Sept. 8, 1931. E. BURKE 1,822,475

MULTIPLE CONDUIT

Filed Jan. 13, 1927

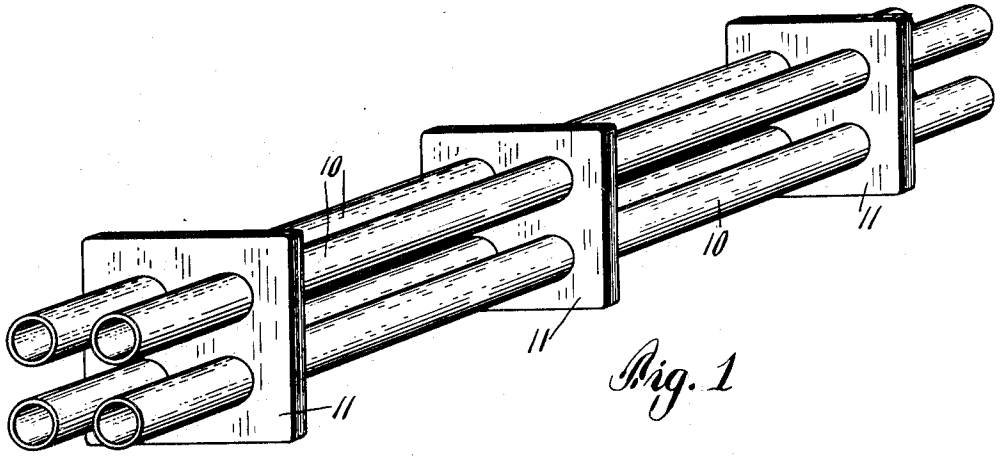


Fig. 1

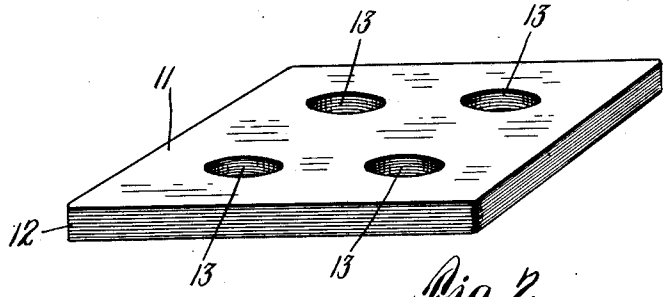


Fig. 2

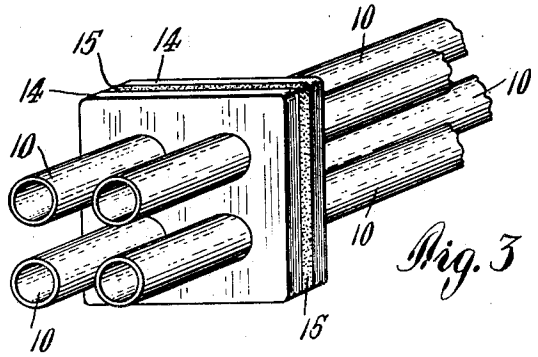


Fig. 3

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UNITED STATES PATENT OFFICE

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MULTIPLE CONDUIT

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This invention relates to multiple conduit, particularly that which is made by assembling sections of individual conduit in side-by-side relation and holding them in such relation by suitable means. Waterproof conduit is used for a variety of purposes in modern industry and it is frequently desirable in certain types of installation to run a plurality of conduits in side-by-side relation. For many of the ordinary purposes of waterproof conduit, it has been found that a conduit made of fiber, impregnated with pitch or other suitable waterproofing material, is desirable for many reasons, including those of economy, lightness of weight resulting in easy handling, toughness, and convenience of interfitting the ends of successive sections. While impregnated fibrous conduit possesses many advantages over other types of conduit, the laying of single conduit in a multiple installation involves an excessive amount of handling which results in corresponding expense. In order to facilitate the handling of conduit which is to be laid in multiple lines, it is found to be advantageous to assemble two or more such sections of single conduit in spaced side-by-side relation, this arrangement not only facilitating the handling and laying of the conduit, but also insuring the proper uniform spacing of the parallel lines thereof. This invention relates more particularly to an improved means for holding sections of conduit together in the form of sections of multiple conduit. In carrying out my invention, I provide a simple, light, convenient, and economical means for holding the individual sections in place, my improved holding means being of sufficient strength for the purposes desired. Various other advantages inherent in my invention will be apparent to one skilled in the art from the description thereof which follows and from the drawings, of which,—

Figure 1 shows in perspective a section of multiple conduit illustrating an embodiment of my invention.

