

July 28, 1964

M. J. WISE ETAL

3,142,106

STRIPPING MEANS FOR CONCRETE SLAB CASTING FORMS

Filed April 15, 1963

5 Sheets-Sheet 2

Fig. 3B

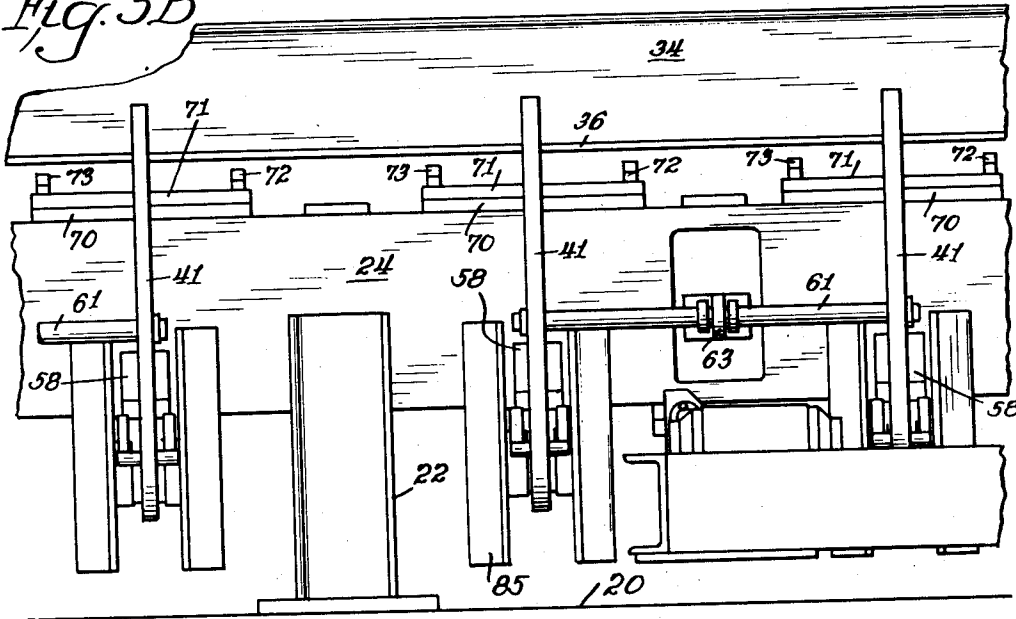
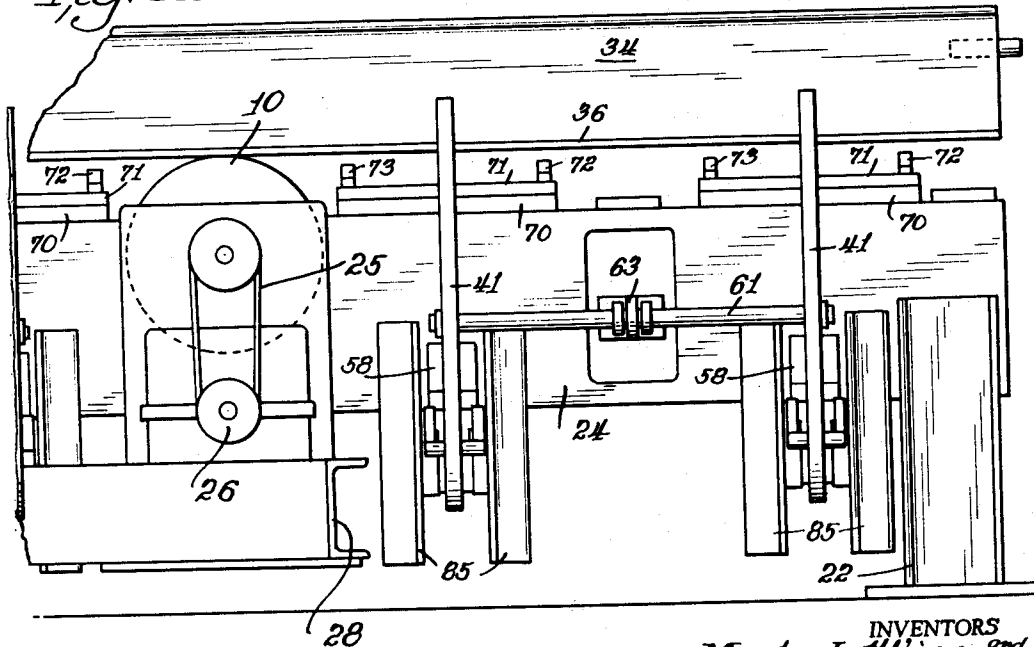


