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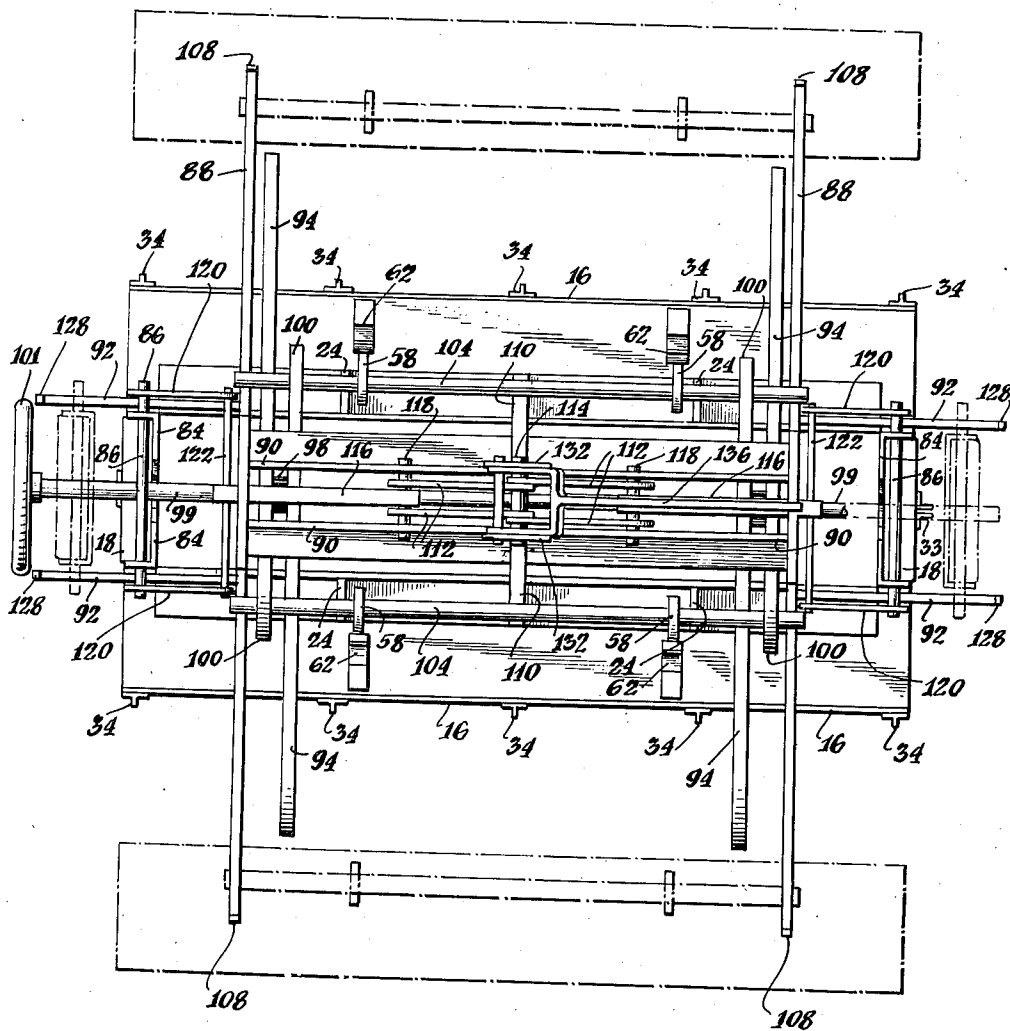
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APPARATUS FOR CASTING AND HANDLING BLOCKS

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5 Sheets-Sheet 2

Fig. III



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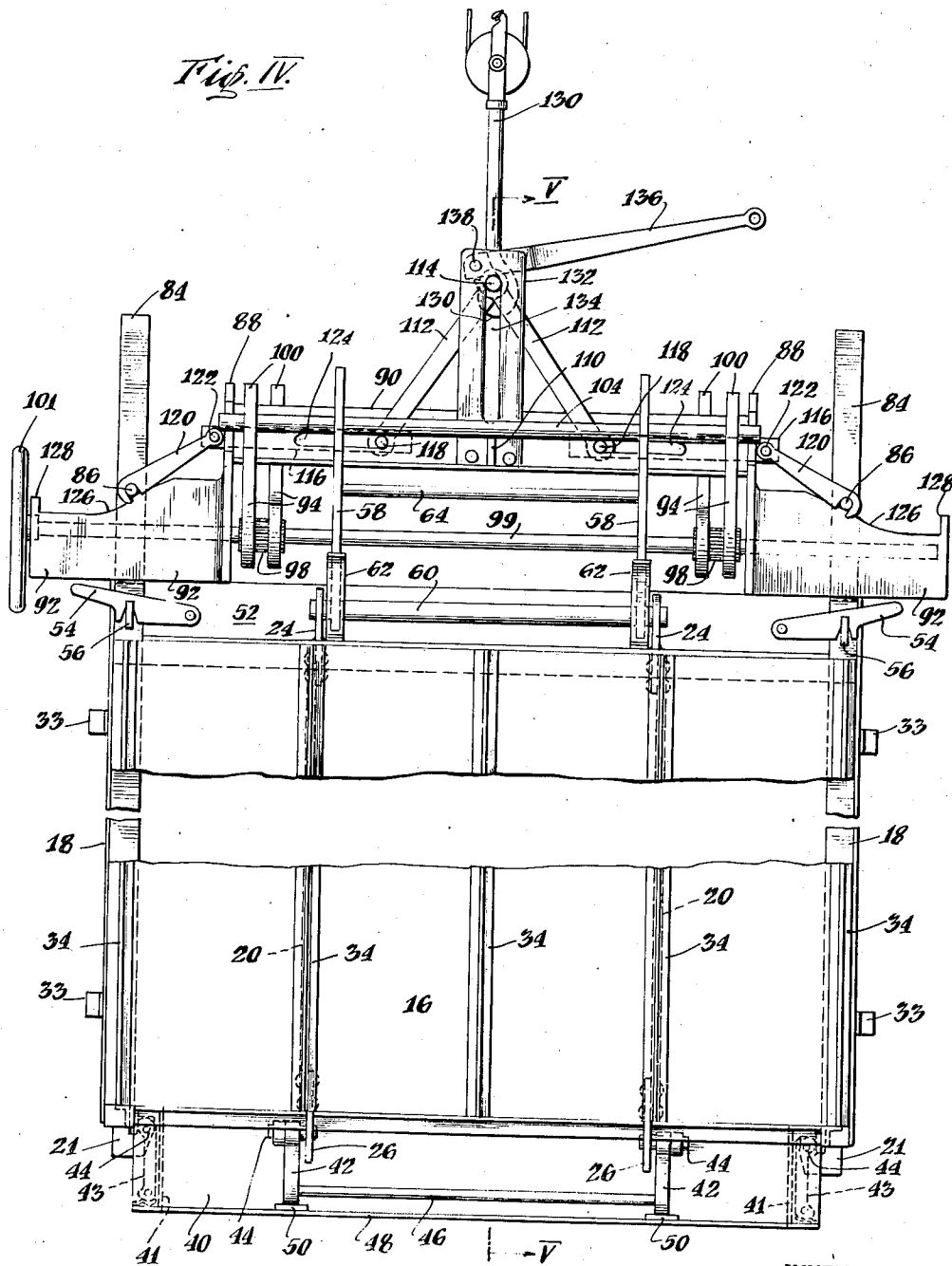
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5 Sheets-Sheet 3



