E. L. WILLIAMS.

REINFORCED CONCRETE POLE.

APPLICATION FILED MAR. 31, 1910.

993,427.

Patented May 30, 1911.

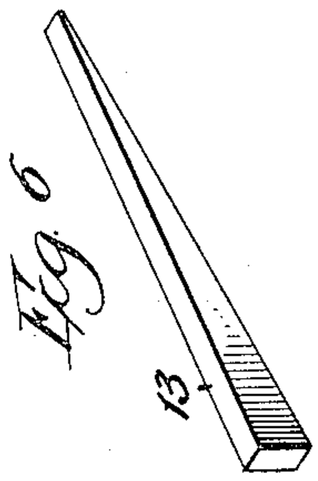
Fig. 6

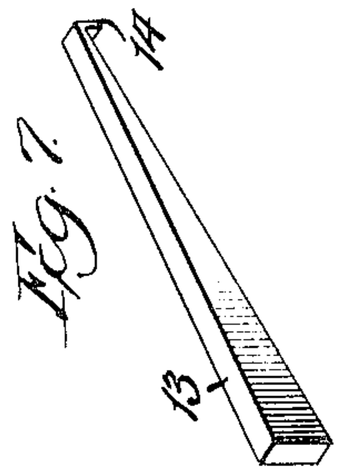
Fig. 7

