(No Model.) 2 Sheets—Sheet 1.

M. R. MUCKLE, Jr.

UNDERGROUND CONDUIT.

No. 379,408. Patented Mar. 13, 1888.

Fig. 1.

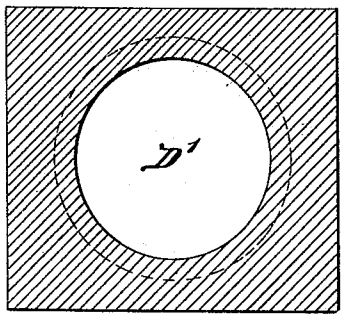


Fig. 2.

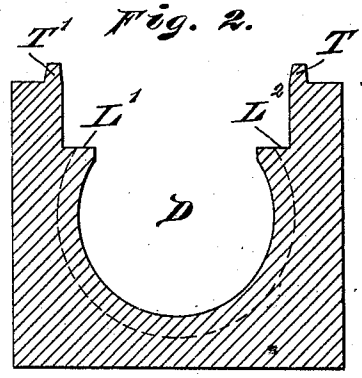


Fig. 3.

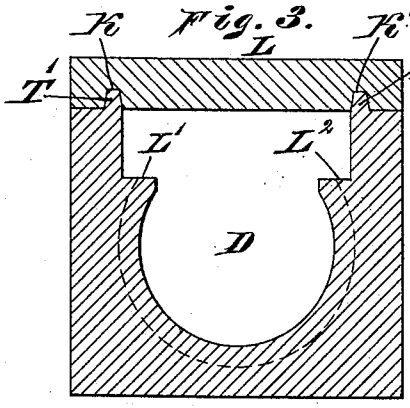


Fig. 5.

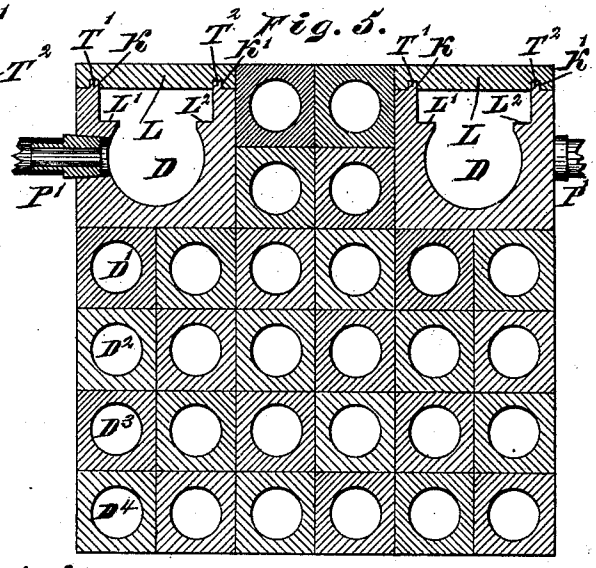


Fig. 4.

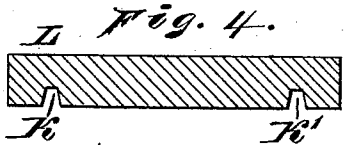
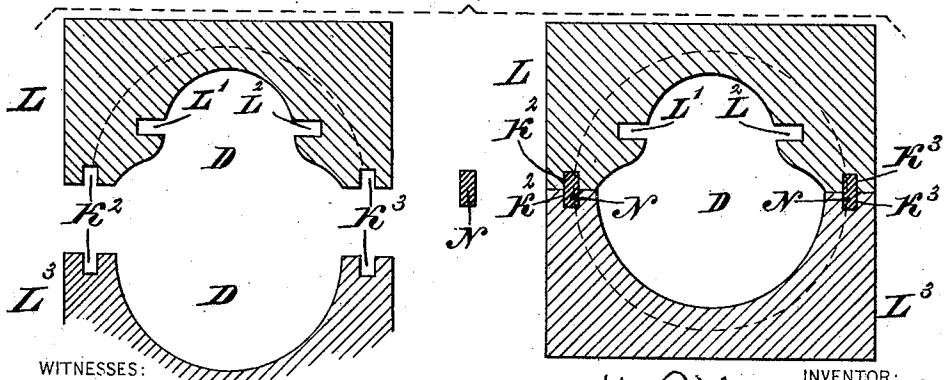


Fig. 6.