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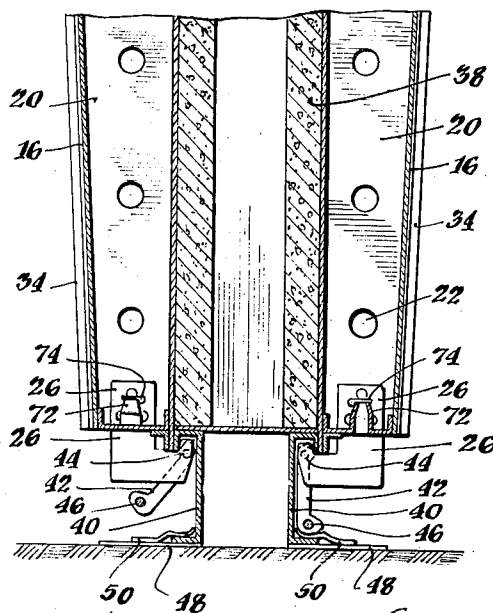
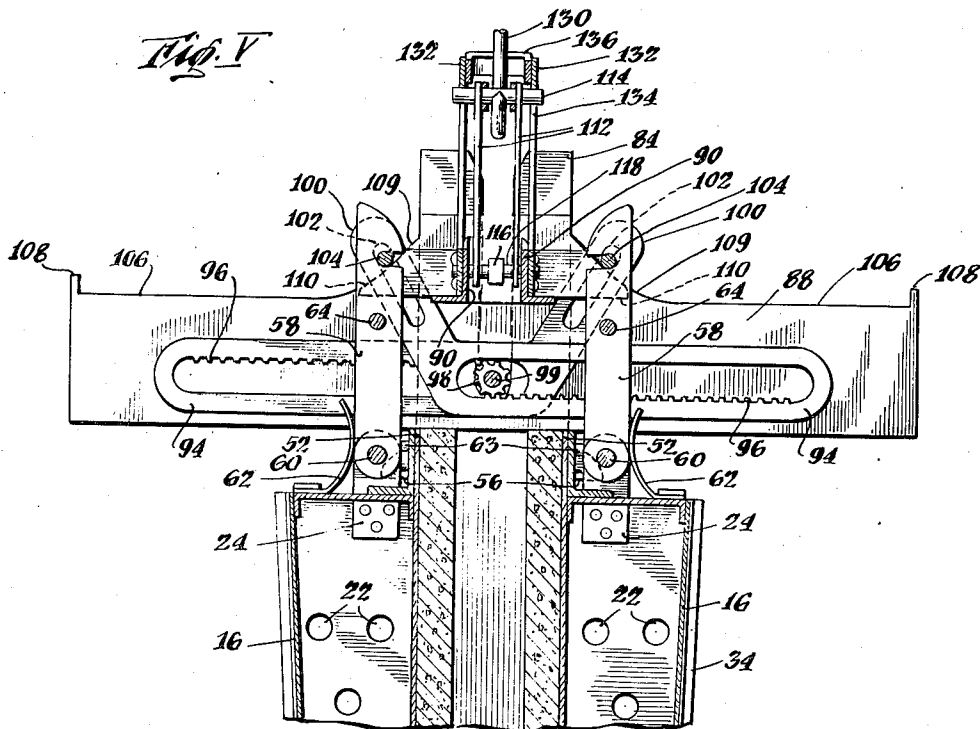
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APPARATUS FOR CASTING AND HANDLING BLOCKS

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5 Sheets-Sheet 4



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APPARATUS FOR CASTING AND
HANDLING BLOCKS

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Application April 10, 1942, Serial No. 438,401

25 Claims. (Cl. 25—121)

This invention relates to improvements in apparatus for casting and handling blocks, and more particularly to apparatus used in the casting of cementitious blocks and the handling of such blocks after they have been cast.

