(No Model.)

J. H. VAN DORN.

SECTIONAL METAL POLE.

No. 421,532. Patented Feb. 18, 1890.

Fig. 1.

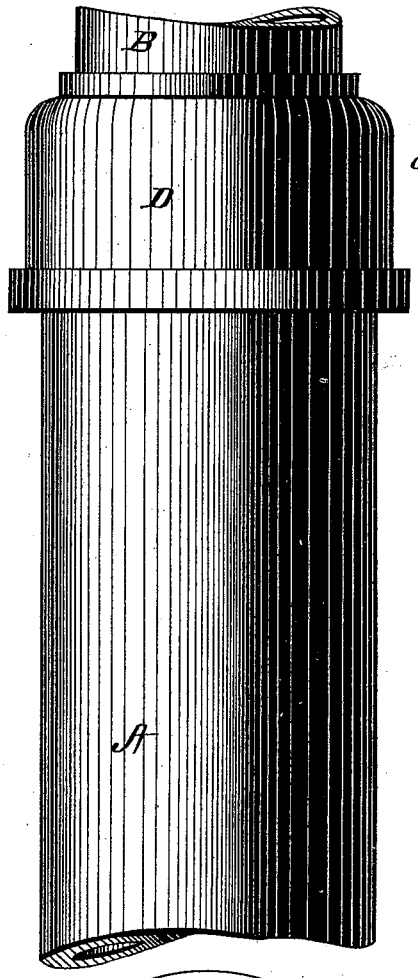


Fig. 4.

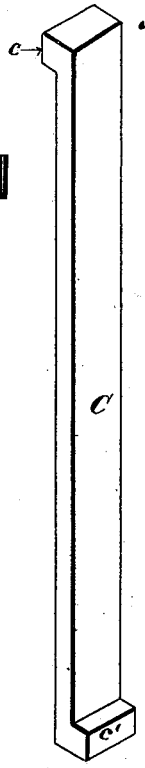


Fig. 2.

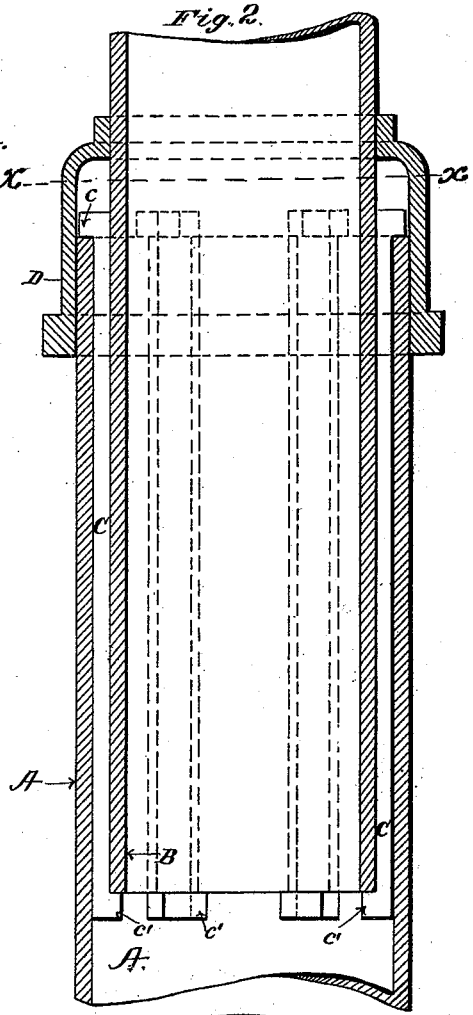


Fig. 5.

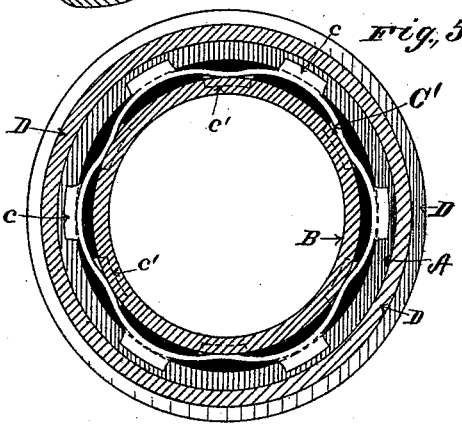
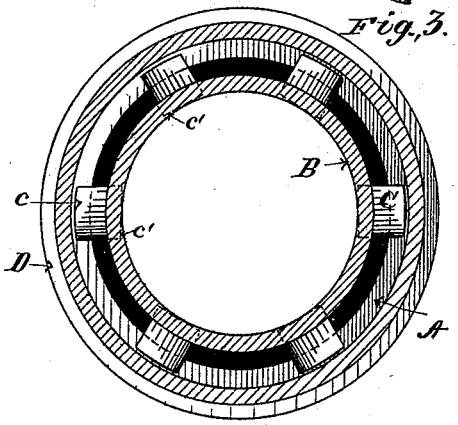


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

JAMES H. VAN DORN, OF CLEVELAND, OHIO.

SECTIONAL METAL POLE.

SPECIFICATION forming part of Letters Patent No. 421,532, dated February 18, 1890.

