

July 2, 1940.

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2,206,410

CORE FOR FORMING CONCRETE CONDUITS

Filed Nov. 17, 1937

2 Sheets-Sheet 1

FIG. 1

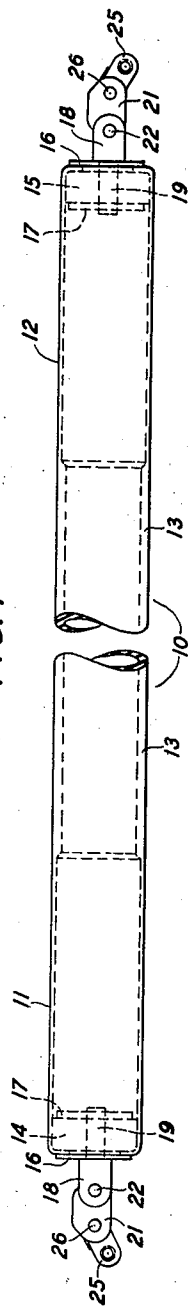
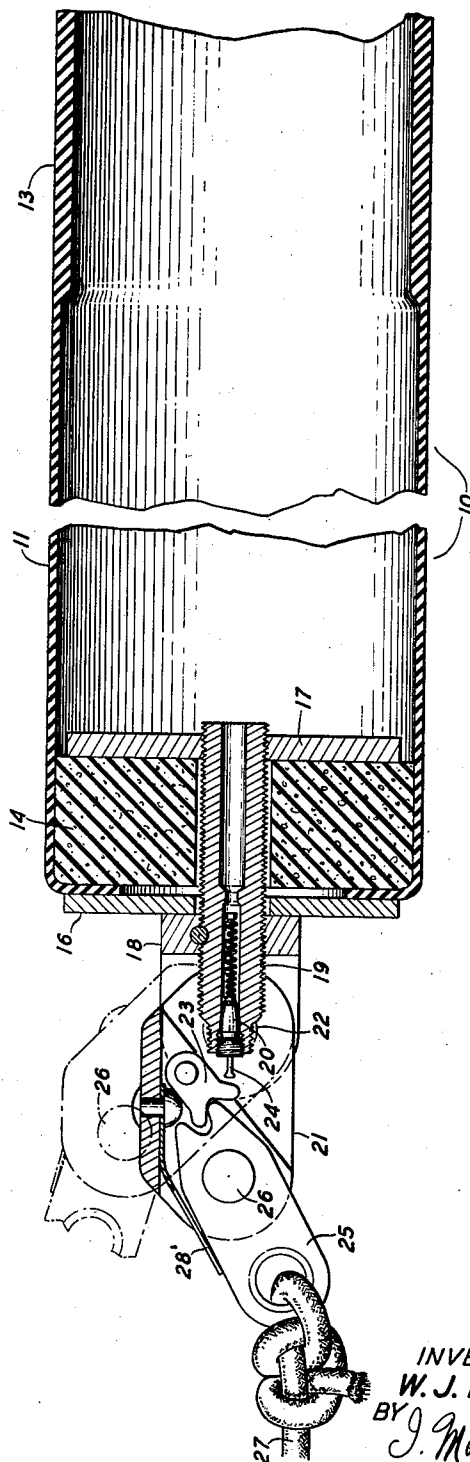