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(No Model.) 2 Sheets—Sheet 2.

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UNDERGROUND CONDUIT.

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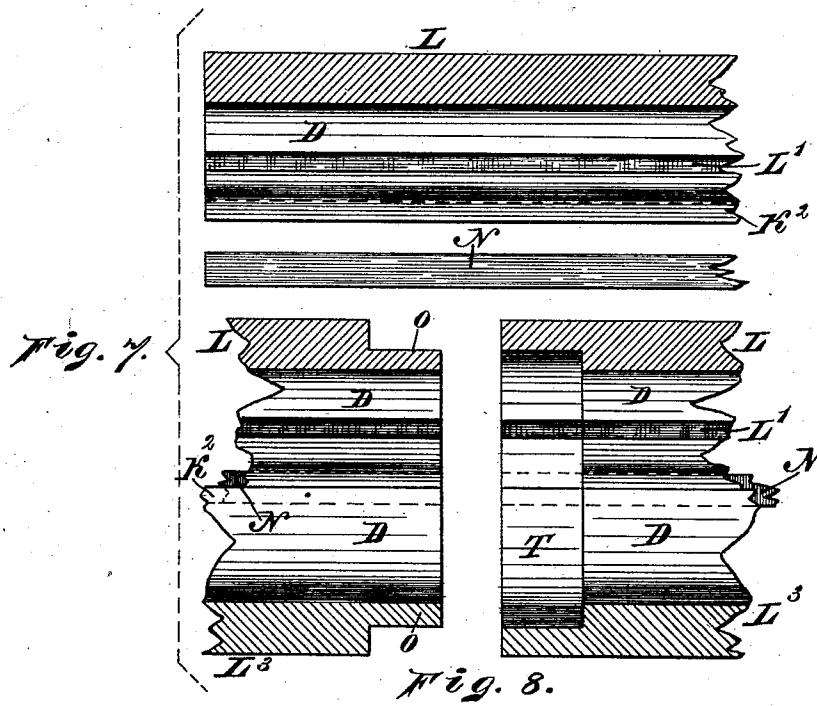


Fig. 7.

Fig. 8.

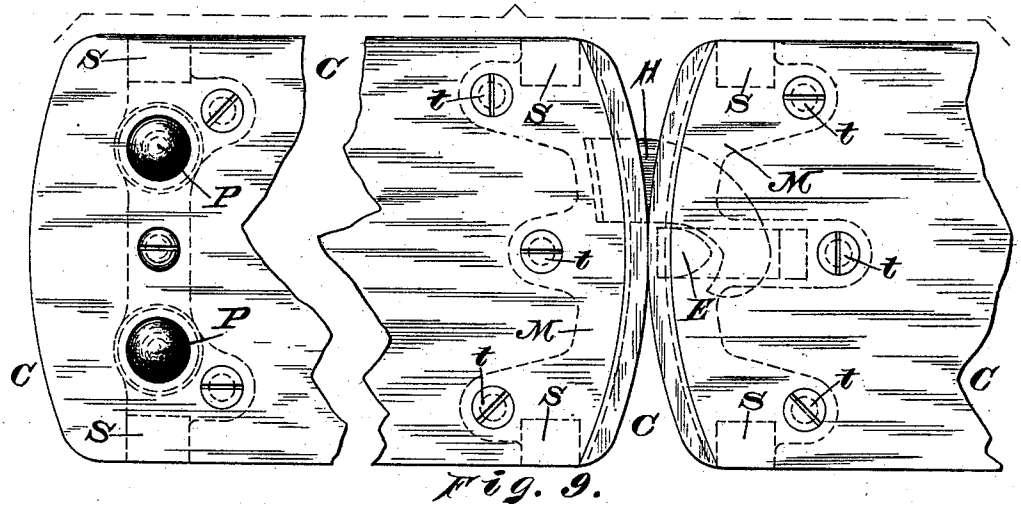
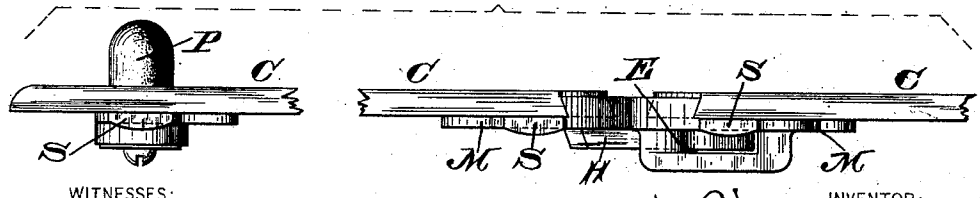


Fig. 9.



