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MOLD FOR THE END OF CONCRETE PIPE AND THE LIKE

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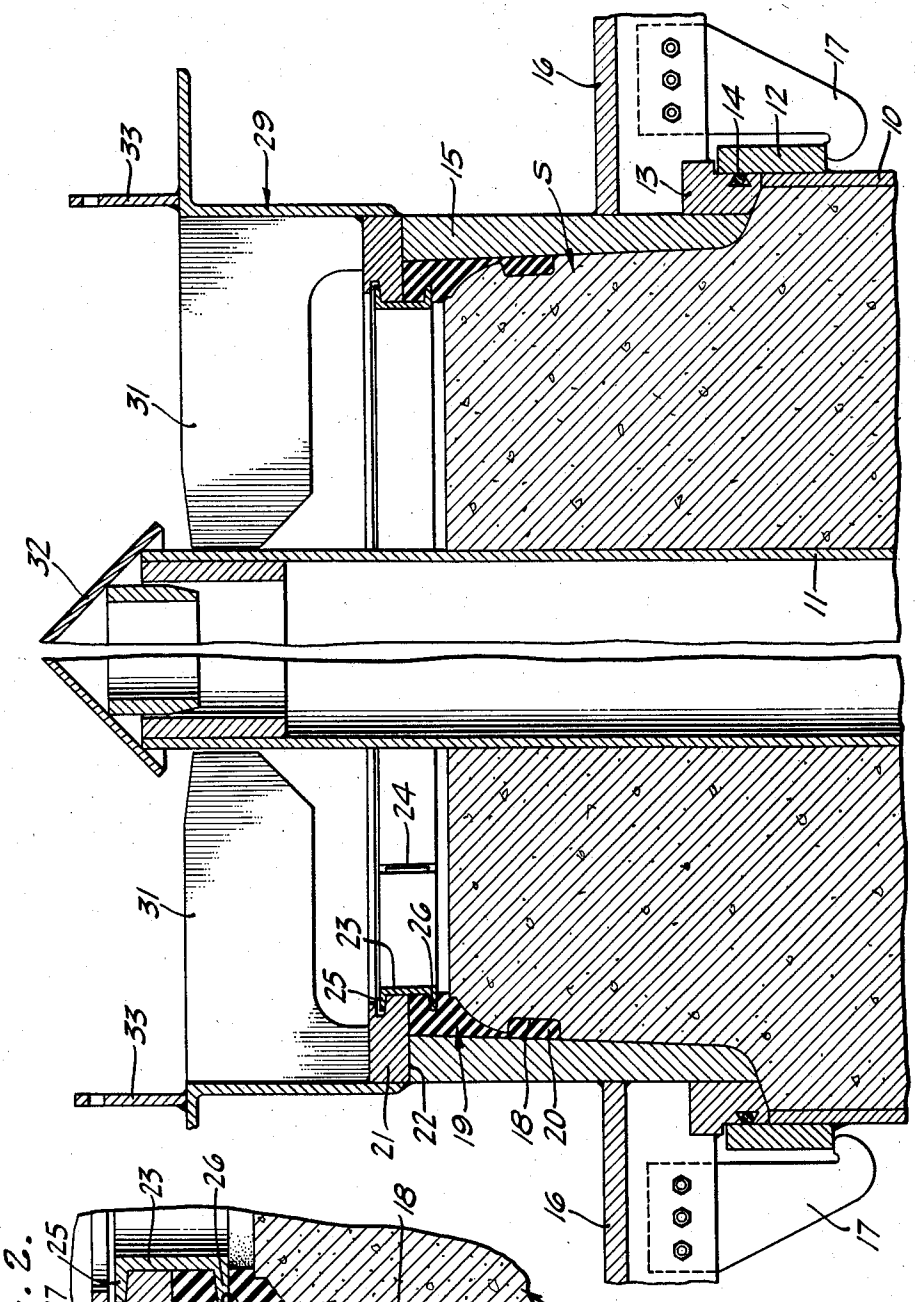


FIG. 1.

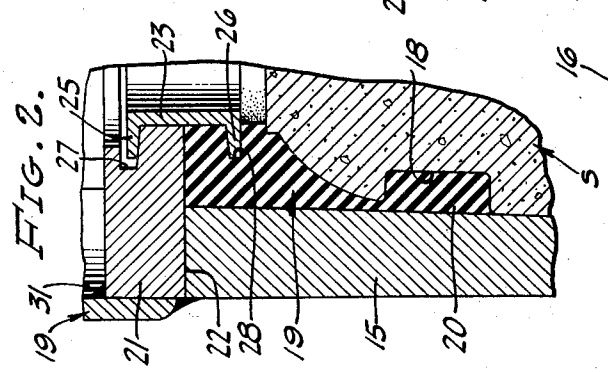


FIG. 2.

