May 28, 1968 V. R. ANDERSON 3,385,554

APPARATUS FOR MOLDING CONCRETE FEED BUNKS

Filed Jan. 4, 1965 2 Sheets-Sheet 1

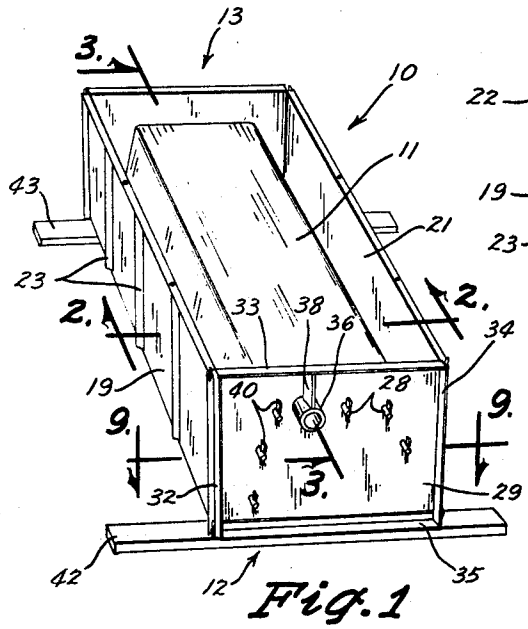


Fig. 1

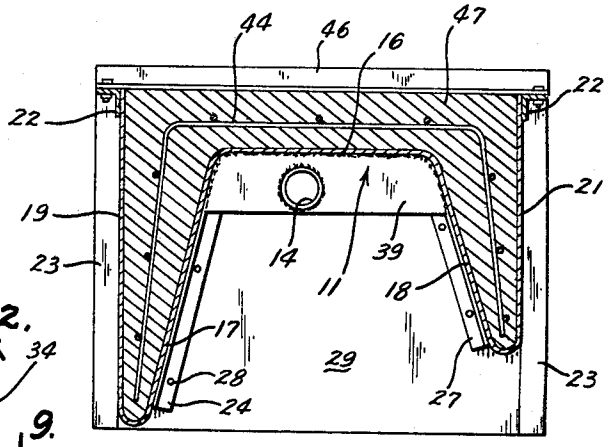


Fig. 2

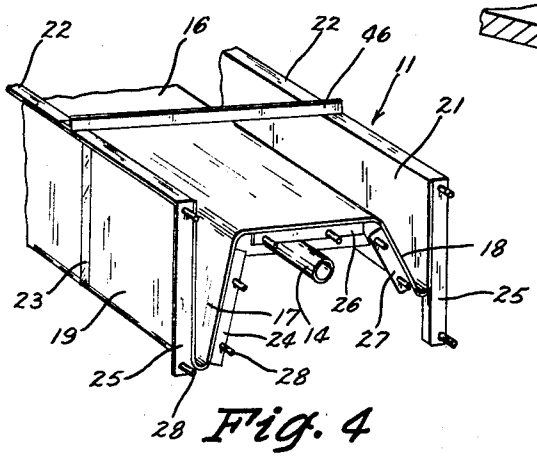


Fig. 4

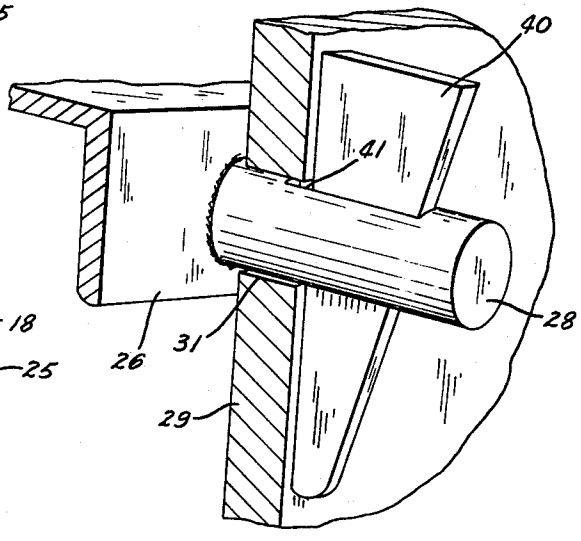


Fig. 5

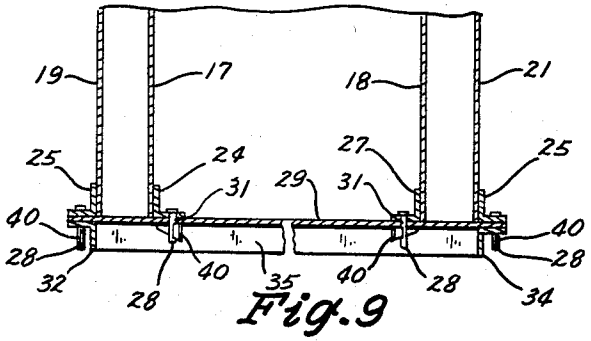


Fig. 9

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APPARATUS FOR MOLDING CONCRETE FEED BUNKS

Filed Jan. 4, 1965 2 Sheets-Sheet 2

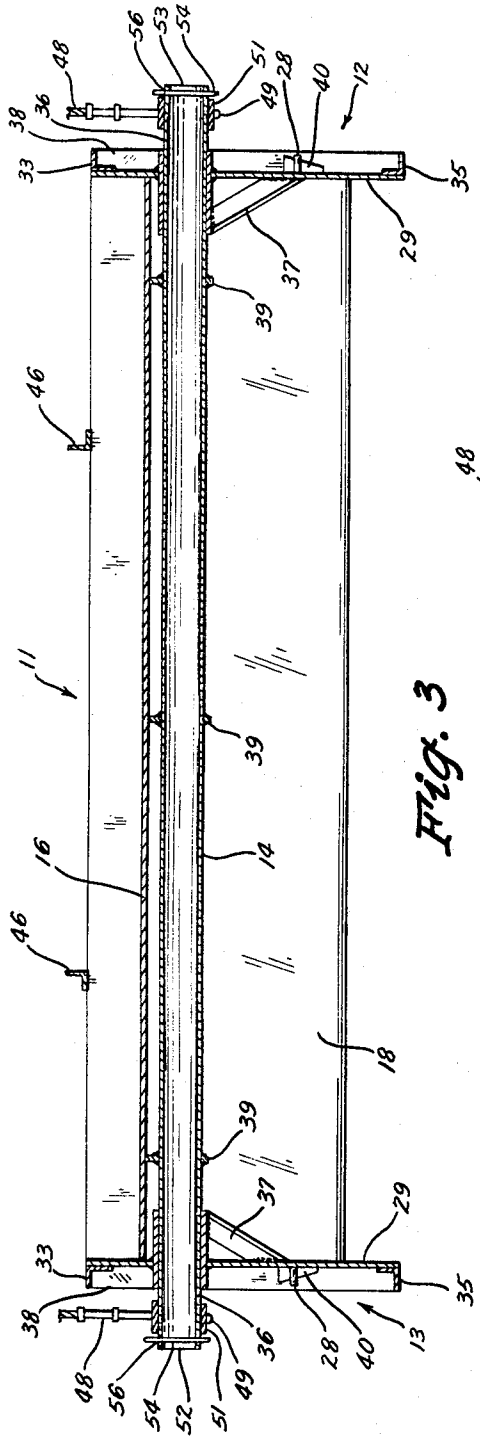


Fig. 3

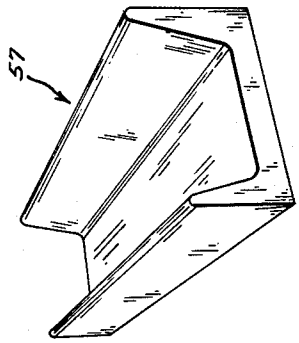


Fig. 8

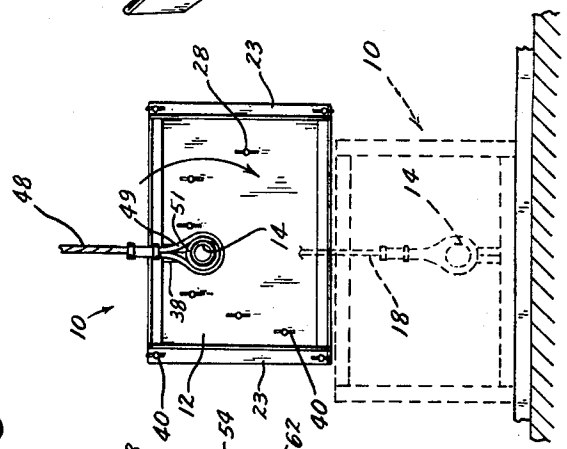


Fig. 6

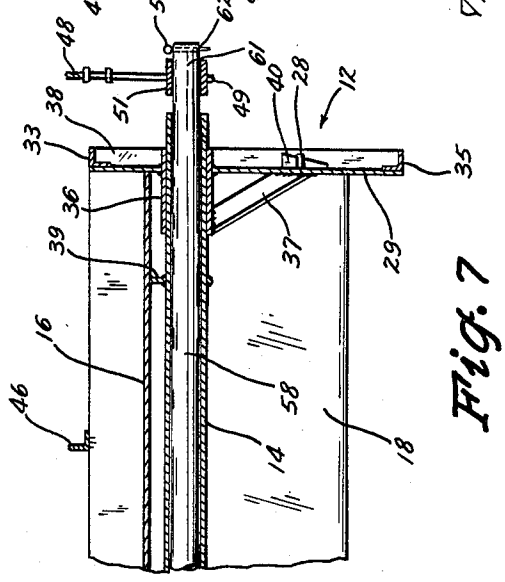


Fig. 7

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United States Patent Office 3,385,554 Patented May 28, 1968

3,385,554
APPARATUS FOR MOLDING CONCRETE FEED BUNKS

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Filed Jan. 4, 1965, Ser. No. 423,195
3 Claims. (Cl. 249—165)

This invention relates to apparatus for molding feed bunks or the like.

An object of this invention is to provide an improved apparatus for molding feed bunks or the like.

Another object of this invention is the provision of an improved concrete molding apparatus for molding feed bunks or the like where the time and effort required in casting the concrete article is materially reduced.

