

W. R. KINNEAR.

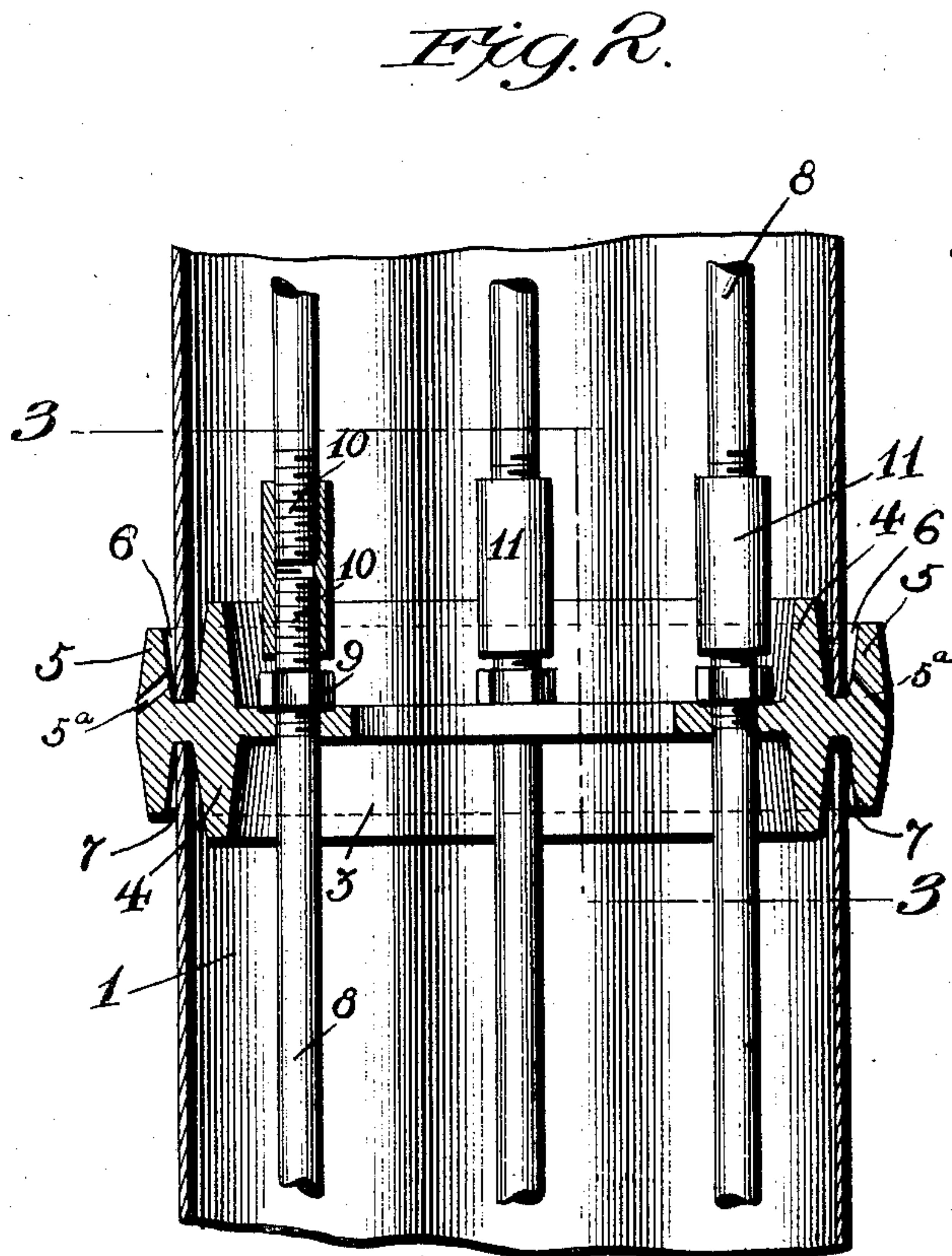
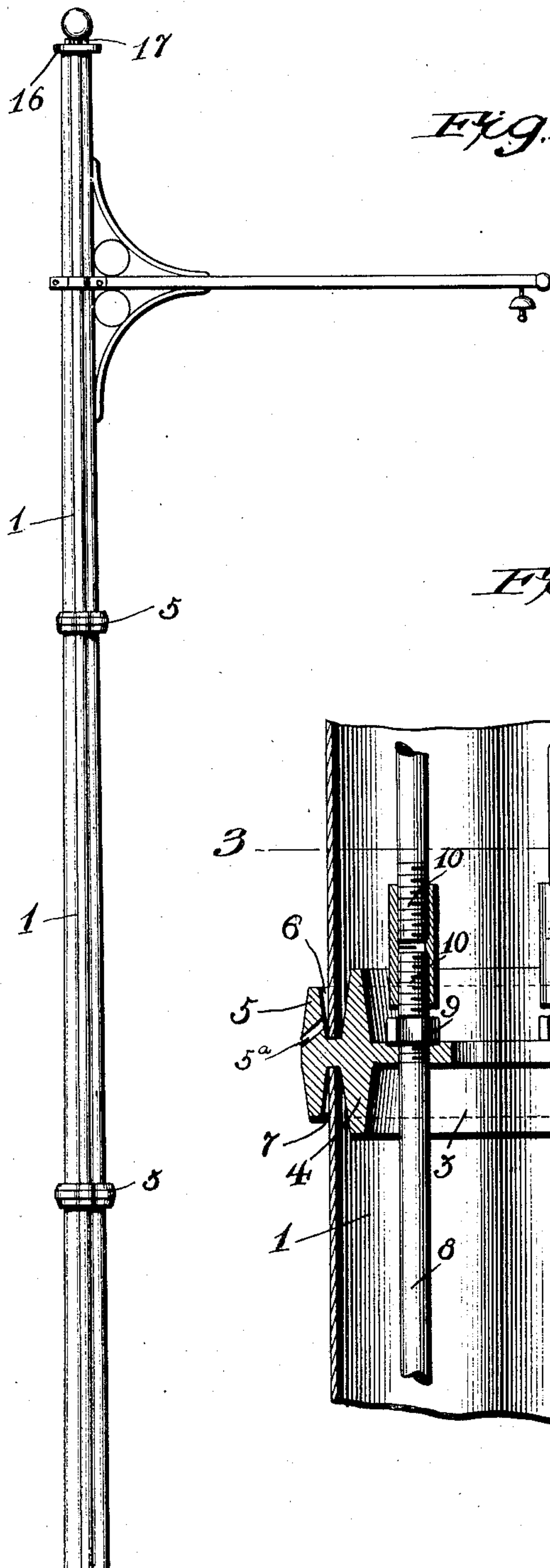
METALLIC POLE.

