March 1, 1927. 1,619,362

T. E. MURRAY

WITHDRAWING CORES FROM MOLDED CONDUITS

Filed Sept. 17, 1924

Fig. 1.

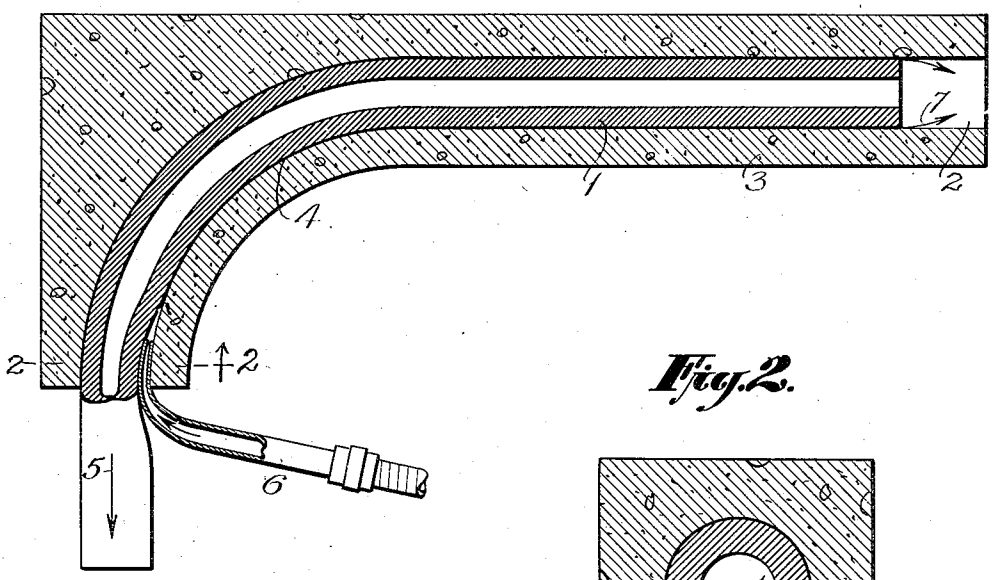


Fig. 2.

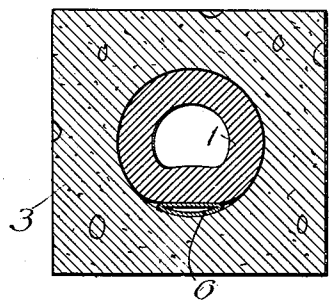
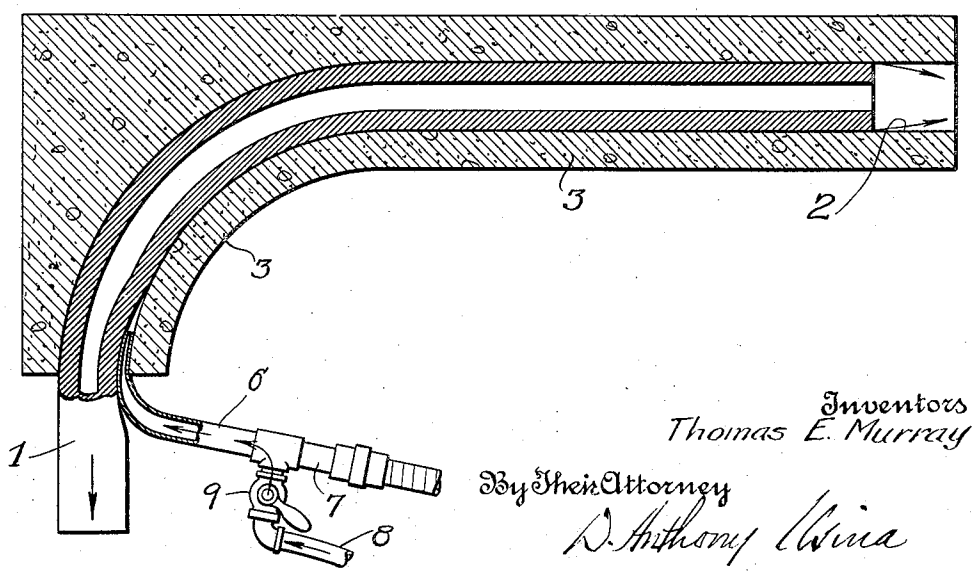


Fig. 3.



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UNITED STATES PATENT OFFICE.

