

Aug. 14, 1951

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2,564,026

FORM FOR MANUFACTURING CONCRETE DRAIN TILES

Filed Aug. 11, 1950

2 Sheets-Sheet 1

FIG. 1.

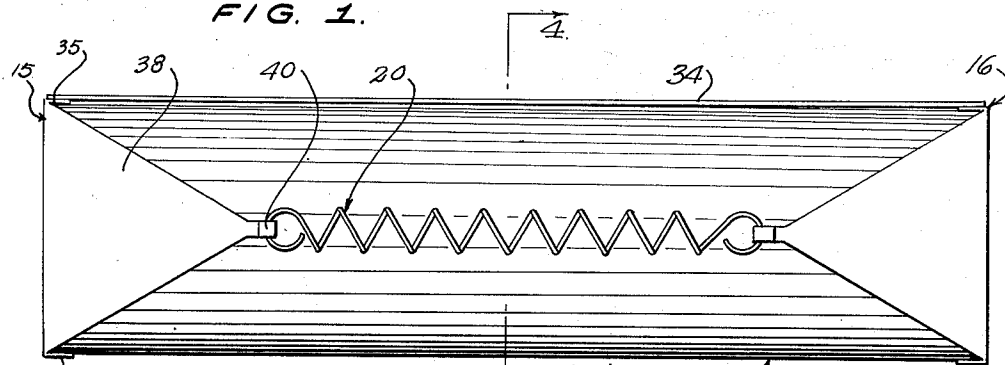


FIG. 2.

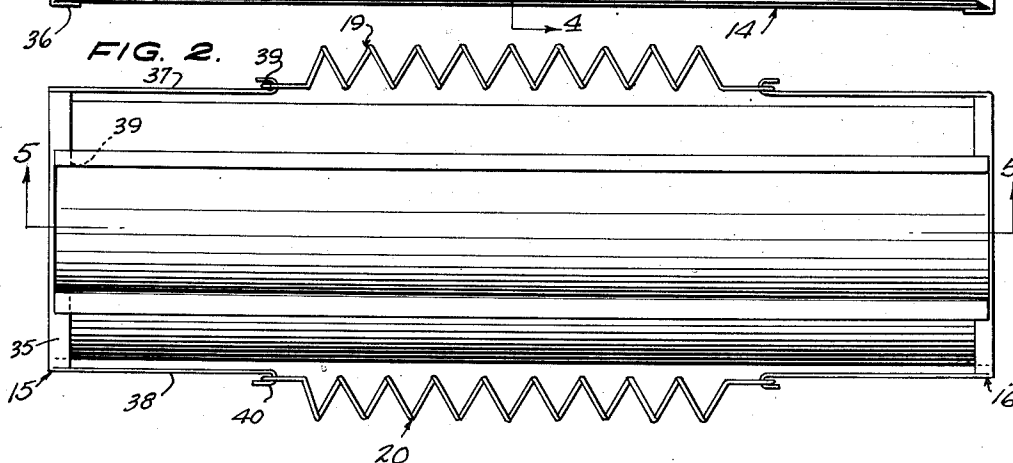


FIG. 3.

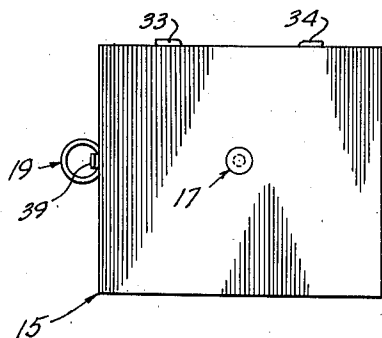
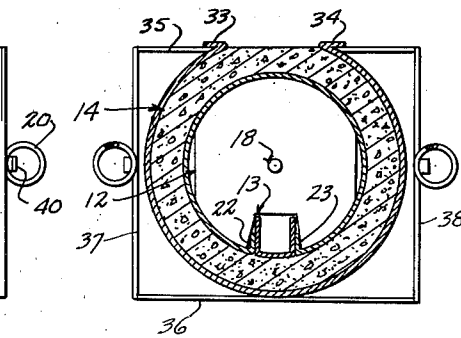


FIG. 4.



