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APPARATUS FOR CASTING CONCRETE PIPE

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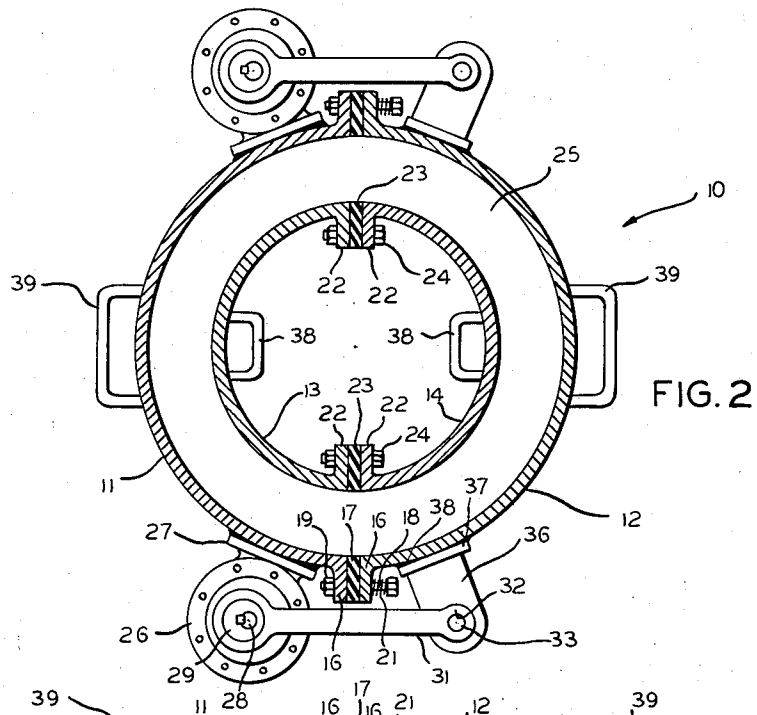


FIG. 2

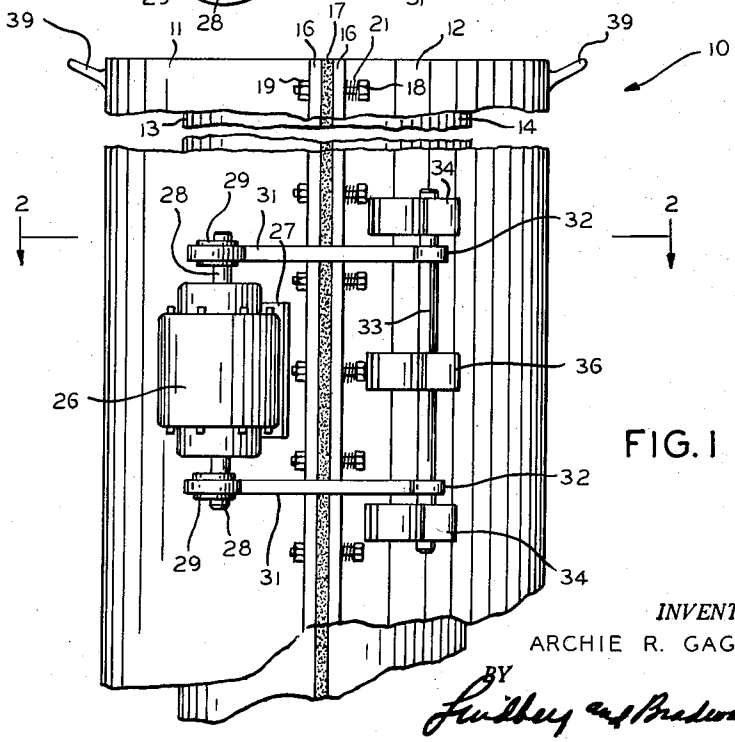


FIG. 1

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APPARATUS FOR CASTING CONCRETE PIPE

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2 Claims. (Cl. 25—30)

This invention relates generally to the art of casting concrete pipe and has particular reference to a mold for casting such pipe in a vibratory manner to obtain a dense concrete of high strength.

Apparatus according to the present invention consists of a plurality of longitudinally extending arcuate mold portions, the contiguous mold portions being connected for excursion with respect to each other by vibrating means. Such vibrating means is disposed on one contiguous mold portion and includes an eccentric connected by a link to the other contiguous mold portion. The apparatus according to the present invention makes it possible to employ a very low slump low water-cement ratio concrete mix having extremely high density and freedom from honeycomb. Apparatus according to the present invention also makes is unnecessary to use the immersion type of vibrator.

One of the principal objects of this invention is to provide improved apparatus for casting concrete pipe, such apparatus being characterized by the use of mixes of very low slump and low water-cement ratios.

Another object is to provide apparatus for casting concrete pipe, such apparatus being characterized by longitudinally extending arcuate mold portions, adjacent mold portions being spaced by a resilient shim, together with means for providing a known excursion of the adjacent mold portions with respect to each other so as to provide a dense concrete mass substantially free from honeycomb.

Other objects and important features of the invention will be apparent from a study of the specification following taken with the drawing which together describe and illustrate a preferred embodiment of the invention and what is now considered to be one of the best modes of practicing the principles thereof. Other embodiments may be suggested to those having the benefit of the teachings herein, and such other embodiments are intended to be reserved especially as they fall within the scope and spirit of the subjoined claims.

In the drawings:

Fig. 1 is an elevational view of apparatus according to one embodiment of the present invention for casting concrete pipe; and

Fig. 2 is a section taken along the line 2—2 of Fig. 1, looking in the direction of the arrows, certain parts being shown in plan view.