FIG. 2



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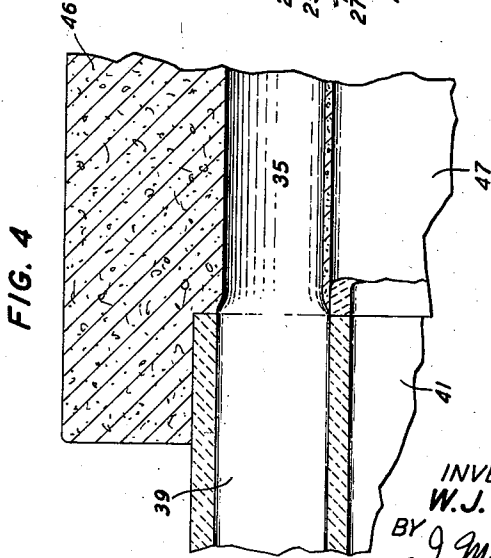
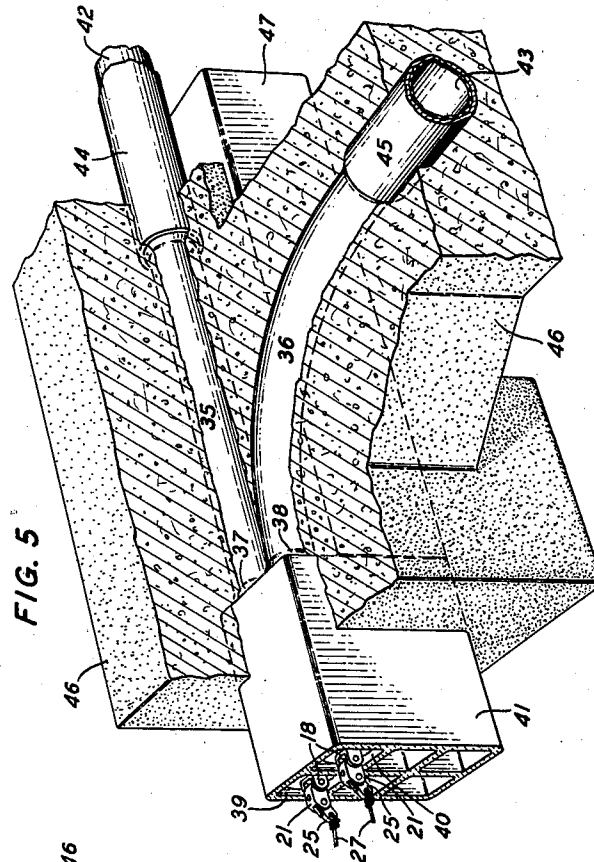
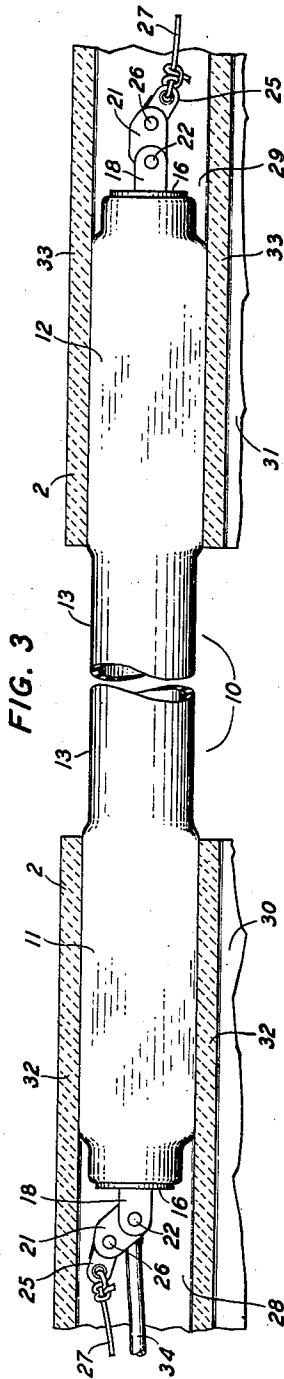
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CORE FOR FORMING CONCRETE CONDUITS

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2 Claims. (Cl. 25—128)

This invention relates to a method of casting concrete or other cementitious conduit, and more particularly to a collapsible form or core for joining and making bends in conduit.

The object of the present invention is the provision of a core or form for making concrete joints in conduit which will readily adapt itself to the size and shape of the conduit to be joined.

Another object of the invention is the provision of a core or form for making conduit joints which may be readily removed after the concrete or other cementitious material has hardened.

A still further object of the invention is the provision of a form or core for making joints in conduit, which may be curved to form bends of different radii.

In accordance with the preferred form of this invention, there is provided a flexible, distensible and collapsible form or core for forming cementitious or concrete joints in conduits and the like. This form or core is constructed from rubber or some other suitable material, which is readily expansible, and comprises an elongated tube closed at each end and having means therein for the introduction and release of fluid pressure. The walls of said form or core, at each end, are somewhat thinner than the middle or intermediate portion of the form, said thin wall portion extending some distance from each end thereof. Due to the form having thin wall end portions it will, when pressure is introduced therein, expand and will cause the ends of the form to conform to the inside contour of the end of the conduits to be joined. In other words, if the bore of the one conduit is circular, the end of the form or core will assume a round shape and if the bore is square, it will assume a square configuration.

This and other features of the invention will be more fully brought out in the following description when read in connection with the following drawings of which:

Fig. 1 is a foreshortened plan view of the core or form in its deflated condition;

Fig. 2 is an enlarged fragmentary view partly in section which illustrates the unequal wall thickness of the tube and also the air valve and its operating mechanism;

Fig. 3 is a longitudinal sectional view of two fragments of conduit with the core or form inflated, the ends thereof distended and embracing the walls of the conduit;

Fig. 4 is an enlarged fragmentary sectional

view of the end of a conduit with the core therein and concrete therearound; and

Fig. 5 is a fragmentary perspective view partly in section showing a portion of a six-way conduit in position with two branches leading therefrom, said branches formed in the concrete by means of the core or form shown in Fig. 1 and a pipe section attached thereto.

