F. H. SOUDER.

CONCRETE PIPE MOLD.

APPLICATION FILED NOV. 10, 1914.

1,150,828.

Patented Aug. 17, 1915

2 SHEETS—SHEET 1.

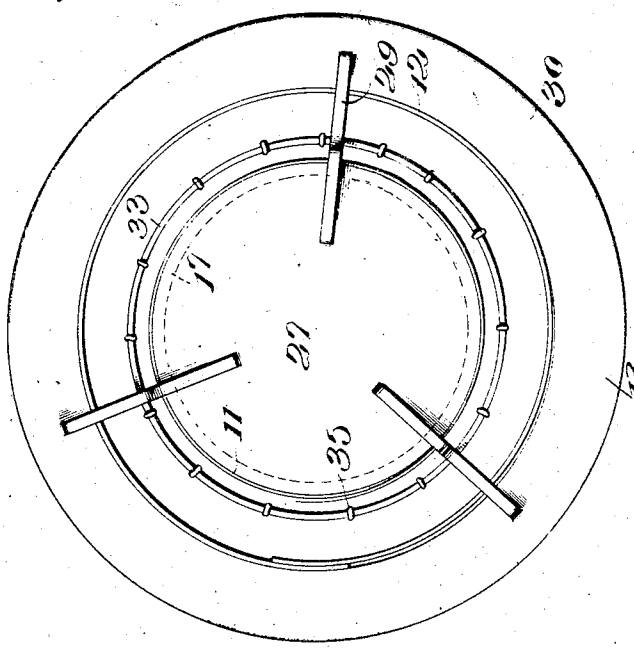


Fig. 3.

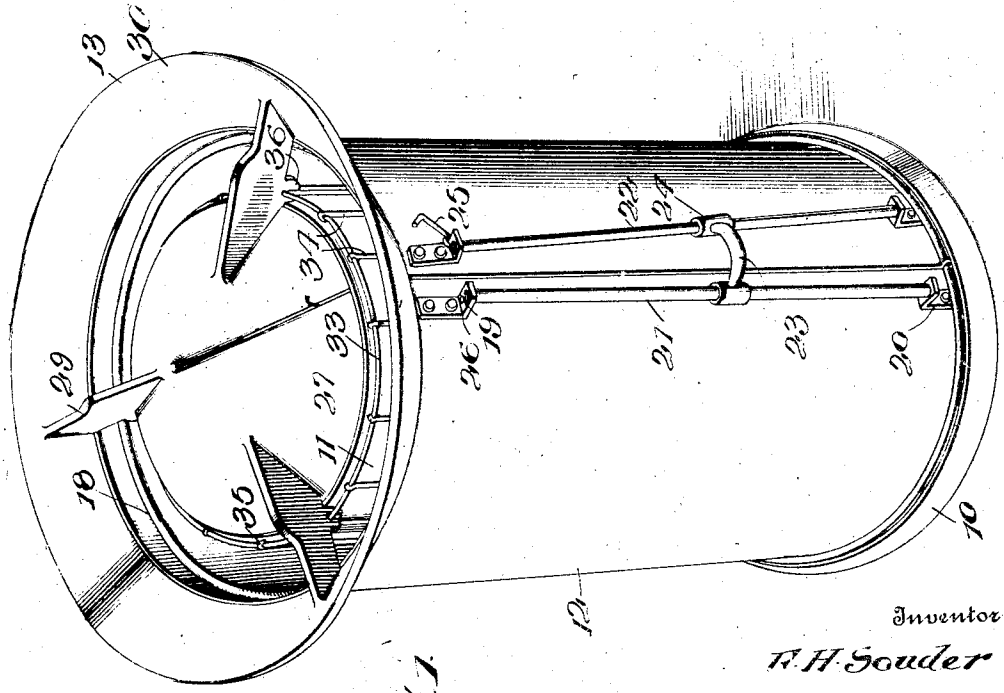


Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2.

