

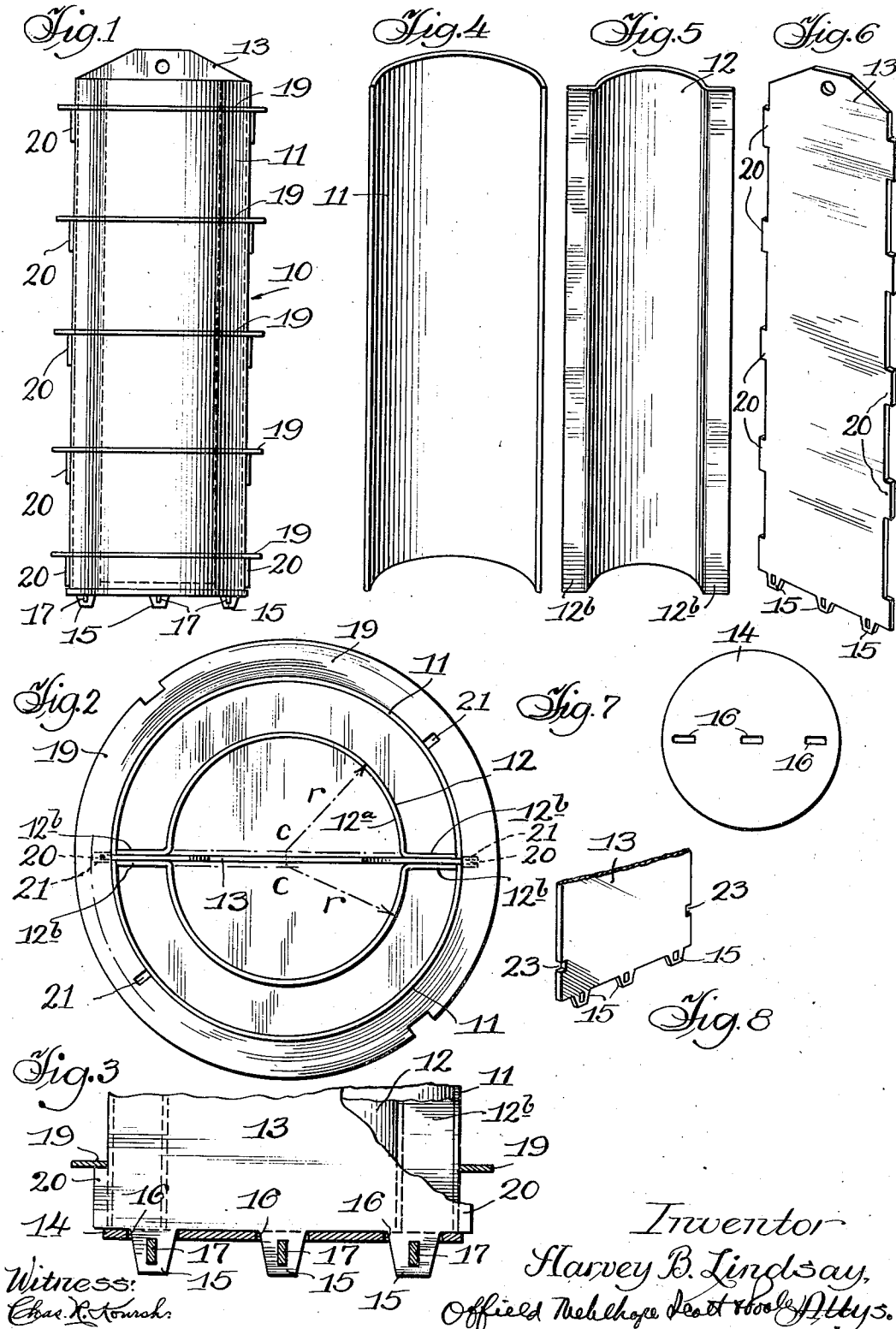
Nov. 21, 1939.

