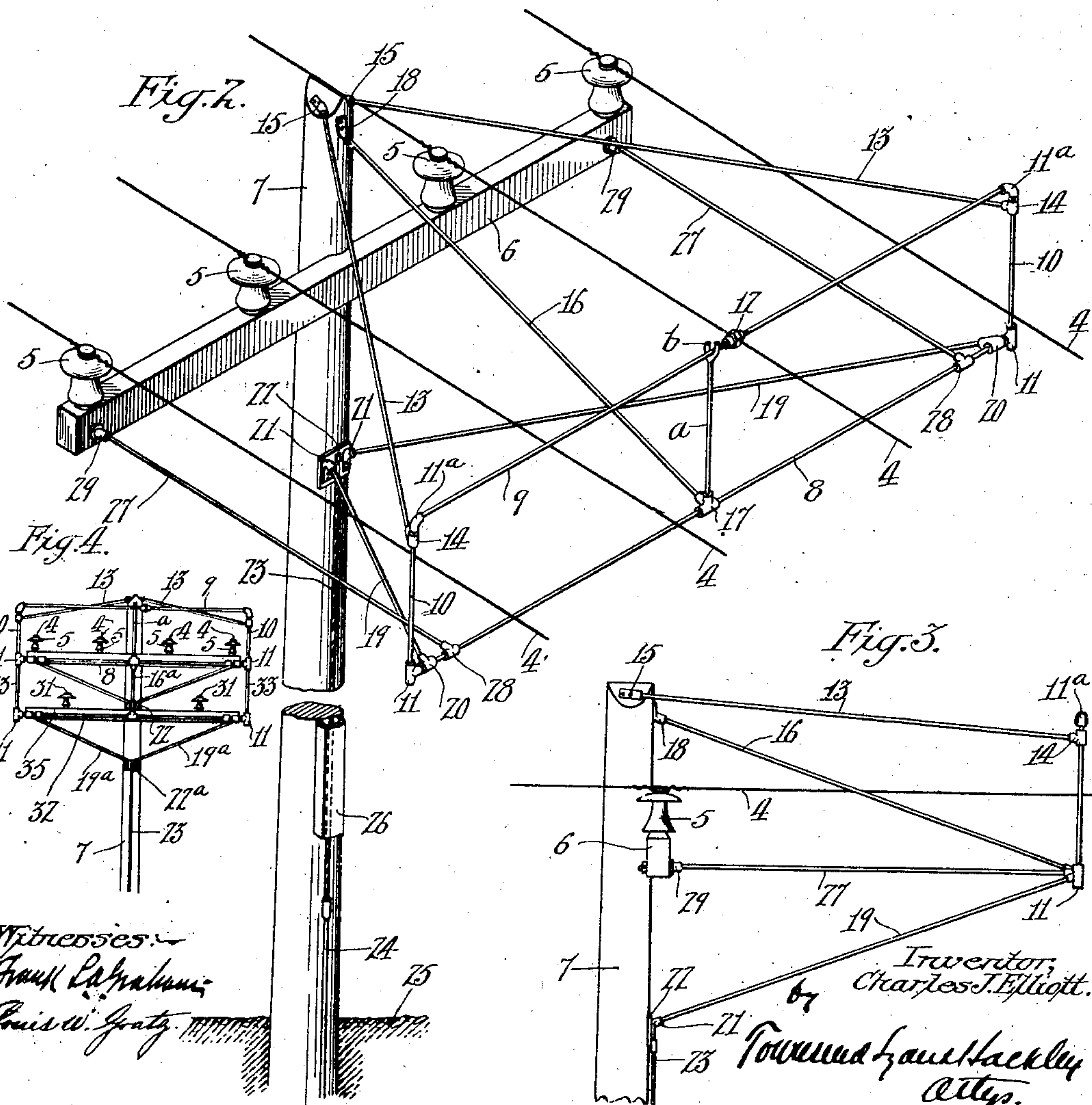
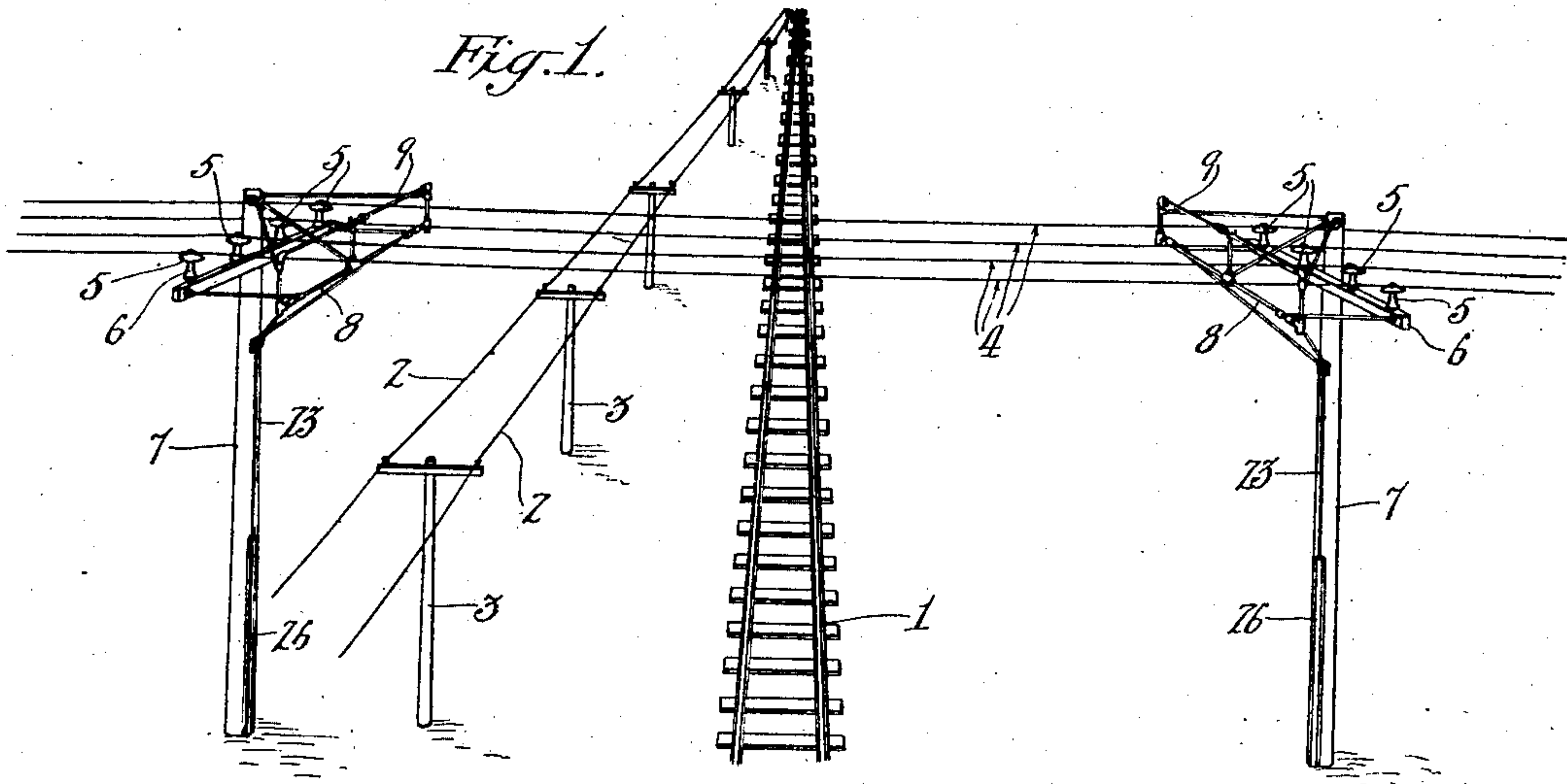