Fig. 3A



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Fig. 4

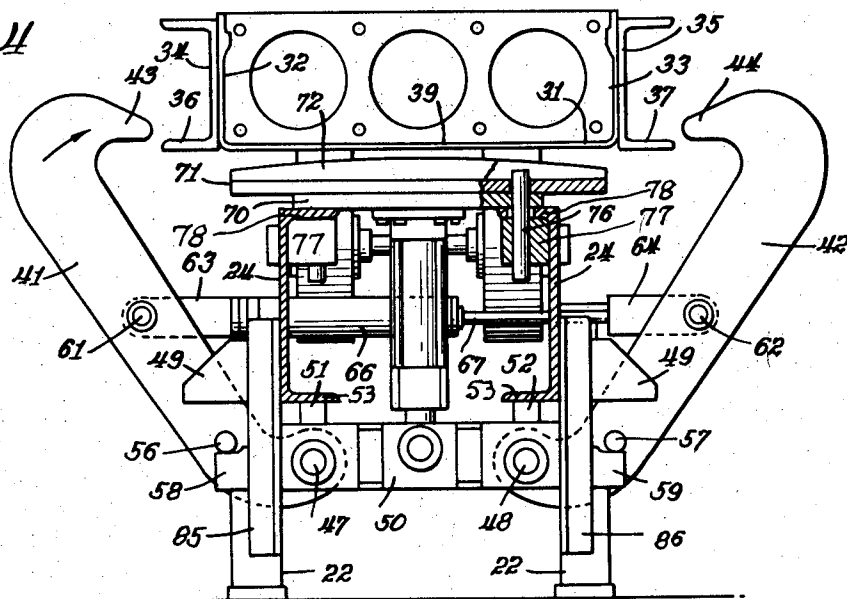
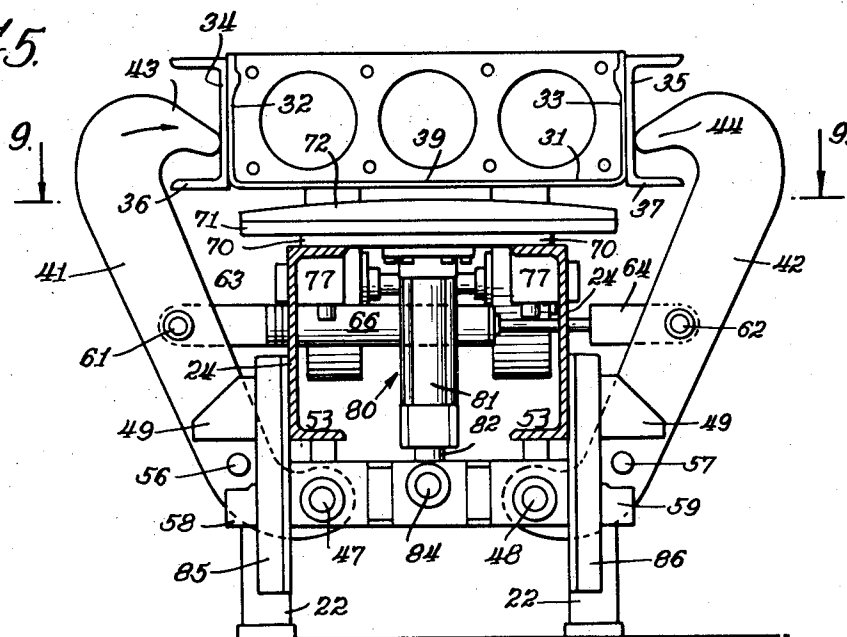


Fig. 5



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Fig. 6.

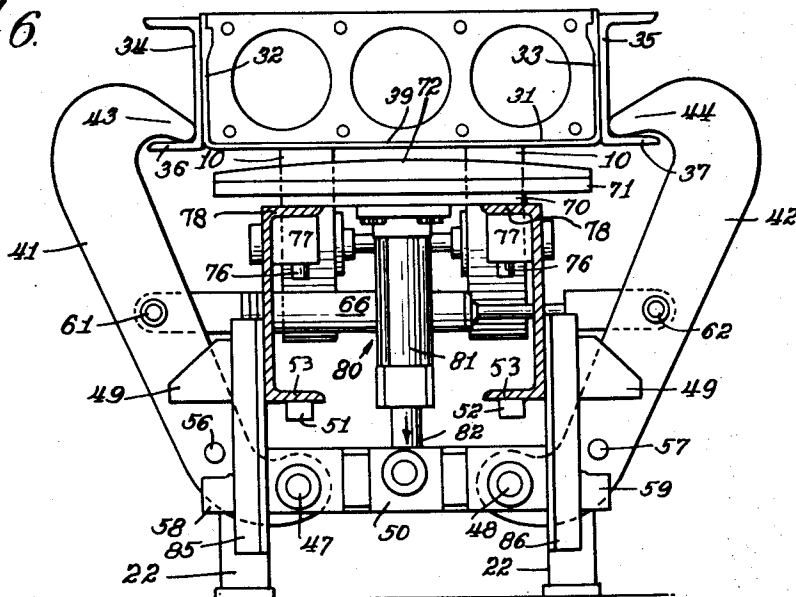
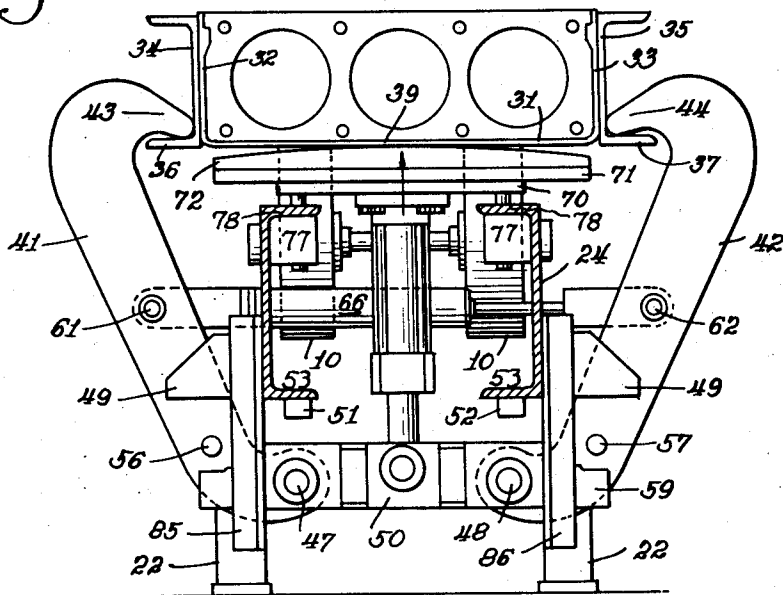


Fig. 7.