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2,180,422

METAL MOLD

Filed Aug. 19, 1937



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UNITED STATES PATENT OFFICE

2,180,422

METAL MOLD

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Application August 19, 1937, Serial No. 159,852

9 Claims. (Cl. 25—121)

This invention relates to improvements in molds, and more particularly to quickly demountable metallic molds adapted for use in forming insulation material, such as intumescent silicate of soda or the like, for steam pipes and similar tubular forms, although not necessarily limited to the use of such material or molding in such shape or form.

Among the objects of the invention is to provide a material mold of light weight so that when the molded material is heated while molding, but little heat will be lost by the sensible heat carried out by the molds themselves.

A further object of the invention is to provide a knock-down but quickly assemblable form of mold having no hinges, catches, springs or similar small connecting parts which heating and handling would soon spoil. A still further object is to provide a mold, the different elements of which are composed of different materials having different coefficients of expansion to the end that after the mold and the molded material have been subjected to heat, upon cooling the inner members having the highest coefficient of expansion would also shrink the greatest distance, thus tending to loosen the material within the mold and making the mold easier to disassemble.

The invention may best be understood by reference to the accompanying drawing illustrating one embodiment thereof, in which:

Figure 1 is a side view of a complete mold in assembled form, such as might be used for semi-circular sections of insulating material in tubular form for covering steam pipes or the like;

Figure 2 is an enlarged top plan view of the mold shown in Figure 1;

Figure 3 is a fragmentary section of the bottom end of the mold;

Figure 4 is a detailed perspective view of an exterior shell portion of the mold shown in Figure 1;

Figure 5 is a detailed perspective view of an interior shell portion of the mold shown in Figure 1;

Figure 6 is a detailed perspective view of a center supporting plate forming part of the mold shown in Figure 1;

Figure 7 is a detail of the bottom disk of the mold; and

Figure 8 is a detailed fragmentary view of a modified form of center supporting plate.

Referring now to details of the embodiment of my invention shown in the drawing, the mold indicated generally at 10 is designed to form in

one molding operation two semi-circular sections of insulating material adapted for use as pipe covering. The mold is made up of several separable parts including two similar outer shells 11, 11, each made of a suitable metal having a relatively low coefficient of expansion, as for instance steel, a pair of inner shell members 12, 12 form the inner walls of the mold, said inner shell members each consisting of a semi-circular body portion 12^a having outwardly bent terminal flanges 12^b, 12^b, the extreme margins of which are adapted to fit in abutting relationship with the extreme ends of the corresponding outer shells 11, 11 as clearly shown in Figure 2. These inner shells 12 are preferably made of suitable metal such as aluminum, copper, or the like having a higher coefficient of expansion than the outer shells 11.

A center supporting plate 13 is also provided, which may be of the same material as the inner shells 12, disposed along opposite sides thereof, or of other material having substantially the same coefficient of expansion. Said plate extends slightly higher than the body of the mold and has an eye 13^a for attachment with suitable mold supporting means (not shown).

The center plate 13 is of substantially the same width as the maximum diameter of the outer shell members 11. Thus, when the outer and inner shell members are in assembled relation, as shown in Figures 1 and 2, the adjacent opposed ends of the two outer shell members 11 are separated from each other by the thickness of the center plate 13, while the flanged portions 12^b, 12^b of the inner shell members 12 have their edges in abutting relation with the ends of their respective outer shell members 11. Preferably the inner shells 12 are welded or otherwise fastened by means of their flanges 12^b to the center plate 13, in the position shown in Figure 2, thereby making these three members a unit for easy assembly of the whole mold.

In order to maintain the proper substantially semi-circular shape of the mold cavities formed between the two respective pairs of outer and inner shell members 11 and 12, it will be observed that in each instance said outer and inner shell members 11 and 12 are formed on radii having a center *c* on a line forming an extension between the respective upright faces of the flanges 12^b, 12^b, which define the longitudinal parting line of its respective semi-circular mold cavity. With the arrangement thus described, the two mold cavities are such as to form substantially similar semi-circular half sections

which, when removed from the mold, will fit together to form a true circle. The mold itself, however, when in assembled form, as shown in Figure 1, does not form a true circle, the mold body being slightly widened in a direction perpendicular to the center plate 13, by an amount equal to the distance between the two center points c, c.