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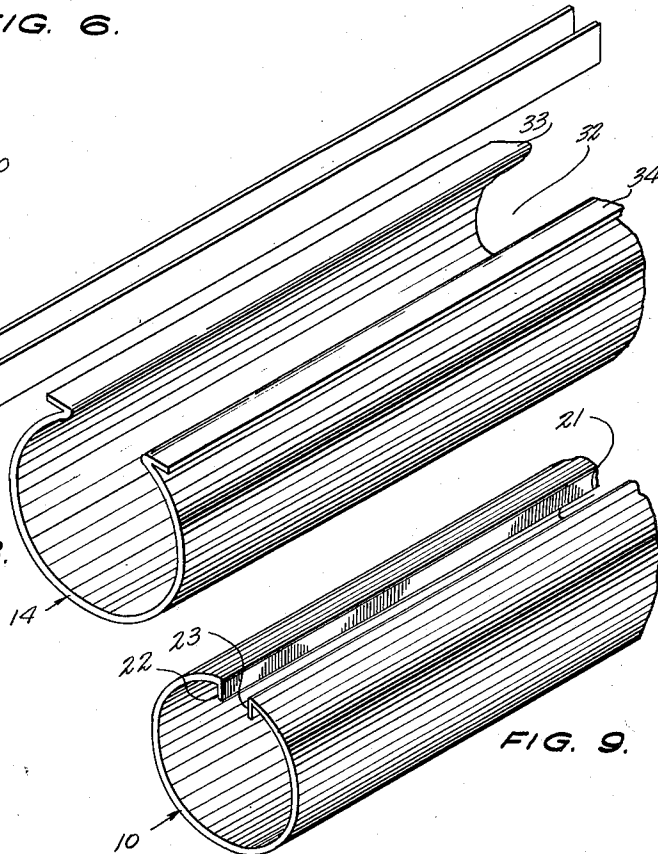
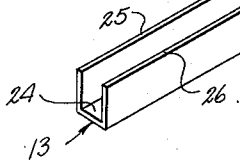
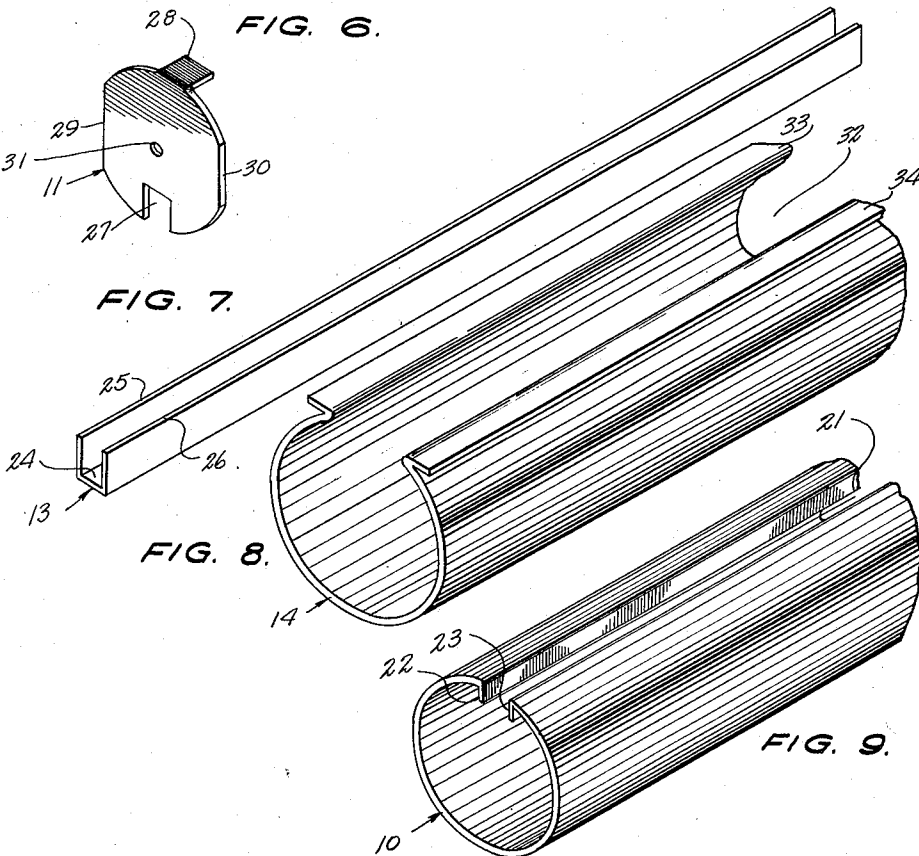
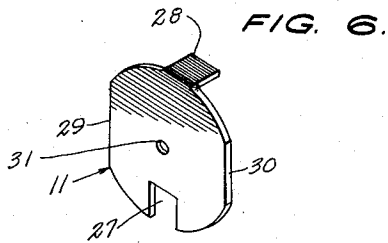
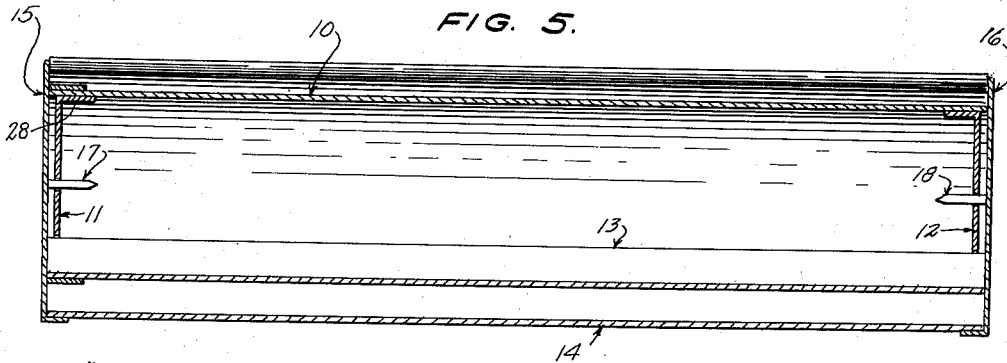
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FORM FOR MANUFACTURING CONCRETE DRAIN TILES