APPLICATION FILED AUG. 20, 1909.

Patented Oct. 25, 1910.

4 SHEETS—SHEET 1.

973,670.



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4 SHEETS—SHEET 2.

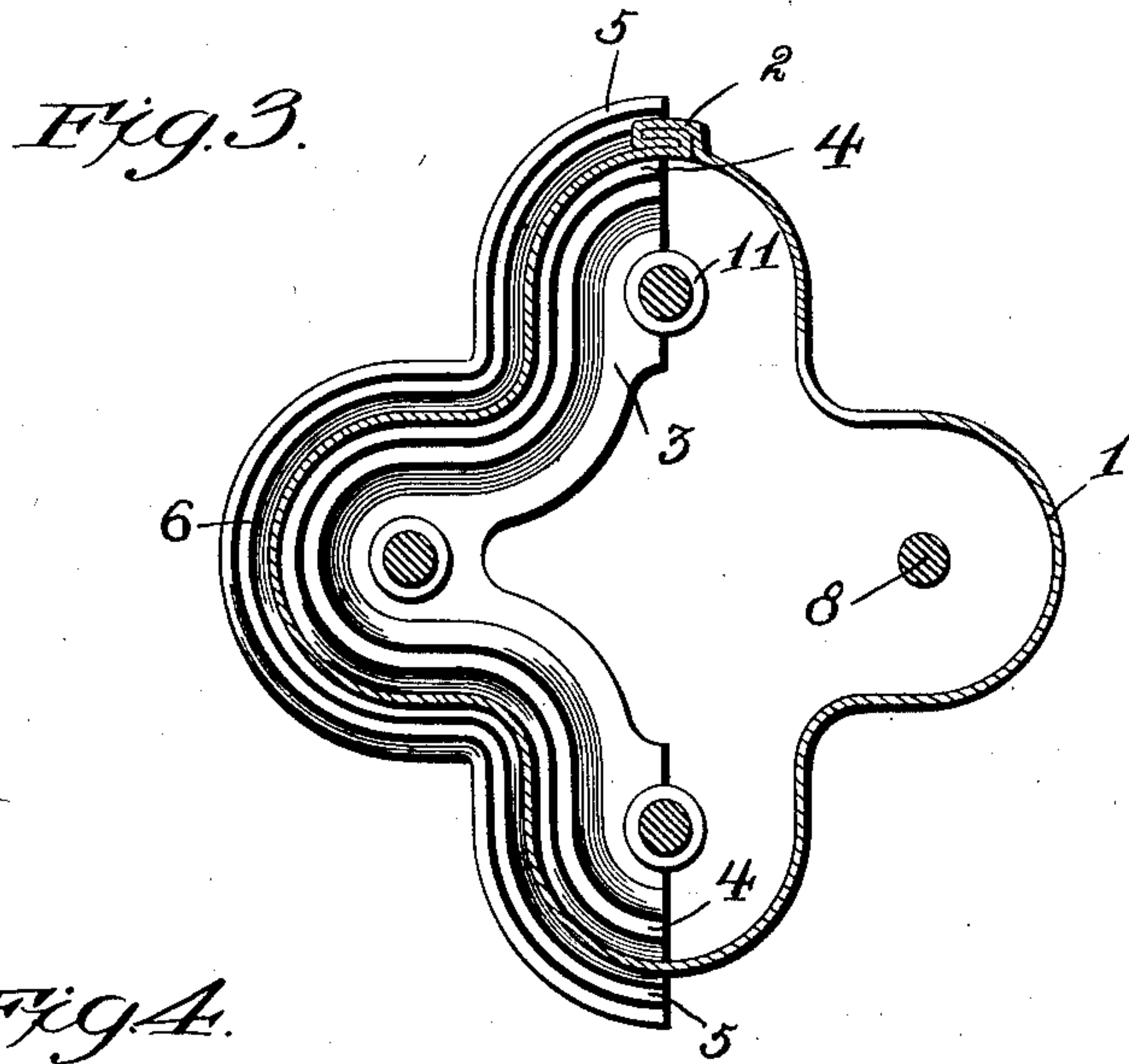


Fig. 4.

