. The combination, with a crossing-clamp, of a supply conductor, an electric lamp mount-
 105 ed upon and supported by said clamp, and a supply conductor for said lamp, substantially as herein specified.

3. The combination, with a crossing-clamp, of two supply conductors arranged at an an-
 110 gle, two separate electric signals mounted and supported by said clamp, one at each side of one of said supply conductors, and signal-wires located parallel with but normally sepa-
 115 rated from said supply conductors and connected to said electric signals to illuminate one or both of the same when a car approaches the crossing point from either direction, sub-
 120 stantially as herein specified.

4. As an article of manufacture, a crossing-
 125 clamp provided at a point about midway of its length on one edge with a lateral recess or depression to be engaged by an electric conductor and with another recess in its op-
 130 posite edge about opposite said first mentioned recess, a locking projection at or near each end of said clamp for retaining the supply conductor in position without the use of bolts or screws, and oblique grooves or depressions formed in opposite sides of said clamp, one
 135 of which grooves extends on one side from the locking device at one end to one of the recesses at one edge of the clamp, and the other groove extending obliquely from the locking device at the opposite end of the clamp
 140 on the opposite side thereof to the same recess at which the other groove terminates, whereby the clamp may be attached and detached by revoluble movement without the use of

bolts or screws, substantially as herein specified.

5 5. The combination, with a crossing-clamp constructed with a lateral recess in its edge and grooves in its sides whereby it may be attached or detached by revoluble movement, of a guy-wire clamp constructed with a lateral recess and side grooves, whereby it may be attached to or detached from a guy-wire,

and means which pivotally connect said guy- 10 wire clamp to said crossing-clamp, substantially as herein specified.

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

DANIEL W. SMITH.

Witnesses:

E. E. LONGAN,
MAUD GRIFFIN.