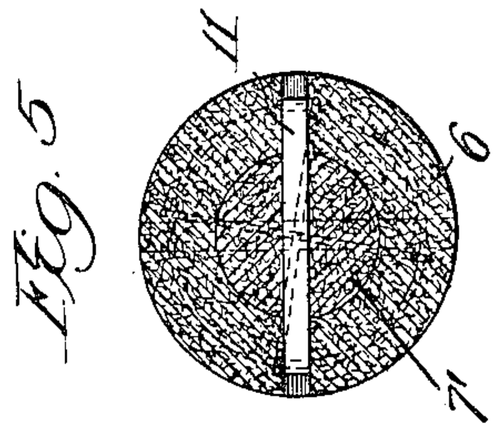
Fig. 5

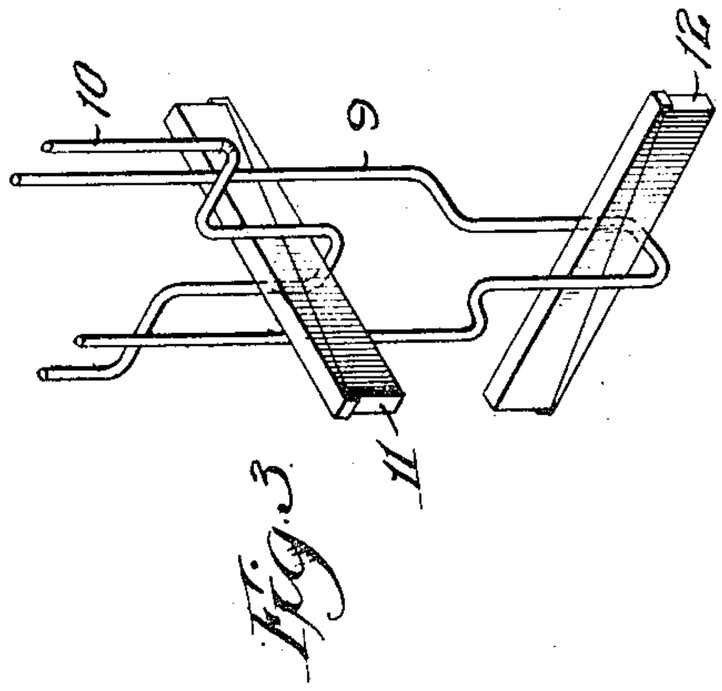
Fig. 3

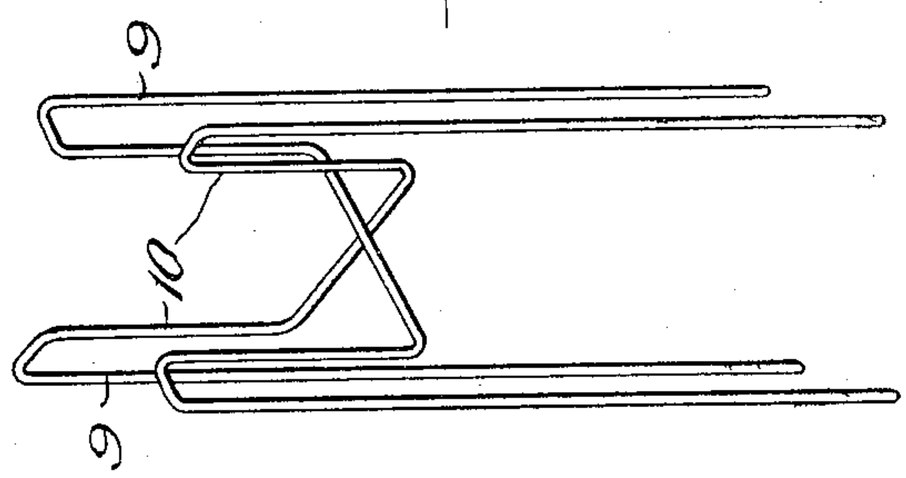
Fig. 4

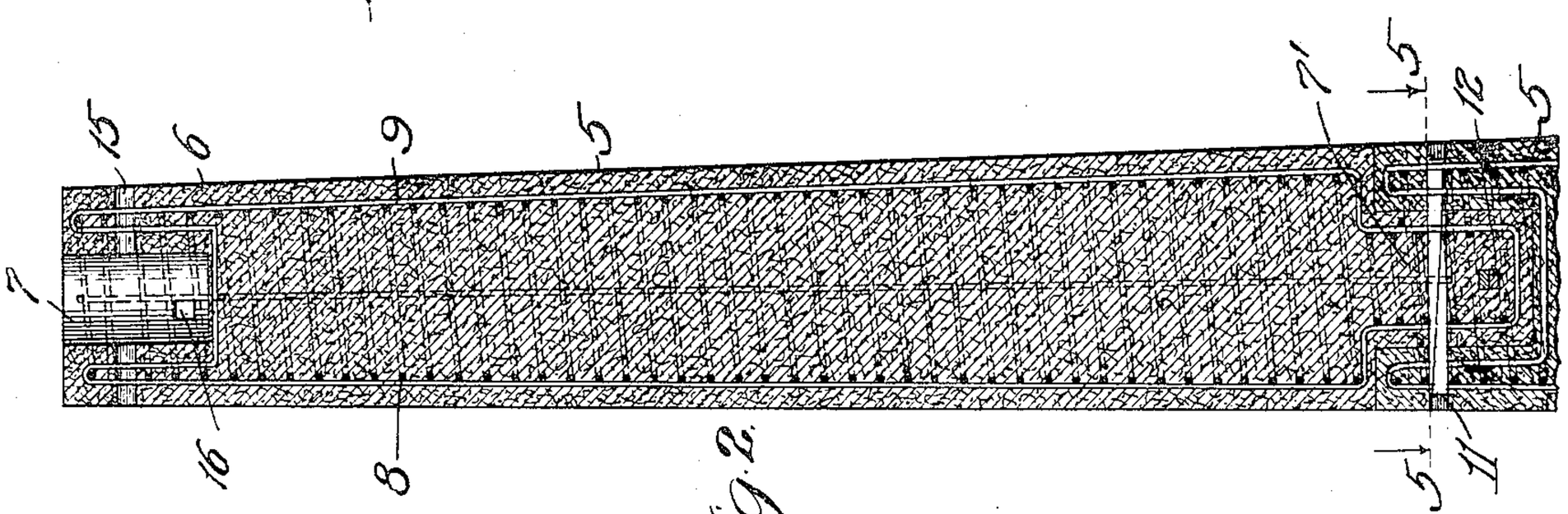
Fig. 2.

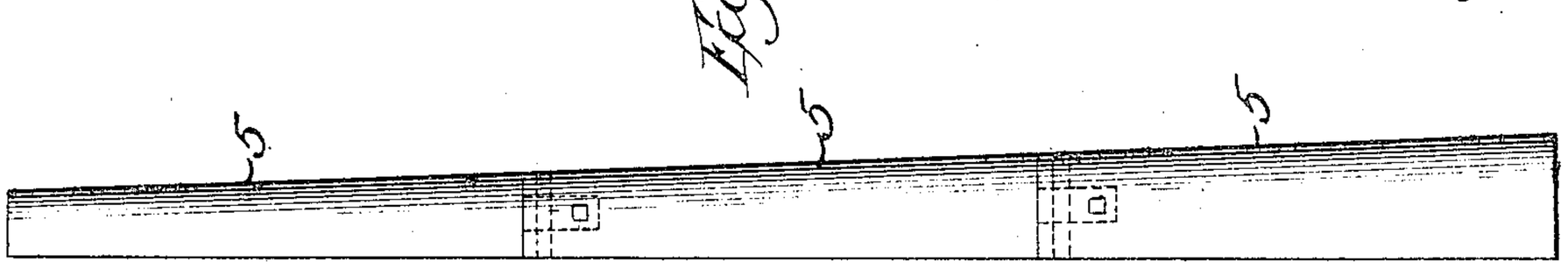
Fig. 1.

