

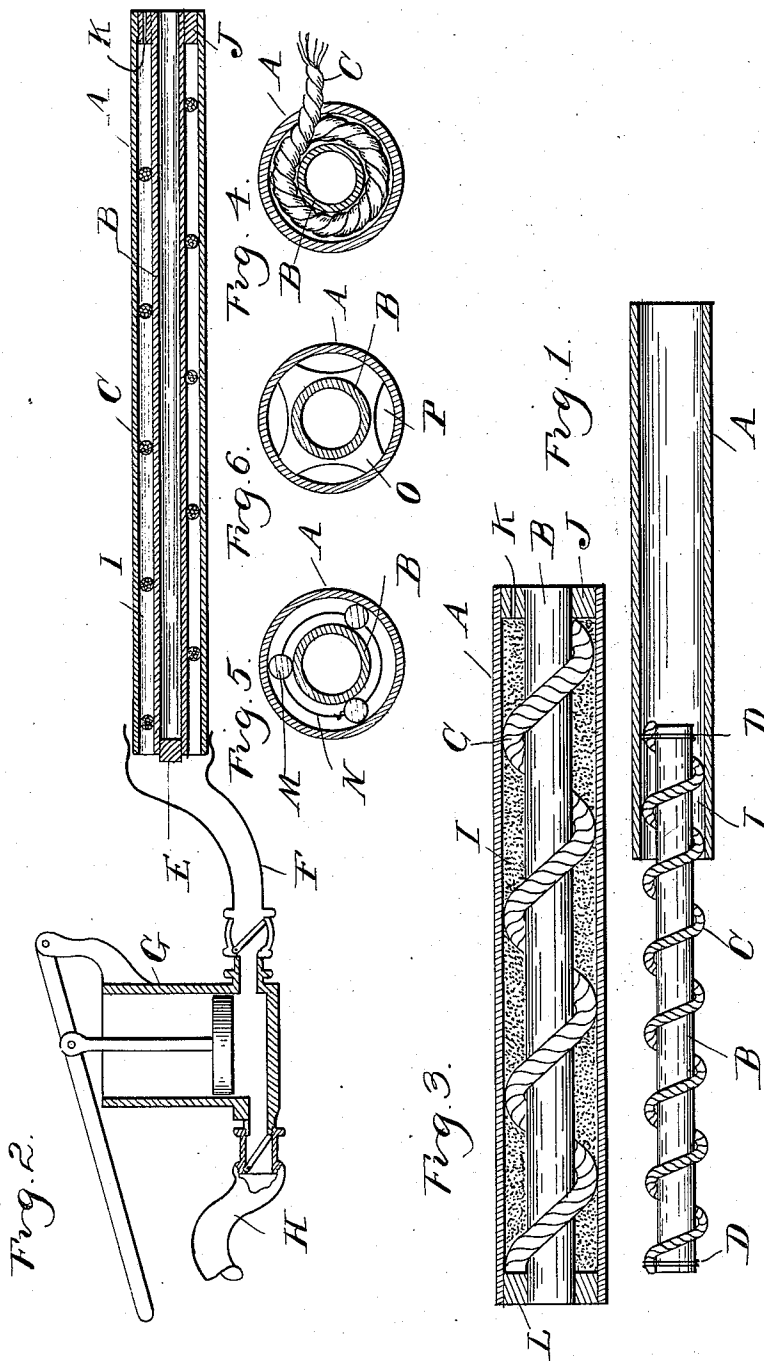
(No Model.)

J. F. CUMMINGS.

PROCESS OF MANUFACTURING ELECTRIC CONDUIT SECTIONS.

No. 497,535.

Patented May 16, 1893.



UNITED STATES PATENT OFFICE.

JAMES F. CUMMINGS, OF DETROIT, MICHIGAN.

PROCESS OF MANUFACTURING ELECTRIC-CONDUIT SECTIONS.

SPECIFICATION forming part of Letters Patent No. 497,535, dated May 16, 1893.