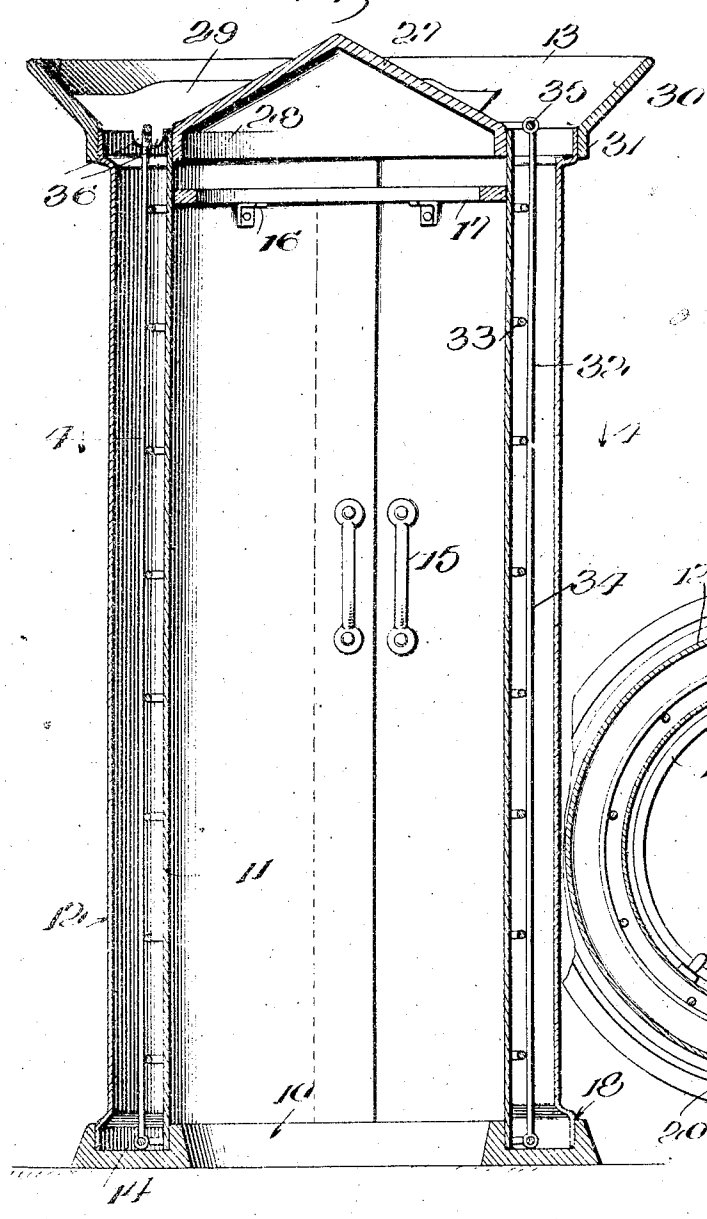
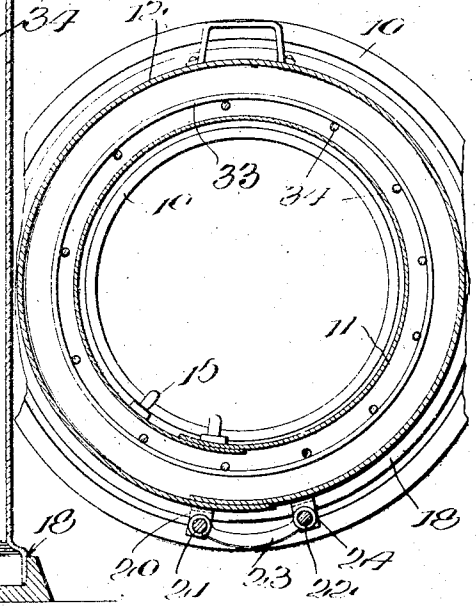


Fig. 4.



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CONCRETE-PIPE MOLD.

1,150,828. Specification of Letters Patent. Patented Aug. 17, 1915.

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To all whom it may concern:

Be it known that I, FREDERICK H. SOUDER, a citizen of the United States, residing at Lansdale, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Concrete-Pipe Molds, of which the following is a specification.

My present invention relates to new and useful improvements in molds for manufacturing concrete pipe sections, the primary object of my invention being the provision of a mold structure capable of being conveniently assembled for use and as conveniently unassembled and removed from the finished pipe.

A further object of my invention is to construct a pipe mold of the above described character having a relatively light hollow core and an outer casing forming the inner and outer walls of the mold, the core and casing being held in proper relation by a base which also forms an end wall of the mold and by a top mold member. In this connection, one of the most important objects accomplished in my present invention consists in constructing the top member in such a manner that it may be used as a filling spout, permitting pouring of the concrete into the mold, while in a semi-liquid state, and further in such a manner that it will prevent entry of any semi-liquid concrete into the hollow core.

A further object of my invention is to so construct the top member of the mold that it may be utilized to center and hold in proper position a reinforcing member or element in the form of a cylindrical tube made of foraminous material.

Another object of my present invention consists in the provision of means for contracting the outer casing of the mold to assist in assembling it and means for subsequently expanding such mold section to bring it into close clamping engagement with the base and upper mold member and so hold the complete mold against disarrangement during use.

With these and other objects in view, my invention will be more fully described, illustrated in the accompanying drawings, and then specifically pointed out in the claims which are attached to and form a part of this application.