An object of this invention is to provide a generally improved mold for casting and forming cementitious blocks.

Another object of this invention is to provide an improved molding jacket for casting cementitious blocks.

Still another object of this invention resides in the provision of improved apparatus for lifting a jacket and cast cementitious block from a surrounding cradle and off a central core.

A further object of this invention is to provide combined means for lifting a jacket and cast cementitious block from a surrounding cradle and off a central core, and for stripping the jacket from the casting after the jacket and casting have been removed from the cradle.

A more specific object of this invention lies in the provision of a novel jacket lifting and lowering, stripping and assembling device adapted for use with a variety of different size jackets.

These and other features, capabilities and advantages of the invention will appear from the subjoined detailed description of one embodiment and a modification thereof, illustrated in the accompanying drawings in which:

Fig. I is a partially cut-off end view of a mold, showing my improved jacket resting in a surrounding cradle, with my improved lifting apparatus positioned above the jacket;

Fig. II is a horizontal cross-sectional view taken along the line II—II of Fig. I;

Fig. III is a top plan view on an enlarged scale, showing the lifting apparatus connected to the jacket, and the jacket removed from the cradle;

Fig. IV is a side view showing the lifting apparatus holding the jacket, drawn to the same scale as Fig. III;

Fig. V is a broken vertical cross-sectional view taken along the line V—V of Fig. IV, but drawn to a larger scale, showing the lifting apparatus connected to the side of the jacket;

Fig. VI is a partial cross-sectional view similar to Fig. V showing the side of the jacket stripped from the casting;

Fig. VII is a longitudinal vertical cross-sectional view on the same scale as Figs. V and VI showing the end of the jacket stripped from the casting; and

Fig. VIII is a partial end view illustrating a modified arrangement for forming the connection

between the lifting device and the end of the jacket.

Fig. IX shows a preferred shape of rod used in the arrangement illustrated in Fig. VIII, taken in cross-section along the line IX—IX.

In Fig. I, showing the general arrangement of the apparatus in accordance with this invention in end view, it will be seen that this apparatus includes, as its parts, a surrounding jacket generally indicated at 10 which, during the casting operation, rests in a cradle generally indicated at 12. This cradle may be mounted in an earthen pit (not shown) although the position and placing of the cradle is of no particular importance for the purposes of the present invention. A lifting device generally indicated at 14 and to be described in more detail hereafter, is used for lifting the jacket and the supported casting from the cradle. Of course, the same device 14 is used to assemble and lower the jacket into the cradle preparatory to the pouring and casting of the cementitious blocks.

The surrounding jacket consists, generally speaking, of sides, designated throughout the drawings as 16, and ends 18. In accordance with the preferred form of the invention these jacket sections are formed from sheet steel, and generally, closed at both top and bottom. Within each side 16 I preferably provide transverse bracing members 20 which extend vertically throughout the entire height of the side jackets. They may be attached to the opposite walls of the sides by welding, or other suitable means. As seen more clearly in Fig. V, these vertical members are preferably provided with a plurality of openings 22 therethrough, for a purpose to be described hereinafter. The vertical members 20 serve not only to brace and strengthen the sides 16, but are also utilized as lifting straps through which the lifting forces are transmitted when the jacket and the cementitious casting are lifted from the cradle. For this purpose, the upper end of each member 20 is provided with a vertical extension 24 connected thereto by rivets or other suitable means, and projecting through and above the closed top of the side jacket. The lower ends of the members 20 are provided with hooked depending members 26 adapted to engage beneath the bottom of the formed casting, as most clearly indicated in Fig. V. The sides may be provided with additional braces 21, which will not, however, extend beyond the top and bottom, but will be provided with a suitable number of openings (not shown).

The cradle 12 which supports the jacket 10 and the casting during the pouring operation are

preferably formed from a series of spaced vertical beams 28, connected together at the bottom by a transverse platform upon which the cradle and casting rest, and also interconnected by a plurality of horizontal, longitudinally extending beams 30. For raising or lowering the jacket in the cradle with a minimum of friction, the beams 30 are provided with longitudinal guide rails 31 having line contact with the vertical rails 34 attached to the outside of the sides 16. This arrangement reduces the friction drag between these two relatively moving parts. Within the purview of those skilled in this art, other friction reducing means such as rollers, could, of course, be used in place of guide rails 31. Additionally, as is clearly shown in Fig. I, the outside of the sides 16 and the inside of the cradle are correspondingly tapered to secure a proper fit of the jacket in the cradle. Attention is also directed to the fact that the vertical rails 34 on the sides, although engaging the horizontal rail 31, are preferably spaced so that they are positioned, transversely of the apparatus, opposite the corresponding vertical beams 28 of the cradle. Thus, the outward pressure from the jacket and casting, is directly transmitted to the strongest part of the cradle. Furthermore, to assist in this direct transmission of forces, the members 20 serving both as lifting straps and as strengthening members for the sides as well as the braces 21 are positioned opposite and in line with the vertical rails 34 and the vertical beams 28. This arrangement is most clearly illustrated in Fig. II, which also shows the fixed central hollow core 36 which, together with the jacket 10, are used in the forming of the desired casting 38. In order to facilitate the drawing of the casting 38 off of the central core 36, the latter may be tapered, as indicated by the shape of the vertical inner wall of the casting, as shown in Fig. V. The inner core 36 may be split up into a plurality of separate stationary cores or may have any desirable shape, depending upon the type of the casting involved.