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M. RICHARDS MUCKLE, JR., OF PHILADELPHIA, PENNSYLVANIA.

UNDERGROUND CONDUIT.

SPECIFICATION forming part of Letters Patent No. 379,408, dated March 13, 1888.

Application filed November 25, 1887. Serial No. 256,104. (No model.)

To all whom it may concern:

Be it known that I, M. RICHARDS MUCKLE, Jr., a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Underground Conduits, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to improvements in underground conduits for containing or carrying electrical wires; and its objects are, first, to provide a novel form of car or carrier for carrying cables or conductors into conduits; second, to provide a novel form of conduit having ledges to sustain a cable-carrying car and a grooved lid to cover it; third, it consists in novel features of construction, hereinafter described, but particularly pointed out in the claims which follow this specification. I attain these special objects by the apparatus shown in the accompanying drawings, in which—

Figure 1 is a cross-section of one of a well-known form of bored wooden duct or conduit. Fig. 2 is a similar cross-section of my improved conduit, having the upper side removed and showing ledges for sustaining the car or cable carrier, with the lid removed. Fig. 3 is a similar cross-section to Fig. 2, showing the lid of the duct in place. Fig. 4 is a separate cross-sectional view of the lid. Fig. 5 is a cross section of the conduit complete, showing the bored block conduits or ducts in place, with the house-ducts arranged at the right and left on top. Fig. 6 is a cross-sectional view of a modified form of duct or conduit, showing the same made of two halves doweled together by wooden strips. Fig. 7 is a longitudinal vertical section of the parts shown in Fig. 6. Fig. 8 is a horizontal view of the cable car or carrier. Fig. 9 is a vertical elevation of the same.

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

For a simple form of duct or conduit I take a rectangular or other regular sided stick of wood of any desired length and bore a hole through it from end to end. I then join a series of such ducts or conduits together end to end by the well-known mortise and tenon, as wooden water-pipes are joined. This constitutes my simplest form of conduit. It is made of soft wood and afterward soaked in creosote, coal-tar, or any other such material, such as generally used to preserve wood; but this form of duct constitutes no part of my invention.

My form of duct or conduit is shown in Fig. 2, which is made in the main the same as that shown in Fig. 1, after which the upper portion is cut away, as shown, by a tongue-and-grooving machine, so as to leave ledges L' L^2 and tongues T' T^2, the latter adapted to fit in grooves K K' of the lid L. (Shown in Fig. 4.) This form of conduit is also joined together by mortise and tenon, as was the form shown in Fig. 1. In Fig. 5 I show a series of these ducts, D D' D^2 D^3, &c., massed together to carry a series of cables or wires for a system, the upper outside pair, D, being of the type shown in Figs. 2 and 3 and designed to carry the house-wires, and the remainder of the simple form shown in Fig. 1 for carrying the leads.

P' P' are plugs which enter the ends of the upper ducts or conduits at intervals of, say, fifty feet, more or less, and are designed to be removed in order to admit side ducts for taking off branch or side wires to the houses.

In Fig. 5 the arrangement of the whole series is such that the solid bored block-conduits carry the mains or leads from the central station, while the upper right and left pair carry the house-loops from man-hole to man-hole, the loops from any pair of leads in any one of the bored-block conduits being carried up at the man-holes into the upper or house ducts, while the individual house-wires are taken off from these house-ducts through the plug-holes at P' P', located at the desired intervals.

In Fig. 6 I show still another modified form, in which the duct or conduit is made of two halves of wood, L L^2, having its channel or hole D grooved out of the two halves and each provided with grooves K^2 K^3, adapted to fit over long wooden strips N, acting in the nature of dowels to hold such parts together. In the upper part of the upper half are two grooves, L' L^2, which are adapted to carry the cable car, and are similar to like parts in Fig. 2.