The bottom of the mold is formed by a disk 14 adapted to fit over and close the spaces between the inner and outer shells 12 and 11. In the form shown, the bottom disk 14 is detachably connected to and supported by the center plate 13 by means of a plurality of depending eyes 15, 15 on the bottom of said plate, which project through registering holes 16, 16 formed along the center of the bottom disk, as clearly shown in Figure 3. Each eye 15 is adapted to receive a removable key 17 of usual wedge shape.

The main parts of the mold, including inner and outer shell members 11 and 12 and center plate 13 are all held in assembled relationship by means of a plurality of rings 19, preferably of metal having a similar coefficient of expansion to that of outer shells 11, and each slightly elliptical in form with its internal diameter extended or slightly elongated in one direction, so as to fit over the exterior of the outer shells 11, 11 when in assembled relation.

The rings 19 are disposed and held at predetermined points along the mold by means of a plurality of projections 20, 20 spaced along opposite sides of the center plate 13, and extending beyond the outer surface of the shells 11, 11, as clearly shown in Figure 1. Each of the rings 19 is provided at its point of minimum diameter with a pair of oppositely disposed slots 21, 21 on its interior margin arranged to permit said ring to pass over the lugs 20, 20 when the slots 21, 21 are in registering position therewith. The arrangement is such, however, that after the several rings have been passed over one or more pairs of the opposed lugs 20, 20, to dispose said rings properly along the mold body, said rings, by partial rotation out of registering position with the adjacent lugs 20, can no longer be removed lengthwise of the mold. Moreover, due to the slightly elliptical shape of the rings previously referred to, the partial rotation of said rings will serve to wedge and lock the parts of the mold in closely fitting engagement. For this purpose it is preferable to rotate the several rings in alternate directions, thus maintaining substantially equal wedging action on all sides of the outer shell members 11.

In a modified form of center plate and locking means shown in Figure 8, the side margins of the center plate are extended throughout the entire length except as to a plurality of opposed notches 23, 23. With this arrangement the rings 19, 19 may be slipped longitudinally of the mold when the notches 23, 23 are in registering position with the extended portions of the center plate 13, but the several rings may be locked against any longitudinal movement by partial rotation of each ring when in horizontal registering position with one of the notches 23.

The use and operation of a mold constructed in accordance with my invention will now be understood from the above description. All of the metallic parts are relatively light in weight and extremely simple in construction and arrangement. Due to the lightness of the parts, little heat is absorbed or carried away by the metallic parts. The several parts can be quickly and easily

assembled and disassembled, but when held in assembled position by the connecting rings, the several parts of the mold cooperate to form a rigid and efficient mold body. The rings, however, can be readily rotated to unlocking position and knocked off with a few taps.

It will also be observed that the inner mold members, such as the shell pieces 12, are made of metal having a higher coefficient of expansion than the outer shells 11 and the rings 19, so that when the molds cool the inner members will shrink the greatest distance and thus tend to loosen the material within the mold. This also assists in disassembling the molds.

Although I have shown and described certain embodiments and uses of my invention, it will be understood that I do not wish to be limited to the exact construction and uses shown and described, but that various changes and modifications may be made without departing from the spirit and scope of my invention as defined in the appended claims.

I claim:

1. A mold for hollow tubular bodies comprising a pair of outer shell members, a pair of inner shell members, each of said inner shell members having integral flanged extremities abutting the ends of their respective outer shell members to form two similar mold cavities, and means for detachably securing said inner and outer shell members in assembled relation, including a plurality of one-piece rings fitting over the exterior surface of said outer shell members and maintaining the adjacent ends thereof in mutually registering position.

