J. B. & J. M. CORNELL.

Telegraph-Pole.

No. 217,343. Patented July 8, 1879.

Fig. 1.

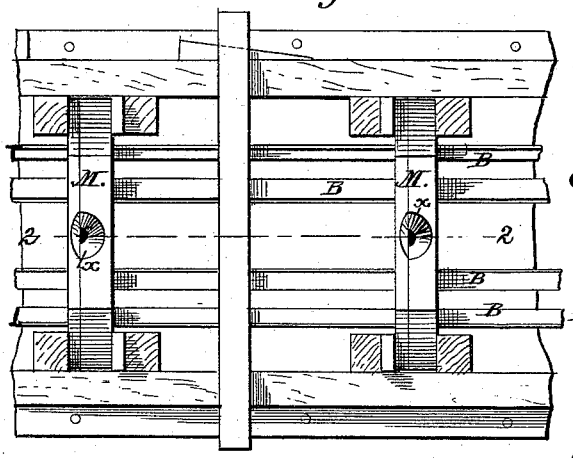


Fig. 2.

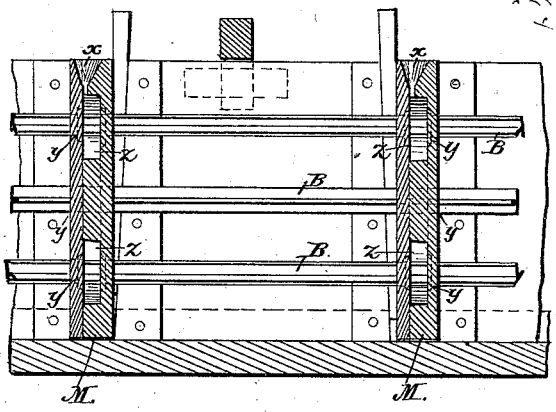


Fig. 4.

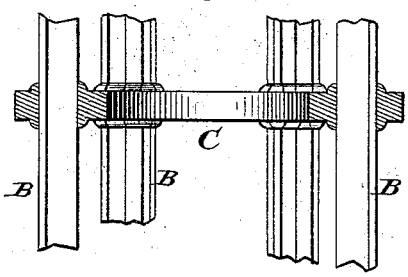
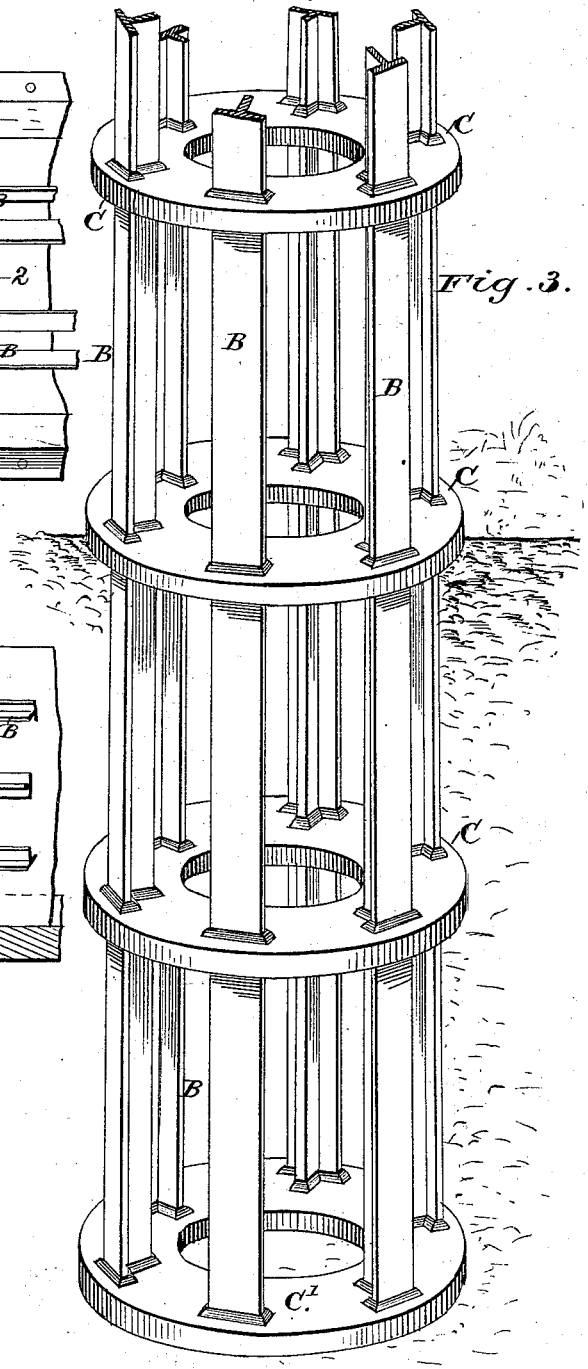