In Fig. 7, L shows the lid of this modified form, N the dowel, T the mortise, and O the

tenon for fitting the successive sections of conduit together.

The carriage or carrier for introducing the cables into the conduit, as shown in Figs. 8 and 9, consists of a series of short wooden blocks about two feet in length, each provided with four projecting feet, S S—two at each end—which are adapted to bear or ride on the ledges or in the grooves L' L^2 of Figs. 2, 3, and 6. These short wooden carriers are connected together by hook-couplers H E, very much as cars are coupled, and are provided on their upper surfaces with standards or pins P P, between which the cable lies as it is carried into the conduit. The coupling-links H E are fastened to the ends of the carriers by metallic shoes M M through the agency of screws *t t t*. I prefer to make these shoes of cast metal, having the coupling-hooks H E and the feet S cast integral therewith.

The method of inserting the cable or conductor with this car is as follows: The first section of the carrier is inserted into one of the ducts having a cable or wire attached to its advanced end, which cable or wire is then projected through the conduit to the desired outlet at P' P' by attaching successive sections of the car or carrier and pushing them forward until said outlet is reached, when the wire is released from the advance carrier-section and drawn out through the outlet P' by tongs or other means into the building or place to be wired. The carrier is then withdrawn from the conduit piece by piece and disconnected at the starting-point, thus allowing the cable to drop into its place in the duct, the pins P P on the carriers causing the cable to assume a central position in the duct or conduit. It will be seen that inasmuch as the carriers are of wood, which is softer than lead-covered cables, there will be no abrasure or probable injury to the inclosed cable or wire when the carriers are being withdrawn, and of course no such abrasure can occur while the cable is being inserted, for the reason that it is carried bodily into place and not drawn through the conduit or duct, as has been the practice heretofore.

I design to use this specified form of carrier in inserting the house tap-wires running from the street man-holes to the building to be wired and by way of the shelved ducts, although it is obvious they may be used in the main conduits if desired.

With such an apparatus I avoid the use of pilot-rods or drawing-in wires or ropes, and avoid also the danger of breaking such pilot rods or ropes in the act of drawing in a cable and thus temporarily clogging up the duct or conduit.

I am aware that it is not new with me to provide a car or carrier for drawing a cable into a conduit; nor is it new with me to make wooden ducts or conduits; nor do I claim particularly a wooden duct or conduit having its ends jointed together by mortise and tenon, and such simple form of conduit is only shown here to better illustrate my improvement.

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

1. A car or carrier for laying cables in underground conduits, consisting of a block or frame, C, having bearings S S, adapted to rest upon the ledges L' L^2 of the conduit, with one or more cable-supporting pins, P, substantially as described.

2. A car or carrier for laying cables in closed conduits, consisting of a solid supporting-frame having a cable-support adapted to center the cable on withdrawal of the car, substantially as described.

3. A duct or conduit for electric wires, made of a solid block of wood or analogous material, having a channel grooved throughout its entire length, with ledges or shelves for sustaining a cable-carrying car, and tongues at its upper side adapted to fit in corresponding grooves in the removable cover, substantially as described.

4. A cable-carrier for carrying a cable or conductor into a conduit, consisting of a car adapted to carry a developed or extended length of cable, in combination with means in the rear of the car for forcing said car and cable into the conduit from the outer or rear end of the conduit, substantially as described.

5. The within-described means for carrying a cable or conductor bodily into a conduit, consisting of a series of detachable cars, each having a frame and bearings adapted to rest or ride on side ledges of the conduit, substantially as described.

6. The within-described means for carrying a cable or conductor bodily into a conduit, consisting of a series of cars, each having bearings adapted to rest or ride on side ledges of the conduit, in combination with means, as described, for forcing said cars and cable into the conduit from the rear or outer end of the conduit, substantially as described.

7. In a carrier for inserting cables or conductors into a conduit, two or more cars or carriers with couplings for connecting said cars together, substantially as described.

8. A car or carrier for inserting cables or conductors into a conduit, having guide-pins for centering the cable, substantially as described.

9. In a carrier for inserting cables or conductors into a conduit by carrying it bodily, a series of cars having detachable couplers, the cars being adapted to abut one against another, thereby relieving any stress on the couplers, substantially as described.

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Witnesses:
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