Referring now to the drawings, the form or core member 10 is constructed of rubber, or some similar material, and comprises an elongated tube of substantially circular cross-section, the ends 11 and 12 of which have a wall thickness substantially thinner than the intermediate portion 13. Closing the openings in the end of the tube 10 are the soft rubber plugs 14 and 15 which are vulcanized to the tube 10 and further secured in place by means of the metal washers 16 and 17. The washer 17 bears against the inner surface of the plugs 14 and 15, and the washer 16 bears against the outer surface, but has interposed therebetween a portion of the end of the tube 10, and as shown in Fig. 2 this bent-over portion of the tube 10 serves as a gasket when the two washers 16 and 17 are drawn toward each other by means of the U-shaped bracket 18 which threadedly engages and is secured to the outer surface of the valve stem 19, which in turn is in threaded engagement with the inner washer 17, thus forming an airtight joint.

Inside of the valve stem 19 is a valve mechanism 20 (which is of the well-known bicycle tire type). This valve serves as a means for inflating and deflating the tube 10. As shown in Fig. 2, there is associated with the valve mechanism 20 and pivotally mounted on the U-shaped bracket 18, a mechanism for remotely controlling the deflation of the core 10. This mechanism comprises a link member 21 pivoted at 22 on the U-shaped bracket 18. A cam 23 is pivotally mounted thereon and is adapted to engage the extending portion 24 of the valve mechanism 20 when the link arm 25 rotates on its pivot 26 and is moved upward in the position, as shown in the dot-and-dash lines in Fig. 2, when tension is applied on the rope 27. The spring 28' tends to hold the link arm 25 down in its normal position, as shown by the full lines in Fig. 2, thereby maintaining the cam 23 in a position out of engagement with the extending portion 24 of the valve mechanism 20.

By referring to Figs. 1 and 2, it will be observed that a valve mechanism and release therefor, such as described above, is located at each

end of the tube 10 and that after the tube 10 is deflated, by means of the operation of the valve-releasing device, it may be removed by further tension on the rope 27.

5 As shown in Fig. 3, the tube 10 has been inflated and is positioned in the bores 28 and 29 of the conduit 30 and 31 with the inflated ends 11 and 12 firmly embraced by the walls 32 and 33 and sealing the ends of the bores 28 and 29 to prevent the entrance of cementitious material. A hose 34 for the introduction of fluid pressure into the tube 10 is secured to the valve at the end 11. This hose is threaded through the bores of the conduits together with the rope 15 27.

Operation

In forming a conduit joint in accordance with this invention, the ends 11 and 12 of the tube 10 are inserted in the ends of the conduit or pipe to be jointed. Fluid pressure is introduced through the hose 34, which in turn causes the ends 11 and 12 to distend due to the thin wall section, while the diameter of the intermediate portion 13 of the tube 10 increases slightly. The expansion of the ends 11 and 12 causes the tube 10 to firmly embrace the walls of the conduit or pipe and forms a tight seal. The concrete or other cementitious material is then introduced around the tube 10 and firmly encloses the ends of the conduit or pipe and the tube 10. After the concrete has hardened, the air is released from the tube 10 by means of the valve actuating mechanism shown in Fig. 2, which is 35 operated by means of the rope 27. After the air has been released, the tube 10 will deflate and assume the shape as shown in Fig. 1, whereby it may be easily removed from the concrete inasmuch as the diameter of the tube 10 is now 40 slightly less than the bore in the concrete. The removal of the tube 10 is accomplished by applying tension to the rope 27, as heretofore described.

In order to illustrate another use for the inven-

tion, I have shown in Fig. 5 the joining of single bore round conduit or pipe to the square bore of the multiple duct conduit. As shown in this figure, the tubes or forms 35 and 36 are inflated and their ends 37 and 38 are firmly embraced by the square bores 39 and 40 of the conduit 41, while the other ends 42 and 43 are firmly embraced by the bores of the pipes or conduits 44 and 45. The concrete or other cementitious material 46 completely surrounds and encloses the ends of the pipes 44 and 45, the conduits 41 and 47 and the tubes or forms 35 and 36. After the concrete has hardened, the cores or tubes 35 and 36 are removed, as heretofore described.

The core or form of applicant's invention is simple and relatively inexpensive to manufacture and due to its novel construction adapts itself to various sizes and shapes of openings or bores and may be very readily removed from the completed joint.

It is to be understood that the invention is not limited to the details shown as various changes and modifications may be made without departing from the spirit of the invention and it is only limited by the scope of the appended claims.

What is claimed is:

1. A form for making joints in conduits and the like, comprising a single piece of expansible material molded to provide an inflatable form having walls of non-uniform thickness, the walls at each end of the form being comparatively thin and the intermediate portion being relatively thicker.

2. A form for making joints in conduits and the like, comprising a single piece of expansible material molded to provide an inflatable form having walls of non-uniform thickness, said walls at each end of the form being comparatively thinner than the intermediate portion thereof, and a valve mechanism at each end of said form for the introduction and release of fluid pressure.

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