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Fig. 8

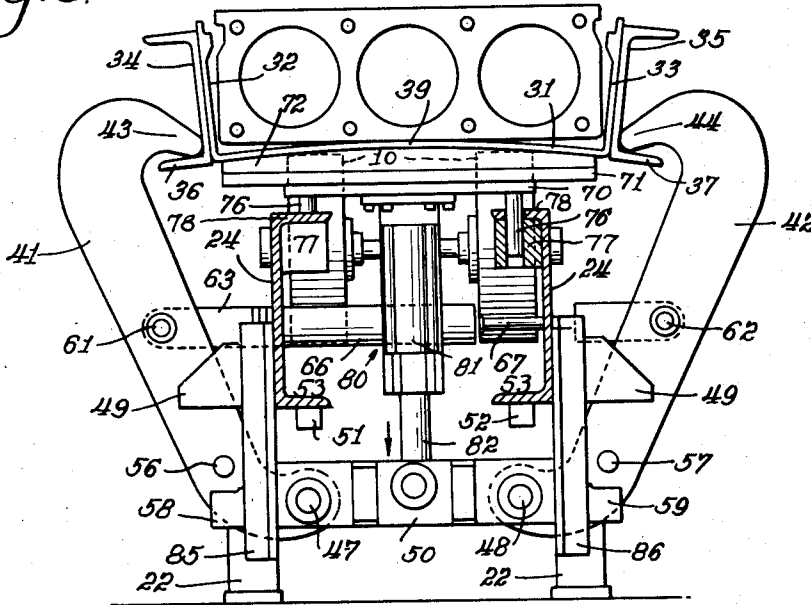
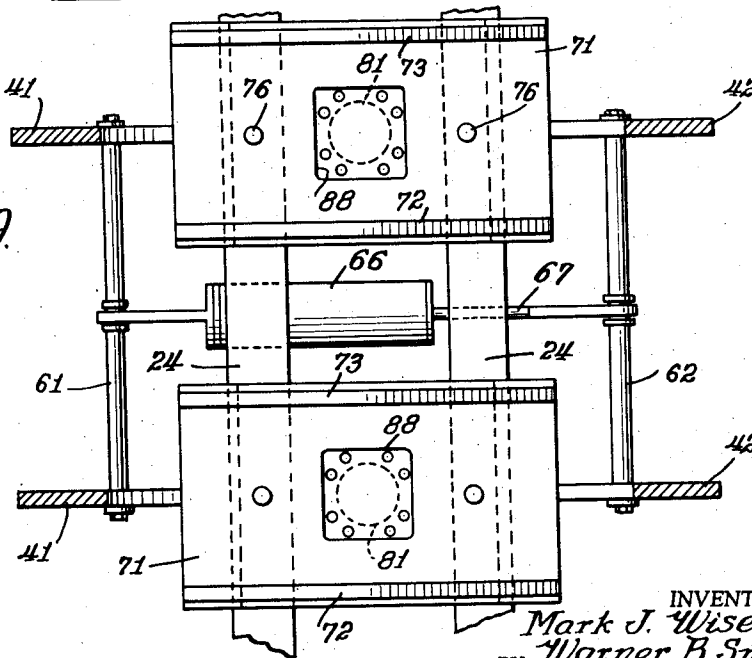


Fig. 9



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3,142,106 STRIPPING MEANS FOR CONCRETE SLAB CASTING FORMS

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11 Claims. (Cl. 25—120)

This invention relates to stripping means for concrete slab casting forms and in particular long U-shaped slab casting forms such as are disclosed and claimed in United States Patents Nos. 3,023,476 and 3,023,477, issued on March 6, 1962. The stripping means forming the subject of the present application relates to contour plate stripping such as is disclosed in the 3,023,477 patent referred to above and is disclosed and claimed in Patent No. 3,061,904, issued on November 6, 1962.

The casting forms to be stripped are long, heavy steel forms whose length may be as much as about 50 feet. As is more fully disclosed in the patents referred to above, the stripping of a casting form must be done accurately and in all cases in such manner as to avoid overstressing the form. In addition thereto, it is desirable that a form to be stripped should be transferred from the steam room where castings are cured to the stripping station with a minimum of handling.

Casting forms are disposed in stacks in the kiln curing room, with each U-shaped casting form in a horizontal position, and the sides of the casting forms extending upwardly from the form bottom. It had been the practice to strip each such casting form by first turning such a casting form up-side-down and then manipulating the casting form to release the casting. Changes in the general technique of casting as well as the desirability of streamlining stripping procedure dictated stripping a casting form while in normal right-side-up position. Attempts to provide such stripping means created serious problems.

A serious disadvantage of all previous stripping means was the lack of adaptability of such stripping means to a particular casting form and the exact manner in which the casting form may have been positioned on the stripping means. This lack of adaptability resulted in creating stresses in a casting form apart from the stresses contemplated in stripping. When casting forms as long as 50 feet are to be operated on by stripping means of equal length, there are bound to be substantial dimensional differences. Among casting forms there is a fabrication tolerance between the form bottom and the bottom flange of the form side-supporting channel. Concrete may build up on the bottom flange of the side-supporting channel (where force is applied) resulting in an abnormal difference of level between the form bottom and the top of this concrete buildup. Or the bottom channel of the form side may become bent or deformed through handling of the form, also resulting in a level differential between the form bottom and the bottom flange of the form. Differences may result from a slight misalignment in attempting to place a form as long as 50 feet on the exact center line of a stripping means of equal length. There are tolerances in the stripping means due to fabrication and installation which appear in attempting to keep a unit as long as 50 feet exactly straight or level.

