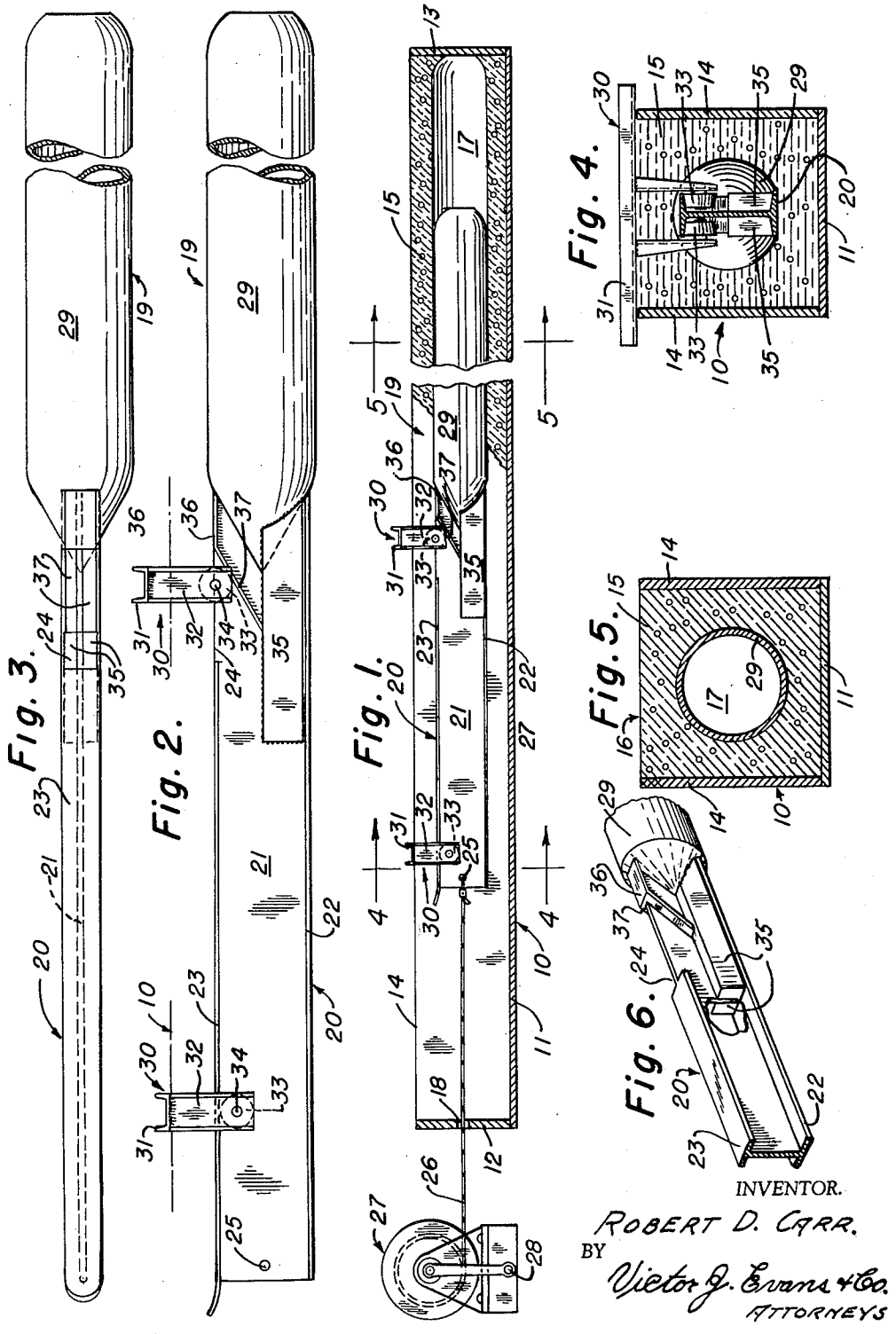
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APPARATUS FOR FORMING OBJECTS

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# APPARATUS FOR FORMING OBJECTS

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1 Claim. (Cl. 25—41)

This invention relates to the formation or manufacture of members such as precast concrete or plastic members that have a longitudinally extending hole or opening therein.

The primary object of this invention is to provide a hole forming mandrel for precast concrete wherein a hole is adapted to be formed in precast concrete by pulling a pipe or tube through the concrete as it is being placed.

A further object is to provide a means for or apparatus for forming objects such as concrete pipes which have longitudinally extending holes or openings therein, and wherein according to the present invention a mandrel is moved through a form as the concrete or other plastic material is being placed in the form, and wherein the mandrel is guided and supported by means of a beam attached to the leading end of a pipe or tubular body member, the beam being engaged by removable trolleys that hang down in between the sides of the form.

Still another object is to provide a hole forming mandrel for precast concrete which is economical to manufacture and efficient in operation and which is rugged in structure and foolproof in use.