Fig. 3.



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2 Sheets—Sheet 2.

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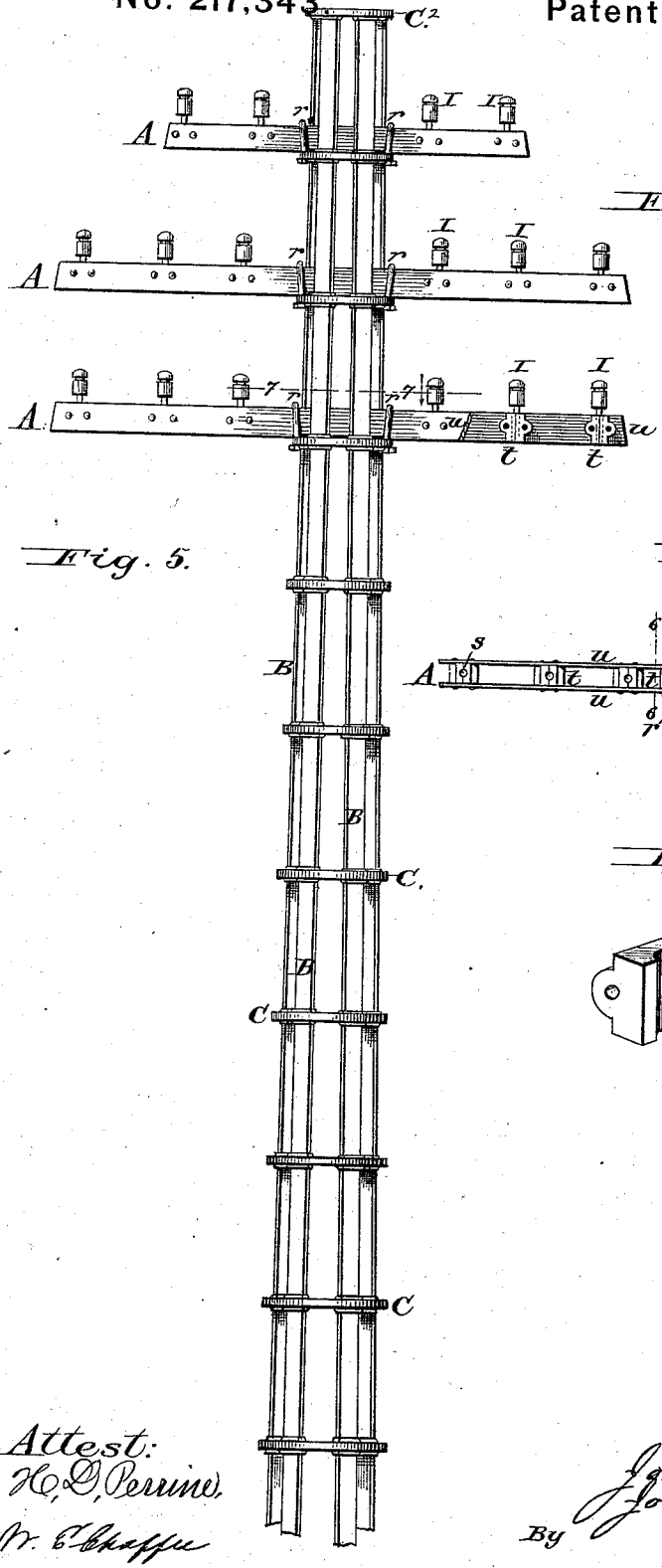


Fig. 5.