Figure 2 is a perspective of a single collar or holding member for holding the individual sections of conduit in place.

Figure 3 shows a modified form of holding means.

Referring to the drawings in detail, 10 represents sections of individual conduit of any desired material but preferably of fiber. Such conduit may be made in laminated form by winding layers of paper upon one another with suitable adhesives, or may be made as a homogeneous unit by winding a sheet of wet pulp upon itself under pressure, whereby the successive convolutions of the pulp are interfelted with one another so as to be undistinguishable in the finished tube. In order to form a plurality of sections of single conduit into a section of multiple conduit, I may employ a number of collars 11. These collars I make by taking sheets of pressed pulp such as are formed on a "wet machine" and pressing a suitable number of such sheets together with or without sizing to form a single heavy sheet of any desired thickness, the thickness of the sheet being determined by the required strength of the collars 11 for the uses to which the multiple conduit is destined. Figure 2 indicates the collar 11 as built up from a number of sheets of pressed pulp from a wet machine. The thick laminated sheet thus built up is then cut to suitable size and holes 13 are punched or otherwise formed therein, the holes 13 being preferably of a size to receive the conduit sections 10 in a tight driving fit. Sections of conduit are then inserted through a suitable number of collars 11, three being illustrated in Figure 1. The fit of the conduits 10 in the holes 13 may be sufficiently snug to obviate the necessity of further fastening means, but if desired, the collars 11 may be further secured by adhesives, pegs, or any other desired means. The collars 11 may be dried as desired either before or after being assembled with single conduit 10 into multiple conduit sections. The single sections 10 also may be impregnated with pitch or not as desired before being assembled with the collars. I prefer in some cases to assemble unsaturated sections 10 with the collars 11, the whole assembled multiple section then being impregnated as a unit, the impregnating

material serving also to bind the conduits 10 and the collars 11 all firmly together. This results in a comparatively light and economical structure which is both convenient and easy to lay.

If greater strength and rigidity be required than can be readily had from the fiber collars 11, I may use in place of each collar 11 a pair of collars 14, each of which is similar to the collar 11, but may be somewhat thinner. I assemble the collars 14 in pairs with the sections 10 in building up a section of multiple conduit, a pair of collars 14 taking the place of a single collar 11. The collars of each such pair are spaced at a suitable distance and in the space between I pour grout of cinder concrete or other material which when set will have desired characteristics of strength, rigidity and lightness. Such material forms a third layer 15 interposed between the collars 14 of each pair, the whole composite collar thus formed being a strong and rigid structure. When the grout or other material is introduced between the collars 14, it is understood of course that suitable temporary mold members may be placed around the edges of the collars 14 to hold the material between them until it sets. The collars 14 themselves serve as a part of the mold during the setting of the layer 15, and may be left in place permanently to constitute a part of the compound collar as shown in Figure 3. The waterproofing of the members of a multiple section so built up may be done either before or after the assembling of the members. I may saturate the individual conduits before inserting them though the unsaturated collars. The whole may then be immersed in a bath of saturant either before or after the grout has been inserted and allowed to set between the double collars 14. If the grout be inserted between unsaturated collars 14, the latter will absorb a portion of the fluent elements of the grout and will be stiffened thereby and united more firmly to the grout layer. Likewise if the individual conduit sections are unsaturated when the grout is inserted, they will be bonded firmly to the grout. Whether or not some or all of the fiber members in the multiple section have been previously impregnated, I prefer to immerse the whole assembled section in waterproofing compound to insure a complete waterproofing of all parts of the structure.

Having thus described certain embodiments of my invention, it will be evident to those skilled in the art that various changes and modifications may be made therein without departing from its spirit or scope as defined by the appended claims.

I claim:—

1. A spacing and holding member for an individual conduit in a section of multiple conduit, comprising a plurality of sheets of pulp laminated into a relatively thick sheet and perforated to receive the single conduit with a driving fit.

2. The method of making a section of multiple fibrous conduit, which comprises forming perforations in a pair of fibrous sheets to receive individual conduit sections, assembling said sheets in spaced relations on sections of individual conduit passing through the perforations thereof, filling in the space between said sheets with plastic material, permitting the plastic material to set, and immersing the assembled section in a bath of waterproofing compound.

3. A multiple conduit section comprising a plurality of sections of individual pulp conduit in side-by-side relation, collars engaging and supporting said individual sections, said collars each comprising a thick pulp sheet having perforations receiving individual sections with a driving fit, and a waterproofing saturant continuously permeating the entire assembled structure.

In testimony whereof I have affixed my signature.

EDMUND BURKE.