These and other objects of the invention will become apparent from a reading of the following specification and claim, together with the accompanying drawings, wherein like parts are referred to and indicated by like reference characters and wherein:

FIGURE 1 is a vertical longitudinal sectional view taken through the apparatus of the present invention.

FIGURE 2 is an enlarged side elevational view of the hole forming mandrel and showing the removable trolleys, and with parts broken away.

FIGURE 3 is a top plan view of the movable mandrel per se.

FIGURE 4 is a sectional view taken on the line 4—4 of FIGURE 1.

FIGURE 5 is a sectional view taken on the line 5—5 of FIGURE 1.

FIGURE 6 is a fragmentary perspective view illustrating certain constructional details of the present invention.

Referring in detail to the drawings, the numeral 10 indicates a form which includes a horizontally disposed bottom wall 11 as well as spaced parallel vertically disposed end walls 12 and 13 and spaced parallel vertically disposed side walls 14. The numeral 16 indicates an article which is to be formed according to the present invention and wherein the article 16 may be a rectangular concrete pipe which has a longitudinally extending central circular opening or hole 17 therein, and the numeral 15 indicates the concrete or other plastic material which is adapted to be placed in the form 10.

According to the present invention there is provided a movable mandrel which is indicated generally by the numeral 19, and the mandrel 19 includes a tubular body member 29 which has a beam 20 secured to its leading edge, as for example by welding. The beam 20 is shown to comprise a vertically disposed wall portion or web 21 as well as lower and upper horizontally disposed spaced apart flanges 22 and 23, and the upper flange 23 is cut away as at 24.

The leading edge of the beam 20 is provided with an aperture or opening 25, and the numeral 26 indicates a cable which extends through an opening 18 in the end wall 12 of the form 10, and the cable 26 is connected to the apertured portion 25 of the beam 20. The cable 26



is arranged in engagement with a winch 27, and the winch 27 may be actuated by means of a crank or handle 28.

There is further provided a plurality of removable trolleys which are each indicated generally by the numeral 30, and each of the trolleys 30 includes a horizontally disposed crosspiece 31 which engages the upper edges of the side walls 14 of the form 10. Depending from each crosspiece 31 is a pair of spaced apart legs 32, and wheels or rollers 33 are journaled to the legs 32 as for example by means of pins or axles 34, FIGURE 4, and these wheels 33 engage the lower surface of the upper flange 23 of the beam 20 for a purpose to be later described.

As shown in FIGURE 6, a pair of blocks or pads 35 are secured as by welding to opposite sides of the beam 20 contiguous to the junction of the beam with the body member 29, and these blocks 35 are adjacent the lower flange 22. There is also provided a horizontally disposed plate portion 36 which is affixed to the upper rear edge portion of the beam adjacent the leading edge of the body member 29, and inclined wall sections 37 extend between the plate portion 36 and the blocks 35 that are secured thereto in any suitable manner, or else these parts may be formed as integral or one piece units.

From the foregoing, it is apparent that there has been provided a method of and means for forming articles wherein the completed articles such as the concrete pipes 16 will have a longitudinally extending central opening or hole such as the hole 17 therein. According to the present invention the mandrel 19 is adapted to be pulled or moved though the form such as the form 10 as the concrete 15 is being placed therein, and with the parts arranged as shown in FIGURE 1 for example, it will be seen that with the cable 26 connected as at 25 to the leading edge of the beam 20, by operating the winch 27 as for example by means of the crank 28, the cable 27 will move through the opening 18 in the end wall 12 to pull or move the mandrel 19 through the form 10.

As the mandrel 19 moves through the form 10, and with the concrete 15 placed in the form, it will be seen that a hole such as the hole 17 will be formed by the tubular body member 29 and the rate of movement of the mandrel and the size thereof is such that the concrete 15 will set up or harden sufficiently so that the concrete will retain its desired shape or form as the mandrel is pulled or moved through the form.

The trolleys 30 are removable and the trolleys 30 each include the horizontal crosspiece 31 which rests on or engages the upper edges of the side walls 14, and depending from each crosspiece 31 are the legs 32 which have the wheels 33 journaled thereto as for example by means of pins 34, and these wheels 33 engage the lower surface of the upper flange 23 of the beam 20 so as to provide a means for guiding and supporting the mandrel during its movement through the form as for example when the winch 27 is actuated.

The upper flange 23 of the beam 20 is cut away as at 24, and there is provided the blocks 35 and inclined wall sections 37 as well as the horizontal plate portion 36, FIGURE 6, and this construction provides clearance in the cut away portion 24 so that the trolleys can be properly utilized in the desired manner.

Suitable material can be used for making the various parts, and these parts or elements can be made in different shapes or sizes as desired or required.