Fig. II also shows an arrangement which assists in positioning the jacket in the cradle, wherein vertically spaced brackets 33 on the ends of the jacket form a U-guide adapted to receive a vertical rail 35 mounted on spaced transverse beams 37 of the cradle (one end of the cradle has been cut off in Fig. II to correspond with Fig. I).

As described above, the members 20 extending vertically throughout the sides 16, and which serve as lifting straps, have attached, at their lower ends, hook-shaped members 26 which project inwardly beneath the casting. These hook members are adapted to engage a bottom which may be formed from U-shaped beams 40, which bottom is lifted, therefore, with the casting and jacket. For the purpose of locking the hook members 26 within one of the arms of the U, I preferably provide locking levers 42 pivoted at 44, as in Fig. IV which, in their vertical position will prevent disengagement of the hook members 26 when the casting and jacket are being lifted from the cradle. A connecting bar 46 may be used to push the locking levers 42 into and out of position. The bottom member may be provided with a base plate 48, connected to the U-beams in any suitable manner, to which plate are connected springs 50 adapted to releasably hold the locking levers 42 in their locked position. In Fig. V I have indicated one of the levers 42 in locked position, and the other in the

unlocked position. It is to be understood that similar hooks 21 attached to the bottom of the ends 18 will engage with transverse beams 41, which interconnect the beams 40 and form with the same the bottom of the mold. A similar locking lever construction 43 will be used as in connection with the sides.

The upper ends of the sides 16 are preferably provided with a suitable screed curb 52 to which may be pivoted levers 54 engaging lugs 56 attached to the ends 18. In this manner, the ends and sides are interlocked to form the hollow surrounding jacket generally indicated at 10.

To form the interconnection between the sides 16 and the lifting apparatus 14, lifting hooks 58 are pivotally interconnected with extension 24 of the lifting strap 40 by suitable means such as pivot rod 60. The lifting hooks 58 are in a normally vertical position, being there held by suitable springs 62 which hold the lifting hook against suitable abutments 63. Rods 64, extending between each pair of lifting hooks on opposite sides of the jacket are used to pull the lifting hook 58 out of disengagement with the lifting apparatus.

In accordance with the preferred form of apparatus, it is intended that the sides 16, ends 18 and the hollow core 36 be filled with steam under such pressure that, during the pouring of the cementitious mixtures, either the inner core 36 alone, or additionally, the ends and sides will be filled with steam at temperatures running up to 500° F. The method of forming a casting at such high temperatures forms no part of the present invention, but is covered in my co-pending application Serial No. 433,037, filed March 2, 1942, in which the advantages of such method are fully described. However, in order to utilize this method with the apparatus of the present invention, I have provided suitable conduits 68 having nozzles 70 which may suitably engage openings 72 in the bottom of the sides 16, during the time the jacket 10 is in the cradle 12 and the cementitious mixture is being poured. In order to prevent the escape of the high temperature steam from the sides 16, the opening 72 may be covered by a suitable valve 74, which will close automatically when the jacket is lifted from the cradle. The steam in the conduits 68 may then be shut off by suitable valves 76. The ends 18 will be supplied with steam through a similar conduit 66 and openings 80, controlled by the valve 78. Similar suitable stationary steam connections 67 (Fig. II) will also be used to engage openings 82 at the bottom of central core 36. In all cases, suitable means (not shown) will be provided for draining the condensate from the jacket. The purpose of the openings 22 in the vertical braces 20 and 21 which sectionalize the sides 16 will now readily be apparent. Such openings permit permeation of the steam throughout the entire sides.

While only certain, relatively simple apparatus has been shown for removably interconnecting the steam conduits with the movable sides and ends, it is to be understood that any other suitable arrangement could be used. It is even contemplated that the sides and ends be more or less permanently connected with a flexible steam hose which could be pulled out of the cradle with the jacket, and then later disconnected.

For the purpose of lifting the sides 16, the arrangement of lifting hooks 58 has previously been described. The connection on the end jacket

18 for the purpose of lifting the same by the apparatus 14, is effected by split extensions 84 having a U-shaped cross-section (Fig. III) between the flanges of which U is supported a removable pin 86 which engages with suitable connecting means on the lifting apparatus, now to be described.

As will be best seen from a study of Figs. III, IV, V, VI, and VII, the handling device 14 consists of two sets of interconnected parts, one set relating to the lifting and stripping of the sides 16, and the other to the lifting and stripping of the ends 18. The apparatus has, as its foundation, a pair of longitudinally extending beams 90 to which are interconnected in any suitable manner, as welding, at opposite ends, a pair of transversely extending tracks 88. Two sets of longitudinally extending tracks 92 on each end of the apparatus, are, in turn, rigidly interconnected with the transversely extending tracks 88. At each end of the apparatus are also to be found a pair of internal racks 94 having teeth 96 adapted to engage a common pinion 98 mounted upon a rotatable shaft 99 in such a manner that rotation of the pinion 98 shifts the racks 94 in respectively opposite transverse directions. The racks 94 have an upwardly slanting extension 100 formed with a slot 102 adapted to receive a longitudinally extending bar 104. One bar on each side of the apparatus engages slot 102 in corresponding rack extensions 100 and is slidable upon the upper shaped surface 106 of the track 88. Projections 108 upon the end of the track 88 will prevent the rod 104 from running off the end of the track. In what may be termed the retracted position of the lifting apparatus, the rods 104 will rest upon the upwardly extending curved surface 109 of the track 88, in such a position that, as is clearly indicated in Fig. I, they will be directly above the vertical lifting hook 58 connected to the sides 16, as previously described. In order to form a further support for the rod 104, a partial track 110 may be connected to the longitudinally extending beam 90 near the center of the lifting apparatus.

