June 3, 1952 F. K. SEDGWICK 2,599,022

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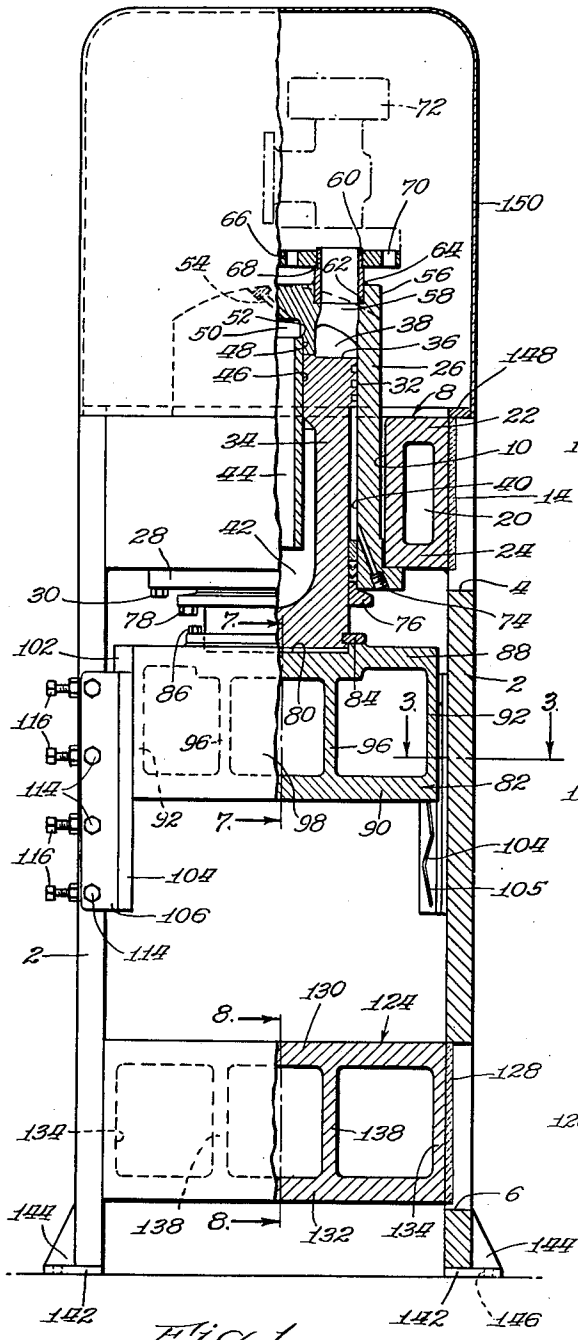


Fig. 1.

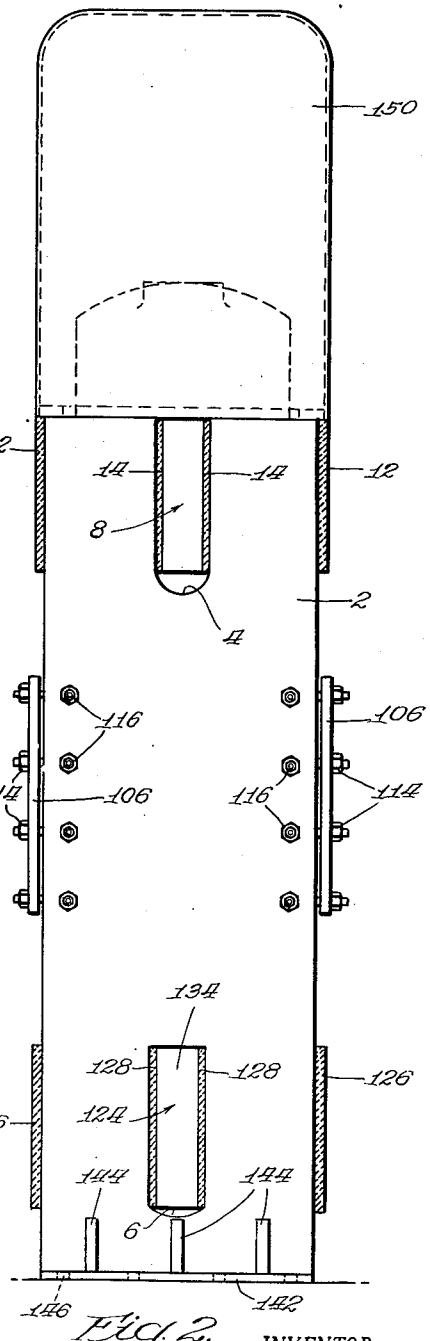


Fig. 2.

INVENTOR.

