(No Model.)

A. SEGADE & D. J. O'REGAN.

METHOD OF AND APPARATUS FOR MAKING CONDUIT SECTIONS.

No. 537,238. Patented Apr. 9, 1895.

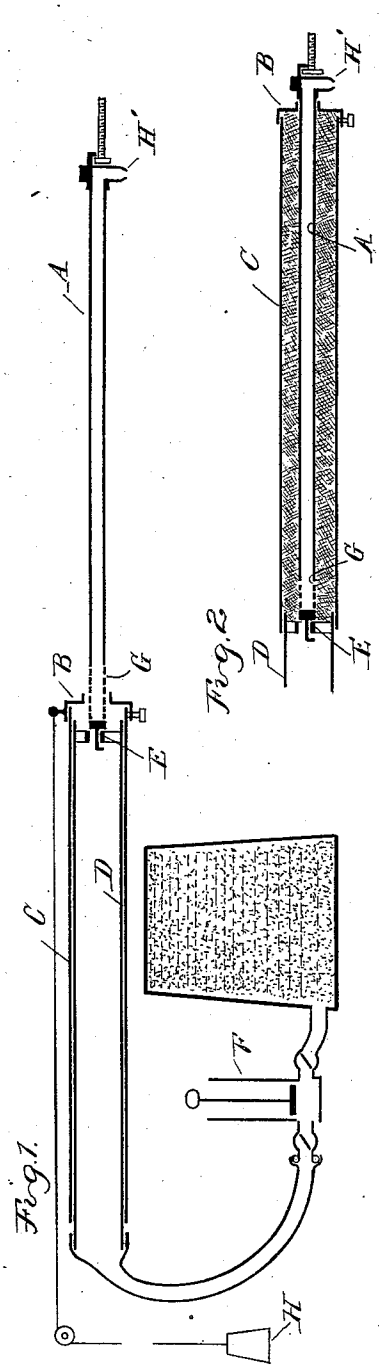

Fig. 1.

Fig. 2.

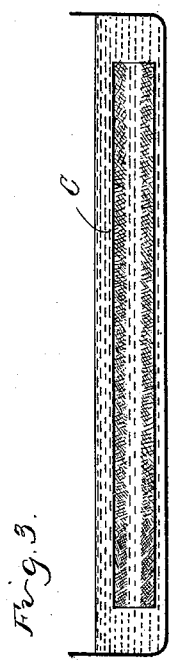

Fig. 3.

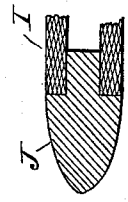

Fig. 6.

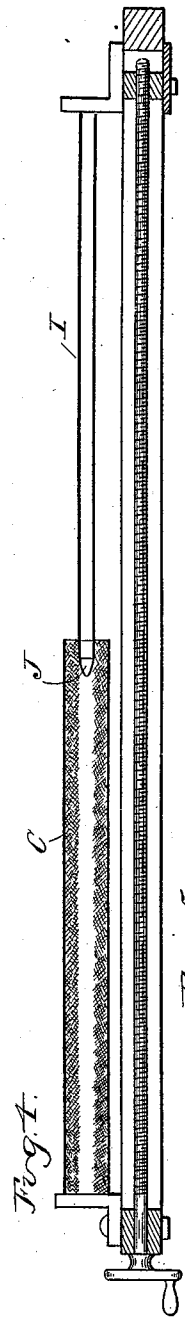

Fig. 4.

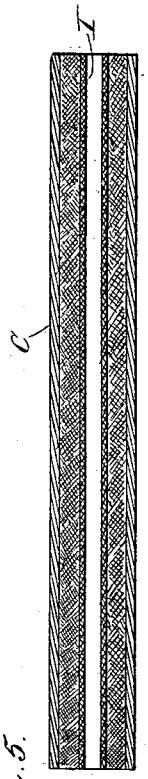

Fig. 5.

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UNITED STATES PATENT OFFICE.

ALEXANDER SEGADE AND DENNIS J. O'REGAN, OF DETROIT, MICHIGAN, ASSIGNORS OF ONE-HALF TO PATRICK McCOY, OF SAME PLACE.

METHOD OF AND APPARATUS FOR MAKING CONDUIT-SECTIONS.

SPECIFICATION forming part of Letters Patent No. 537,238, dated April 9, 1895.

Application filed February 10, 1894. Serial No. 499,755. (No model.)

To all whom it may concern:

Be it known that we, ALEXANDER SEGADE, a citizen of the United States, and DENNIS J. O'REGAN, a subject of the Queen of Great Britain, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Methods of and Apparatus for Making Conduit-Sections, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention consists in the peculiar steps herein described by which a conduit for underground electric conductors is formed with one or more ducts, and further in the peculiar construction of the apparatus herein described for carrying out said method, all as more fully hereinafter described.