While the present invention has been described being used with concrete, it is to be understood that the principles of the present invention are applicable to other types of material such as plastic substances or the like.

The present invention is especially suitable for use in forming concrete pipes such as pipes having a suitable outside configuration which may be rectangular as indi-

cated by the numeral 16 in FIGURE 5, and the completed pipe 16 may be removed from the form 10 after it completely sets up or hardens. The completed article 16 will have the longitudinally extending hole 17 therein due to the fact that the tubular body member 29 will have been moved through the concrete to form such a hole or opening, and such a hole can be used for any desired purpose as for example various types of fluids, liquids, or other substances can flow through such longitudinally extending holes 17.

The form consists of a box-like member which has an open top and a closed bottom as well as closed ends and closed sides, and this form may vary in configuration or size, depending upon the article being shaped or formed therein. The concrete 15 being cast may be supplied to the form from any suitable source of supply.

It will therefore be seen that according to the present invention there has been provided a means for forming holes in precast concrete, and as shown in FIGURE 6, the inclined wall sections 37 define ramps for the trolley wheels 33. The top flange 23 is cut out or cut away as indicated by the numeral 24, and the raps 37 permit or provide a guide means whereby the wheels 33 can roll up these ramps and out of engagement with the beam. The beam 20 functions as a guide member for the mandrel, and the body member 29 may be a pipe, tube or the like. The blocks 35 function as reinforcements to compensate for the cut away portion 24. Instead of using the winch 27, other suitable pulling devices can be used for moving the mandrel through the form. In FIGURE 1, the numeral 15 indicates fresh concrete which has been poured in the right side of the form 10. The numeral 25 indicates a pulling eye so that the mandrel 19 can be pulled from right to left as for example as shown in FIGURE 1.

It will therefore be seen that there has been provided a tool which includes a hole forming mandrel for precast concrete and the tool of the present invention is especially useful in the manufacture of precast concrete with a hole or holes therein. The mandrel 19 is adapted to be pulled through the form as the concrete is placed around it, and the mandrel is of such a length and its rate of travel is such that the concrete, placed fresh at the leading end of the mandrel, is sufficiently set up by the time the trailing end of the mandrel goes through that it remains intact or in its desired shape.

The guide beam 20 is affixed to the leading end of the body member 29 and is used to hold up this end of the body member in its proper position while fresh concrete is placed around it and this guide beam 20 is supported by the removable inverted trolleys 30 which include the wheels 33 that hang down from the top of the concrete form as for example as shown in FIGURE 4. The length of the guide beam 20 is such and the spacing of the trolleys is such that at least one set of wheels 33 will be supporting the beam 20 at all times. As the mandrel moves forward, a trolley 30 straddles and supports the top flange 23 of the beam, and this trolley is then removed at the trailing end of the beam through the cutout 24 in the top flange 23.



Thus, it will be seen that there has been provided an apparatus for forming a hole in precast concrete by pulling a pipe or tube such as the tube 29 through the concrete as it is being placed, and there has also been provided a means of guiding and supporting the mandrel by means of a beam attached to the leading end of the pipe and wherein the beam is carried by removable trolleys that have portions that hang down in between the side walls of the forms.

Minor changes in shape, size and rearrangement of details coming within the field of invention claimed may be resorted to in actual practice, if desired.

What is claimed is:

In an apparatus for making precast concrete articles with longitudinally extending central holes therein, a form including a bottom wall, spaced apart side walls and spaced apart end walls; a movable mandrel including a tubular body member, a guide beam affixed to the leading end of said body member, said guide beam including a vertically disposed wall portion and horizontally disposed spaced parallel upper and lower flanges, said upper flange being cut away adjacent said body member, one of said end walls of the form having an aperture therein, a winch arranged externally of said form and said winch including a cable extending through said aperture and said cable being connected to the leading end of the beam; a plurality of spaced apart removable trolleys each including a horizontally disposed crosspiece extending transversely across the upper edges of said side walls, a pair of spaced apart elements depending from said crosspiece, wheels connected to said elements for engaging the lower surfaces of the upper flange of the beam, a pair of blocks secured to opposite sides of the beam contiguous to the junction of the lower flange and the body member, a horizontally disposed plate portion affixed to the beam adjacent the junction of the vertically disposed wall portion of the beam with the body member, and inclined wall sections on opposite sides of the wall portion of the beam, and said inclined wall sections defining ramps which extend between the plate portion and the upper surfaces of the blocks.


References Cited in the file of this patent

UNITED STATES PATENTS

| | | |
|---|---|---|
| 424,656 | Ransome | Apr. 1, 1890 |
| 857,587 | Boyle | June 25, 1907 |
| 1,422,150 | Trullinger et al. | July 11, 1922 |

FOREIGN PATENTS

| | | |
|---|---|---|
| 73,240 | Denmark | Oct. 22, 1951 |