Robert K. Sedgwick

BY

Wm O. B. Garner

Atty

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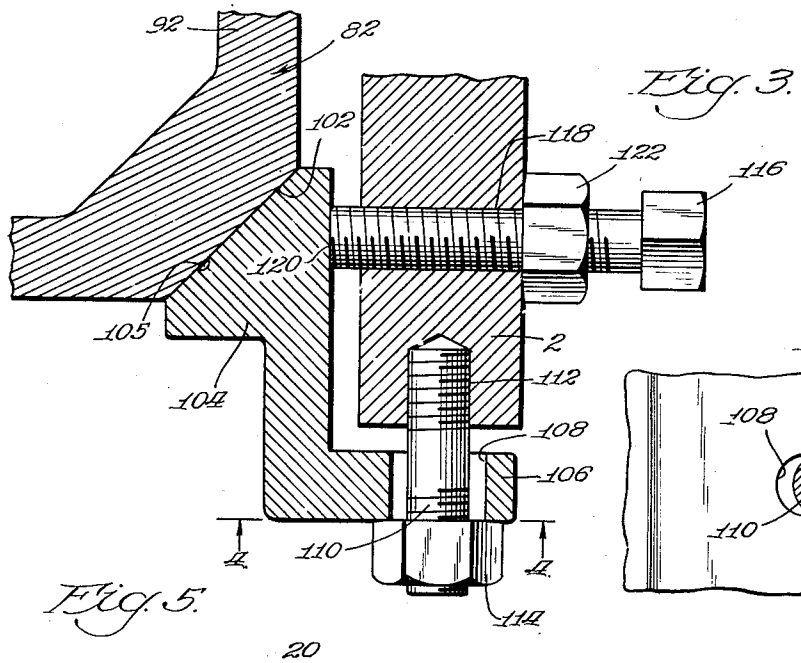


Fig. 3.

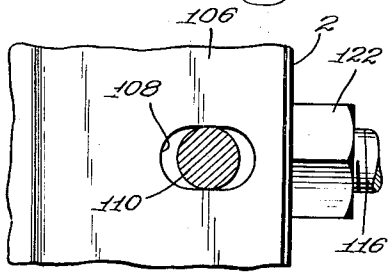
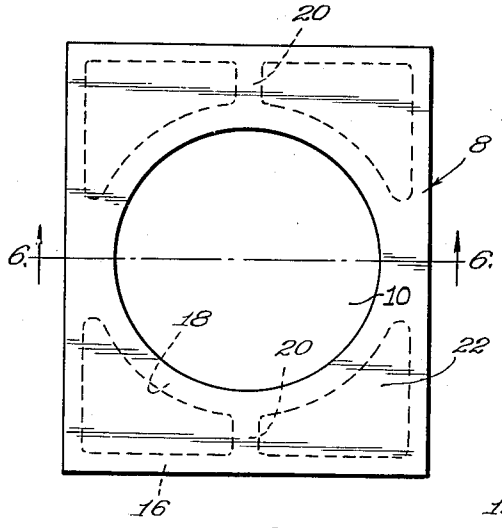


Fig. 4.

Fig. 5.



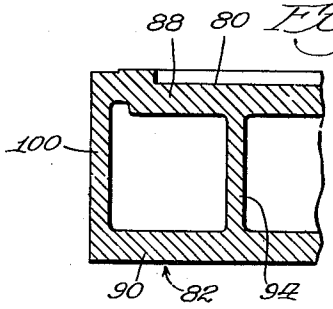


Fig. 7.

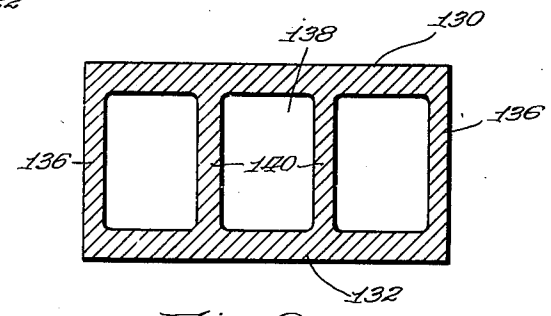


Fig. 8.

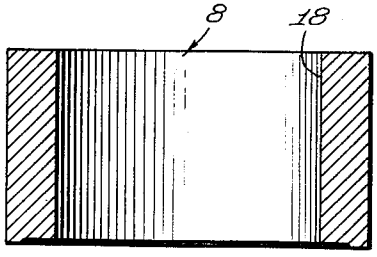


Fig. 6.

INVENTOR.
Robert K. Sedgwick
BY
Orin O. B. Garner
Atty.