In the drawings: Figure 1 is a perspective view of a complete mold, together with the reinforcing element, showing the entire device in assembled position and ready to receive the semi-liquid concrete from which the pipe is to be formed; Fig. 2 is a central vertical sectional view taken through the mold; Fig. 3 is a plan view of the assembled mold; Fig. 4 is a transverse sectional view taken on the line 4—4 of Fig. 2.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The mold forming the subject matter of my present invention primarily includes a base 10 which supports and centers a core 11, an outer mold casing 12 and a top member, indicated as a whole by the numeral 13 which centers and braces the upper portions of the core and casing and which also facilitates the filling of the space between such mold members with the semi-liquid concrete or other pipe forming material.

More specifically, the base 10 is constructed in the form of a ring, being preferably made of metal with its inner and outer edges converging toward each other upwardly to present a neat and finished appearance. The upper face of this ring is provided with a peripheral groove or channel 14 having a plane surfaced bottom wall and plane surfaced peripheral walls extending perpendicularly with respect to the bottom wall.

The core 11 of the mold is formed of relatively-heavy resilient sheet metal bent into cylindrical formation with its free edges overlapping each other. This core, in released position, is preferably somewhat less in diameter than the inner diameter of the channel 14 and is equal in length to the length of the pipe section to be formed. At any suitable point intermediate its length and adjacent its free edges it is provided with handles 15 by means of which its free edges may be moved to overlap each other to a more or less extent and therefore to expand or contract the core as a whole. As shown in Fig. 2, this core is positioned with one end seating in the channel 14 of the base 10 and closely engaging the inner wall of such channel, it usually being necessary to somewhat expand the core to apply it in this position. Adjacent the opposite end of the core, I provide a plurality of spaced L-shaped brackets 16 secured to the core with their free arms directed inwardly. When the core is in place, the free arms of

these brackets support a metallic expanding ring 17 which is inserted in the upper end of the core to hold such end in proper shape. It will of course be understood that the external diameter of this expanding ring is equal to the internal diameter of the channel 14 of the base in order that the internal diameter of the finished pipe section may be uniform throughout the length of the pipe.

The outer casing 12 of the mold is substantially identical with the core in its main features, being formed from a single relatively heavy sheet of resilient metal bent into the form of a cylinder with its free edges overlapping. The upper and lower edge portions of this metal sheet are, however, struck out in order that such portions of the casing may be flared as shown at 18 in the drawings, whereby the ends of the resultant pipe section formed in the mold will be thickened and reinforced. It will of course be understood that this casing 12 is equal in height to the height of the core, although somewhat greater in diameter. In fact, this casing, when free of the base and top member of the mold, should somewhat exceed in diameter the outer diameter of the channel 14 of the base so that it must be somewhat contracted by drawing its overlapping edges more closely together when it is positioned in the base, as shown.

The overlapping edge portions of this casing, adjacent the upper and lower ends of the casing, are provided with L-shaped brackets 19 and 20, respectively, the brackets 19 being located nearer the free edges of the casing than the brackets 20 and therefore nearer each other. A rod 21 has one end secured in one of the brackets 19 and its opposite end secured in the corresponding bracket 20, while a rod 22 is similarly secured to the other brackets 19 and 20. It will therefore be seen that these rods converge toward each other toward the upper end of the casing.

A sliding clamp bar 23 is formed at its ends with eyes 24 to slidably engage about the rods 21 and 22 in the manner shown in Fig. 1. It will of course be apparent that movement of this clamp bar toward the brackets 20 will draw the rods 21 and 22 toward each other and, consequently, cause the free edges of the casing to move to more completely overlap, and consequently contract the mold casing. On the other hand, movement of the clamp bar 23 toward the brackets 19 will correspondingly expand the casing. When the clamp rod is in its lowermost position, the diameter of the casing is reduced to such an extent that the lower end of the casing may be readily introduced into the channel 14 of the base 10. One of the brackets 19 is provided with a swingingly mounted hook 25, the bill of which is adapted to engage through a perforation 26 formed in the other bracket 19 to hold the upper end of the mold casing in a contracted position corresponding to that of the lower end of the mold casing when the clamp bar 23 is in lowered position, this locking of the upper end of the mold casing, in contracted position, facilitating the application of the top member of the mold, as will be later explained.

The top member of the mold includes a conical shaped cap portion 27 provided at its free edge with a downwardly directed flange 28 adapted to seat in the upper end of the core 11 and, consequently, center the core with respect to the outer casing of the mold. A plurality of radiating arms 29, preferably formed integrally with this cap, connect it with a funnel member or spout 30 of frusto conical shape. The smaller end of the spout is, of course, directed downwardly and this end is provided with the downwardly extending flange 31 adapted to engage about and embrace the upper end of the mold casing 12 when the top member of the mold is in place. When the top member is positioned, as shown in Fig. 2 of the drawings, it will be seen that the lower edges of the arms 29 rest upon the upper ends of the core and mold casing to support the cap portion 27 and funnel portion 30 in proper position. Furthermore, the upper end of the core is held in properly extended position by the flange 28 of the cap portion, while the upper end of the mold casing is held in proper contracted position by engagement against the inner face of the flange 31 of the funnel portion 30 of the upper mold member.