2. A mold for hollow tubular bodies comprising a pair of sheet metal outer shell members, a pair of sheet metal inner shell members, each of said inner shell members having flanged extremities closing the ends of their respective outer shell members, said inner and outer shell members forming concentric halves of a mold body substantially elliptical in transverse section, and means for securing said inner and outer shell members in assembled relation, comprising a plurality of rings each having its inner periphery substantially elliptical so as to fit over the exterior surface of said mold body and exert inward clamping action on the outer walls of said mold body when rotated with respect thereto.

3. A mold for hollow tubular bodies comprising a pair of metallic outer shell members, a pair of inner metallic shell members having flanged extremities, each abutting the extremities of one of said outer shell members to form two similar mold cavities, semi-circular in transverse section, a supporting plate disposed between the flanges of said inner shell members, said outer shell members forming a mold body substantially elliptical in transverse section, and means for securing said inner and outer shell members in assembled relation, comprising a plurality of rings each having their inner periphery substantially elliptical and fitting over the exterior surface of said mold body so as to exert inward clamping action on the outer walls of said mold body when rotated with respect thereto.

4. A mold for hollow tubular bodies comprising a pair of metallic outer shell members, a pair of inner metallic shell members having flanged extremities, each abutting the extremities of one of said outer shell members to form two similar mold cavities semi-circular in transverse section, a supporting plate disposed between the flanges of said inner shell members and having a plurality

of opposed locking lugs projecting beyond the adjacent extremities of said outer shell members, said outer shell members forming a mold body substantially elliptical in transverse section, and means for securing said inner and outer shell members in assembled relation, comprising a plurality of rings each having its inner periphery substantially elliptical and also having opposed slots in its inner periphery, so that said rings can pass over said locking lugs when in registering position therewith, and be rotated into interlocking engagement with said lugs to exert inward clamping action on the outer walls of said mold body.

5. A mold for hollow tubular bodies comprising a pair of metallic outer shell members, a pair of metallic inner shell members having flanged extremities, each of said inner shell members abutting the extremities of one of said outer shell members so as to form two similar mold cavities, a separate supporting plate disposed between the flanges of said inner shell members, a bottom plate closing the end of said two mold cavities, means for detachably securing said bottom plate to said supporting plate, and means for securing said inner and outer shell members and said supporting plate in assembled relation, comprising a plurality of one-piece rings fitting over the exterior surface of said outer shell member and maintaining the adjacent ends thereof in mutually registering position.

6. A mold for hollow tubular bodies comprising a pair of metallic outer shell members, a pair of metallic inner shell members having flanged extremities, each of said inner shell members closing the extremities of one of said outer shell members so as to form two similar mold cavities, a separate supporting plate disposed between the flanges of said inner shell members, a bottom plate closing the end of said two mold cavities, means for detachably securing said bottom plate to said supporting plate, comprising a plurality of lugs projecting from the bottom of said supporting plate extending through said bottom

plate, locking pins removably associated with said lugs, and means for securing said inner and outer shell members and said supporting plate in assembled relation, comprising a plurality of one-piece rings fitting over the exterior surface of said outer shell member and maintaining the adjacent ends thereof in mutually registering position.

7. A mold for hollow tubular bodies comprising a pair of sheet metal outer shell members, a pair of inner sheet metal shell members, each of said inner members having flanged extremities abutting the ends of their respective outer members to form two similar mold cavities, and means for detachably securing said inner and outer shell members in assembled relation, including a plurality of one-piece rings fitting over said outer shell members, said outer shell members and said rings being of a metal having a lower coefficient of expansion than that of said inner shell members.

8. A collapsible mold comprising relatively larger outer metal wall members having their extremities spanning relatively smaller inner metal wall members, and a plurality of demountable bands for detachably securing said outer and inner wall members together, the metal comprising said outer wall members and said bands having a lower coefficient of expansion than that comprising said inner wall members.

9. A mold comprising two spaced wall members of different metals detachably connected together, one of which members is larger than the other, the larger of said wall members being concave and having its extremities overlapping the side edges of the smaller wall member, the metal comprising said larger wall member having a lower coefficient of expansion than that comprising the smaller wall member so that said wall members will, upon cooling, shrink away from each other and tend to loosen the material within the mold.

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