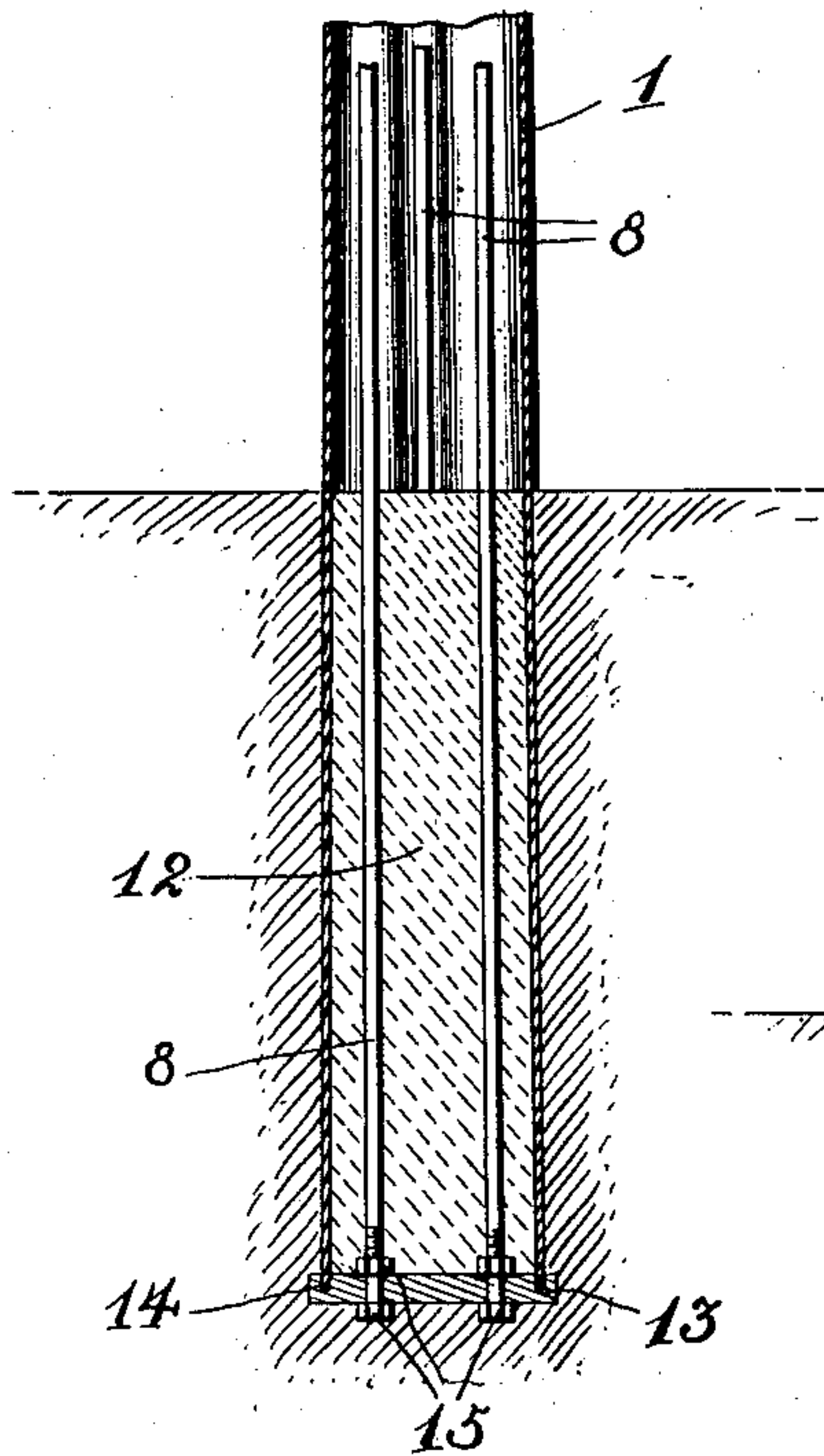


Fig. 6.