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Another disadvantage of prior stripping means appears when an attempt is made to strip forms of different lengths on the same stripping means. When short forms were operated on in a long stripping means, excessive force was applied at the ends of the short forms due to lack of loading in the unused length of the stripping means. This resulted in overstressing or overbending of the form bottom near the ends on short forms.

Sales and market requirements are such that castings of various widths are needed. These various width castings are made in casting forms of varying widths. From the standpoint of production it is neither economical nor feasible to expect to have a manufacturing facility for each particular casting width. It is therefore desirable to have a stripping means capable of handling forms and resultant castings of varying widths.

In order to improve production and to provide right-side-up stripping, the present invention discloses a stripping means for operating on a casting form while it is in normal horizontal position with the sides extending upwardly. The present invention provides stripping means for carrying out in an expeditious and economical manner the stripping principles referred to in Patent No. 3,061,904, and in conjunction with the 3,023,477 form patent as referred to previously.

This invention discloses a stripping means that automatically assumes both the longitudinal and lateral configuration of the form bottom, bringing the two together whereby the form is operated on equally throughout its length resulting in equal and constant stressing of the form bottom which in turn results in an equal form opening at the top for best casting removal.

This invention discloses a stripping means that operates on either long forms or short forms and inherently provides equal operating forces throughout the form lengths. In addition, the new stripping means is easily combined with a conveyor system whereby the casting forms travel along the fixture and after being stripped can continue on to be cleaned and refilled with concrete mix for a new casting operation.

This invention discloses a stripping means that automatically compensates for forms of different depths. Since casting forms may be fabricated from a U-shaped metal channel with supporting structural channels on either side, distances between the form bottom and the bottom flange of the outside supporting channels may vary, depending upon the particular outside supporting channels selected. It may not always be possible to select a particular side-supporting channel size from a steel manufacturer in order to keep all distances on all forms from form bottom to the bottom flange of the channels equal. This invention discloses a stripping means that compensates for various dimensional differences between form bottom and bottom flanges of supporting channels while still operating on all casting forms in a manner to apply equal stresses throughout the form bottom along the entire casting form length.

In accordance with the present invention, a complete stripping system or stripping means includes a number of modular units serially disposed for longitudinally accommodation of a form. Between desired modular units there may be provided conveyor wheels upon which the casting forms are supported for longitudinal movement for moving casting forms to stripping positions and away therefrom after stripping has been accomplished.

A modular unit extends for a relatively short distance along the length of a casting form and is functionally complete for the particular length of casting form involved. Such a modular stripping unit includes means for gripping the sides of the casting form and means acting upon the form bottom for arching the casting form in the manner taught by the patents previously identified. A modular stripping unit preferably includes power means for moving the casting form side gripping means into or out of gripping position. For convenience, power means for operating such form side gripping means may be mechanically coupled to link two stripping sub-units to operate as one. Insofar as stripping per se is concerned, the modular stripping units are independent of each other. This is highly desirable in connection with erecting and operating modular units.

A principal feature of the present invention resides in the means for operating the individual stripping modular units. The power means for operating the form side gripping means may take on any desired form, this gripping means being generally passive during actual stripping. The means for operating the modular stripping units are hydraulic. For convenience, the means for operating the form side gripping means are also hydraulic, thus simplifying the mechanism and the operation. By virtue of the use of hydraulic power means for controlling or energizing the individual stripping modular units, the problem involved in overstressing a form during stripping, which problem is serious with earlier stripping means, is completely eliminated.

Any unloaded stripping units do not have any reaction on loaded stripping units which actually function to strip a particular length of casting form. As many modular stripping units will function as are actually loaded with a length of casting form. Casting forms come in different lengths, with every casting form length involving an integral number of an arbitrary unit length, such as eight feet. The modular unit may have the same unit length, this including auxiliary means as conveyor wheels. Each individual stripping unit is, insofar as force is concerned, operative on a length of casting form independently of the remainder of the length of casting form. The stripping force exerted by a stripping unit will be controlled entirely by the hydraulic pressure available. By having the length of a casting form an integral number of stripping unit lengths or by having small lengths of physically separate stripping units, say, two feet per unit, the stripping force exerted throughout the length of a casting form will be quite uniform no matter what length casting form is handled.

It is important in the operation of each modular unit that the side gripping means and bottom arching means be operated to provide a sequence of operations in a certain order. Thus the casting form side gripping means must first engage the sides of a casting form, after which actual stripping involving arching the form bottom takes place. After stripping has been accomplished, the reverse sequence is important. It is essential that the stress producing arching of the casting form be relieved before disengagement of the form side gripping means is accomplished.

In order that the invention may be fully understood, reference will now be made to the drawings wherein:

FIGURE 1 is a diagrammatic plan view illustrating the principles of a system embodying the present invention.

FIGURE 2 is a diagrammatic view in elevation of the system illustrated in FIGURE 1.

FIGURES 3A and 3B are elevations of a practical embodiment of the invention, the two views being partial views of a complete modular unit.

FIGURE 4 is a transverse sectional view of one part of a stripping unit with the various parts of the mechanism shown in normal standby condition and a casting form containing a casting therein.