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MOLD FOR THE END OF CONCRETE PIPE AND THE LIKE

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6 Claims. (Cl. 25—127)

This invention relates to improvements in molds for concrete pipe and the like. This application may be considered as a continuation-in-part of the subject matter disclosed in my copending application Serial No. 460,016, filed October 4, 1954.

Explanatory of the present invention, some concrete pipe, particularly large sizes, are molded in a vertical mold which, after the mold is filled with concrete is vibrated to work out air bubbles and to compact the concrete into as dense a mass as possible. After the concrete has been molded and has set sufficiently to enable the mold to be removed, the mold is removed and the molded concrete pipe is allowed to cure. Some molds used for this purpose are diametrically split and can be opened when it is desired to remove the mold from the molded concrete pipe. Other molds are unsplit and are stripped vertically from the pipe section.

In molding concrete pipe in this manner, one customary procedure is to mold the pipe with the bell end down and the spigot end up. It is desirable to form on the exterior of the spigot a circumferentially extending groove. This groove is intended to ultimately receive a rubber gasket ring or the equivalent when the spigot is inserted into the bell of an adjoining pipe section in assembling sections of concrete pipe to form a pipeline.

A primary object of the present invention is to provide a means for shaping the spigot end of a molded concrete pipe so as to core in the exterior of the spigot the groove which will ultimately receive the gasket. To this end, an elastic rubber ring is positioned in the top of the mold which has an internal rib or bead which will core in the spigot the circumferential groove. As these molds are rather rapidly filled with concrete at their upper ends provision must be made for holding the elastic rubber ring in position and against being carried down in the mold by the concrete as it fills the mold.

An object of this invention is to provide a simple, novel, and highly advantageous means for firmly locking the elastic coring ring against axial displacement in the mold, the arrangement being such that the elastic coring ring can be unlocked from the mold so that it can be axially withdrawn from the mold along with the pipe when the mold is stripped from the pipe. After the mold has been removed from the pipe the elastic coring ring can be removed from the spigot by radially stretching it and slipping it off of the end of the spigot while in its stretched condition.

With the foregoing and other objects in view, which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawings for an illustrative embodiment of the invention, wherein:

Figure 1 is a sectional view through the upper portion of a vertical concrete pipe mold constructed in accordance with the present invention; and

Fig. 2 is a partial view in vertical section on an enlarged scale of a portion of Fig. 1.

Referring to the accompanying drawings wherein similar reference characters designate similar parts throughout, the improved mold consists of a mold body **10** of cylindrical shape designed to form the outer wall of the mold. This mold body may or may not be diametrically split. Within the body there is a central or axial core **11**, and the core, together with the mold body, form the inner and outer walls of the mold between which concrete is poured to form a concrete pipe section.

At the top of the body there is an upstanding collar **12** the upstanding portion of which is designed to receive telescopically a sealing ring **13** in which there is a rubber sealing ring or gasket **14**. The sealing ring may be attached to or formed integral with a shaping ring **15** designed to shape the major portion of the spigot S on the concrete pipe section. The shaping ring may have radially extending arms **16** equipped with hooks **17** which are receivable downwardly through vertical grooves or slots in the collar **12**, and after having been passed therethrough by rotating the shaping rings slightly the hooks **17** may be disaligned from the slots to lock the shaping ring **15** in position on top of the mold.

The invention concerns the manner in which a circumferentially extending groove **18** is formed on the exterior of the spigot. To this end an elastic endless coring ring **19** is provided having on the interior thereof a circumferentially extending ridge or bead **20**. This elastic rubber coring ring is designed to fit in the corner between the top of the shaping ring **15** and a ring **21** welded or otherwise secured to the top thereof which provides inwardly extending flange portions **22**. A split spring ring **23** which is split as at **24** is of channel-shaped cross section to provide flange portions **25** and **26** designed to enter grooves **27** and **28** in rings **21** and **19**, respectively. This ring, due to its inherent ability to expand, serves to press the elastic coring ring **19** against the interior of the shaping ring **15** and by reason of the flanges **25** and **26** extending into their respective grooves **27** and **28**, the spring ring serves to lock the coring ring **19** against axial displacement relatively to the mold and relatively to the shaping ring **15**.

Above the ring **21** there may be a spider **29** having radially inwardly extending spider arms **31** intended to hold the upper end of the core **11** centered or concentrically with relation to the mold body **10**. A pouring cone **32** is usually positioned on top of the core serving to direct concrete as it is poured into the space between the core **11** and the shaping ring **15**. The spider may be equipped with upwardly extending ears **33** by which the mold body can be lifted from the molded concrete pipe section after the concrete has been partially set.

