(No Model.)

M. H. BRONSDON.

CABLE RAILWAY CONDUIT.

No. 477,884. Patented June 28, 1892.

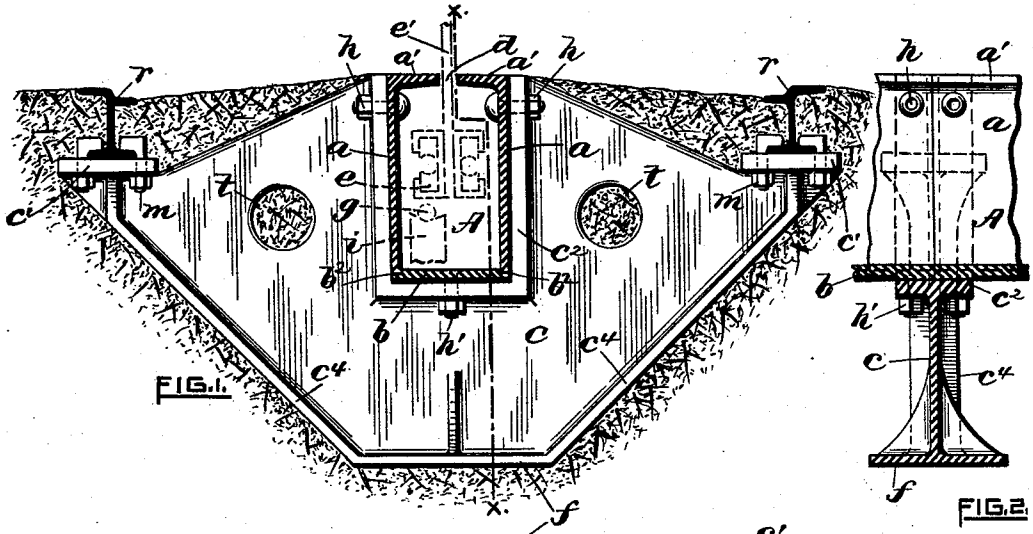

FIG. 1.

FIG. 2.

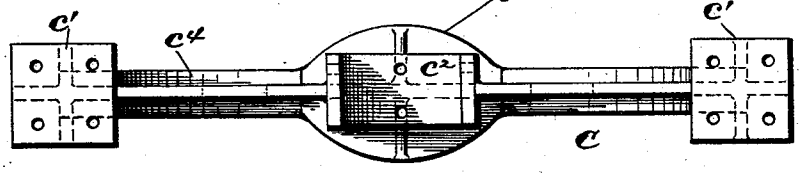

FIG. 3.

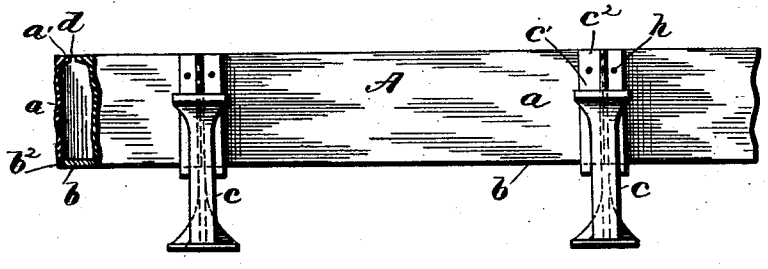

FIG. 4.

WITNESSES.

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UNITED STATES PATENT OFFICE.

MILTON H. BRONSDON, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR OF ONE-HALF TO WALTER RICHMOND, OF SAME PLACE.

CABLE-RAILWAY CONDUIT.

SPECIFICATION forming part of Letters Patent No. 477,884, dated June 28, 1892.

Application filed July 17, 1891. Serial No. 399,799. (No model.)

To all whom it may concern:

Be it known that I, MILTON H. BRONSDON, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Cable Conduits or Tunnels for Cable Roads; 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 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.

The invention forming the subject of my present application for Letters Patent relates to cable railroads, but more especially to the conduit or slotted cable-tube portion of such railroads.

It has been usual heretofore, particularly in conduits connected with rail-supporting frames, to make the tunnels comparatively large in area cross-sectionally, the opening in some cases being of a size to allow a person to freely pass through it. There are objections to conduits of such large proportions. For example, the necessarily increased weight involves greater cost for material, the excavations and foundations are more extensive and costly, and the lateral pressure upon the sides of the conduit due to frost, heavy traffic, &c., frequently closes the narrow grip-slot in places, thereby rendering the road inoperative for the time being.

The object I seek to attain is to overcome the disadvantages just referred to. To that end my improved cable-tunnel consists, essentially, of rolled angle-irons so placed that the upper flanges are separated from each other to form a continuous grip-slot, a rolled plate forming the bottom of the tunnel arranged to engage with the lower edges of the angle-irons, and cast-iron rail-carrying yokes or girders having said rolled irons and plates secured thereto, all as will be more fully hereinafter set forth and claimed.