C. J. ELLIOTT.
 GUARD FOR TELEGRAPH AND TELEPHONE WIRES.
 APPLICATION FILED JUNE 4, 1908.

928,431.

Patented July 20, 1909.



UNITED STATES PATENT OFFICE.

CHARLES J. ELLIOTT, OF OXNARD, CALIFORNIA.

GUARD FOR TELEGRAPH AND TELEPHONE WIRES.

No. 928,431.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed June 4, 1908. Serial No. 436,693.

To all whom it may concern:

Be it known that I, CHARLES J. ELLIOTT, a citizen of the United States, residing at Oxnard, in the county of Ventura and State of California, have invented a new and useful Guard for Telegraph and Telephone Wires, of which the following is a specification.

This invention relates to a device adapted to be applied to poles or supports for wires carrying a high tension current at places where such high tension wires are strung in the air above and across telegraph or telephone wires, as, for example, along the line of a railway or in fact any telegraph or telephone line or any railway, roadway, or building which would be damaged or rendered unsafe if the high tension wires above them were to break and fall upon them, the object of the invention being to prevent such damage to the telegraph or telephone wires by means which will sever that section of the broken wire from its line so that it will fall to the ground and thus not hang in the air from its unbroken end where it would be apt to dangle against or lie upon the telephone or telegraph wires.