FIGURE 5 is a view similar to FIGURE 4 illustrating

the first movement bringing the casting form side gripping means into position toward the casting form sides in connection with the start of a stripping operation.

FIGURES 6 and 7 are two views of the mechanism illustrated in FIGURES 4 and 5 showing the mechanism in still further advanced stages of the stripping operation.

FIGURE 8 is a view of the mechanism opening a casting form to permit removal of the casting.

FIGURE 9 is a section on line 9-9 of FIGURE 5.

Referring first to FIGURES 1 and 2, a complete stripping assembly is illustrated. This assembly consists of modules, each indicated by a capital letter, and here illustrated as having eight modules indicated by A to H inclusive. A complete module is physically separate from the rest except for the interconnection of the hydraulic pressure lines and with the possible exception of static supporting means which may or may not be independent. A modular unit, such as A for example, may have a length of any desired value, such as for example about six or eight feet.

Between modules A and B are conveyor wheels 10. Modules B and C may be adjacent each other while between modules C and D there may be additional conveyor wheels 10. This may continue as indicated for as long as the modules continue. Each modular unit is functionally complete in itself in that means are provided for operating on the casting form portion resting upon that particular unit when stripping. The modules are all alike so that a detailed description of one only will suffice.

Each modular unit, such as A for example, in the form of the invention illustrated here, consists of two stripping units or sub-modules A1 and A2. The same is true for the remaining modular units. Thus stripping unit A1 is a complete stripping portion for operating upon the length of the casting form resting upon that particular unit. Sub-units A1 and A2 are conveniently provided with a common power means for operating on the casting form side hooks. However, each sub-unit, such as A1 for example, may be functionally complete with its own power unit for operating on the casting form side engaging hooks.

The various hydraulic units for each modular unit are all connected together in parallel to a common source of fluid under pressure so that the power means for each modular unit are operated simultaneously. The power means for operating the casting form side engaging hooks are functionally separate from the power means for accomplishing the actual stripping, so that the valve for controlling one set of power means is completely independent of the other except that synchronization between the two may be provided so that a proper sequence of operations is provided.

The power operated means for operating the casting form side engaging hooks need not necessarily be hydraulic and can be electromagnetic or any other means. There is no particular problem involved in insuring that all the hooks are moved into operative position. The problem in previous structures has involved the actual application of stripping force to arch the bottom of the casting form while the casting form side hooks restrain the sides of the casting form. The invention to be described herein makes such a system possible with a minimum of mechanical parts and a maximum of efficiency and desirable operating characteristics.

Referring for example to FIGURES 3A and 3B, a modular unit is illustrated, the view being taken from a side elevation. The various modular units are supported on a suitable floor or base, indicated by 20. The entire stripping assembly is supported in part at spaced intervals by steel posts 22 of any suitable shape, upon which longitudinal channels 24 may rest. Channels 24 need not be continuous for the entire length of all the units and can extend for the length of a modular unit or even for the length of a sub-unit. Referring for example to FIGURE

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3A, conveyor wheels 10, which are illustrated as being two in number disposed transversely across the stripping unit, consist of a steel or rigid wheel having a flexible rubber rim. Conveyor wheels 10 are on one shaft which may be dead or be driven by belt 25 from a suitable source of power 26, such as an electric motor. Suitable switch means for motor 26 is provided so that conveyor wheels 10 if driven may be stopped when a casting form is to be stripped. A casting form may be pushed beyond wheels 10 for stripping. The other conveyor wheels may be idlers or one or more may be driven. The motor and conveyor wheels are supported on frame 28 which rests upon a suitable support, not shown. If desired, a casting form may be lowered from a crane on the stripping units.

The stripping form to be operated upon is illustrated in FIGURES 4 to 8 inclusive and consists of casting form proper 31 having sides 32 and 33 respectively. Sides 32 and 33 are reinforced by channels 34 and 35 having bottom flanges 36 and 37 which are held down during stripping. Casting form 31 has bottom portion 39 which is arched upwardly during stripping.

The flange hold-down means comprise claws 41 and 42 disposed on opposite sides of a casting form to provide pairs of stripping claws along the length of a casting form. Claws 41 and 42 are each provided with hook portions 43 and 44 which are shaped to engage flanges 36 and 37 when the claws are moved toward each other to the position as seen in FIGURES 5 to 8 inclusive. Claws 41 and 42 are pivoted respectively at pins 47 and 48 and the claws have guide plates 49 carried by the webs of channels 24. Pins 47 and 48 are disposed in floating yoke 50 which can move vertically as seen in FIGURES 4 to 8 inclusive. Yoke 50 for each pair of claws is a relatively massive structure which, in its top position as illustrated in FIGURE 4, rests against stops 51 and 52 carried by lower flanges 53 of channels 24.

Claws 41 and 42 are provided respectively with pins 56 and 57 which extend laterally therefrom on opposite sides. Pins 56 and 57 cooperate with extensions 58 and 59 of floating yoke 50 to limit the outward claw movement. As illustrated in FIGURE 4, pins 56 and 57 will rest upon extensions 58 and 59 and thus limit the outward movement of these claws. Each pair of claws 41 and 42 is operated by power means operating on claw parts between the hooks and pivot pins. Thus each claw has pivot pins 61 and 62 to which is pivotally secured links 63 and 64 extending toward each other. Links 63 and 64 are secured respectively to relatively movable cylinder 66 and piston rod 67 of a hydraulic power unit, which, for convenience, will be referred to as the horizontal power unit. Piston rod 67 is rigidly attached to a piston, not shown, within hydraulic cylinder 66. Hydraulic cylinder 66 is preferably of the double acting variety wherein pressure on either side of the piston is secured with hydraulic lines going to the hydraulic cylinder on opposite sides of the piston.