Witnesses:
Ed. C. Davies
A. J. Wilson

Inventor:
Edward L. Williams
By Smith, Hill & Fuller
Attys.

UNITED STATES PATENT OFFICE.

EDWARD L. WILLIAMS, OF IGERNA, CALIFORNIA.

REINFORCED-CONCRETE POLE.

993,427. Specification of Letters Patent. Patented May 30, 1911.

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To all whom it may concern:

Be it known that I, EDWARD L. WILLIAMS, a citizen of the United States, residing at Igerna, in the county of Siskiyou and State of California, have invented certain new and useful Improvements in Reinforced-Concrete Poles, of which the following is a specification.

My invention relates to reinforced concrete poles and aims to produce a pole which can be manufactured in sections, any number of which can be joined to form a pole of any preferred length.

While my reinforced pole may be employed wherever poles of any kind are used, it is particularly adaptable as a telephone or telegraph pole.

I am aware that reinforced concrete telephone poles have heretofore been used to a slight extent, but one of the chief objections thereto has been the inconvenience in handling and transporting them, due to their length and great weight. I have obviated this objectionable feature by providing a pole made up of sections, which may be manufactured separately of any desired length, suitable to be readily handled for purposes of transportation. The sections are so made that they may be inter-engaged, one with the other, and securely locked together; and by varying the number of sections employed, a pole may be constructed of any desired length. The sections may be either assembled on the ground before the pole is raised or the bottom section may be set in the ground and the superposed sections may be placed thereon one at a time.

My invention will be best understood by referring to the following description when taken in connection with the accompanying illustration of one specific embodiment thereof, while its scope will be more particularly pointed out in the appended claims.

In the accompanying drawings Figure 1 is an elevation of a sectional pole. Fig. 2 is a partial longitudinal section thereof. Fig. 3 is a perspective of the looped reinforcing members inside a projecting plug and showing the relative position of the locking pins thereto. Fig. 4 is a perspective of the looped longitudinal members which reinforce the socket walls. Fig. 5 is a section on line 5—5 of Fig. 2. Fig. 6 is a perspective of one of the wedge locking pins, and Fig. 7 is a similar view but showing the end bent over to engage its coöperating pin to lock it in position.

The pole comprises a plurality of sections 5 which can be manufactured independently and which are adapted to be joined together at their ends to produce a unitary structure. As many of these sections may be employed in constructing a particular pole as the length of the pole requires. Each section is composed of a concrete body portion 6 provided at one end with a socket 7, and at the other end with a projection or plug 7′, said plug and socket being the complements of each other, and of a standard size so that the ends of the sections may be jointed together by inserting the plug into a corresponding socket.

In order to provide rigidity to the pole and strengthen it against shearing and tensile stresses, it is essential that the concrete body portion be reinforced by some suitable strengthening means. I prefer to employ for this purpose a spirally coiled metal wire or rod 8, which is disposed longitudinally of the section and is embedded in the walls of the socket at one end and reduced in size and embedded in the plug at the other end. I have found that by employing a spiral reinforcing element in this construction a mechanical bond is attained between the reinforcing element and the concrete, superior to any other known form of reinforcing for this purpose.

In order to provide additional reinforcement, especially at the portions where the sections are joined, a reinforcing member 9 is disposed longitudinally of the section and outside the coil 8 following the contour of the reduced portion of the coil in the plug, and being looped back upon itself over the end of the coil in the socket walls, and embedded in the body portion of the section at the inner end of the socket. The ends of this reinforcing member may be joined thereby forming a continual reinforcing member at opposite sides of the socket wall, the projecting plug, and the main body portion of the section. Another longitudinal reinforcing member 10 is arranged preferably at right angles to the member 9, being looped upon itself in the walls of the socket similarly to the member 9 as shown in Fig. 4, and also embedded in the plug at the opposite end of the section. As is best shown in Fig. 3, the member 10 does not extend as

