J. B. DAVIS.

MOLD FOR CONCRETE STRUCTURES.

APPLICATION FILED DEC. 24, 1917.

1,262,652.

Patented Apr. 16, 1918.

3 SHEETS—SHEET 1.

Fig. 1.

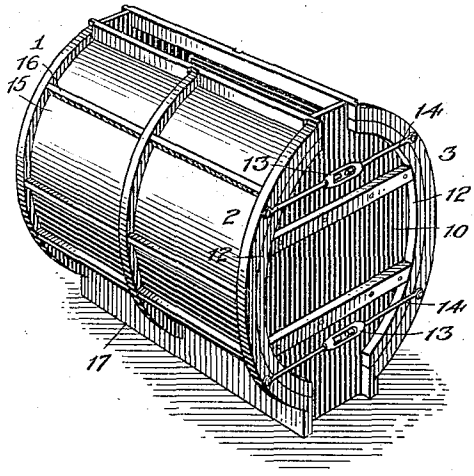


Fig. 3.

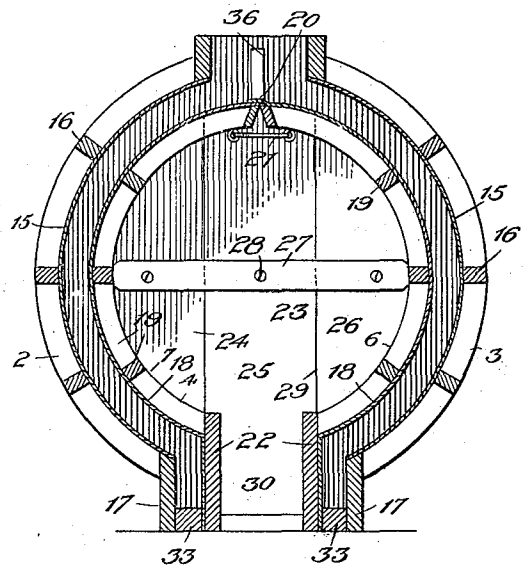
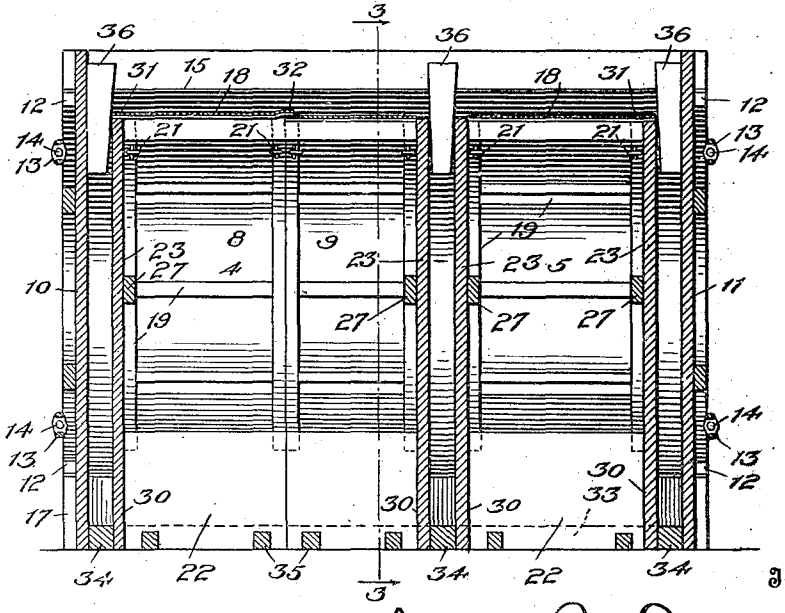


Fig. 2.



Witness

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3 SHEETS—SHEET 2.

Fig. 4.

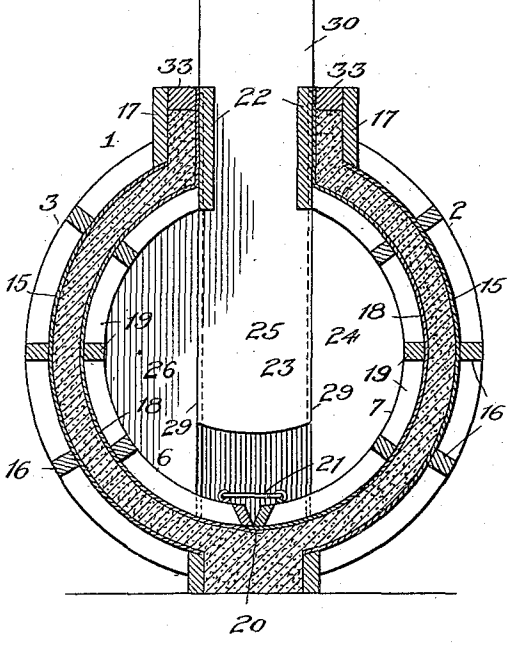


Fig. 5.