Application filed July 12, 1892. Serial No. 439,748. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. CUMMINGS, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Processes of Manufacturing Conduit-Sections for Underground Electrical Conductors, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a new and useful process of manufacturing conduit sections for underground electrical conductors, and the invention consists in the peculiar manner of manufacturing such a conduit comprising an inner and an outer casing spaced by strips or blocks and having an intervening annular chamber filled with a non-conducting compound forced in in a liquid state and allowed to dry or harden therein, all as more fully hereinafter described.

The article hereinafter described and referred to I have made the subject matter of a pending application for Letters Patent filed July 28, 1892, Serial No. 441,542.

In the drawings, Figure 1 is a view showing the two casings and the manner of engaging one within the other, the outer casing being in section and the inner casing in elevation. Fig. 2 is a longitudinal section in diagram through the conduit section with a pump applied to force in the non-conducting material. Fig. 3 is a longitudinal section through the completed conduit section. Fig. 4 is an end elevation of the inner section in Fig. 1. Figs. 5 and 6 are end elevations of sections of modified form.

A is a casing preferably a metallic pipe and B is a similar casing or piping of somewhat smaller diameter than the casing A, these pipes being of such a size that one may be inserted within the other and leave between the two an annular chamber.

In order to maintain the inner pipe in proper relation to the outer pipe I employ spacing blocks or strips of any desired construction. That which I preferably employ consists of a rope C secured by means of a band or string D at one end, and wound spirally around the inner casing B from end to end and likewise secured at the opposite end. This rope is of

a size so that when it is bound around the casing B it will just fit within the casing A, as shown in Fig. 1, leaving a spiral passage way from end to end of the tube between the two casings. To the inner casing A at one end I then apply a plug E and couple upon the outer casing the discharge pipe F from a pump G of any desired construction. This pump has a suction pipe H connected with a supply of non-conducting material, such as asphaltum or similar substance. The pump being now operated, it is evident that the compound will be discharged into the annular chamber I between the two casings, and will follow in the spiral pathway formed by the rope to the opposite end of the casing, entirely filling the chamber I. I preferably place a plug J at the opposite end of the chamber I, which plug will necessarily have a vent hole K to allow the air to be forced out in advance of the compound. A plug L is then inserted at the opposite end of the chamber I and the section is allowed to remain until the compound has hardened into a solid mass. The resulting section is water tight and cannot leak at any point until both the inner and outer casing together with the filling in the chamber I has been punctured.

Any desired coupling may be employed in connecting the sections together in laying them into a completed conduit.

The reason why I preferably employ the spiral rope is that it forms a single spiral chamber I from end to end of the casing and insures a perfect and uniform filling of that chamber with the compound. I may use other spacing devices however, such for instance, as shown in Figs. 5 and 6. In Fig. 5 I have shown a series of longitudinal strips M connected together by a cord or other separating device N, and in Fig. 6 I have shown spacing blocks O, having grooves P cut at points in the margin thereof. I consider that these constructions are within the spirit of my invention although I prefer the flexible spiral device which has the advantages mentioned.

What I claim as my invention is—

1. The herein described process of manufacturing conduit sections for electrical conductors consisting in concentrically arranging two tubes, with spacing blocks between

forming spaces from end to end, retaining the tubes in a fixed position relative to each other and then in forcing a non-conducting compound into the annular space between, and
5 finally allowing the compound to harden substantially as described.

2. The herein described process of manufacturing conduit sections for electrical conductors, consisting in spirally winding a casing
10 with a non-conducting flexible cord inserting the casing thus wound into a larger casing of a diameter equal to that of the inner tube and its winding retaining the tubes in a fixed position relative to each other, filling
15 one end of the inner tube and then in forcing into the space between a liquid non-

conducting compound and allowing said compound to harden, substantially as described.

3. The method of forming conduit sections, consisting of arranging a tube within a tube, 20 with centering means at two or more points between the tubes, partly filling one end of the outer tube, injecting a liquid non-conducting substance into the space between the tubes and finally permitting the substance to 25 harden, substantially as described.

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

JAMES F. CUMMINGS.

Witnesses:

M. B. O'DOHERTY,
N. L. LINDOP.