By means of my invention I am enabled to employ rolled iron having a commercial form and size. The track-rails used may have any well-known form, as I make no claim to the rail itself. The yokes are adapted to support both rails and also the parts forming the tunnel. A cable road, or rather the underground or conduit portion of it, embodying my improvements can be more quickly and cheaply laid, because the necessary excavations are shallower, the foundations are less extensive, the relative as well as the actual cost of the materials are less, the structure is stronger, although lighter, the sides of the tunnel are flat and smooth, (therefore the wear of the traveling grip and cable due to contact with the tunnel is reduced to a minimum,) the grip-slot is prevented from closing and the tunnel may be readily taken apart for repairs when necessary.

In the appended sheet of drawings, Figure 1 represents a transverse or cross-sectional view of a cable-railroad conduit, &c., embodying my improvements as in use. Fig. 2 is a vertical transverse sectional view of the yoke, taken on line $x\,x$ of Fig. 1, and also showing a portion of the cable-tunnel. Fig. 3 is a plan view of the yoke itself; and Fig. 4 is a side elevation, in reduced scale, showing the arrangement of the tunnel and yokes, the track-rails being omitted.

Again referring to the drawings, A indicates the chamber or tunnel as a whole, in which the cable and gripping device freely travel. This tunnel or conduit is practically continuous, and it consists of two angle-irons a, one of its sides or legs being shorter than the other, the same as commercially rolled, and a flat rolled plate or strip b. The two angle-irons a are so placed that the short legs a' are opposite to and separated from each other at the top, thereby forming the top of the conduit and the narrow slot d, along which latter the grip lever or connection e' (shown by dotted lines in Fig. 1) freely travels. As drawn, the two longitudinal sides of the plate b are cut away or recessed along the upper edges at b' to form a seating for the lower edges of the side plates or angle-irons a, such recesses at the same time serving as a lateral guide or support to prevent the sides of the tunnel from being sprung or bent inwardly.

The cable-tunnel is supported longitudinally at intervals, say, of four feet by cast-

iron ties or yokes *c*, each, as drawn, having a central U-shaped opening flanked by laterally-projecting flanges c^2, adapted to receive the tunnel-securing bolts *h h'*. The yokes are further provided with outer or end flanges *c'*, adapted to carry the track-rails *r*, suitable bolts *m*, passing through the flanges and engaging the rails, serving to hold the latter firmly in position. The main portion of the yoke consists of the central web, which may be perforated, as at *t t*, to reduce its weight, if desired, the outer lower edges being reinforced by the lateral flanges c^4 and bottom flange *f*.

It will be seen that my improved cable-tunnel is perfectly smooth inside, the bolt-heads alone projecting inwardly, and these may be countersunk, if necessary. Where the sections or lengths of angle-iron *a* meet, I prefer to arrange them so as to abut together in one of the yokes, as indicated in Fig. 2.

The cable *g* and a portion of one of the cable-supporting sleeves or pulleys are indicated by dotted lines in Fig. 1. So also are the grip *e* and the grip-arm *e'*.

In constructing a cable road embodying my improvements it will be seen that only comparatively shallow excavations need be made in the street to receive the yokes, while a much shallower continuous one suffices for the conduit itself, the size of the latter interiorly being, say, six by eleven inches. After the yokes have been properly set the rolled iron pieces *a a b* are placed in the U-shaped openings of the yokes and secured in position by the side bolts *h* and the bottom bolts *h'*. The rails *r* may next be located upon and secured to the flanges *c'* of the yokes by suitable bolts *m*, after which the excavations are properly refilled and the street surfaced off, as usual. By means of such construction I am enabled to produce the improved roadway with greater rapidity and less cost as compared with other cable roads. It is to be understood that the surfaces of the yokes, &c., are first properly covered to prevent oxidation.

My improved conduit A is equally adapted to be used as a support for one or more suitably-mounted electric wires or conductors, the slot *d* at the same time serving to receive an arm or lever arranged to be electrically connected with the conductors.

I am aware that it is not new to employ rolled plates for the sides of the cable tube or conduit. Therefore I do not claim such construction, broadly; but

What I do claim as my invention is—

In a cable road, the yoke or chair *c*, provided with integrally-formed oppositely-arranged ends adapted to receive and carry the two track-rails and having a flanged central opening extending downwardly from the top of the yoke, in combination with the tunnel or cable-conduit A, composed of oppositely-arranged rolled angle-iron plates *a* and bottom plate *b*, secured to said yokes, and having the top members *a'* of the plates *a* separated from each other to form the central longitudinal slot *d*, substantially as described, and for the purpose set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

MILTON H. BRONSDON.

Witnesses:

CHARLES HANNIGAN,

GEO. H. REMINGTON.