Still another object of this invention is the provision of a feed bunk molding apparatus including but an inner, one piece form, a pair of end plate forms, and a support for lifting and transporting the apparatus, the support connected to the inner and end plate forms at a plurality of locations.

Yet another object of this invention is the provision of a concrete article molding apparatus wherein an elongated support extends completely the entire length of the apparatus along the center of gravity thereof, when filled with concrete.

Another object of this invention is the provision of a concrete molding apparatus capable of accomplishing the above designated objects, and which is economical to manufacture, simple and rugged in construction, and effective in use.

These objects, and other features and advantages of this invention will be readily apparent upon reference to the following description, when taken with the accompanying drawings, wherein:

FIG. 1 is a perspective view of the apparatus of this invention when empty;

FIG. 2 is an enlarged, transverse sectional view taken along the line 2—2 in FIG. 1, and showing the apparatus when in use;

FIG. 3 is an enlarged, longitudinal sectional view as taken along the line 3—3 in FIG. 1;

FIG. 4 is a fragmentary, perspective view of an end of the inner form of the apparatus;

FIG. 5 is a greatly enlarged perspective sectional view of a detail of the FIG. 1 structure;

FIG. 6 is an end elevational view, showing the apparatus in a raised position prior to inversion;

FIG. 7 is a fragmentary sectional view similar to FIG. 2, and showing a modification;

FIG. 8 is a perspective view of a finished feed bunk; and

FIG. 9 is an enlarged sectional view as taken along the line 9—9 in FIG. 1.

Referring now to the drawings, a preferred embodiment of the concrete molding apparatus is indicated generally at **10** in FIG. 1. The apparatus **10** comprises an elongated, preformed inner form **11**, a pair of identical end plate units **12** and **13**, and an elongated central support member **14** (see FIG. 3). In use, the inner form **11** forms all the bottom and side exposed surfaces of the concrete article being formed, and the end plate units **12** and **13** are adapted to form all exposed end surfaces thereof.

More particularly, the inner form **11** is a single piece of continuous sheet metal or similar material, preformed to have a relatively flat and straight base section **16**, normally horizontally disposed. From each outer edge of the base section, a pair of straight walls **17** and **18** depend angularly away from each other in a diverging manner best illustrated in FIG. 3. It will be noted that wall **17** is longer than wall **18** and extends to the lower edge of an

end plate unit. From the lower edges of the walls **17** and **18**, a pair of straight side sections **19** and **21** extend upwardly in a parallel, normally vertically disposed manner with their upper edges even.