The method particularly consists in forming the ducts and casing of a conduit section, by filling the material around a removable mandrel and more particularly in accomplishing this by drawing the mandrel into the casing by the pressure of the ingoing compound, and the apparatus designed to so construct the conduit.

In the drawings, we have shown apparatus designed to carry out our method in constructing a conduit having a single duct. It is evident however, that the same method may be employed in constructing a conduit with a series of ducts.

Figure 1 is a vertical, central, longitudinal section through the apparatus showing the parts in their initial position ready for manufacturing the conduit section by our method. Fig. 2 is a section through the conduit, the parts being in the position as the conduit section is completed. Fig. 3 is a longitudinal section through a tank and a completed conduit section therein. Fig. 4 is a longitudinal section showing the casing with the duct being inserted. Fig. 5 is a longitudinal section through the completed section. Fig. 6 is an enlarged section of the duct casing shown in Fig. 4, with the pointed cap therein.

In the previous state of the art conduit sections have been constructed of an outer section and an inner duct or ducts with an intermediate filling of insulating material, such as asphalt, and this has usually been done by centering the conduits in the casing and then filling in the material by pouring around the ducts, or by partially filling the outer casing and then forcing plugged ducts in such casing, thereby forcing the insulating material around the ducts. In practice, these methods have serious objections and limit the use of insulating material to a few such compounds as asphalt. Our invention is intended to overcome these objections, and to this end we carry it out as follows:

A is a tubular mandrel stationarily secured, and B is a head slidingly engaging thereon, and of suitable size to receive one end of the conduit casing C.

D is a tube of a diameter slightly smaller than the conduit casing C and adapted to fit therein. At its inner end it is provided with an apertured head E having means for detachably engaging with the end of the mandrel A, and its other end connected to the pump F, which in turn is connected to any suitable supply of insulating material.

In the drawings, we have shown the apparatus designed for filling the conduit casing with wood or paper pulp or similar material. In the use of this material we preferably mix the pulp with a suitable amount of water, so that it may be handled by the pump F. The inner end of the mandrel A we provide with a series of perforations G. The head B or the conduit casing C is retarded by means of a weight H, or any other suitable weight or friction device to give the requisite pressure to the material in the conduit casing.

The parts being thus constructed and arranged, as shown in Fig. 1, it is evident if the pump F be set in motion, it will draw the compound from the tank and force it through the tube D through the apertures in the head E against the head B of the casing C. The solid material, that is, the pulp, will be deposited in the conduit casing, around the tubular mandrel A, the fluid passing out through the aperture G in that tube, and as the pressure increases, the head B with the casing will be pushed along over the mandrel A as fast as the pulp is solidly deposited about the mandrel. The fluid entering through the ap-

ertures G in the mandrel may find exit through the exit nozzle H′ at the opposite end thereof.

When the casing is filled, the tube D may be detached from the mandrel, and the material in the conduit casing may be put to one side to harden or dry, and the mandrel withdrawn leaving a conduit comprising an outer casing filled with a compound, with one or more longitudinal apertures therethrough, the construction being substantially as shown in Fig. 3.

In case wood or paper pulp is used we next preferably treat the conduit to an oil bath, as shown in Fig. 3, and then force into the apertures through the filling a duct I of hard rubber or other suitable material. This we do by first engaging the pointed head or cap J in the end of the duct and then forcing the duct in position, the finished article being shown in Fig. 5.

We may use asphalt or other material to deposit around the mandrel, and in case asphalt or similar material is used, where it is not necessary to carry it in the water, as is the case with the pulp, the apertures G may be omitted from the mandrel.

What we claim as our invention is—

1. The herein described method of forming conduit sections consisting in introducing an insulated material in a semi-fluid or plastic state into a casing around a mandrel, allowing the material to harden, removing the mandrel, treating the section with oil, and finally introducing a duct into the space from which the mandrel was removed, substantially as described.

2. The combination of the conduit casing, a cap for one end, the mandrel slidingly engaging through the cap, the supply pipe in the conduit casing, and the apertured head in the supply pipe with which the mandrel engages, substantially as described.

3. The combination of the conduit section casing, a cap for one end thereof, the tubular mandrel slidingly engaging through the cap, the supply pipe, the apertured head thereon, with which the end of the mandrel engages, means for retarding the motion of the casing over the mandrel, and means for forcing the filling into the casing around the mandrel, substantially as described.

4. In an apparatus for forming conduit sections, the combination with a filling and forcing means, of a removable imperforate conduit pipe slidingly supported relative to the forcing and filling means, and a hollow perforated mandrel arranged in line with the interior and in the path of the pipe, substantially as described.

5. In an apparatus for filling conduit casings, the combination of a movable and removable imperforate conduit pipe, a fixed perforated mandrel arranged in line therewith, means for closing one end of the pipe and means for forcibly injecting a filling material into the pipe against the closing means, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

ALEXANDER SEGADE.
DENNIS J. O'REGAN.

Witnesses:
JAMES WHITTEMORE,
O. F. BARTHEL.