Fig. 6.

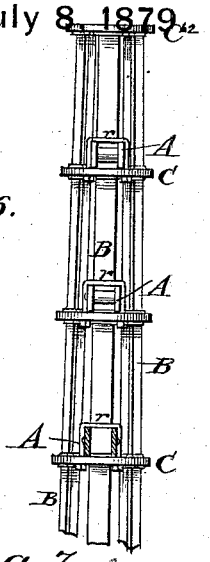


Fig. 7.

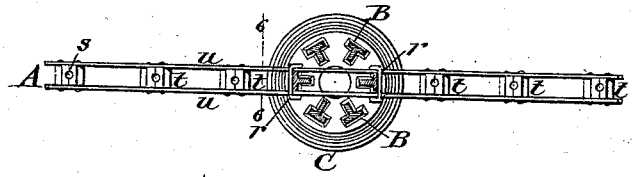
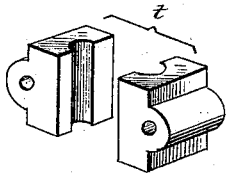


Fig. 8.



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UNITED STATES PATENT OFFICE.

JOHN B. CORNELL AND JOHN M. CORNELL, OF NEW YORK, N. Y.

IMPROVEMENT IN TELEGRAPH-POLES.

Specification forming part of Letters Patent No. **217,343**, dated July 8, 1879; application filed May 27, 1879.

To all whom it may concern:

Be it known that we, JOHN B. CORNELL and JOHN M. CORNELL, both of the city and county of New York, in the State of New York, have invented a new and useful Improvement in Telegraph-Poles; and we 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This improvement relates, primarily, to poles for supporting telegraph-line wires above the streets of cities, but is applicable in part to poles for elevated electric lights, &c., where a great height is desired; the object of the first part of our present invention being to produce a light iron pole of superior stiffness and strength, which can be manufactured at a comparatively small cost, and of any required height.

Another object of our said invention is to form metallic cross-arms of superior lightness and strength; and another object is to provide for readily and securely supporting and fastening said arms.

Our said invention consists, first, in the combination of three or more upright wrought-iron bars of the required length, and a sufficient number of horizontal cast-iron ring-plates cast upon said bars to form the pole proper; secondly, in cross-arms (one or more) composed of parallel flat bars, with cast-iron separators and connecting bolts or rivets, said separators forming sockets to receive the insulator-plugs; and, thirdly, in combining the said cross-arms with the said pole by staple-clips passing through the said ring-plates, the latter forming supports upon which the respective arms rest, as hereinafter more fully described.

Figure 1 of the accompanying drawings is a fragmentary plan view, illustrating the process of forming our improved pole. Fig. 2 is a vertical cross-section of the ring-plate molds on the line 2 2, Fig. 1. Fig. 3 is a sectional perspective view of the earth end of the improved pole, illustrating the mode of anchoring the same. Fig. 4 represents a vertical section through one of the ring-plates. Fig. 5 is an elevation of the upper end of the pole, showing its cross-arms. Fig. 6 is an edge view of the same. Fig. 7 represents a horizontal section of the pole on the line 7 7, Fig. 5, and a plan view of the lower cross-arm; and Fig. 8 is a perspective view of a pair of the separators of the cross-arms.

Figs. 3 and 4 are drawn to one scale; Figs. 5 to 7, inclusive, to another scale, smaller than the former, and Fig. 8 to a larger scale.

Like letters of reference indicate corresponding parts in the several figures.

In manufacturing our improved pole we may use commercial bar-iron of any approved shape in cross-section; but we prefer to employ T-iron of suitable sizes.

To produce each pole we take three or more bars, B, of wrought-iron, of proper size, (six being the preferred number,) and cut the same to the required length, so that they will extend vertically to the required height.