The inner form **11** inner and upper surfaces for receiving the concrete is of a smooth nature, with the joints—so to speak—smoothly rounded as clearly shown in FIG. 2. This provides for the upper and side surfaces of the cast article having a finished texture for concrete work. To reinforce the form **11**, a pair of angle irons **22** (FIGS. 2 and 4) are secured to the upper edges of the side sections **19** and **21**, and a plurality of angle irons **23** are secured in longitudinally spaced relation to the outer surfaces of the side sections **19** and **21**.

At each end of the inner form **11**, a trio of angle iron portions **24**, **26** and **27** (FIG. 4) are secured with their vertically disposed legs flush with each other and in the same normally vertical plane. A plurality of pins **28** are secured to the portions **24**, **26**, **27**, and which pins extend horizontally outward beyond the ends of the form **11**. A pair of angle irons **25** (FIG. 4) are also attached to the end edges of the inner form side sections for reinforcement purposes, and also are provided with a plurality of outwardly protruding pins **28**.

As each end plate unit **12** and **13** is identical, only one will be described with like parts having like reference numbers. The end plate unit **12** (FIGS. 1, 3 and 9) for example, includes a flat, right angular plate **29** having a plurality of holes **31** formed therein of a size and placed to receive all the pins **28**. Reinforcing angle iron frame pieces **32**, **33**, **34**, and **35** are secured to the outer four edges of the plate **29**. A stub shaft **36** extends through the plate **29** at a point therein which is on the exact center of gravity when the apparatus **10** is completely assembled and in use.

The stub shaft **36** is shown extended inwardly of the plate **29** (FIG. 7) and connected to the plate **29** by a brace **37**, which arrangement is optional. The stub shaft **36** does preferably extend outwardly of the plate **29** (see FIG. 7 and also FIG. 1), and is supported by an external brace **38**. Extended through the stub shaft **36** on each plate **29** is the central support member **14**, which therefore is extended along the center of gravity of the apparatus **10**.

As illustrated in FIG. 3, the support member **14** is straight and tubular, and the ends of which extend beyond the plates **29**. As the support member **14** supports the end plate units **12** and **13** by its connection with the stub shafts **36**, it supports the inner form **11** intermediate the end plate units by being secured, as by welding or the like, to a plurality of gusset-type plates **39** (FIGS. 2 and 3) secured themselves as by welding to the inner form **11** transversely across the interior base section **16** and walls **17** and **18** thereof. By this arrangement, the central support member **14** not only supports the inner form and end plates as a unit at the end plates, but also and importantly provides interior support. There is no tendency, thus, of the inner form **11** to sag or bend when suspended at the end plate ends.

Use of the apparatus **10** is as follows. Each end plate unit **12** and **13** is placed against an end of the inner form **11** with the pins **28** protruding through the respective holes **31**, whereby the end plates **29** are squared with the inner form ends. The end plate units **12** and **13** are then secured to the inner form **11** by a wedge **40** (FIG. 5) being inserted through an opening **41** provided therefor in each pin **28**.

The assembled inner form **11** and end plate units **12** and **13** are then placed as illustrated in FIG. 1 on a pair of level supports **42** and **43**, whereby the entire structure is horizontally level. The inner surfaces of the form **11** and end plates **29** are then wiped with a special oil or other concrete form fluid. At this point, a reinforcing

mesh screen **44** of a shape complementary to the form **11**, is placed therein as best illustrated in FIG. 3. A plurality of spacer bars **46** are then secured across the top edges of the form **11**, being secured to the angle irons **22**. Concrete **47** is then poured into the cavity formed by the inner form **11** and the side plates **29**, until the concrete reaches the tops of the angle irons **22**, whereat the actual bottom of the article is formed by a floating process.

After the concrete has cured to the specifications of the operator, a hoist is connected to the apparatus to lift same. The hoist may include, for each end of the apparatus, a lifting cable **48**, a ring **49** connected thereto, and a collar **51** secured within the ring **49**. The collars **51** have an inner diameter to enable their slipping over the exposed ends **52** and **53** of the support member **14**, and are retained there by a lock pin **54** inserted through a hole **56** formed in each end **52** and **53**.