The means which I provide for severing a section of the broken wire comprises a guard which is in connection with the ground and against which guard the broken wire must strike and upon such wire striking the guard the arcing which will occur between the wire and guard will burn the wire through at said point where the wire strikes the guard, and thus detach the section of broken wire which had extended across above the telephone or telegraph wires the section thus severed being allowed to fall to the ground and as no current passes through it after it is severed it causes no damage.

The accompanying drawings illustrate the invention and referring thereto Figure 1 is a perspective view of a line of railway which is paralleled by a telegraph or telephone line and illustrating the same, overhead high tension wires which are strung across the railway above the telegraph and telephone wires, the posts supporting the high tension wires being equipped with the guards forming the invention. Fig. 2 is an enlarged perspective view of a pole and support for the high tension wires showing the guard as applied thereto and connected with ground an intermediate portion of the pole being broken away to contract the view. Fig. 3

is an enlarged side elevation of a portion of the pole which carries the guard and shows the construction and relative arrangement of the guard and high tension wires. Fig. 4 is a front elevation showing another guard attached to the upper guard for supporting a lower set of wires.

1 designates a line of railway which is paralleled by telegraph wires 2 carried on poles 3. Obviously the wires 2 need not necessarily be wires which extend along the side of a railway as they might be telephone or telegraph wires which extend along a thoroughfare or even in outlying districts.

4 designates a set of wires carrying a high tension current which wires are supported in the usual manner by insulators 5 on arms 6 fixed to the poles 7, the wires 4 lying above and extending across the line of wires 2. It is preferable to provide each pole 7 with a guard.

The guard comprises a rectangular frame having a lower horizontal rod 8 and an upper horizontal rod 9 which are united by vertical rods 10. This frame as well as its supports may be easily constructed of gas pipe which will afford a stiff and rigid frame work of low cost and the various parts may be readily joined together by such connections as are usually employed in securing the joints of gas pipe. For example, the vertical rods 10 are secured at their lower ends by tees 11 to the rod 8 and are secured at their upper ends by elbows 11^a to rod 9. The upper rod 9 is formed in two sections united near the center by a union 12 which enables the upper part of the frame to be opened for a purpose to be described. The rectangular frame is supported in such a manner that the high tension wires 4 pass through it without coming in contact with it the frame being of sufficient size to permit the sag in wires 4 and any swinging motion which they may have without allowing them to come in contact with the frame while they are unbroken. The frame is supported by two upper rods 13 which are connected by tees 14 with the upper ends of the respective vertical rods 10, the other ends of rods 13 being secured by socket connections 15 to the upper end of the pole 7. A rod 16 is connected by a tee 17 with the center of rod 8 and at its other end is secured by a socket connection 18 with the upper end of pole 7. A vertical rod *a* extends up from the tee 17 and its upper end has a saddle *b* which supports the upper rod

9 and yet allows the two sections of rod 9 to be swung out when desired. A pair of strut rods 19 are connected by tees 20 with rod 8 and at their inner ends are secured by socket connections 21 to a metal plate 22 which is secured to the pole. A cable 23 extends from the plate 22 down along the pole 7 and connects with a copper rod 24 which extends into the ground 25 for a sufficient distance to lie in moist earth so that a good connection is established with the ground. A conduit 26 incloses the upper portion of rod 24 and part of the cable 23 for several feet above the ground so that persons are protected from it if it should be charged as will be described. A pair of rods 27 are connected by tees 28 with the rod 8 and their rear ends pass through socket connections 29 at the respective ends of the cross arms 6, and are secured by nuts as shown in Fig. 3. The members or bars 13, 19 and 27 constitute a bracket or supporting means for holding the conducting frame 9 away from the pole, this supporting means or bracket extending lengthwise of the wires 4 and in case of two poles on opposite sides of the way to be protected said brackets or supporting means extend from each pole toward the other pole. The object of this outward suspension of the directing frame is to insure the contact of the wire 4 with said frame, it being obvious that the farther the frame is supported away from the pole the less the wire will have to bend to make the grounding contact.

The object of the union 12 is to enable the two sections of the rod 9 to be swung out to permit the guard, with its attached supporting rods, to be moved up from below and secured in place without disturbing the wires already attached to the cross arm, then the sections of rod 9 may be closed above the wires.