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UNITED STATES PATENT OFFICE

2,564,026

FORM FOR MANUFACTURING CONCRETE
DRAINTILES

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Application August 11, 1950, Serial No. 178,871

3 Claims. (Cl. 25-118)

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This invention relates to reusable forms and more particularly to reusable metal forms for manufacturing tubular articles, such as drain tiles, from concrete.

It is among the objects of the invention to provide an improved metal form which can be easily assembled to cast tubular concrete objects, such as a drain tile, into which plastic concrete to form the tile can be easily poured and tamped, which can be quickly and easily removed from a hardened tile and reassembled for reuse, which is readily portable and can be supported on the ground or on a suitable supporting structure, and which is simple and durable in construction, economical to manufacture, easy to use, and highly efficient in operation.

Other objects and advantages will become apparent from a consideration of the following description and the appended claims in conjunction with the accompanying drawings wherein:

Figure 1 is a side elevational view of a metal form illustrative of the invention;

Figure 2 is a top plan view of the form illustrated in Figure 1;

Figure 3 is an end elevational view of the form illustrated in Figures 1 and 2;

Figure 4 is a transverse cross sectional view on the line 4-4 of Figure 1;

Figure 5 is a longitudinal cross sectional view on the line 5-5 of Figure 2;

Figure 6 is a perspective view of an inner cylinder end closure plate constituting an operative component of the form assembly;

Figure 7 is a perspective view of an inner cylinder spacer;

Figure 8 is a perspective view of a fragmentary portion of the outer cylinder portion of the form; and

Figure 9 is a perspective view of a fragmentary portion of the inner cylinder.

With continued reference to the drawings, the form assembly of the present invention comprises, in general, an inner cylinder 10, end closure plates 11 and 12 closing the respectively opposite ends of the inner cylinder, a spacer 13 disposed in a longitudinally extending slot in the inner cylinder to hold the inner cylinder in proper shape during the casting operation, an outer cylinder 14, rectangular end walls 15 and 16 closing the respectively opposite ends of the outer cylinder, spikes 17 and 18 projecting from the end walls 15 and 16 inwardly through apertures in the end closure plates 11 and 12 to hold the inner cylinder substantially coaxial with the outer cylinder, and springs 19 and 20 connected between the end walls 15 and 16 to resiliently

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hold these end walls against the opposite ends of the outer cylinder.