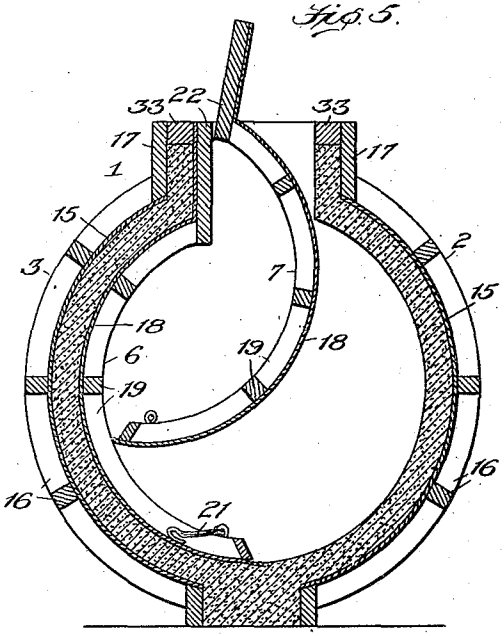
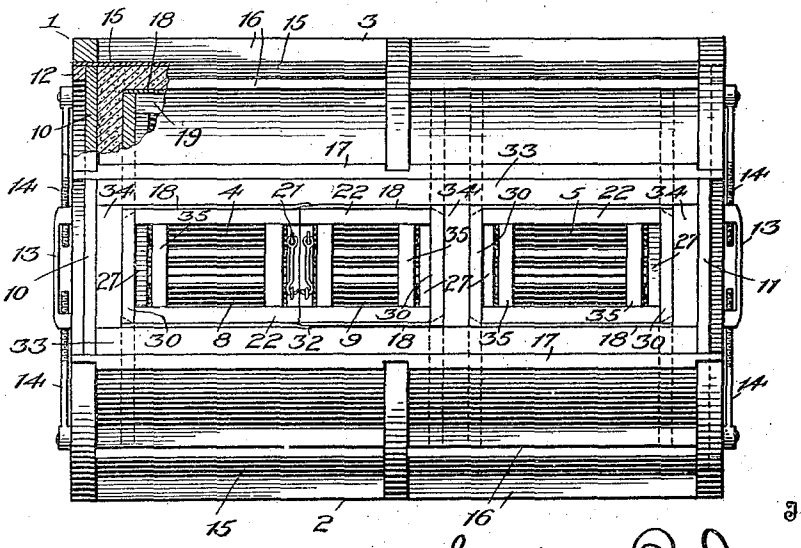


Fig. 6.



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3 SHEETS—SHEET 3.

Fig. 7.

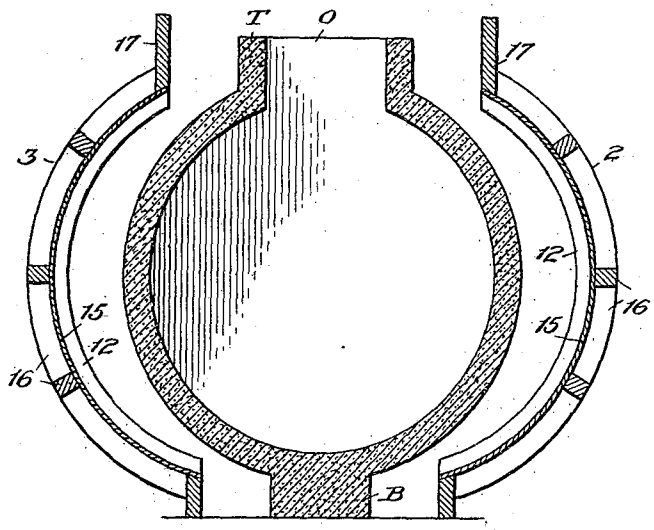


Fig. 8.