That portion of the lifting apparatus which is to lift and strip the ends consists of the two pairs of longitudinally extending tracks 92, previously described, which are controlled in the following manner. Two pairs of links 112 (see Figs. III, IV and VII) are connected together at one end by a centrally positioned pivot rod 114, and at their outer ends are respectively pivotally connected to longitudinally movable push rods 116 by means of pivot rods 118. The outer ends of the push rods 116 are each provided with a pair of hooks 120 mounted at the outer ends of a pivot rod 122, and adapted to engage the transverse rod 86 mounted in the extension 84 of the end jacket. In order to properly guide the outward sliding movement of the push rods 116, they may be passed through suitable openings in the transversely extending tracks 88, and the pivot rods 118 are extended upon either side, as shown in Fig. III, to be positively guided in suitable slots 124 (Fig. VII) formed in the longitudinally extending beams 90. The rods 86, engaged by the hook 120 are adapted to slide upon the slanting upper surface 126 of the tracks 92 which, in turn, are formed with end stops 128 to limit the movement of the rods 86. The lifting apparatus 14 is raised and lowered by suitable means (only indicated in part), including a hook 30 which engages the pivot rod 114. This

pivot rod is adapted to be vertically guided in slots 134 formed in opposite vertical extensions 132 rigidly interconnected with the longitudinal beams 90. A lever 136, pivoted in the extension 132 at 138 may be used to press the pivot rod 114 downwardly.

The operation of my apparatus will now be described. If it is assumed that the various parts are in the position indicated in Fig. I, that is, the jacket 10 is in the cradle 12, and the concrete or other cementitious form has been made by pouring the suitable material between the core 36 and the surrounding jacket 10, and the time has come when it is desired to remove the jacket and the casting from the cradle, the lifting apparatus is first appropriately positioned relatively to the jacket, as indicated in Fig. I, and then lowered. The rods 86 on the opposite end jacket extension 84 are first removed, so that the lifting and stripping apparatus 14 may slide down upon the top of the jacket. As the lifting apparatus is lowered in position, the two sets of hooks 58 connected to the sides 16 will be outwardly displaced about their pivots 54 against the action of springs 62 by the rod 102. This result is brought about by suitably curving the upper end of the lifting hooks 58. When, however, the rods 104 are opposite the cut-out portion of the hooks 58, the latter will snap back into place and the hooks will, under the action of springs 62, firmly engage the respective rods 104 on the lifting apparatus. At the same time, the end tracks 92 will have slipped down alongside the longitudinal flanges of the end jacket extensions 84 to such an extent that the rods 86 may be replaced in their respective openings, and the end hooks 120 placed thereover. The shaft 99 will slip into the guiding split in end extension 84. The jacket and casting are now ready to be raised, and will be hauled vertically out of the cradle with the end guides 33 running on rails 35, when the lifting apparatus is actuated in the upward direction. This prevents strain and friction on the sides and core. In this connection, it will be noted, that through the hook 58, the vertical extending strap 20 and the lower hook 26, the heavy casting itself will be directly raised from beneath along a substantially continuous line of force so that strain upon the sides 16 has been largely eliminated. It is also to be noted that through this arrangement the bottom 40, 41 is also lifted out of the cradle. Lifting of the casting and jacket also breaks the steam connection, in a manner previously described, or through any other suitable arrangement. Very little lifting will be done through the end hooks 27, which are used mainly for holding the bottom of the ends 18 in place.

After the casting, jacket and bottom have been lifted out of the cradle, they are swung into the desired position, for example, wherever the casting is to be cured or otherwise supplementarily treated, and the removed unit is then lowered to the ground, in a position as indicated in Fig. V.

When it is desired to strip the jacket from the castings, first of all the latch 54, 56 is unlocked and then the locking levers 42, 43 will be pulled out into a position as indicated in the left hand side of Fig. V. By actuation of the wheel 101, in turn rotating shaft 99 and pinions 93, racks 94 are moved outwardly in opposite directions, carrying with them rods 104, riding upon the downwardly curved tracks 88. This action, in connection with the fact that it is the casting

alone which is supported upon the bottom 40, 41, which was removed from the cradle with the casting and jacket, whereby the sides 16 will, of their own weight tend to drop downwardly, results in an outward and downward movement of the sides. This downward motion of the sides, acting in the direction of compression of the casting, prevents damage as contrasted, for example, to arrangements in which the jacket is lifted off upwardly. The inclination of surface 109 is sufficient to permit the hooks 26 to disengage the bottom beams 40. This movement will be continued until after the rods 104 moved upon the relatively flat surface 106 of the track 38 and in this position the sides 16 will be displaced from the casting and will preferably still clear the ground. If it is then desirable to treat the sides of the casting, the racks 94 are further actuated by rotation of the pinions 93, shaft 99 and the wheel 101, which may be on either end or both ends of the apparatus, to move the rods 104, and with them the sides 16, toward the outer end of the track. When the sides 16 are in this position, suitable room is provided between the sides and the casting for a workman to work upon the outer sides of the casting.