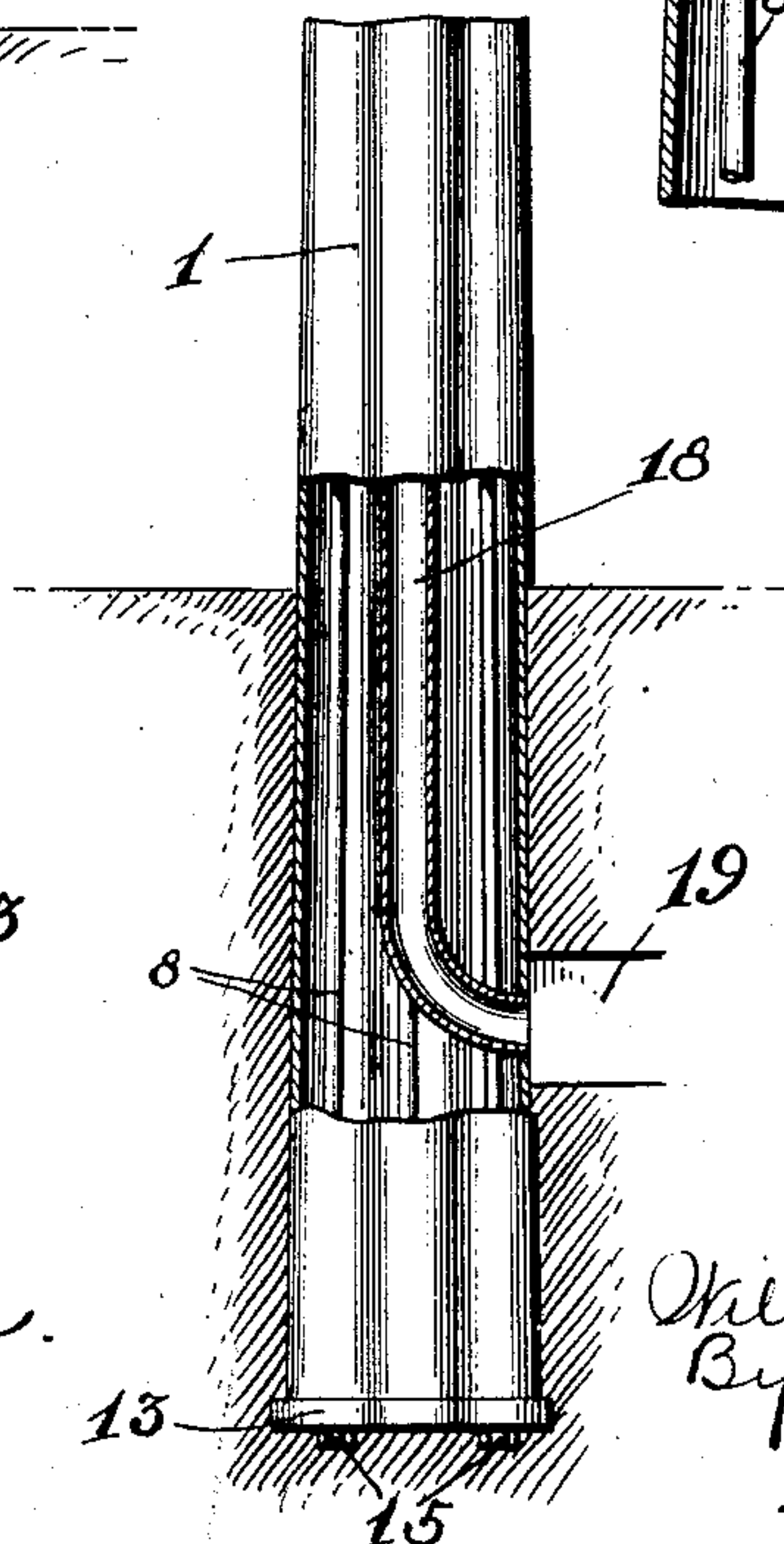


Fig. 5.