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WITHDRAWING CORES FROM MOLDED CONDUITS.

Application filed September 17, 1924. Serial No. 738,151.

In an application of Thomas E. Murray, No. 670,423, now Patent 1,556,869, dated October 13, 1925, there is described a method of molding conduits in plastic material by means of a highly resilient tubular core of sufficient strength to support the external pressure of the molded material and of such a composition that when pulled longitudinally it will contract transversely to break its adhesion to the surrounding material and permit its withdrawal. Such cores are generally made of high grade rubber composition to secure the necessary resiliency. When the conduit is of considerable length or is curved longitudinally the withdrawal of the core requires a very strong pull, and a point is reached at which high grade material will not stand the strain, but will break.

My present invention provides a way of lessening the strain required to pull such cores out of the molded material; thus permitting the use of longer cores or, for a given length, of cores of greater resiliency even though this means reduced strength. The accompanying drawings illustrate an embodiment of the invention. Fig. 1 illustrates in longitudinal section the operation of pulling a flexible core out of the molded conduit. Fig. 2 illustrates the same in cross-section on the line 2—2. Fig. 3 illustrates a modification in section.

The tubular soft rubber core 1 has been used to form a conduit 2 in a body of plastic material 3. The conduit is shown with a curved portion 4 by way of example. The invention, however, is useful on straight lengths as well as on curves. The projecting end of the core is pulled in the direction of the arrow 5. If the length be not too great or the friction due to the curve in the conduit be not too great, the core can be pulled out without putting a strain on it which is beyond the strength of the material of which it is composed. Such a pull will diminish the cross-section and break the adhesion of the rubber to the surrounding concrete progressively backward along the length of the conduit and permit the withdrawal of the core.

But where the strain required is beyond the strength of the material a special means is used for breaking the adhesion between the tube and the surrounding wall at least sufficiently to permit the withdrawal of the core under a tension less than its breaking strength. The adhesion may readily be broken to a considerable extent by thrusting a nozzle 6 between the core and the surrounding wall at the exposed end of the conduit and forcing air or water or other lubricant into the space between the core and the surrounding wall. The nozzle may be made of iron pipe or any other suitable material. The air or other fluid introduced will force its way between the core and the surrounding wall backward along the length of the core escaping into the rear end of the conduit as indicated by the arrows 7. The mere loosening of the core in this way will sometimes be sufficient, the operation being completed before the core is pulled. But generally it will be preferable to continue forcing the lubricating fluid into the space around the core while the pulling operation is going on so as to maintain a quantity of the lubricating fluid always between the core and the surrounding material. Where the conduit 2 is open at its rear end the lubricating fluid may pass directly through such end. Where it is closed the fluid may turn and pass forward through the tubular core, pressing the latter in the direction of its withdrawal.

According to Fig. 3 the nozzle 6 is connected at its rear end to two branch pipes 7 and 8, the former for air and the latter for water, with a cock 9 for cutting off the water. Instead of water, oil or other liquid lubricant may be used.

With this apparatus, according to the circumstances of the case, air may be used alone to release the core from the surrounding wall, or water (or other liquid) may be used alone, or the two may be supplied at the same time. I have found it particularly advantageous to first force a liquid through the nozzle and to follow this with air.

Although I have described with great particularity of detail a certain embodiment of my invention, yet it is not to be understood therefrom that the invention is restricted to the particular embodiment of the invention disclosed. Various modifications thereof may be made by those skilled in the art without departure from the invention as defined in the following claims.

What I claim is:—

1. In the molding of conduits in plastic material by means of a flexible core, the method of withdrawal which consists in forcing a lubricating fluid into the space be-

tween the core and the surrounding wall so as to flex the core to break the adhesion while pulling the core longitudinally to withdraw it from the conduit.

2. In the molding of conduits in plastic material by the use of a flexible tubular highly resilient core, the method of withdrawing the core which consists in the forcing of a fluid between the outside of the core and the surrounding wall so as to break their adhesion to each other and simultaneously pulling the end of the core so as to cause it to contract in cross-section and thus augment the breaking of its adhesion to the surrounding wall.

3. In the molding of conduits in plastic material by means of a flexible core, the method of withdrawal which consists in the forcing of a liquid and air into the space between the core and the surrounding wall.

In witness whereof, I have hereunto signed my name.

THOMAS E. MURRAY.