Attention is directed to the fact that when the casting and jacket have been lowered to the ground upon the bottom 40, 41, the ends 18 will also tend to move downwardly, of their own weight, and, by the riding of the rods 86 on the slanting surface 126 of the track, will also tend to move outwardly from the end of the casting, as well as downwardly. This is prevented, however, as long as the hook 130 urges the pin 114 upwardly. As soon as this hook is lowered and the pin 114, links 112 and push rods 116 are released, the outward and downward movement of the ends 18 is free to take place. Again, it is to be noted that the inclination of the surface 126 is sufficient for the hooks 26 to disengage the beams 41. If, adhesion between the ends 18 and the end of the casting exists to such an extent that the ends 18 will not move of their own volition, they may be pushed outwardly and downwardly by operation of the lever 136 which, by pressing the pivot pin 114 downwardly in the slot 134, pushes the links 112, which in turn, actuate the push rods 116 to push the ends 18 outwardly through the hooks 120. When the initial adhesion has once been broken, the ends 18 may slide downwardly and outwardly until the rods 86 are stopped by the stops 128 on the end of the tracks 92, which may have some downward slope throughout their length.

The apparatus 14 is used to lower the jacket in place in the cradle, as well as for lifting the same out of the cradle and stripping the jacket from the casting. In this event, assuming these parts are in the position shown in Figs. IV and V (without, of course, the casting being present), and after making sure that the latches 54, 55 are locked, lower hooks 25 and 27 are locked in position in the bottom beams 40 and 41 by means of locking levers 42 and 43, the jacket is lowered into the cradle. The rod 86 is then removed, releasing the ends from the lifting apparatus, and the hooks 53 connected to the side jacket 16 are swung outwardly by means of the rod 64. The lifting apparatus may then readily be removed and held ready for re-use as soon as the next casting has been poured.

It will be also clear that the device 14 can be used to assemble the empty jacket. For example, when the hook 130 is raised, it will pull the ends

together, while at the same time the sides are pulled together by rotation of the wheel 101. Latch 54, 56 is now engaged and the bottom hooks 26, 27 connected to the bottom 40, 41 held in place by locking levers 42, 43. The jacket is then ready to be lifted and placed in the cradle for the next pouring operation.

As an alternative arrangement for the removal of rod 86, engaging the end-jacket lifting apparatus, I may employ a permanent construction such as shown, for example, in Fig. VIII. In this case, a rotatable slotted guide 138 is mounted between the arms of the extension 84, and may be provided with a pair of retractable non-rotatable rods 140 having a periphery as shown, for example, in Fig. IX. These rods are each provided with pins 142 engaging the cam slots 143 in the member 138. Rotation of the member 138 by means such as the handle 144 will cause the rods 140 to retract so that they will be substantially flush with the outer sides of the supporting arms. Thus, for example, when it is desired to lower the lifting apparatus in place, the handle 144, is moved upwardly to retract the rods 140, and after the lifting apparatus has been lowered, the handle 144 is moved downwardly to push out the rod 140 which may then be engaged by the hook 120.

The advantages of my above-described apparatus will, it is believed, be obvious to those skilled in this art. In the first place, the manner in which the jackets, particularly the sides are supported in the cradle, whereby the outward forces occurring during the pouring of the casting are transmitted directly to the strongest part of the cradle, permits the use of jackets formed out of relatively light sheet metal. This, in turn, results in the use of relatively lighter lifting apparatus.

The lifting apparatus per se will, of course, be used with a plurality of jackets and, in combination with the high speed casting obtained by the use of high temperature steam or heat as described in my aforementioned co-pending application, will facilitate the mass production of formed concrete castings. Within a normally desired range, the same lifting apparatus can be used for castings and with jackets of varying length.

It is also pointed out that while various constructional details in connection with the foregoing apparatus have been described in some detail for the sake of clarity, changes in such details may be made by those skilled in this art without departing from my invention as defined by the following claims.

I claim:

1. In combination, a mold adapted for use in forming a casting, including a cradle, a jacket laterally supported in said cradle having separate interconnected sides and ends, a bottom means releasably connecting said bottom to said sides and ends, and vertical extensions projecting from and above said sides and ends, a handling device, and means interconnecting said vertical extensions with said handling device, whereby said handling device may raise said jacket, bottom and the formed casting from said cradle, and further means on said handling device directing said sides and ends outwardly and downwardly when said releasable means are disconnected and said jacket and casting are lowered upon said bottom independently of said cradle.

2. The combination according to claim 1, in which said further means includes downwardly curved track sections, extending outwardly from

the ends and from the side of said device, and said interconnecting means includes rods for each end and side of the jacket, slidable upon said track sections, whereby, when said casting rests upon said bottom, said sides and ends will be supported through said rod on said track sections, and will move outwardly and downwardly thereon by the action of their own weight.

3. In combination, a mold adapted for use in forming a casting, including a cradle, a jacket laterally supported in said cradle, said jacket including oppositely positioned sides, a pair of vertically extending hooks mounted on the top of each side, a bottom positioned, and means releasably connecting said bottom to said sides, and a handling device having a pair of oppositely mounted rods each adapted to engage a pair of hooks on said opposite sides, whereby upward movement of said handling device will raise said jacket and connected bottom from said cradle, said handling device including a pair of transversely extending tracks at each end thereof, upon which said rods are adapted to rest, said tracks having an outwardly and downwardly curved guiding surface near their inner ends, upon which said rods are positioned when the device is lifting the jacket, bottom and casting from the cradle, whereby when said jacket and casting are lowered upon said bottom, independently of said cradle, and said releasable means are disconnected, said rods, under the action of the weight of said sides, will slide downwardly and outwardly along said track and thereby carry said sides downwardly and outwardly of said casting.

4. The combination according to claim 3, in combination with means positively moving said rods, and with them said sides, along said track.