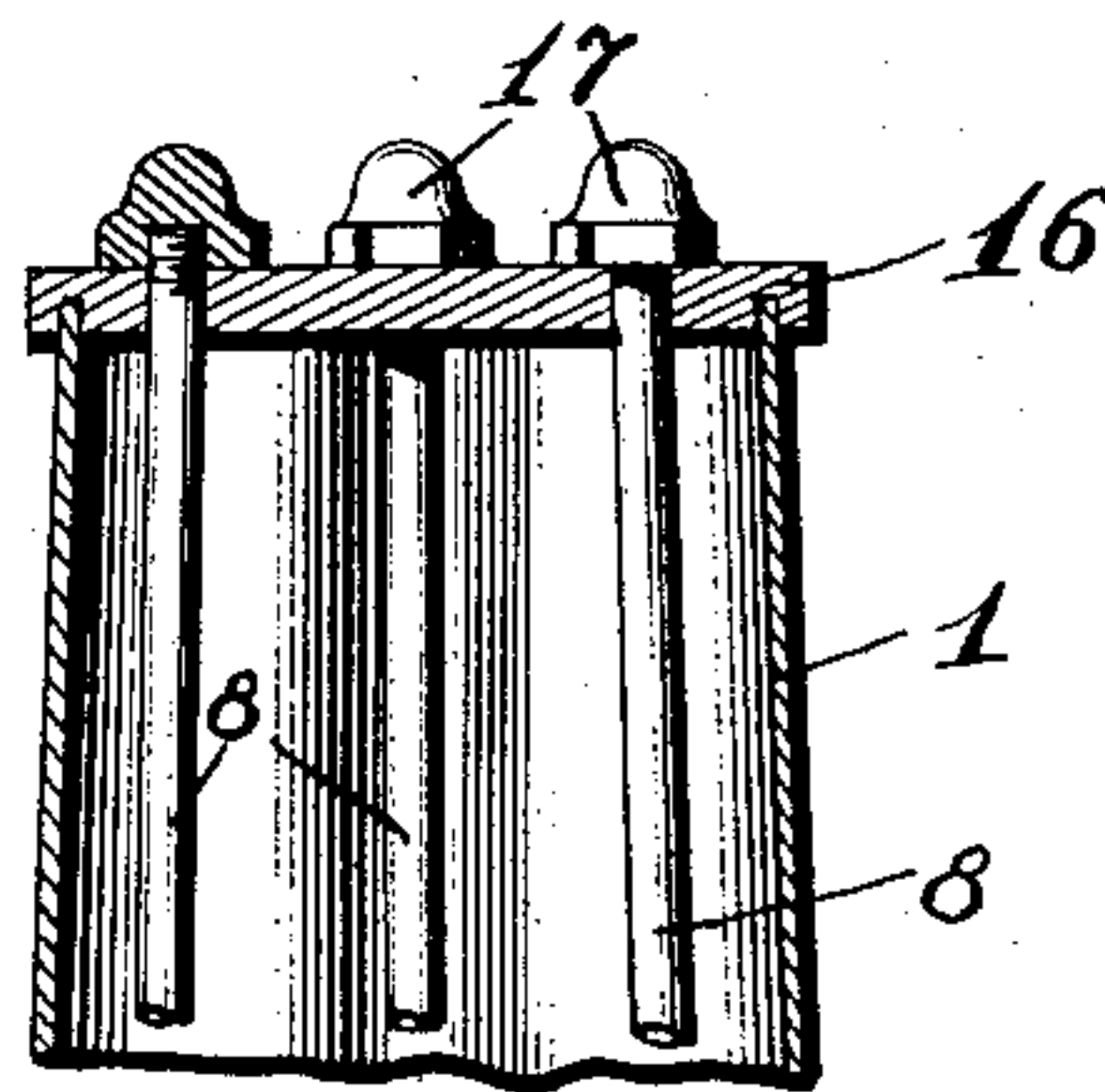
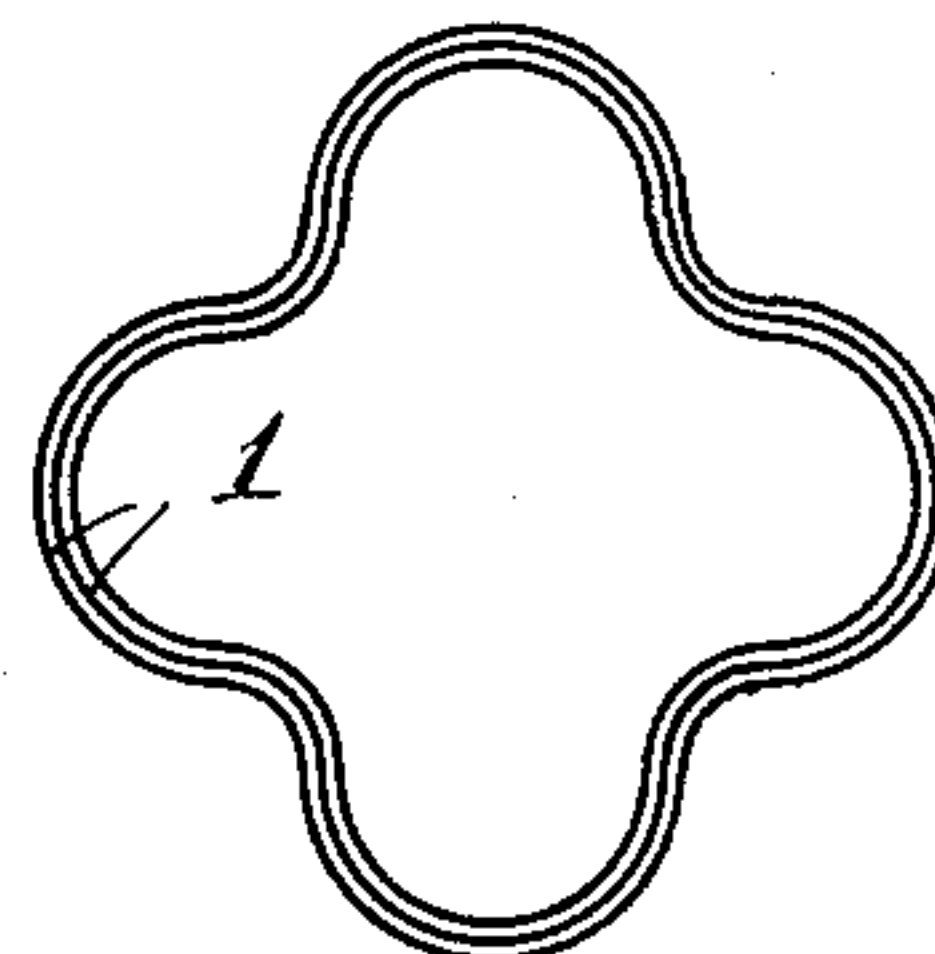