The bars B are next inserted lengthwise into and through a series of dry-sand molds, M, as illustrated by Fig. 1, said molds being constructed with matrical cavities *z*, Fig. 2, of the required shape and dimensions, bar-holes *y* of the required number, shape, and arrangement to receive said bars and support them in their proper positions, and gates *x* in what become the upper edges of the molds. To render the pole tapering the successive matrical cavities *z* are made of diminishing size, and the said bar-holes *y* are each formed at the proper angle.

In practice the molds are supported and clamped so as to be accurately in line with each other on a horizontal surface, and at that distance apart for which the patterns were made, as shown.

The bars B having been inserted in the molds M, molten iron is run into the several molds, and as soon as the castings C C^1 C^2 are cool enough the molds are removed and the castings are cleaned. This done, the pole proper is complete, the said bars being solidly united by the said castings, so as to require no additional fastenings or stays. The whole structure so formed becomes as one solid piece, precluding looseness of joints; and by in-

creasing the number or weight of the bars and castings per pole, any required strength may be readily obtained.

The castings C C^1 are termed "ring-plates," being annular and flat in their preferred shape. One of these, C^1, is formed flush with the earth end of the bars B, and by embedding this or two or more of the ring-plates in the ground, as illustrated by Fig. 3, a very secure anchorage may be obtained, the entire area of each plate being utilized, while the earth surrounds each bar. The casting C^2 is made solid instead of annular, so as to form a cap.

The ring-plates have been formed with fillets *w*, Figs. 3 and 4, to re-enforce the union between them and the bars B; but this and like details of the shape of the ring-plates are not considered essential to the present invention.

Another preferred, but unessential, detail consists in the arrangement of the bars B, of T-iron, with their main flanges *v* projecting radially inward, so as to brace the pole in every direction, and at the same time to secure compactness and a smooth exterior.

Where a cylindrical or non-tapering pole will answer every purpose, the ring-plates, and consequently their molds, may be uniform, and either form of pole may have a ring-plate instead of a cap formed at the upper end.

To the pole proper, made as above described, cross-arms A are attached, as illustrated by Figs. 5 to 8, inclusive, to adapt the same for its primary purpose. Each arm is composed of two bars, *u*, of flat iron, which are stayed parallel to each other, and a given distance apart, by cast-iron separators *t*, Fig. 8. Through each of the latter a bolt or rivet passes to unite the bars *u*.

The separators *t* are made with a half-round concave in one side of each, so that by arranging them in pairs, as shown, round sockets *s* will be formed to receive the ordinary wooden plugs of glass insulators I, Fig. 5.

The number and length of the cross-arms will be determined by the number and arrangement of insulators requisite for the complement of wires.

The cross-arms A extend through the pole, (a diametric pair of the bars B being embraced by the respective arms in the illustration,) and they are attached to the ring-plates C, above which they cross, by staple-clips *r r* on the respective sides of the pole. Nuts at the extremities of the clips are screwed up against the bottoms of the ring-plates, as shown in Fig. 6. Each cross-arm is thus supported beneath and securely fastened in place.

It will be observed that, besides said staple-clips and the bolts or rivets of the cross-arms, an iron telegraph-pole constructed according to this invention consists exclusively of commercial bar-iron and simple iron castings.

The apparatus by means of which the ring-plates are cast forms no part of this invention, and may be varied at pleasure. It is shown to enable those skilled in the art to make our improved pole without further aid.

The following is what we claim as new and of our invention, and desire to secure by Letters Patent, namely:

1. The combination of a number of upright bars, B, of wrought-iron, and a number of horizontal ring-plates, C, of cast-iron, the latter being cast on the former, so that the whole structure is as one solid piece, substantially as herein specified.

2. The cross-arms A, (one or more,) composed of parallel flat bars, with bolts or rivets to unite said bars, and cast-iron separators secured between said bars by said bolts or rivets, said separators being made to form sockets for the insulator-plugs, substantially as herein set forth.

3. The combination of the upright bars B, the horizontal ring-plates C, cast on said bars, and the cross-arms A, (one or more,) clipped on said ring-plates, substantially as herein described.

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THOS. CROCKER.