For convenience, two adjacent claws 41 and corresponding adjacent claws 42 are operated by one horizontal hydraulic power unit. Pins 61 and 62 extend between adjacent claw 41 on one side of a modular unit and pin 62 extends between adjacent cooperating claws 42 on the other side of the modular unit. It is understood, however, that hydraulic cylinder 66 and piston rod 67 may be provided for each single pair of claws 41 and 42 with every pair of cooperating claws having its own hydraulic power unit.

Between each cooperating pair of claws 41 and 42 is horizontal support panel 70. Support panel 70 carries panel 71 provided with contour ribs 72 and 73. Contour ribs 72 and 73 extend across a stripping unit parallel to each other and spaced along the length of a stripping unit. Claws 41 and 42 of each pair are located midway between adjacent contour ribs 72 and 73.

The width of panel 71 and curvature of the top faces of ribs 72 and 73 will depend upon the width of a casting

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form to be stripped and the curvature to which the casting form must be arched for proper stripping. Panel 71 and contour ribs 72 and 73 are removably secured and are properly located by pins 76.

The spacing between adjacent claws 41 on the same side of a casting form can be about two or three feet in practice. Similarly, the spacing between adjacent contour ribs may be somewhat less, such as about one or two feet. The spacing between adjacent ends of panel 70 will generally be less than the spacing between adjacent claws and in practice may be of the order of about one foot. A casting form can be from about 15 or 20 feet to as much as 50 feet or longer. A series of modular stripping units are disposed along 50 or more or less feet and handle one or two or more casting forms.

All horizontal hydraulic cylinders 66 for the various pairs of claws 41 and 42 have corresponding hydraulic lines connected in parallel to a source of hydraulic pressure. Such a source of pressure may include a pump driven by an electric motor and provided with suitable pressure control means. Such sources of hydraulic pressure are well known and available on the market and do not require any detailed description. The arrangement is such that all hydraulic cylinders 66 are similarly affected so that the claws will tend to move outwardly or inwardly. When the claws move inwardly, they tend to engage the casting form sides—in this case webs 34 and 35—with equal force.

Means are provided for forcing panels 70 and 71 upwardly and thus present the contour ribs to the outside surface of the bottom of the casting form. In order to accomplish this, vertical hydraulic power unit 80 is provided for each panel 70. Vertical hydraulic unit 80 includes hydraulic cylinder 81 and piston rod 82 coupled to a piston operating within cylinder 81. Cylinder 81 resembles hydraulic cylinder 66 in being of the double-acting type having fluid-flow connections at both ends of the cylinder so that pressure can be applied to either side of the piston. One of the relatively movable elements of power unit 80—in this case the piston rod—is pivotally secured at 84 to floating yoke 50. Floating yoke 50 is guided in its vertical travel angle irons 85 and 86 rigidly secured to channels 24. The base of hydraulic cylinder 81 is rigidly bolted at 88 to panel 70. Panel 70 is wide enough to overlie the top flanges of channels 24 to limit the downward travel of the entire stripping mechanism of a unit. A vertical hydraulic unit in its retracted position as illustrated in FIGURES 4 and 5, has its position determined by panel 70 and floating yoke 50 engaging the top flanges and stops on the bottom flanges of channels 24.

Panels 70 and 71 are restrained from lateral movement by pins 76 carried by panel 70, the pins being slidable in blocks 77 secured to the underside of top flanges 78 of channels 24. Panel 71 has suitable apertures in which pins 76 can slide, thus permitting vertical movement of panels 70 and 71. Pins 76 must clear form bottom 39. These pins 76 may be disposed anywhere between contour ribs 72 and 73 and so long as the tops of pins 76 are below the level of the contour surfaces, there will be no problem.

The hydraulic hoses of cylinder 81 are connected in parallel, the corresponding hoses for the top of the cylinders being connected to one line and the corresponding hoses for the bottom of the cylinders connected to the other line. The various hoses are connected to a suitable source of hydraulic pressure which may be the pressure source used for operating the claws for the sides of the casting form or may be separate. All of the vertical power units will be similarly raised or lowered. It is essential that the vertical power units be controlled independently of the horizontal power units operating claws 41 and 42.

In order to strip a casting form, the casting form is positioned on stripping units either by movement over conveyor wheels or by lowering from a crane, or by a com-

bination of the two. Prior to and up to the time that a casting form has reached a stripping position, claws 41 and 42 should be in the position illustrated in FIGURE 4 with maximum separation between claws. The vertical power unit will be in the position illustrated in FIGURE 4. In this position, floating yoke 50 will be in its top position resting against stops 51 and 52. Panels 70 and 71 and contour ribs 72 and 73 will be below the bottom of the casting form, with the casting form resting upon conveyor wheels which are disposed between adjacent modular units. Panel 70 of each unit will rest upon the top flanges of channels 24.