Fig. 7.



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METALLIC POLE.

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METALLIC POLE.

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4 SHEETS—SHEET 4.

Fig. 12.

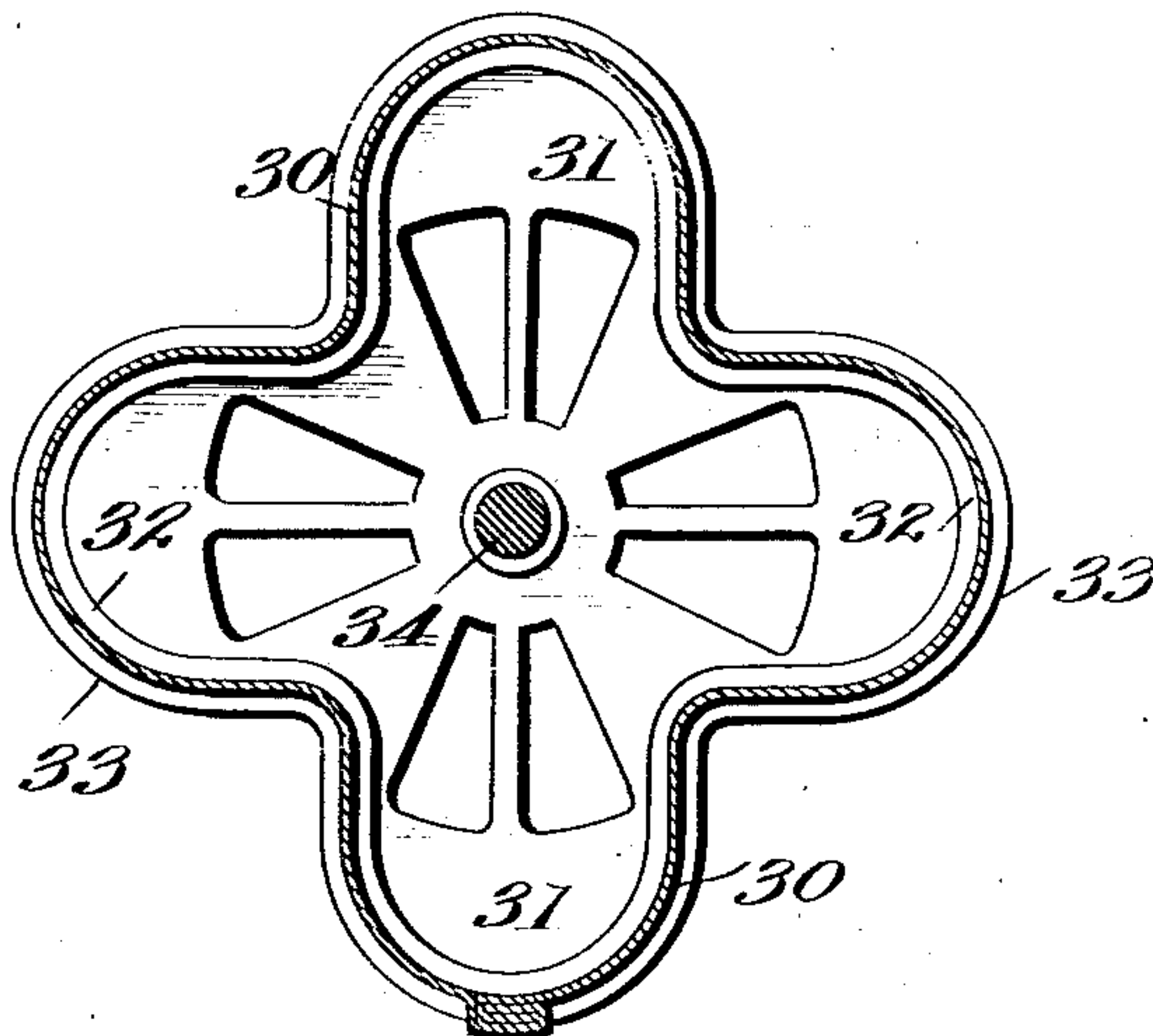
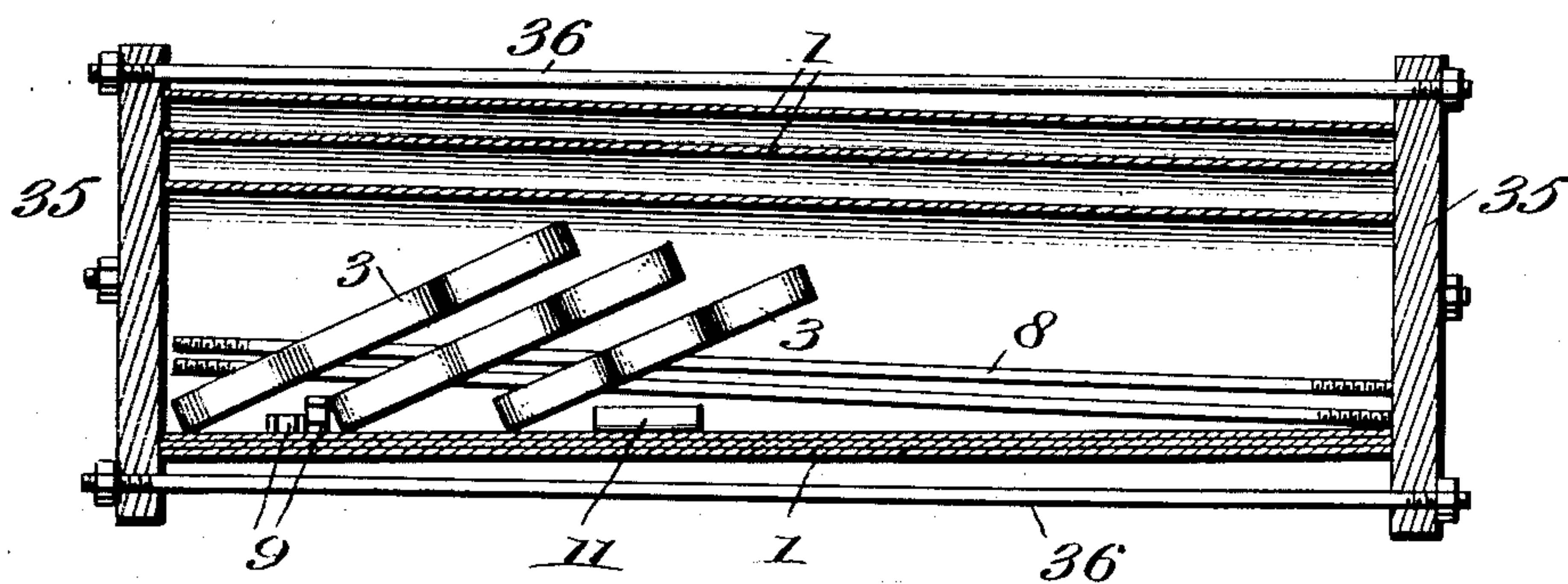


Fig. 13.



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UNITED STATES PATENT OFFICE.

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METALLIC POLE.

973,670.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM R. KINNEAR, a citizen of the United States, residing at New Castle, in the county of Lawrence and State of Pennsylvania, have invented certain new and useful Improvements in Metallic Poles, of which the following is a specification.

The present invention relates to metallic poles for telegraph, telephone and trolley service, and has for its purpose to provide a pole of that character made up of a plurality of sections which by their peculiar design and manner of assembling, constitute transversely rigid longitudinal compression members of an upright and rigid column suitable to readily withstand all the normal strains to which it may be subjected.

Another object is to provide abutment plates or union pieces interposed between adjacent ends of each two compression members and constructed to provide seats for said compression members, whereby the latter are held in alinement and sustained against outward or inward displacement or buckling.

A further object is to provide tension members for the column, which shall extend between and be connected to the end compression members. Said tension members are made to extend through the abutment plates but for convenience in shipment and also to adapt them to impose compression on each plate as assembled, said tension members are divided into sections and united by coupled sleeves. The compression members are preferably tapered so as to make the base of the column relatively wider than the head and in order that the assembled parts may have their walls in alinement, the larger end of one section corresponds in dimensions with the smaller end of the next lower section. The tension members are preferably given substantially the same inclination as the side walls; in other words, they are substantially parallel to the side walls so as to increase the rigidity of the structure.