5. The combination according to claim 3, in which said device is provided with a pair of cooperating, transversely movable racks at each end, each rack having a slotted guide engaging said rods, and means including engaging pinions for moving said racks in unison, whereby said rods with their depending sides may be positively moved along said tracks.

6. A hollow jacket for forming cementitious blocks and the like comprising, in combination, a pair of oppositely positioned closed hollow sides, a pair of oppositely positioned closed hollow ends connected between said sides, a plurality of vertically extending transverse members connected across opposite walls of each side throughout the entire height of said side, a vertical extension attached to at least two of said members on each side and projecting through and above the top of each side, and means attached to the lower end of such members, projecting through the bottom of each side and extending inwardly beneath the bottom of the jacket and adapted to support the block formed within the jacket, whereby, when the jacket is lifted by said vertical extension the weight of said block upon said means will be transmitted to said vertical extensions directly through said vertical members independently of the walls of the sides.

7. The combination according to claim 6, in combination with a lifting hook pivotally connected to each vertical extension.

8. A hollow jacket for forming cementitious blocks and the like comprising, in combination, a pair of oppositely positioned closed hollow sides, a pair of oppositely positioned closed hollow ends connected between said sides, a plurality of vertically extending transverse members connected

across opposite walls of each side throughout the entire height of said side, a vertical extension attached to at least two of said members on each side and projecting through and above the top of each side, a bottom positioned in the center of and below said jacket, hooks attached to the lower end of such members, projecting through the bottom of each side and extending inwardly to engage said bottom, whereby, when the jacket is lifted from above by said vertical extensions, the weight of the block will be transmitted directly through said vertical members, substantially independently of the walls of the sides.

9. In combination, a wedge-shaped cradle comprising two opposite sets of a plurality of substantially vertical longitudinally spaced inwardly and downwardly sloping beams, means interconnecting said sets at their lower ends to form a cradle bottom, a plurality of longitudinally extending vertically spaced beams interconnecting the vertical beams of each set along their inner sides, and a relatively narrow rail attached to and running along the inner side of each longitudinal beam, a hollow jacket in said cradle having hollow sides whose outer walls are downwardly and inwardly sloping in accordance with the shape of said cradle, hollow ends, a bottom positioned beneath the center of said hollow jacket and lower than said ends and sides, means releasably connecting said bottom with said ends and sides, other means for releasably connecting said ends and sides together, a plurality of vertically extending transverse braces connected between the opposite walls of each side, and vertical rails attached along the outside of each side, cooperating with the longitudinal rails of said cradle to form a relatively frictionless sliding line contact whenever said jacket is raised or lowered in said cradle, the vertical braces within each side, the vertical rails on each side, and the vertical beams of said cradle being so aligned that the internal expanding forces inside of the jacket, occurring during the casting of a formed block, will be transmitted directly to the vertical cradle beams, a handling device for raising said jacket from said cradle, and releasable means interconnecting said handling device with the top of said ends and sides, said last releasable means including connectors formed as substantially aligned vertical extensions of at least two of said vertical side braces of each side of said jacket, and said releasable means connecting the sides to said bottom comprising lower extensions of the same vertical beams formed as hooks engaging said bottom, whereby when said jacket, bottom and cast block are raised by said device from said cradle, the weight of the block on said bottom is transferred to said lifting device along substantially vertical lines of force through said vertical braces, substantially independently of the remainder of said jacket.

10. The combination according to claim 9, in combination with means supplying heat to the sides and ends of said jacket when the latter is in said cradle.

11. The combination according to claim 9, in combination with a central hollow core mounted within and spaced from said hollow jacket and attached to said cradle bottom, and means for supplying heat to said core.

12. In combination, a wedge-shaped cradle comprising two opposite sets of a plurality of substantially vertical longitudinally spaced inwardly and downwardly sloping beams, means inter-

connecting said set of beams at their lower ends to form a cradle bottom, a plurality of longitudinally extending vertically spaced beams each interconnecting the vertical beams of each set along their inner sides, and a relatively narrow rail attached to and running along the inner side of each longitudinal beam, and a hollow jacket in said cradle having hollow sides whose outer walls are downwardly and inwardly sloped in accordance with the shape of said cradle, hollow ends, a bottom positioned beneath the center of said hollow jacket and lower than said ends and sides, means releasably connecting said bottom with said ends and sides, other means releasably connecting said ends and sides together, a plurality of vertically extending transverse braces connected between the opposite walls of each side, and vertical rails attached along the outside of each side, cooperating with the longitudinal rails of said cradle to form a relatively frictionless sliding line contact whenever said jacket is raised or lowered in said cradle, the vertical braces within each side, the vertical rails on each side, and the vertical beams of said cradle being so aligned that the internal expanding forces inside of the jacket, occurring during the casting of a formed block, will be transmitted directly to the vertical cradle beams.

13. The combination according to claim 12, in combination with a plurality of vertically spaced aligned guides attached along the outer wall of each end, and means connected with said cradle, cooperating with said guides to hold said jacket in substantially vertical alignment when the same is being raised or lowered in said cradle.

14. In combination, a jacket comprising separate sides, ends and bottom, means releasably interconnecting said sides, ends and bottom, and a handling device for lifting, lowering, assembling and stripping said jacket, comprising a set of tracks at each end of said device, said tracks having a guiding surface sloping downwardly and outwardly of said device, other sets of tracks on each side of said device, having a guiding surface sloping downwardly and outwardly of said device, a rod slidable upon each set of end tracks, means for connecting said rods to said ends, another rod slidable upon each set of side tracks, means connecting said other rods to said sides, and means on said handling device moving all of said rods on their respective tracks, whereby said sides and ends may be pulled upwardly and together by moving said rods inwardly and upwardly along the sloping surfaces of said tracks, and may be pushed downwardly and apart by moving said rods outwardly and downwardly along the sloping surfaces of said tracks.