near the end of the plug as does the member 9, but is looped back about midway the plug for the purpose of receiving a locking pin 11, disposed at right angles to and above a similar locking pin 12, which passes through the looped end of the member 9, as shown in Fig. 2. Each of these pins comprises two similar wedge-shaped sections 13, which are adapted to be inserted into the transverse openings with which the socket walls and plugs are provided, from the opposite ends thereof. The wedge-shaped sections are driven firmly together until the smaller end on each section over-laps the large end of its coöperating section. These overlapping ends are then preferably bent downwardly as shown in Fig. 7, to prevent the sections from dis-engagement with each other. The driving of these wedge-shaped sections into the openings through the pole joints, firmly draws the sections of the pole together, and the tensile stress in the projecting plug set up by this wedging action of the locking pin sections when being driven in, is received and sustained by the longitudinal members 9 and 10, through the loops in which the locking pins extend. Both the plug and the walls of the socket are additionally strengthened by the spiral reinforcing elements 8, between the coils of which the locking pins are inserted.

In the manufacture of the individual pole sections they are provided with the plug at one end, the socket at the other, and the reinforcing elements as disclosed, and also the transverse locking-pin receiving openings 15 and 16 in the socket wall and corresponding openings in the projecting plug. It will be evident that the individual sections together with the locking pins may be readily conveyed to the place where the pole is to be set up. The sections may then be joined on the ground before the pole is raised, and securely locked together by the insertion of the locking pins, or the lower section may be set in the ground and the upper sections superposed thereon, one at a time. After the locking pins have been inserted and secured together by bending over the ends as heretofore described, the ends of the locking-pin-receiving openings will preferably be sealed up with mortar or cement in order that the pole may present a uniformly smooth surface.

From the foregoing it is thought that the construction and many advantages of the herein described invention will be apparent without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction may be resorted to without departing from the spirit of my invention or sacrificing any of the advantages thereof.

What I claim is:

1. A reinforced concrete pole comprising a plurality of sections, each section being composed of reinforced concrete and provided with an integral socket at one end and an integral concrete plug at the other end, a reinforcing element disposed longitudinally of the section and extending into said plug at one end and into the walls of the socket at the other end and looped back upon itself in said plug and in the walls of said socket, and means disposed through the integral plugs and sockets to lock the sections together to form an integral structure, substantially as described.

2. A reinforced concrete pole composed of a plurality of sections provided with plug and socket connections, means extending longitudinally of the sections for reinforcing the sockets and plugs, a loop formed in the ends of said reinforcing means, and a locking device extending transversely of the plug and socket connection and through the adjacent loops in the reinforcing means, for binding said sections together, substantially as described.

3. A reinforced concrete pole composed of a plurality of sections, provided with plug and socket connections, reinforcing means comprising spirally coiled and longitudinally looped reinforcing elements, and a locking device inserted through the loops, a reinforcing element of a socket and an interengaging plug and transversely of the plug and socket, to lock said sections together, substantially as described.

4. A reinforced concrete pole composed of a plurality of sections, a section thereof being provided at one end with a socket and at the other end with an integral centrally disposed plug, a spiral reinforcing element extending longitudinally of the section, disposed exteriorly of the socket and interiorly of the plug, and longitudinal members disposed adjacent the spiral element throughout its length, substantially as described.

5. A reinforced concrete pole, comprising a plurality of sections, one end of a section being provided with a socket, a plurality of looped reinforcing members disposed in the walls of said socket, the interengaging end of a contiguous section being provided with a projection engaged in said socket, a plurality of looped reinforcing members embedded in said projection, and means for locking said sections together, substantially as described.

6. A reinforced concrete pole composed of a plurality of sections, one end of a section being provided with a socket and the other end with an integral concrete plug, a plurality of reinforcing elements disposed longitudinally of the section and embedded within said plug and the walls of said socket, and locking means securing the ends of said sections together, comprising a plurality of wedge-shaped pins passed transversely

through the interengaging plugs and sockets, substantially as described.

7. A pole section, comprising a solid concrete body provided with a socket at one end and a plug at the other, a spiral reinforcing element disposed in said body and extending into the walls of the socket at one end and into the body of the projecting plug at the other, and a continuous reinforcing element extending in a longitudinal direction entirely around the perimeter of the section adjacent the coiled member and looped back upon itself in the body of the plug and in the walls of the socket to furnish reinforcing and locking provisions for the plug and socket, substantially as described.

EDWARD L. WILLIAMS.

Witnesses:
W. E. TEBBE,
FRED H. TEBBE.