As a rule, in manufacturing concrete pipes with my mold, I prefer to provide each pipe section with a reinforcing element in the form of a tubular structure 32 of foraminous material of relatively large mesh. As shown in the drawings, this reinforcing element includes a plurality of horizontally disposed reinforcing rings 33 of relatively stiff wire supported in proper spaced relation by being welded or otherwise secured to a plurality of spaced vertical brace wires or rods 34, the upper and lower ends of these brace rods being bent about the upper and lower rings 32 as shown at 35. This reinforcing element is of a diameter somewhat greater than the diameter of the core and less than the diameter of the mold casing in order that it may be completely embedded in the concrete of the finished pipe section. Of course, any suitable type of reinforcing element may be employed and such element is merely mentioned in this case because of the provision which I make for properly centering the reinforcing element during pouring of the concrete.

Referring to Figs. 1 and 2 of the drawings it will be seen that each of the arms 29 is provided intermediate its length with a pair of spaced apart downwardly depending fingers 36 adapted to straddle the upper ring 33 of the reinforcing element when the latter is in place and therefore to hold the reinforcing element in proper centralized position.

In assembling the mold, the core is expanded sufficiently to permit its lower end to be seated in the channel 14 of the base and to receive the expanding ring 17. The reinforcing element 32 is then positioned about the core, being centralized as accurately as possible, and the outer casing 12 of the mold positioned about the reinforcing element with its lower end seating in the channel 14 of the base. The positioning of the outer casing in this manner is facilitated by moving the clamp bar 23 to the lower end of the rods 21 and 22 and by engaging the hook 25 with the co-acting bracket 19. After the outer casing is in place, the top member of the mold is applied, care being taken that its flange 28 seats in the upper end of the core and that the upper ring of the reinforcing element engages between the fingers of the various arms. When the upper member has been applied in this manner, the hook 25 is released to permit expanding of the upper end of the outer casing and the clamp bar 23 is drawn upward as far as possible to expand the mold casing and bring its lower edge portion into engagement with the outer face of the channel 14 and its upper edge portion into engagement with the flange 31 of the upper mold member. Under these conditions, all parts of the mold are rigidly locked together and the semi-liquid concrete mixture may be safely poured into the mold, the spout portion 30 of the upper member directing the liquid mass between the core and outer wall of the mold and the cap portion 27, preventing any loss of the concrete by its passage into the core.

After the concrete has partially hardened or set, the upper mold member may be removed to permit finishing or smoothing off of the upper end of the pipe section and after the concrete has fully hardened or set, the mold may be disassembled and removed. This is readily accomplished by removing the base 10 from the core and outer casing of the mold by lifting the remainder of the mold away from it and by then moving the clamp bar 23 still higher upon the rods 21 and 22 to expand the outer casing and permit its being slipped from the finished pipe section. The expanding ring 17 may then be removed from the core when the core, because of its own resiliency, will contract and permit its ready withdrawal from the pipe.

Having thus described the invention, what is claimed as new is:

1. A concrete mold including an expansible outer casing, a core, a base provided with a circular channel in its upper face to seat the lower ends of the casing and core, and a member engaging the opposite ends of the core and casing to support them in spaced relation, said member including centering means for a reinforcing member adapted to be disposed between the casing and core.

2. A pipe mold comprising an expansible outer casing, a core, a base member seating the casing and core, a conical cap formed with a flange disposed to engage the end of the core remote from the base, arms extending from said cap, a spout member supported by said arms and engaging the outer casing, and spaced lugs formed on said arms and adapted to receive a reinforcing member when the latter is disposed between the core and casing.

3. A pipe mold including a base formed with an annular channel in its upper face, an upper mold member including an inner cap portion and an outer funnel portion having depending concentric flanges, a core adapted to seat at its lower end in the channel of the base and engaged at its upper end about the flange of the cap portion, a resilient outer casing having overlapping edges adapted to seat at its lower end in the channel of the base member and to engage at its upper end within the flange of the funnel portion of the upper member, means for drawing the overlapping edges of said member into still further overlapping position and securing them in such position to permit positioning of the casing, and means for subsequently forcing the overlapping edges in the opposite direction to expand the casing and lock it to the base and funnel portion of the upper member.

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

FREDERICK H. SOUDER. [L. S.]

Witnesses:
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DANIEL S. SCHULTZ.