The horizontal hydraulic power units are first operated to move the claws toward each other to the position shown in FIGURE 5. In this position the hook ends of the claws will be directly above the bottom flanges of the channels reinforcing the casting form sides. Thereafter the vertical hydraulic units are operated to move their piston rods downwardly with respect to the cylinders. The operation of the vertical hydraulic unit first effects the lowering of floating yoke 50 from its top position, dropping claws 41 and 42 down against the bottom flanges of the casting form side channels, as seen in FIGURE 6. When claws 41 and 42 engage the flanges of the channels reinforcing the sides of the casting form, the stripping system will be in a condition to exert force to arch the casting form. With the claws on the lower casting form flanges bracing the piston rods of the vertical power units against further downward movement, hydraulic pressure in the vertical power unit cylinders causes the cylinders of the power units to force panels 70 and 71 upwardly against the form bottom as seen in FIGURE 7. The combination of the downward force on the sides of the casting form and the upward force exerted on the panels urging the contour ribs against the bottom of the casting form results in the casting form being arched to assume the position illustrated in FIGURE 8. In this position, the casting is clear of the sides of the casting form. The casting can be lifted up by suction pads or other suitable means.

During stripping as illustrated in FIGURE 8, the casting form bottom may be pressing against the conveyor wheels. Since the conveyor wheels are covered with rubber, no damage will occur. It is possible to design the mechanism so that the casting form will be clear of the conveyor wheels in the conditions illustrated in FIGURES 7 and 8. As soon as stripping has been accomplished, the vertical power units are operated to cause each piston rod to move inwardly of its cylinder. This will change the mechanism to the position of FIGURE 7, then to the position of FIGURE 6, and finally to the position of FIGURE 5. Thereafter, the horizontal power units are operated to swing the claws outwardly away from each other as seen in FIGURE 4, after which the casting form may be removed either by way of conveyors or by elevating with a crane. The casting forms are free to go to a station where they may be cleaned, scrubbed and prepared for a new casting operation.

The force exerted upon a unit length of casting form will always be the same whether a form is 20 feet or much longer and will be controlled by the amount of hydraulic pressure in the vertical power units. The total force used on a casting form will be a function of the casting form length. Thus one short form, say 20 feet long, if used alone on a machine for 50-foot forms, will be stripped properly. The idle claws and power units will have no reaction or effect upon the active power units or the forces exerted by them. It is important that the length of a casting form with relation to the stripping system be such that the end portions of a casting form to be stripped will at all times rest on a pair of contour ribs rather than end between the two contour ribs of one pair.

Various modifications in the mechanism, as illustrated in the drawings, may be made while still retaining the advantages of the present invention. The conveyor wheels

may be omitted between modular units if desired. However, these conveyor wheels are generally desirable in facilitating the movement of a casting form along the various stripping units so that exact positioning of a stripping unit is easily accomplished.

An advantage of the structure as disclosed herein, with a floating yoke, is that all forces for arching a casting form are self contained within a stripping unit. Furthermore, the floating yoke with the pivot connections to the power unit and claws permits the claws and floating yoke to accommodate unsymmetrical claw positions on the casting form flanges.

What is claimed is:

1. Means for stripping steel casting forms, each casting form having a generally U-shaped cross section with a length great in comparison to the transverse dimensions thereof, each casting form during stripping being in a horizontal position with the sides of the casting form extending upwardly and the casting form resting on its bottom, the stripping requiring that the sides of the casting form be forced outwardly away from each other and the bottom of the casting form arched upwardly, said stripping means comprising a plurality of separate individual stripping units disposed longitudinally of a casting form, each stripping unit having a length which is substantially smaller than the length of a casting form being operated upon, said stripping units being similar and each unit including the following: hold-down members on opposite sides of a casting form in stripping position, means for mounting said hold-down members to be movable from a normally inoperative position to an operative position where said members can cooperate with the sides of said casting form, means normally inoperative disposed below the bottom of said casting form and movable upwardly first to engage the casting form bottom then elevate the same above a normal supported position and finally to provide a force to arch the casting form bottom during stripping, means normally inoperative for moving said hold-down members downwardly from their operative positions first to engage the casting form sides and then hold the same down against the upward arching force exerted against the form bottom, means powered by hydraulic pressure for moving said two normally inoperative means in opposite directions for stripping a casting form; said stripping assembly including conduit means connecting all separate hydraulic power means of the various stripping units making up a stripping assembly to a common source of hydraulic pressure and providing unrestricted fluid flow between the individual hydraulic pressure powered means, means for supporting a casting form in normal horizontal position, and means for mounting said various stripping units independently of each other whereby a casting form during stripping is operated upon by a plurality of physically separate stripping units, the separate hydraulic power means being subject to similar hydraulic pressure and the separate units being short enough so that the amount of force exerted upon a unit length of casting form during a stripping operation is generally independent of the length of the casting form and stripping of various lengths of casting form will be accurately and consistently accomplished without danger of overstressing.

2. The stripping means according to claim 1 wherein the means for supporting a casting form in normal horizontal position include conveyor means disposed between adjacent stripping units.

3. Means for stripping steel casting forms, each casting form having a generally U-shaped cross section with a length great in comparison to the transverse dimensions thereof, each casting form during stripping being in a horizontal position with the sides of the casting form extending upwardly and the casting form resting on its bottom, the stripping requiring that the sides of the casting form be forced outwardly away from each other and the bottom of the casting form arched upwardly, said stripping means comprising a plurality of separate individual

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stripping units disposed longitudinally of a casting form, each stripping unit having a length which is substantially smaller than the length of a casting form being operated upon, said stripping units being similar and each unit including the following: hold-down members on opposite sides of a casting form in stripping position, means for mounting said hold-down members to be movable from a normally inoperative position to an operative position where said members can cooperate with the sides of said casting form, means normally inoperative disposed below the bottom of said casting form and movable upwardly first to engage the casting form bottom then elevate the same above a normal supported position and finally to provide a force to arch the casting form bottom during stripping, means normally inoperative for moving said hold-down members downwardly from their operative positions first to engage the casting form sides and then hold the same down against the upward arching force exerted against the form bottom, a cylinder and piston powered by hydraulic pressure coupled to said two normally inoperative means to move the same in opposite directions for stripping a casting form; said stripping assembly including conduit means connecting all separate cylinders of the various stripping units making up a stripping assembly to a common source of hydraulic pressure and providing unrestricted fluid flow between the individual cylinders, means for supporting a casting form in normal horizontal position, and means for mounting said various stripping units independently of each other whereby a casting form during stripping is operated upon by a plurality of physically separate stripping units, the separate hydraulic cylinders being subject to similar hydraulic pressure and the separate units being short enough so that the amount of force exerted upon a unit length of casting form during a stripping operation is generally independent of the length of the casting form and stripping of various lengths of casting form will be accurately and consistently accomplished without danger of over-stressing.