In forming a concrete pipe section with the improved mold the surfaces of the mold body, the shaping ring, and the core which are to come in contact with the concrete are usually oiled in conformity with conventional practice so that the concrete will not bond to these metallic parts.

The elastic coring ring **19** is positioned in the corner between the shaping ring **15** and ring **21** and the split spring ring **23** is then applied by radially deforming one end of the ring relatively to the other and overlapping the ends. The spring ring, while in its contracted condition, is inserted into the mold so as to position its flanges **25** and **26** opposite the grooves **27** and **28**, respectively. The spring ring is then released and allowed to expand and when the flanges enter their respective grooves the spring ring effectively locks the elastic coring ring against axial displacement. Concrete is then

poured into the mold and the mold filled and after the mold has been filled it is usually subjected to vibration to work out air pockets contained in the concrete and to produce a settling of the concrete into as dense a mass as possible. When the concrete has set sufficiently to permit removal of the mold the spring ring **23** is contracted by causing its ends to overlap and it is removed. The entire mold structure can then be stripped from the concrete section by pulling it vertically by means of the ears **33**. During this removal of the mold the elastic coring ring **19** will, of course, remain with the concrete pipe section and spigot S by reason of the interlock between the rib **20** and the groove **18**. If the shaping ring **15** is tapered as shown this stripping of the shaping ring from the spigot is somewhat facilitated. After the mold has been removed the coring ring **19** can be radially stretched due to its elasticity to withdraw the rib **20** from the groove **18** and the coring ring can then be axially slipped off of the end of the spigot S while in its stretched condition.

The coring ring **19** may be of such size that when in its normal or unstressed condition it just fits within the top of the shaping ring **15**. In the alternative the coring ring **19** may be somewhat oversized with relation to the interior of the shaping ring **15** so that when the coring ring is in applied position it is in circumferential compression. When of this latter design the rib **20** being under circumferential compression tends to hug the walls of the shaping ring **15** quite closely even though this rib is somewhat remote from the expansion forces exerted by the spring ring **23**.

From the above-described construction it will be appreciated that the improved mold enables the groove **18** to be cored into the exterior of the spigot S quite readily. At the same time the coring ring is positively but releasably locked in position against axial displacement by the concrete that is poured into the top of the mold.

Various changes may be made in the details of construction without departing from the spirit and scope of the invention as defined by the appended claims.

I claim:

1. A vertical mold for concrete pipe and the like having at the top thereof an elastic coring ring arranged to core a circumferential groove on the exterior of the pipe, a split metallic ring engaging the top of the elastic coring ring and serving to hold the elastic coring ring against the walls of the mold.

2. A vertical mold for concrete pipe and the like having at the top thereof an elastic coring ring arranged to core a circumferential groove on the exterior of the pipe, a split metallic ring engaging the top of the elastic coring ring and serving to hold the elastic coring ring against the walls of the mold, said elastic ring being axially withdrawable from the mold with the molded pipe.

3. A vertical mold for concrete pipe and the like having at the top thereof an elastic coring ring provided with an internal annular rib adapted to core an annular groove in the pipe on the exterior thereof, said mold having inwardly projecting flange portions over the elastic ring, and a split spring ring having portions engaging the elastic ring and said flange portions to hold the elastic ring against axial displacement relative to the mold while the mold is being filled.

4. A vertical mold for concrete pipe and the like having at the top thereof an elastic coring ring provided with an internal annular rib adapted to core an annular groove in the pipe on the exterior thereof, said mold having inwardly projecting flange portions over the elastic ring, and a split spring ring having portions engaging the elastic ring and said flange portions to hold the elastic ring against axial displacement relative to the mold while the mold is being filled, said elastic ring being axially withdrawable from the mold with the pipe following collapse and removal of the spring ring.

5. A vertical mold for concrete pipe and the like having at the top thereof a shaping ring, flange portions extending inwardly from the top of the shaping ring, an elastic coring ring positioned within the shaping ring and against said flange portions, said elastic coring ring having an internal annular rib adapted to core an annular groove in the pipe on the exterior thereof, and a split spring ring having portions engaging the elastic coring ring and said flange portions to hold the elastic ring against axial displacement relative to the mold while the mold is being filled.

6. A vertical mold for concrete pipe and the like having at the top thereof a shaping ring, flange portions extending inwardly from the top of the shaping ring, an elastic coring ring positioned within the shaping ring and against said flange portions, said elastic coring ring having an internal annular rib adapted to core an annular groove in the pipe on the exterior thereof, and a split spring ring having portions engaging the elastic coring ring and said flange portions to hold the elastic ring against axial displacement relative to the mold while the mold is being filled, said elastic coring ring being axially withdrawable from the mold with the pipe on collapse and removal of the spring ring.

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