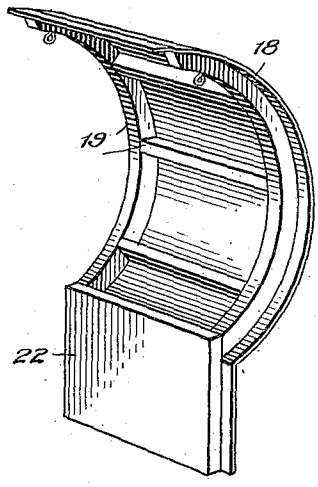


Fig. 9.

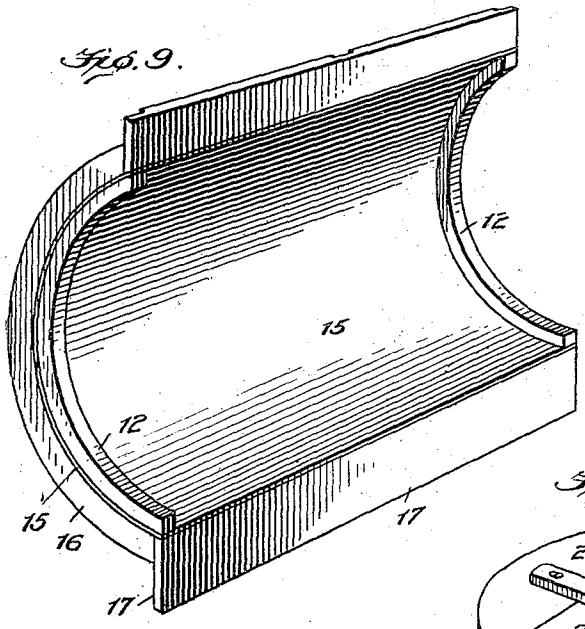


Fig. 11.

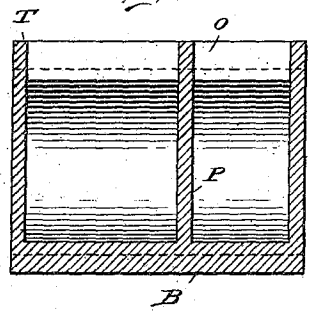
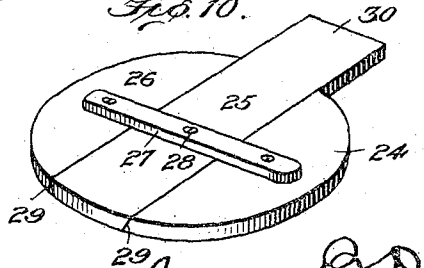


Fig. 10.



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UNITED STATES PATENT OFFICE.

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MOLD FOR CONCRETE STRUCTURES.

1,262,652. Specification of Letters Patent. Patented Apr. 16, 1918.

Application filed December 24, 1917. Serial No. 208,611.

To all whom it may concern:

Be it known that I, JAMES B. DAVIS, a citizen of the United States, residing at Wilmington, in the county of New Hanover and State of North Carolina, have invented certain new and useful Improvements in Molds for Concrete Structures; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain new and useful improvements in molds, and more especially contemplates an improved device for the production of a septic tank for use in connection with sanitary sewerage systems.

The production of a septic tank of the form shown herein is at the present time largely a matter of detailed form work, wherein portions of the mold are set up and taken out successively. This method is both tedious and unsatisfactory, in that the production is slow and the lack of uniformity in the tanks commercially undesirable.

This invention has been designed to overcome these structural difficulties, and to that end comprises a mold having inner and outer sections consisting of a plurality of collapsible members, which, when set up, form a unitary structure into which cement or similar material can be poured for the production of the complete tank.

An object of this invention is to produce a mold, the outer section of which includes complementary side and end members, and the inner section or core of which comprises spaced sections, each of which is composed of semi-cylindrical complementary side and end members respectively.

Another object of this invention is the production of a mold designed to form a substantially cylindrical partitioned tank having a supporting base and a flanged upper portion longitudinally arranged with openings therein.

A further object of this invention is to produce a mold the outer section of which can be readily removed from the cast product, and the inner or multi-section core collapsed and removed through the openings provided in the upper flanged portion of the cast tank.

With these and other objects in view the invention further consists in the combination and arrangement of the several sections, spacing blocks, and wedges hereinafter described and set forth in the appended claims.

In the accompanying drawings which show by way of illustration my improved mold, and product produced thereby,

Figure 1 is a perspective view of the improved mold, set up for the pouring operation.

Fig. 2 is a longitudinal vertical section through the mold.

Fig. 3 is a vertical transverse sectional view on the line 3—3 of Fig. 2.