The inner cylinder 10 is formed of suitable sheet metal, preferably of a resilient nature, and has an outside diameter substantially equal to the desired inside diameter of the tubular concrete object to be cast in the mold. This inner cylinder has a slot 21 extending longitudinally thereof from one end to the other and has inwardly directed flanges 22 and 23 extending one along each side of the slot 21 in spaced apart and substantially parallel relationship to each other.

The spacer 13 is an elongated body of channel shaped cross section having a web 24 the width of which is substantially equal to the width of the slot 21 when the form is properly assembled, and spaced apart, substantially parallel flanges 25 and 26 disposed between the flanges 22 and 23 of the inner cylinder. The length of the spacer 13 is substantially equal to the length of the inner cylinder and this spacer is disposed in the slot 21 in position such that its web is flush with the outer surface of the inner cylinder 10, as is particularly illustrated on Figure 4.

Each of the end closure plates 11 and 12 is a sheet metal body of generally circular shape having a peripheral notch 27 of rectangular shape and of a size to receive the flanges 22 and 23 of the inner cylinder and the portion of the spacer 13 projecting inwardly of these flanges. The sides of the notch 27 are preferably outwardly divergent or are stepped to closely receive both the flanges 22 and 23 of the inner cylinder and the flanges 25 and 26 of the spacer. Opposite the notch 27 the end closure plate is provided with a rectangular tab 28 extending perpendicularly from one side of the plate at the periphery of the latter to assist in maintaining the plate in proper position in the inner cylinder and substantially perpendicular to the inner cylinder axis. The sides of the plate 11 between the notch 27 and the tab 28 may be flattened, as indicated at 29 and 30, to facilitate placing the end closure plates in the inner cylinder and removing them therefrom. Each end closure plate is provided with a centrally disposed aperture, as indicated at 31, in Figure 6.

The outer cylinder 14 is larger in diameter than the inner cylinder 10 and is of substantially the same length as the inner cylinder. This outer cylinder is provided with a slot 32 extending longitudinally thereof from one end to the other and with outwardly projecting flanges 33 and 34 extending one along each side of the slot 32. The flanges 33 and 34 are turned outwardly so

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that their outer surfaces lie substantially in a common plane which is tangential to the outer surface of the outer cylinder 14 along the mid-width location of the slot 32.

Each of the end walls 15 and 16 comprises a rectangular sheet metal body having flanges 35 and 36 disposed one along each of two opposite edges of the body and having triangular extensions 37 and 38 disposed one along each of the other two edges of the body.

When the form is in operative position, the flange 36 is at the bottom, the flange 35 at the top, and the extensions 37 and 38 substantially vertically disposed at respectively opposite sides of the outer cylinder 14, as is particularly illustrated in Figure 4.

The upper flange 35 is provided with a rectangular notch 39 symmetrically disposed relative to the mid-length location of this flange and the opposite end edges of which are received under the flanges 33 and 34 to hold these flanges in a predetermined spaced apart and substantially parallel relationship to each other.

The outer cylinder flanges being firmly held at the opposite ends of the outer cylinder by the top flanges of the end walls 15 and 16, the outer cylinder is firmly held in predetermined shape with a predetermined width of the slot 32.

The extensions 37 and 38 taper symmetrically in a direction away from the end wall 15 and are respectively provided at their distal ends with hook formations 39 and 40. The two extensions on each of the end walls 15 and 16 are substantially parallel to each other, as is clearly illustrated in Figure 2, and are disposed at respectively opposite sides of the outer cylinder and spaced from the latter. The extensions 37 and 38 extend from the end wall 15 toward the mid-length location of the outer cylinder and the corresponding extensions on the end wall 16 extend from this end wall also toward the mid-length location of the outer cylinder, complementary extensions on the two end walls being disposed at the same sides of the outer cylinder.

The springs 19 and 20 are connected at their opposite ends to the hook formations on each pair of complementary end wall extensions and resiliently pull the end walls together, holding them firmly against the corresponding ends of the outer cylinder of the form.

The spikes 17 and 18 carried by the end walls 15 and 16 extend through the central apertures provided in the end closure plates 11 and 12 of the inner cylinder and hold the inner cylinder substantially coaxial with the outer cylinder so that a circumferential space of substantially uniform thickness is provided between the outer and inner cylinders, as is particularly illustrated in Figure 4.