The further purpose of the invention is to so construct the several sections of the pole that they may be telescoped for shipment, and wherein the reinforcing elements and connecting members may be contained within the telescoped sections.

A further purpose of the invention is to construct a pole of a number of sections

which are individually united by a peculiar seam which in addition to giving rigidity to the pole when the sections are assembled, further provides a means that will aid the linemen to climb the pole.

With these as the essential objects, my invention embodies other advantages that will be obvious from the following extended description and set forth in the claims.

The invention is shown in its preferred structure in the accompanying drawings, wherein,

Figure 1 is an elevation of a pole showing the sections assembled, Fig. 2 is a detail sectional view showing the manner of assembling and reinforcing the sections, Fig. 3 is a transverse sectional view taken along the line 3—3 of Fig. 2, Fig. 4 is a sectional view in detail showing the manner of anchoring the pole, Fig. 5 is a transverse section in detail of the upper end of the pole, Fig. 6 is a sectional view, partly in elevation, showing the manner of leading in under-ground wires, Fig. 7 is a diagrammatic sectional plan view of the sections constituting the pole when assembled, Fig. 8 is a transverse sectional view of the pole showing a modified form of section, Fig. 9 is a longitudinal view of the sections shown in Fig. 8, Fig. 10 is a detail view of a modified form of union plate shown in Figs. 8 and 9, Fig. 11 is a sectional view of Fig. 10, Fig. 12 is a sectional view of a further modification, and, Fig. 13 is a sectional view showing the several sections of a pole telescoped and their associated parts contained therein, for transportation.

Referring to the several figures and with like numerals of reference indicating corresponding parts in the different views shown, 1 designates the metallic sections which are made preferably of a single sheet of metal, the side edges whereof are united by a double seam as indicated by the numeral 2 in Fig. 3. Each of the sections 1 is in cross section of four-lobed design and tapers in its length, and in cross dimensions is dependent upon its position when assembled; thus the lower section or base is of greater width than the middle section, and that section is correspondingly greater than the upper section as will be obvious. These sections constitute compression members in the column, for which reason as well as for the purpose of creating a more ornamental appearance and permitting a better disposi-

tion of the internal tension members, the adjacent or abutting ends of the sections substantially correspond in dimensions. For holding the sections in respective alinement when assembled and giving lateral strength thereto, there are provided castings or union pieces 3 whose outline is in design precisely that of the metallic sections. Each of the castings 3 is cut away for its central portion to reduce its weight, and is provided with inner and outer oppositely disposed flange elements 4 and 5 respectively, the inner of which flanges is greater in lengthwise dimension. The flanges or ridges 4 and 5 provide between them upper and lower circumferential grooves 6 and 7 respectively which are in exact alinement and provide respectively the cap for a lower section and the base or seat for the upper section in which manner the several lengths of the pole are assembled, as clearly shown in Fig. 2. The outer flange 5 of the union piece 3 has formed therein at suitable intervals downwardly disposed perforations 5^a which communicate with the upper channel 6 for the purpose of providing a drain for such water as would accumulate therein by reason of running down the sides of the pole.

For holding the several metallic sections 1 in superposed and assembled relation, there are provided a plurality of reinforcing bars 8, constituting tension members, there being shown in the present instance four such bars. The castings or union pieces are each provided with perforations through which the bars pass, for convenience in assembling and putting compression on each plate individually, each bar is provided with a tightening nut 9 to receive which said bars have screw threads 10. For convenience in shipment and also for adjusting the bars to proper length, they are divided into sections and united by screw threaded sleeves 11. The sections of the tension members or bars thus produced are equal in length to the individual compression members but when assembled, each section of tension member extends through one plate but terminates slightly above the next lower plate in order to receive the nut 8 and a sleeve 11. When assembled, the sections of the rods constitute continuous tension members extending from the base to the top of the pole and they are thereby adapted to draw the entire structure together into a rigid column. In addition to their function of uniting the bars 8 into a continuous reinforcing strand, said sleeves 11 may serve the further function of locking the nuts 9 to the plate 3 and thus hold the sections of the post against loosening.

For assembling the several members above described into pole construction the bottom section 1 is anchored in the ground as shown in Fig. 4 for which purpose the interior of

that portion of the section 1 which enters the ground is filled with cement 12 that is held within the same by a base plate 13 which base plate is in cross section of a design similar to the contour of the section 1, and has on its upper face a groove 14 within which fits the lower edge of said section 1. And for making this anchorage positively effective the strands 8 of the ground section are embedded within the cement 12 and have their lower ends passing through the bed plate 13 to which they are secured by locking nuts 15 disposed to either side thereof. The upper ends of the strands 8 shown in Fig. 4 are secured to the casting 3 supported upon the ground section 1 in precisely that manner shown in Fig. 2. The upper ends of the several reinforcing strands 8 project enough beyond the upper section 1 of the pole to secure a cap or head plate 15 which is channeled or grooved to receive the upper edge of the section and which is held in such position by the end nuts 17 as shown in Fig. 5.

Upon the nature of the work for which the pole is intended depends, of course, the manner of supporting or leading-in the wires. I have shown in Fig. 6 the means by which under ground wires may be led through the pole. In this instance the ground section is not anchored in the manner shown in Fig. 4 *i. e.* no cement is used, but has instead a central tube or pipe 18 leading from a conduit 19 and extending throughout the length of the pole.