Fig. 4 is a vertical transverse sectional view through the mold, the product having been cast therein and the mold inverted for the removal of the core sections, by first removing the center strip of the ends of the core, as shown in said figure.

Fig. 5 is a similar view illustrating the manner in which the semi-cylindrical complementary members of the inner or core sections are removed through the longitudinal openings formed in the product or tank.

Fig. 6 is a bottom plan view of the mold, a portion thereof being shown in sections.

Fig. 7 is a transverse sectional view through the molded tank, showing the inner or core sections removed therefrom, and the outer complementary sections detached from the product.

Fig. 8 is a detailed perspective view of one of the semi-cylindrical complementary members of the inner or core section.

Fig. 9 is a similar view of one of the side complementary members of the outer section.

Fig. 10 is a detailed perspective view of one of the multi-part ends of the inner or core section, and

Fig. 11 is a longitudinal sectional view through the partitioned cylindrical septic tank or product produced by my improved mold.

Referring to the drawings, in which simi-

lar reference characters designate corresponding parts, the mold comprises an outer section 1, formed of complementary side members 2 and 3, and inner or core sections 4 and 5 respectively, consisting of semi-cylindrical complementary members 6 and 7 of the same general contour as the complementary members 2 and 3. The core section 4, which as shown herein is designed to produce the larger compartment of the septic tank, is formed of longitudinal co-operating lengths or sections 8 and 9, see Fig. 2. The core section 5 comprises a single length section, and is designed to produce the smaller compartment of the septic tank. These respective inner or core sections 4 and 5 are spaced by suitable blocks and wedges to be hereinafter described, for producing the partition or dividing wall between the larger and smaller compartments of the septic tank. These core sections 4 and 5 are also similarly spaced from the complementary ends 10 and 11 of the outer section 1 for producing the end walls of the septic tank.

The complementary ends 10 and 11 of the outer section 1 are preferably positioned against the inner edges of beads or flanges 12 carried by the complementary side members 2 and 3 of the outer section 1, see Fig. 6.

Suitable turn buckles 13 are interposed between threaded rods 14 carried by the complementary side members 2 and 3 of the outer section. The purpose of these turn buckles 13 is to firmly clamp in place the outer section about the complementary ends 10 and 11 when the mold is set up, as shown for example in Fig. 1.

The outer section 1, and more particularly the complementary sides 2 and 3 thereof are formed of oppositely arranged curved thin plates 15, suitably secured to and reinforced by circumferential and longitudinally spaced ribs 16. Longitudinally arranged spaced ribs 16 are carried by the respective complementary side members 2 and 3 at the top of the mold. At the bottom of the mold similarly arranged, but wider spaced longitudinal ribs 17 are secured to the respective complementary side members 2 and 3 of the outer section 1. Between the longitudinal ribs 16 the plastic material flows to form the base or supporting bottom of the septic tank as shown in Figs. 4 and 5. Between the longitudinal ribs 17 and similarly arranged ribs to be presently described as carried by the core sections, the plastic material is permitted to flow, thereby forming the upper flanges of the septic tank, and the longitudinal openings therebetween.

The semi-cylindrical complementary members 6 and 7 of the inner core sections are formed of curved thin plates 18 secured to and reinforced by circumferential and longitudinally disposed bars or ribs 19. The thin plates 18 are designed to overlap as shown at 20 in Figs. 3 and 4, the complementary members 6 and 7 being hinged to each other at the top thereof by means of hooks 21, or any other suitable form of attaching means. Secured at the bottom of the complementary members 6 and 7 are longitudinally extending ribs 22, between which and the hereinbefore mentioned longitudinal ribs 17 carried by the complementary side members 2 and 3 of the outer section, the plastic material is permitted to flow to form the flanged upper end of the septic tank and the longitudinal openings therein. The thin plates 18 of the respective complementary members 6 and 7 extend downwardly and are secured to the longitudinally extending ribs 22 as shown in Fig. 3 of the drawing. The extension of these plates 18 permits the plastic material to form a smooth uninterrupted surface upon the interior of the tank.

The ends 23 of the inner or core sections 4 and 5 comprise a series of multipart members 24, 25 and 26, joined together by means of a connecting cross bar 27 secured as at 28 to the respective members 24, 25 and 26. These respective members which comprise the end 23 of the core sections are angularly abutted as at 29, see Figs. 6 and 10. The center strip or member 25 of the end 23 is provided with an extension 30 adapted to extend downwardly between the longitudinal ribs 17 carried by the complemntary sides 2 and 3 of the outer section 1. The purpose of these extensions 30 provided upon the ends 23 is to permit of the plastic material forming the end walls and partition to the top of the tank. The width of the center strip or member 25 of the ends 23 is of a size to permit its withdrawal through the longitudinal openings formed in the tank or product, as will be promptly described.