Referring now to the drawing, the apparatus according to the present invention is referred to generally by the reference numeral 10, and includes a plurality of longitudinally extending arcuate outer mold portions 11 and 12, and a plurality of inner longitudinally extending arcuate mold portions 13 and 14. Each of the outer mold portions 11 and 12 is provided along each longitudinal edge with outward extending flanges 16, 16 which are spaced from each other by a shim 17 made of an elastomeric material. The mold portions 11 and 12 are joined together resiliently for movement with respect to each other by means of a bolt 18 and a nut 19, a spring 21 being interposed between the head of the bolt and one of the flanges 16.

The inner mold portions 13 are likewise provided along their longitudinally extending edges with inward extending flanges 22, 22 which are spaced from each other by a shim 23 made of elastomeric material. The two flanges 22, 22 are joined in such spaced relationship by means of a bolt 24.

The outer mold portions 11 and 12 and the inner mold portions 13 and 14, when joined as heretofore described and as seen in Fig. 2, define an annular cavity 25 wherein a concrete mix may be molded. It may be noted that the apparatus shown in Figs. 1 and 2 is placed in position for use upon a pallet or platform, not shown.

Means are provided for causing the outer mold portions 11 and 12 to have excursive movement with respect to each other, such excursive movement enabling a dense low slump concrete mixture to be molded within the annular cavity 25. To this end adjacent longitudinally extending outer mold portions are provided with a motor 26 mounted upon a base 27 to the outer side of mold portion 11. The motor 26 drives a shaft 28 having an eccentric 29 fast thereto at each end thereof. An eccentric follower or link 31 cooperates with each eccentric 29 and has a close bearing fit to the eccentric 29.

The other end of the eccentric follower 31 has a close bearing fit at 32 to a dead shaft 33 which is supported at each end at an abutment or bracket 34 and at a center abutment or bracket 36, each of the brackets having a base 37 which is secured as by welding at 38 to the mold portion 12.

The provision of the elastomeric shim 17 spacing the outer mold portions 11 and 12 and the provision of the resilient shim 23 spacing the inner mold portions 13 and 14 together with the means linking the outer mold portions for excursive movement with respect to each other, enables the concrete to be vibrated readily within the cavity 25.

While I have shown apparatus for the casting of concrete pipe where the apparatus consists of a pair of inner mold portions and a pair of outer mold portions, the use more than a pair of such inner and outer mold portions may be indicated where a very large diameter pipe or where a pipe having a very thick wall is being molded. Irrespective of the number of inner and outer mold portions employed, it is desirable that all the spaced outer mold portions having vibrating means provided as shown in Figs. 1 and 2 to provide excursion of the contiguous mold portions with respect to each other.

When the molding operation is completed, the inner mold portions 13 and 14 can be stripped, by loosening the bolts 24 and removing the resilient shim between the flanges 22. Upon loosening of the bolts 24 and the removal of the shims 23, the inner mold portions 13 and 14 can be removed by lifting bails 38, 38.

Likewise, when the bolts 18 at the outer mold portions are loosened, the resilience of the shim 17 between the flanges 16, 16 will strip the outer mold portions 11 and 12 from the finished molded product, the two mold portions 11 and 12 being then capable of being lifted by lifting bails 39, 39.

The resultant molded pipe then can remain in position upon its pallet or platform for the curing period.

While the invention has been described in terms of a preferred embodiment thereof, its scope is intended to be limited only by the claims here appended.

I claim as my invention:

1. In apparatus for molding concrete pipe in an annular cavity defined in an inner annular mold and an outer annular mold spaced therefrom, the improvement

wherein said inner and outer annular molds comprise longitudinally extending arcuate mold portions which are spaced from each other along their contiguous edges, a longitudinally extending flange along the edges of each arcuate portion and being in confronting relationship with a flange of a contiguous mold portion, a resilient shim between each pair of confronting flanges, means spaced along the length of said confronting flanges and passing through said confronting flanges and the resilient shim therebetween for securing said arcuate mold portions to each other in spaced relationship as defined by said resilient shim, and means for vibratingly moving contiguous arcuate mold portions toward and away from each other through a known distance to compact a concrete mass in said annular cavity comprising a shaft extending longitudinally of one arcuate mold portion and fixed in position relative thereto, an eccentric mounted on said shaft, a link connected to said eccentric, an abutment on a contiguous mold portion, a pivotal connection between said link and said abutment, said link extending across the confronting flanges and resilient shim of said contiguous arcuate mold portions, and resilient means interposed between one end of said securing means and the proximate confronting flange.

2. In apparatus for molding concrete pipe in an annular cavity defined by an inner annular mold and an outer annular mold spaced therefrom, the improvement wherein said inner and outer annular molds comprise longitudinally extending arcuate mold portions which are spaced from each other along their contiguous edges, a

longitudinally extending flange along the edges of each arcuate portion and being in confronting relationship with a flange of a contiguous mold portion, a resilient shim between each pair of confronting flanges, means spaced along the length of said confronting flanges and passing through said confronting flanges and the resilient shim therebetween for securing said arcuate mold portions to each other in spaced relationship as defined by said resilient shim, and means for vibratingly moving contiguous arcuate mold portions toward and away from each other through a known distance to compact a concrete mass in said annular cavity comprising a shaft extending longitudinally of one arcuate mold portion and fixed in position relative thereto, an eccentric mounted on said shaft, a link connected at one end to said eccentric and pivotally connected at its other end to a contiguous mold portion and across the confronting flanges and resilient shim of said contiguous mold portions, and resilient means interposed between one end of said securing means and the proximate confronting flange.

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