With the form completely assembled, as described above, plastic concrete is poured into the form through the slot 32 in the outer cylinder and is tamped into the space between the outer and inner cylinders until this space is completely filled. The surface of the concrete between the adjacent edges of the flanges 33 and 34 is then leveled off with a suitable trowel or other leveling instrument and the concrete permitted to harden.

When it is desired to remove the hardened tubular object from the form, the springs 19 and 20 are first unhooked from one of the end walls and the end walls are removed from the form

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assembly. Removal of the end walls releases the flanges 33 and 34 of the outer cylinder and permits the outer cylinder to expand so that it can be withdrawn from the casting. The end closure plates 11 and 12 of the inner cylinder are then removed and the expander or spacer 13 is next removed from the inner cylinder permitting the inner cylinder to contract. The inner cylinder is then withdrawn from the casting and the casting is entirely free of the form and may be stored in a suitable location for seasoning. The form may then be reassembled in the manner described above and again filled with plastic concrete to produce another casting.

As stated above, the inner and outer cylinders are preferably formed of a resilient sheet material to facilitate their removal from a hardened casting. The inner cylinder end plate, the inner cylinder spacer and the outer cylinder end walls are formed of sheet material of heavier gauge than the material of the inner and outer cylinders so that the end plates, spacer and end walls are substantially rigid in construction.

By using a relatively dry mix, such as is used in manufacturing concrete building blocks, the setting time of the concrete is materially shortened and the form assembly of the present invention can be utilized to produce concrete drain tiles at a rapid rate.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are, therefore, intended to be embraced therein.

What is claimed is:

1. A form for molding tubular concrete objects comprising an inner cylinder having a longitudinally extending slot and inwardly directed flanges disposed one along each side of said slot, a spacer of channel shaped cross section disposed between said flanges with its web portion substantially flush with the surface of said cylinder, centrally apertured end closure plates of substantially circular shape disposed one in each end of said inner cylinder, an outer cylinder surrounding said inner cylinder and circumferentially spaced therefrom, said outer cylinder having a longitudinally extending slot therein and outwardly directed flanges disposed one along each side of said slot, rectangular end walls disposed one against each end of said outer cylinder, a flange on each end wall having a notch therein receiving the corresponding ends of the flanges on said outer cylinder to hold such flanges in predetermined spaced apart relationship, end wall extensions disposed at opposite sides of said outer cylinder and extending from the opposite ends of said outer cylinder toward the mid-length location thereof, resilient means interconnecting complementary extensions extending from opposite ends of said outer cylinder to resiliently hold said end walls against the ends of said outer cylinder, and spikes projecting inwardly one from each end wall substantially at the center thereof and received in the apertures in the corresponding inner cylinder end closure plates to maintain said inner cylinder substantially coaxial with said outer cylinder.

2. A form for casting tubular objects comprising a contractile inner cylinder having a longi-

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itudinally extending slot therein, a spacer disposed in said slot holding said inner cylinder in expanded condition, end closure plates disposed one in each end of said inner cylinder, an expansile outer cylinder receiving said inner cylinder and having a longitudinally extending slot therein, end walls disposed one at each end of said outer cylinder and engaging the latter at opposite sides of the slot therein to hold said outer cylinder in contracted condition, resilient means connected between said end walls resiliently holding the latter against the respectively opposite ends of said outer cylinder, and means acting between each end wall and the adjacent end closure plate holding said inner cylinder substantially coaxial with said outer cylinder.

3. A form for casting tubular objects comprising a contractile inner cylinder having a longitudinally extending slot therein, a spacer disposed in said slot holding said inner cylinder in expanded condition, end closure plates disposed one in

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each end of said inner cylinder, an expansile outer cylinder receiving said inner cylinder and having a longitudinally extending slot therein, end walls disposed one at each end of said outer cylinder and engaging the latter at opposite sides of the slot therein to hold said outer cylinder in contracted condition, resilient means connected between said end walls resiliently holding the latter against the respectively opposite ends of said outer cylinder, and means acting between each end wall and the adjacent end closure plate holding said inner cylinder substantially coaxial with said outer cylinder, said inner and outer cylinders being formed of resilient sheet metal, and said spacer, said end closure plates and said end walls being formed of sheet metal of heavier gauge than the sheet metal of said cylinders.

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No references cited.