As shown in Figs. 2 and 6 of the drawings the ends 23 of the respective core sections 4 and 5 which coöperate with the complementary ends 10 and 11 of the outer section 1 to form the end walls of the tank are adapted to receive the flanged extensions 31 of the thin plates 18. The intermediate end members 23 which coöperate to form the partition of the tank are designed to abut against the ends of their respective core sections with the thin plate portions 18 of the complementary members 6 and 7 terminating short of the edges of the said ends 23. By this construction it will be seen that the end members 23 can be initially removed from the cores for collapsing the same after the product has been molded.

As shown in the drawings, two lengths 8 and 9 of a core section are used to form the larger compartment of the tank, and a

flanged end 32 is provided for overlapping the adjoining core as shown in Fig. 2 of the drawings.

In setting up the mold a plurality of strips and wedges are interposed at various points between the hereinbefore described molding sections. Interposed between the longitudinal ribs 17 of the complementary side members 2 and 3, and the ribs 22 of the complementary members 6 and 7 of the core, are longitudinally arranged strips 33. These strips 33 are longitudinally interposed between the respective ends 23 of the inner or core sections 4 and 5, as shown in dotted lines in Fig. 2 of the drawing. Transversely arranged strips or blocks 34 are interposed between the intermediately arranged ends 23 of the core section, and the ends 23 designed to coöperate with the respective complementary ends 10 and 11 of the outer section. These transversely arranged blocks or strips 34, together with the longitudinally interposed strips or blocks 33, serve to form the molding surface of the upper edge or flange of the septic tank. Intermediate strips or blocks 35 may be interposed between the ribs 22 carried by the complementary members 6 and 7 of the core sections for spreading and holding the said core sections in place.

When the mold is set up for the pouring operation as shown in Figs. 1, 2 and 3, suitable wedge blocks 36 are driven between the intermediate ends 23, between which latter the partition of the tank is formed; and the ends 23 coöperating with the respective complementary ends 10 and 11 with the outer section of the mold. As the cement or other plastic material is poured and the mold is gradually filled, these wedges 36 may be removed.

The invention has been primarily designed for molding a substantially cylindrical septic tank T having a supporting base B and a flanged upper portion provided with longitudinally extending openings O. The tank is divided by an integrally cast partition P arranged to divide the tank into two compartments one of which is larger than the other. The general contour of this tank is disclosed in some of the figures of the drawings, and a longitudinal sectional view therethrough is shown in Fig. 11.

In operation the mold is set up by first assembling the inner or core sections, and subsequently positioning the outer section thereabout with the spacing blocks and wedges in place. The core sections are assembled by hooking the complementary members 6 and 7 together as shown in Fig. 3 of the drawings, the ribs 22 thereof resting upon any suitable smooth foundation and spaced by the transversely arranged blocks or strips 35. The end members 23 of the core sections are then arranged in position as shown in Fig. 2. The respective core sections 4 and 5 are longitudinally alined when being set up and are spaced by means of the intermediate block or strip 34 and wedge 36. The longitudinal strips or blocks 33 are then laid along the outer faces of the ribs 22. The width of these blocks 33 as also the width of the blocks 34, determine the relative thickness of the walls of the septic tank. These blocks may vary in size according to the thickness desired.

The outer section 1 is now assembled about the inner or core members 4 and 5 by bringing the complementary sides 2 and 3 against the longitudinal and transversely arranged bars 33 and 34 respectively. The complementary ends 10 and 11 of the outer section 1 are also positioned behind the flanges 12 of the complementary side members 2 and 3. These end members 10 and 11 of the outer section 1 serve in addition to the blocks 33 and 34 to space the outer section from the inner cores 4 and 5. The complementary sides 2 and 3 of the outer section are drawn together by means of the turn buckles 13 threaded upon the rods 14, and the mold is ready for pouring. The wedges 36 between the complementary ends 10 and 11 and the ends 23 may be withdrawn after the preliminary pouring of the plastic material.

Cement or other suitable plastic material is poured from the top of the mold, thereby forming the septic tank set forth in the drawings.