In the type of pole shown in Figs. 8 and 9 the several parts 1^a comprise half sections, the side edges of which are each formed with an offstanding and inturned flange 20 one fitting within the other as shown in Fig. 8, and by which means said sections are united, and to further strengthen this means of uniting the parts there are provided a plurality of reinforcing bars 21 likewise formed in sections, each having the length of the individual sections of the pole which it supports as clearly shown in Fig. 8. An advantage of providing this type of section is that the unions formed by the side flanges or seams 20 provide a suitable working surface for climbers which is an essential requirement in the poles of the present type.

The castings or union plates 22 used in this construction are in most respects similar to the corresponding plates used in the pole construction shown in Figs. 1 and 2, differing only in that projecting from opposite sides or adjacent the union members 20 said castings have offstanding members or ledges 23, their function being to provide water sheds or drains for the individual sections which make up the pole. And in the present instance the inner and outer ridges 24 and 25 are terminated adjacent the mem-

bers 23 in order to provide a clearance or space for the seam 20.

In assembling the sections of the pole of the type shown in Figs. 8 and 9 the ground section is anchored in any suitable manner and to the base plate of the anchorage the bar 21 is suitably held. At its upper end the several reinforcing strands are secured to the union piece 22 in the manner heretofore described, but the reinforcing bars 21 are terminated just beneath the ledges 23. On the next superposed section the reinforcing bars thereof rest upon said members 23.

As illustrated in Fig. 10, the union plate 26 has the outer of its flange elements 27 constructed along the lines shown in Fig. 2 but its inner flange 28 is turned in at the points 29 to give a suitable clearance for the reinforcing strands 8 which in this instance are disposed between the flanges 27 and 28 instead of being within the inner of said flanges as is the case in the structure heretofore described. In the present instance the peculiar manner of disposing the flanges provides a suitable recess for the nuts 9 and their locking sleeves 11 of the several reinforcing bars. Otherwise the manner of applying this type of union plate is as heretofore explained.

Fig. 12 shows a type of pole intended for use where great height is not required, as for example lamp posts and the like. In this instance the pole is constructed of sections 30 of the type shown in Figs. 1 and 2 and which has the union pieces 31 formed with the usual ridges 32 and 33, but since the same is of no great height the usual reinforcing bars or strands are dispensed with using instead a single center-bar or strengthening member 34 which is suitably anchored to the ground section of the pole and passes continuously through the several union plates to the top of the uppermost section.

Fig. 13 shows the several sections composing the pole telescoped and having contained therein the several abutment plates, heads or castings and the sectional bars 8 which constitute, when assembled, the reinforcing elements. When thus collapsed for transportation, the several parts are held by the end heads or closures 35 which are held together by the tightening rods 36.

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

1. A pole of the character described comprising a plurality of abutting sections, interposed abutment and centering plates and internal tension members drawing the sections into abutment with the interposed plates and holding the parts of the structure in assembled relation.

2. A pole of the character described comprising a plurality of sections of tapered

form adapted to telescope one within another, abutment plates adapted to receive the ends of said sections when assembled in alinement with the plates interposed between adjacent ends of the sections, and tension means for drawing the sections together and holding them in abutment with said plates.

3. A pole of the character described comprising a plurality of tapered sections constructed with the larger end of one section corresponding in dimensions to the smaller end of a next lower section, plates adapted to be interposed between the sections and constructed to receive the ends of the sections when brought into abutment therewith and tension members within the sections extending between and connected with the two end sections and adapted to draw the sections together and hold them in assembled relation.

4. A pole of the character described comprising tapered sections, interposed abutment plates provided with seats for the sections adapted to aline the sections when assembled and tension means connected with the end sections, extending through a plate and adapted to draw the sections together.

5. A pole of the character described comprising compression members constructed with outwardly lobed cross section to strengthen them transversely, union pieces constructed to receive the ends of the compression members in abutment, and tension members connected with the end compression members and extending from one of said end members, through the union piece to the other end member and adapted to impose compression upon the column of members when in assembled relation.

6. A pole of the character described comprising a plurality of metallic sections, castings provided with flanges adapted to receive the ends of said sections and hold the same in relative alinement, a plurality of strands adapted to reinforce the assembled sections, said strands comprising a plurality of bars and means for holding said bars together.

7. A pole of the character described comprising a plurality of metallic sections, castings provided with oppositely disposed flanges adapted to receive the ends of said sections and hold the same in relative alinement, and reinforcing means for holding said sections in assembled relation, said means comprising bars made up of sections, means for holding said bars to the castings, and means for uniting the several bars.

8. A pole of the character described comprising a plurality of metallic sections, castings adapted to receive the ends of said sections and hold the same in relative alinement, said castings provided with oppositely disposed pairs of grooves providing chan-

nels to receive the ends of the sections, and a plurality of bars coupled to said castings and adapted to reinforce the assembled sections.

5 9. A pole of the character described comprising a plurality of metallic sections, each of said sections formed of a metallic sheet united by side seams, reinforcing members for said seams, castings adapted to
10 hold said sections in relative alinement, and a plurality of bars adapted to reinforce the assembled sections.

10 10. A pole of the character described comprising a plurality of metallic sections,
15 each of said sections formed of sheets of

metal united by side seams, said seams providing a surface for climbers, means for reinforcing said seams, castings provided with flanges adapted to receive the ends of said sections and hold the same in relative aline- 20 ment, and a plurality of connected bars coupled to said castings and adapted to reinforce the assembled sections.

The foregoing specification signed at Brooklyn, N. Y., this 18th day of May, 1909. 25

WILLIAM R. KINNEAR.

In presence of—

E. M. HUNGERFORD,

C. LULU BARG.