If one of the high tension wires 4 should break, say, for example, near one of the insulators, its first movement would be an upward and backward snap or whipping action due to the reaction on account of its tension which upward swing might possibly cause it to strike the upper rod 9 whereupon the poor contact with frame 9, which latter is in connection with the ground would cause arcing to occur which would almost immediately sever the copper wire 4 and the severed section would drop to the ground. If in its upward swing the wire did not swing high enough to touch the upper rod 9 its next movement would be downward and before the free end of the broken wire would reach the ground its portion near the opposite guard would strike the lower rod 8, whereupon the arcing will occur and the copper wire be immediately burned through, whereupon the section would fall to the ground. Thus when a high tension wire breaks it is bound to strike some one of the

rods of the guard, as the guard completely surrounds it and therefore it is sure to be severed so that the telegraph or telephone wires which are underneath will not be injured by the high tension wire. In addition to saving the telephone or telegraph wires it is apparent that danger to persons is eliminated, for without the guard the broken wire would hang down and persons touching it would be killed or seriously injured. With my invention, however, the wire is severed before it can drop far enough to injure any one, and as the severed wire carries no current it is harmless.

It will be understood that the term "high tension" is herein used to define any wire which carries a current such as electric lighting or power current whose voltage is such as to render it dangerous to life or property in case of contact, in distinction from telegraph, and telephone wires and is not limited to the stricter sense of the term "high tension."

At the time the broken wire strikes the guard, the circuit breaker in the line opens so that the line becomes dead, otherwise, without my invention, if the broken wire should strike a telegraph wire the telegraph wire would become highly charged and would injure telegraph operators at the key. The circuit breaker referred to is the one at the nearest source of supply. Thus in case of a break in a line supplied by a transformer at a sub-station, the circuit breaker at the transformer will act, while in the case of a break in a main line from a powerhouse, the circuit breaker at the powerhouse will operate. Another advantage of the invention is that it does not prevent other wires being attached to the pole. If one or more cross arms are subsequently added to the pole to support additional sets of wires, a guard may be put on for each set so added.

Fig. 4 shows the pole equipped with a lower cross arm 35 supporting lower wires 31. A lower guard comprising a horizontal rod 32 is connected to tees 11 by rods 33. The rod 32 is braced from the pole by a center rod 16^a and its lower corners are supported from the pole by braces 19^a. Thus the lower wires are inclosed by lower rod 8 of the upper guard and by the lower rod 32 and rods 33 of the lower guard. The tees 11 thus enable as many additional guards as desired to be attached in order, one under the other by connecting to the tees 11 and using merely the brace rods 16^a and 19^a. When the guards are thus arranged in multiple the cable 23 is lowered to connect with the lowermost plate 22^a and when thus connected is in electrical connection with the entire metal framework of the guards as the guards are in metallic connection. Should one of the lower wires break the section is

severed by the lower guard or by the lower rod 8 of the upper guard.

What I claim is—

1. The combination with a wire for supplying electric current, and a supporting pole for supporting said wire, of a guard frame surrounding said wire and means attached to the pole and extending from the pole lengthwise of the wire, and supporting said guard frame in position away from the pole, said guard frame consisting of a conductor and being grounded.

2. The combination with a wire for supplying electric current, and a supporting pole for supporting said wire, of a guard frame surrounding said wire and means attached to the pole and extending from the pole lengthwise of the wire, and supporting said guard frame in position away from the pole, said guard frame consisting of a conductor and being grounded, and a portion of said frame being movable to enable insertion of the wire.

3. In combination with the pole and cross arm supporting high tension wires, a metallic frame through which the high tension wires are adapted to pass, rods extending from the top of said pole to the upper corners of said frame, rods extending from the lower corners of said frame to a point on said pole below the cross arm, rods extending from the lower corner of said frame to the ends of said cross arm, a rod extending from the lower bar of said frame to the upper end of said pole, and means electrically connecting said frame with ground.

4. In combination with the pole and cross arm supporting high tension wires, a metallic frame through which the high tension wires are adapted to pass, rods extending from the top of said pole to the upper

corners of said frame, rods extending from the lower corners of said frame to a point on said pole below the cross arm, rods extending from the lower corner of said frame to the ends of said cross arm, a rod extending from the lower bar of said frame to the upper end of said pole, means electrically connecting said frame with ground, and a rod extending up from the lower rod of said frame and having a saddle which supports the upper rod of said frame.

5. In combination with a high tension wire, a device of the character described comprising a metallic frame through which the high tension wire normally extends without contact therewith, said frame having electrical connection with ground and adapted to cause severing of the high tension wire when the latter breaks and comes in contact with said frame, and tees in the lower corners of said frame forming means for attaching a second frame below the first frame.

6. In combination with a high tension wire, a device of the character described comprising a metallic frame through which the high tension wires pass, tees in the lower corners of said frame, another frame through which another set of high tension wires pass comprising a horizontal rod and vertical rods connecting the same with said tees, braces supporting the second frame, and a cable connected with the lower frame and grounded.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 28th day of May 1908.

CHARLES J. ELLIOTT.

In presence of—

G. T. HACKLEY,

FRANK L. A. GRAHAM.