To remove the mold from the product or tank, the mold is inverted into the position shown in Figs. 4 and 5 of the drawings. The outer section 1 may be readily removed by unfastening the turn buckles 13, separating the complementary sides 2 and 3, and removing the ends 10 and 11. The inner or core members 4 and 5 are removed as follows. Reaching through the longitudinal openings provided in the tank, the cross bars 27 of the intermediate ends 23 are removed by unfastening the screws at 28 in each of the respective members 24 and 25 and 26, whereupon the intermediate or center member 25 can be readily withdrawn in a vertical direction as shown in Fig. 4 of the drawing. The withdrawing of this center member permits of the ready removal of the associated members 24 and 26 respectively. The hook 21 which connects the complementary members 6 and 7 of the core sections together during the molding operation, is now released, thereby permitting of each of the said complementary members 6 and 7 being successively removed through the longitudinal openings formed in the product, as illustrated in Fig. 5 of the drawing. In removing the two part section 8 and 9 of the core 4, the complementary members 6 and 7 of the section 9 are first removed. The complementary members of the section 8 of the

core 4 are subsequently taken out in the manner hereinbefore described. The outer ends 23 of the respective core sections 4 and 5 may then be removed.

From the foregoing it will be obvious that an easily assembled and readily collapsible mold has been produced in which a highly successful type of septic tank can be rapidly produced at a low cost.

I claim:

1. In a mold of the class described, the combination with an outer section composed of separable complementary members, of a plurality of collapsible core sections, each of which comprises detachably joined and semicircularly shaped complementary members, and means for relatively spacing the said core sections from the outer section and from each other.

2. In a mold of the class described, the combination with an outer section composed of separable arcuately shaped complementary side members and end members abutted thereagainst, of a plurality of core sections comprising complementary side members of arcuate formation and end members abutted against said side members, and means for relatively spacing the side and end members of the core sections from the side and end members of the outer section, and from each other.

3. A mold of the class described, comprising an outer section, and an inner core, said core comprising a series of relatively spaced and complete core sections, each of which latter being formed of arcuately shaped complementary side members and abutted end members.

4. A mold of the class described comprising an outer section, and an inner core, said core comprising separate, relatively spaced and completely formed core sections of varying sizes each of which latter being formed of arcuately shaped complementary side members and abutted end members.

5. A mold of the class described, comprising an outer section, and an inner core, said core being formed of complementary end and side members, the latter having outwardly extending ribs terminating in the circumferential plane of the outer section.

6. A mold of the class described, comprising an outer section formed of complementary end and side members, the latter having oppositely arranged longitudinally extending ribs, and an inner core comprising complementary end and side members the latter having outwardly extending ribs longitudinally alined and spaced from one of the series of the longitudinally arranged ribs formed on the outer section.

7. A mold of the class described, comprising an outer section, and an inner core, said core comprising a plurality of relatively spaced sections each section being formed of complementary side members having outwardly extending ribs, and separable end members, the central portion of each separable end member extending outwardly in a plane with the aforesaid ribs to the outside of the said outer section.

8. A mold of the class described comprising an outer section composed of complementary sides having oppositely positioned longitudinally extending ribs, and members arranged between said complementary sides, an inner core consisting of complementary side members joined together upon one side thereof and having outwardly extending longitudinal ribs, and spacing blocks arranged between the said series of ribs formed upon the complementary sides of the said outer section and inner core.

9. A mold of the class described comprising an outer section composed of complementary sides having oppositely positioned longitudinally extending ribs, end members arranged between said complementary sides, an inner core consisting of complementary side members joined together upon one side thereof and having outwardly extending longitudinal ribs, spacing blocks arranged between the said series of ribs formed upon the complementary sides of the said outer section and inner core, and a plurality of wedges interposed between the ends of the outer section and inner core.

10. A mold of the class described comprising an outer section, and an inner core consisting of a plurality of complementary side and end members, the side members being joined together and having outwardly extending spaced ribs, and the said end members being formed of a series of detachable members, the center one of which extends outwardly between the spaced ribs formed on the complementary sides of the core.

11. A mold of the class described comprising an outer section composed of complementary side members having flanges thereon, end members positioned between said side members and abutted against the aforesaid flanges, a plurality of core sections each of which comprises complementary side and end members, and means for spacing the said core sections from the complementary members of the outer section and from each other.

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

JAMES B. DAVIS.

Witnesses:
W. S. BRADLEY,
C. L. GULLICK.