4. Means for stripping steel casting forms, each casting form having a generally U-shaped cross section with a length great in comparison to the transverse dimensions thereof, each casting form during stripping being in a horizontal position with the sides of the casting form extending upwardly and the casting form resting on its bottom, the stripping requiring that the sides of the casting form be forced outwardly away from each other and the bottom of the casting form arched upwardly, said stripping means comprising a plurality of separate individual stripping units disposed longitudinally of a casting form, each stripping unit having a length which is substantially smaller than the length of a casting form being operated upon, said stripping units being similar and each unit including the following: panel means disposed below the bottom of said casting form when in normal horizontal position, means for supporting said panel means in a low position spaced from the casting form bottom when said stripping means is normally inoperative and from which low position said panel means is movable upwardly, a yoke below said panel means, force generating means comprising a cylinder and piston, means for mounting said cylinder and piston to lie along a vertical axis between said panel means and said yoke, said cylinder when subjected to hydraulic pressure urging said piston to move in said cylinder and creating a force tending to move said panel means and yoke vertically away from each other, hold-down claw members pivotally secured to said yoke and disposed on opposite sides of a casting form, said claw members being movable toward each other into operative position for cooperation with the sides of the casting form during stripping, said claw members being adapted to exert a force holding down the sides of the casting form while the panel means presses against the bottom of the casting form for arching the same during stripping; and conduit means providing free fluid flow in-

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terconnecting the separate cylinders of a stripping assembly, means connecting said conduit means to a common source of hydraulic pressure, means for mounting said various stripping units independently of each other and means for supporting a casting form in a normal horizontal position above the level of said panel means when in low position whereby a casting form during stripping is operated upon by a plurality of separate stripping units, the separate hydraulic cylinders being subject to similar hydraulic pressure and the separate units being short enough so that the amount of force exerted upon a unit length of casting form during a stripping operation is generally independent of the length of the casting form and stripping of various lengths of casting form will be accurately and consistently accomplished without danger of over-stressing.

5. The stripping means according to claim 4 wherein independent power means are provided for moving said claw members toward or away from each other, said independent power means extending transversely of a stripping unit and engaging the claw members at regions between the pivot points of said claw members and the free ends for engaging the casting form sides.

6. Means for stripping casting forms of steel, each casting form having a generally U-shaped cross section with a length great in comparison to the transverse dimensions thereof, each casting form during stripping being in a horizontal position, with the sides of the casting form extending upwardly and the casting form resting on its bottom, the stripping requiring that the sides of the casting form be forced outwardly away from each other and the bottom of the casting form arched upwardly for stripping, said stripping means comprising a plurality of separate individual stripping units disposed in succession to form a complete stripping system, each stripping unit having a length which is substantially smaller than the length of a casting form being operated upon, said stripping units being similar and each unit including the following: support means including two horizontally disposed channels extending longitudinally of a unit in spaced parallel relation, the channel webs being vertical and the flanges being horizontal, panel means horizontally disposed over the top flanges and being wide enough to overlay said top flanges and being limited as to downward movement by said top flanges, a vertical hydraulic power unit having cylinder and piston rod providing ends for said power unit and relatively movable in a vertical line, means for rigidly securing said panel means to one end of said power unit, a yoke extending transversely of said stripping unit and being below said panel means, means for securing said yoke to the other end of said power unit, a claw at the outside of each channel pivotally secured to said yoke, each claw being movable about a horizontal pivot axis parallel to the length of a stripping unit, said two claws having ends movable toward or away from each other and adapted to be on opposite sides of a casting form and shaped to engage the casting form sides when the claw ends are near each other, means for supporting a casting form in position between said claws and above said panel means, said panel means including means for arching the bottom of said casting form upwardly when the power unit is energized to cause the cylinder and piston rod to extend, said claw ends restraining the form sides against upward movement, and means for connecting the power units of various stripping units in parallel to a source of hydraulic pressure, whereby difficulties in regard to mounting a complete stripping system and in regard to handling various form lengths with over-stressing are minimized.

7. The construction according to claim 6 wherein the means for mounting said yoke at the other end of said power unit includes a pin permitting said yoke to rock with respect to said power unit and with respect to said claws.

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8. The construction according to claim 6 wherein a horizontal power unit is provided for moving said claws, said horizontal power unit being a hydraulic unit including a cylinder and piston rod.

9. The construction according to claim 6 wherein means are provided for stopping the upward movement of said yoke, said means including the lower flanges of said channels.

10. The construction according to claim 6 wherein conveyor wheel means are provided between adjacent lengths of stripping units, said conveyor wheel means supporting a casting form during preliminary parts of the stripping operation.

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11. The construction according to claim 6 wherein said panel means includes a removable panel carrying contour ribs.

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