The hoist is then operated to pick up the apparatus **10** and to move same to a location to release the completed article, in this case a feed bunk **57** (FIG. 8). At the location of release, or before depending upon the operator, the entire apparatus **10** is inverted 180°, as indicated by the arrow in FIG. 6, so as to locate the feed bunk **57** right side up. This inversion is readily and easily accomplished merely by hand pressure on the apparatus **10** due to the central support member **14** being located on the center of gravity of the filled apparatus **10**.

When the apparatus **10** is lowered, it is preferred that the end plate units undersurfaces again engage substantially horizontal surfaces, and that the space therebetween be free and clear of obstacles so that the spacer bars **46** are free and clear. After having been lowered and the hoist mechanism removed, the spacer bars **46** are removed, the wedges **40** are backed out, and the end plate units **12** and **13** are pulled off. After possibly some tapping of the form **11** to separate the feed bunk **57** therefrom, and subsequent to a reassembly of the hoist mechanism onto the ends **52** and **53** of the support member **14**, the inner form **11** is lifted off and away from the now right-side-up feed bunk **57**. After re-inversion, the inner form **11** is again ready for another use.

For certain purposes, it may be desirable to use a still longer shaft **58** (FIG. 7) for rotating the apparatus **10**, which is inserted through the support member **14**, necessarily tubular for this purpose. Here, the collars **51** would fit over the shaft ends, only one **61** shown, and be secured thereto by the pins **54** being inserted in holes **62** in the ends **59** and **61**. The shaft **58** would readily rotate within the support member **14**, the latter acting as a bushing.

Although a preferred embodiment and one modification of this invention has been described herein, alterations and modifications may be made thereto without departing from the true spirit and scope of the invention as defined by the appended claims.

I claim:

1. Apparatus for molding concrete feed bunks or similar articles comprising in combination:

a unitary elongated inner form section adapted to form all bottom and side surfaces of the cast article;

at least one flange section secured to each end of said inner form section and including a plurality of pins extended outwardly and beyond the ends of said inner form section;

end form means adapted to form all end surfaces of the cast article, and including a pair of plates having a plurality of apertures formed therein, each plate placeable against one end of said inner form section with the pins protruding through the apertures;

means connected to said pins for releasably securing said plates to said inner form section; and

support means including at least one interior support element secured to said inner form section transversely across the inner base thereof and an elongated shaft extended completely through said inner form section for supporting same intermediate the ends thereof, said element and said shaft extended also through and supporting said end form means.

2. Apparatus for molding concrete feed bunks or similar articles comprising in combination:

an elongated form section of a single piece having an intermediate, substantially straight, normally horizontally disposed portion, a pair of portions depending downwardly from opposite outer edges of said intermediate portion, and diverging relative to each other, and a pair of side portions extended upwardly in a parallel manner from the lower edges of said depending portions;

a plurality of pins extended longitudinally outward from each end of said form section;

a pair of end plates each having a plurality of apertures formed therein adapted to receive the pins at one of said ends;

means attachable to said pins for securing said end plates to said form section ends; and

support means for said form section and said end plates including a plurality of gusset plates secured in longitudinally spaced relation transversely across said intermediate portion on the underside thereof, said gusset plates and said end plates each having an opening formed therein, and said openings longitudinally aligned, a collar device secured to each end plate and longitudinally aligned with said openings, and a shaft extended through all of said openings and said collars, the outer ends of said shaft extended beyond said collars.

3. Apparatus for molding concrete feed bunks or similar articles comprising in combination:

a unitary elongated inner form section adapted to form all bottom and side surfaces of the cast article;

at least one flange section secured to each end of said inner form section and including a plurality of pins extended outwardly and beyond the ends of said inner form section;

end form means adapted to form all end surfaces of the cast article, and including a pair of plates having a plurality of apertures formed therein, each plate placeable against one end of said inner form section with the pins protruding through the apertures;

means connected to said pins for releasably securing said plates to said inner form section;

support means including an elongated tubular shaft extended completely through said inner form section for supporting same intermediate the ends thereof, said shaft extended also through and supporting said end form means; and

a rod slidably extended through said shaft, the ends of said rod exposed beyond each end of said shaft.

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