Application filed October 24, 1889. Serial No. 328,005. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. VAN DORN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Sectional Metal Poles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in sectional metal poles, designed more especially for supporting wires for electric purposes—such, for instance, as telegraph and telephone wire and wires for electric railways—although well adapted for various other uses, in which a tapering pole is constructed of tubing of different sizes telescoped at the splices and secured by keys, or a manifold key inserted lengthwise between the overlapping sections of the tubing, such keys having offsets or hooks engaging, respectively, the ends of the tubing to limit the lap of the tubing, to the end that a cheap, strong, and rigid splice is thus secured without screw-threading the tubing, whereby the latter retains its normal strength. A sleeve is secured to the tubing above the splice, such sleeve having an enlarged section adapted to overlap and embrace the upper end of the outer tubing for protecting the splice as against the weather. Heretofore metal poles for such purpose have been generally constructed of tubing of different sizes screw-threaded and connected by means of reducing-couplings. Such screw-threading greatly reduced the strength of the tubing, and a pole of such construction was likely to break when subjected to heavy lateral strain, such breakage more frequently occurring next above the lower coupling. To avoid this difficulty long couplings have been employed having sections that embrace the tubing outside the screw-threaded sections. Such construction involved great expense in boring the couplings from the ends inward to the screw-threaded sections, and in turning in a lathe the corresponding sections of the tubing and such turning off of the surface of the tubing weakened the latter materially, though not to the extent that the tubing was weakened by screw-threading. In view of these difficulties and to lessen the initial cost I have devised the sectional pole illustrated in the accompanying drawings.

Figure 1 is an elevation. Fig. 2 is an elevation in section. Fig. 3 is a plan in section on line *x x*, Fig. 2. Fig. 4 is a view in perspective in detail. Fig. 5 is a sectional plan corresponding with Fig. 3, showing a modification.

For the bottom section of the pole a tube A is employed, of considerable size, say eight or ten inches in diameter, larger or smaller, according to the length of the pole and according to the weight or lateral strain that the pole is intended to sustain.

B represents the next tube above, the latter being of such reduced diameter as will fit loosely inside tube A, leaving some little space between the tubes, tube B extending down inside tube A perhaps ten or twelve inches, (more or less,) according to the size of the tubes and according to circumstances.

Keys C consist of small metal bars of suitable thickness to fit snugly between the two tubes. The respective ends of these keys are offset in opposite directions, these offsets or hook ends being shown at *c* and *c'*. The lower offset hooks under and engages the lower end of tube B and the upper offset hooks over and engages the upper end of tube A. There are several of these keys employed, usually from four to six in number, and arranged at equal intervals, as shown in Fig. 3. The tubing having been cut to equal lengths and the keys being of equal length, it is evident that the length of the poles will be uniform, and that there is no possibility of the tubes telescoping farther than the length of the keys will permit by reason of any weight that the poles may sustain, and the splice thus constructed is likely to be the strongest part of the pole. Before connecting the two tubes a sleeve D, usually of malleable cast-iron and of the variety shown, is shrunk onto tube B just above the splice that is to be made.

In assembling the parts the enlarged lower section of the sleeve overlaps and embraces tube A for some little distance, and fits the outer tube as close as may be without interfering with driving the tubes together in

making the splice. Sleeve D gives a neat finish to the work and protects the splice from the weather.

The wrought-iron tubing, of which the poles are usually constructed in the rough, will vary a trifle in external and internal diameter, and hence keys C, that are always supposed to make a tight fit, will sometimes distend the outer tubes a trifle at the lines of contact with the keys, so that in case six keys were employed tube A would slightly approximate a hexagonal form at the splice.

I have manufactured and put in use a large number of these poles, and they have proven entirely satisfactory. The only difficulty encountered was that it was somewhat troublesome to hold the keys in position while entering tube B, and more recently I have employed the manifold key shown in Fig. 5, in which, in place of separate keys, I substitute a manifold key consisting of a slightly-corrugated tube C′, the corrugations thereof being shallow and broad and extending lengthwise of the tube.

Tube C′ is preferably of malleable cast-iron, the walls thereof between the bearings being quite thin, say an eighth of an inch in thickness. The inner curves of tube C′ engage the inner tube B and the outer curves of tube C′ engage the inner surface of the outer tube A, with offsets *c* projecting outward from the upper end and outer curves of tube C′ for engaging the upper end of tube A, and with offsets *c′* projecting inward from the lower end and inner curves of tube C′ for engaging the lower end of tube B. With such manifold key is avoided the aforesaid difficulty of holding separate keys in place while assembling the parts, and in case the inner tube is a trifle large externally, or the outer tube is a trifle small internally, the web of such manifold key will yield a trifle between the bearings, by means of which a suitable driving fit is always secured without overstraining the outer tube.

In case the pole consists of more than two lengths of tubing the other splices are made in the same manner as the lower splice already described.

What I claim is—

1. The combination, with a metal pole made in sections telescoped at the splices, of a series of keys overlapping the upper edge of a lower section and having inwardly-projecting lower ends forming a rest for the lower end of the section next above, substantially as set forth.

2. In a sectional metal pole, tubes of different diameters telescoped and rigidly connected at the splice, and a sleeve secured to the smaller tube next above the splice, such sleeve having an enlarged section adapted to overlap and embrace the upper end of the larger tube, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 6th day of August, 1889.

JAMES H. VAN DORN.

Witnesses:
C. H. DORER,
ALBERT E. LYNCH.