15. The combination according to claim 14, in which the means connecting the end rods to said ends includes a vertical projection extending above each end, and opposite aligned openings in each vertical projection for removably supporting said end rods.

16. The combination according to claim 14, in which the means connecting the sides to said side rods comprise at least one pair of releasable hooks, mounted on the top of each side, in combination with spring means for urging said hooks into engagement with said rods.

17. The combination according to claim 14, in which the means moving said end rods includes a pair of push rods slidably guided on said device in a longitudinal direction, hooks pivotally connected at the outer end of each

rod, engageable with opposite end rods, and means for moving said push rods.

18. The combination according to claim 14, in which the means moving said end rods includes a pair of push rods slidably guided on said device in a longitudinal direction, hooks pivotally connected at the outer end of each rod, engageable with opposite end rods, links each pivotally interconnected at one end to the inner ends of said push rods, a pivot pin interconnecting the other ends of said links, and vertical guide means guiding said pivot pin for movement in a vertical direction, a lifting hook engaging said pin for raising the same and pulling said end rods inwardly through said hooks, push rods and links, and means depressing said pin and pushing said end rods outwardly through said links, push rods and hooks.

19. The combination according to claim 14, in which the means moving said side rods includes two sets of oppositely, transversely movable internal racks each having a slotted extension engageable with said side rods, pinions engaging said racks, a shaft longitudinally journaled on said device, non-rotatably connected to said pinions, and means at at least one end of said device for rotating said shaft, whereby rotation of said shaft in one direction moves all of said racks inwardly to actuate said rods through said slotted extensions, inwardly and upwardly on the side tracks, and rotation of said shaft in the other direction moves all of said racks outwardly to actuate said rods, through said slotted extensions outwardly and downwardly on said side tracks.

20. The combination according to claim 14, in which the means connecting the end rods to said ends includes a vertical projection extending above each end, and an angularly slotted rotatable hollow guide mounted on each projection, and in which said rods comprise stub rods mounted within said hollow guide and having pins slidable in said slots, whereby upon rotation of said guide in one direction said stub rods are projected outwardly for engagement with said end tracks, and upon rotation of said guide in the other direction, said stub rods are retracted within said hollow guide for disengagement with said end tracks.

21. In combination, a mold adapted for use forming a casting, including a cradle, a jacket supported in said cradle having separate interconnected sides and ends, a bottom, means releasably connecting said bottom to said sides and ends, connecting devices attached to each of said sides and ends, a handling device, and means for interconnecting said connecting devices with said handling device, whereby said handling device may raise said jacket, bottom, and the formed casting from said cradle, and further means on said handling device directing said sides and ends outwardly and downwardly when said releasable means are disconnected and said jacket and casting are lowered upon bottom independently of said cradle.

22. The combination according to claim 21, in which said further means includes downwardly curved track sections extending outwardly from the ends and from the sides of said handling device, and said interconnecting means includes follower means guided upon said track sections, whereby, when said casting rests upon said bottom, said sides and ends will be supported through said follower means

on said track sections, and can move outwardly and downwardly thereon.

23. A hollow jacket for forming cementitious blocks and the like comprising, in combination, a pair of oppositely positioned sides, a pair of oppositely positioned ends connected between said sides, a plurality of vertically extending transverse members connected to opposite sides through the height of the jacket, lifting means attached to at least two of said vertical members on each side, and means attached to the lower end of the vertical members and extending inwardly beneath the bottom and adapted to support the block formed within the jacket, whereby, when the jacket is lifted by said lifting means, the weight of said block upon said inwardly projecting means will be transmitted to the lifting means through said vertical members substantially independently of the rest of the sides.

24. In an apparatus for casting blocks, a wedge-shaped cradle comprising two opposite sets of a plurality of substantially vertical, longitudinally spaced, inwardly and downwardly sloping beams, a plurality of longitudinally extending vertically spaced beams interconnected with the vertical beams of each set along their inner sides, a hollow jacket in said cradle having interconnected sides and ends, a bottom positioned beneath the center of the jacket and lower than said sides and ends, means interconnecting said bottom with said ends and sides, and a plurality of vertically extending beams on said sides, whose outer surfaces are down-

wardly and inwardly sloped in accordance with the shape of said cradle, the vertical beams on said sides and the vertical beams of said cradle being aligned so that when said jacket is in the cradle the expanding forces occurring within the jacket during the casting of a formed block will be transmitted directly to the vertical cradle beams.

25. In combination, a jacket comprising separate sides, ends, and bottom, means releasably interconnecting said sides, ends, and bottom, and a handling device for lifting, lowering, assembling, and stripping said jacket, comprising a set of tracks at each end of said device, said tracks having a guiding surface sloping generally downwardly and outwardly of said device, other sets of tracks on each side of said device, having a guiding surface sloping downwardly and outwardly of said device, means movable along each set of end tracks, means connecting said movable means to said ends, other means movable along each set of side tracks, means connecting said other movable means to said sides, and means on said handling device moving all of said movable means along their respective tracks, whereby said sides and ends may be pulled outwardly and together by moving both said movable means inwardly and upwardly along the sloping surfaces of said tracks, and may be pushed downwardly and apart by moving both said movable means outwardly and downwardly along the sloping surfaces of said tracks.

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