Patented June 3, 1952 2,599,022

UNITED STATES PATENT OFFICE

2,599,022

FABRICATED PRESS

Robert K. Sedgwick, Oak Park, Ill., assignor to American Steel Foundries, Chicago, Ill., a corporation of New Jersey

Application March 18, 1948, Serial No. 15,532

9 Claims. (Cl. 100—71)

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This invention relates to hydraulic presses and more particularly to a novel fabricated press of economical construction and relatively great strength with respect to conventional designs.

A general object of the invention is to devise a press which may be constructed more economically than by current practices and which will afford adequate strength to resist the forces developed under service conditions.

Another object of the invention is to devise a press frame which may be built up by welding standard sections of steel stock.

A further object of the invention is to provide a press frame in which machining of the parts is reduced to a minimum.

Still another object of the invention is to provide in a fabricated press frame, such as above described, readily adjustable platen guide means to avoid machining of the various parts to close tolerances.

The foregoing and other objects and advantages of the invention will become apparent from a consideration of the following specification and the accompanying drawings, wherein:

Figure 1 is a front view of an hydraulic press embodying the invention, the left half of the press being shown in elevation and the right half in central vertical section;

Figure 2 is a side elevational view of the structure shown in Figure 1;

Figure 3 is a sectional view taken through one of the front platen guide gibs in the plane indicated by the line 3—3 of Figure 1;

Figure 4 is a sectional view on the line 4—4 of Figure 3;

Figure 5 is a top plan view of the cylinder support casting;

Figure 6 is a sectional view on the line 6—6 of Figure 5;

Figure 7 is a sectional view of the movable platen on the line 7—7 of Figure 1; and

Figure 8 is a sectional view of the fixed platen on the line 8—8 of Figure 1.

Describing the invention in detail, the novel press frame comprising a pair of steel side walls or panels 2, each having an upper slot or opening 4 and a lower slot or opening 6. A cylinder support, generally designated 8, in the form of a rectangular casting having a central cylindrical opening 10 is in flat face engagement at the sides thereof with respective panels 2 and is welded at each end thereof to one of the panels 2, at opposite edges thereof as at 12, and at opposite edges of the slot 4 as at 14.

The casting 8, as best seen in Figures 5 and 6,

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is preferably formed with an outer rectangular web 16 merging at opposite sides of the casting with an inner annular web 18 reinforced by longitudinal ribs 20 connected between the webs 16 and 18 at the ends of the casting and also connected to top and bottom webs 22 and 24 respectively, as best seen in Figure 1.

A cylinder casting 26 is sleeved within the opening 10 and is provided with an annular flange 28 secured to the support 8 as by studs 30. The cylinder casting 26 is provided with an internal cylindrical chamber 32 receiving a ram 34 having a head 36 in slidable fluid-tight engagement with the chamber 32 to define a main chamber 38 and a return or pullback chamber 40.

The ram 34 is hollow and comprises an internal rapid advance chamber 42 receiving a rapid advance tube 44 having a slidable fluid-tight fit within a restricted portion of the chamber 42 as at 46. The tube 44 is afforded a pressed fit as at 48 within a complementary cylindrical passage 50 in the cylinder casting 26, the upper end of the tube being seated as at 52 against a complementary shoulder within the passage 50 which is provided with a tapped opening 54 for the reception of associated piping (not shown).

The top of the cylinder casting 26 at one side thereof is formed with a boss 56 and a cylindrical opening 58 connected to the main advance chamber 38. A tube 60 is fitted within the opening 58 in abutment with a shoulder therein as at 62 and is welded as at 64 to the top of the cylinder casting 26. A support ring 66 is seated on the tube 60 in abutment with an external shoulder thereof as at 68 and is provided with openings 70 to afford securement for a conventional prefill valve indicated at 72 in phantom lines.

A typical prefill valve 72 and hydraulic actuating circuit associated therewith for operating a press of the type disclosed in the instant application is shown in U. S. Letters Patent No. 2,423,120.

The lower end of the cylinder casting 26 is provided with a tapped opening 74 accommodating connection between associated piping (not shown) and the pullback chamber 40 which is sealed by a packing gland 76 secured by studs 78 to the lower end of the cylinder casting 26.

The lower end of the ram 34 is received within a complementary recess 80 in the top of a movable platen, generally designated 82, and is secured thereto as, for example, by a clamp ring 84 recessed in the ram and secured to the platen 82 as by studs 86. The construction of the platen

82 will be understood by a consideration of Figures 1, 3 and 7. The platen comprises a top wall 88 formed with the above-mentioned recess 80 and a bottom wall 90 connected by spaced side walls 92 and a transverse central rib 94 extending between the side walls and merging therewith. The structure is also reinforced by a pair of substantially parallel ribs 96 extending between and connected to front and rear walls 98 and 100 and to the top and bottom walls 88 and 90.

Each corner of the substantially rectangular platen 82 is provided with a beveled or diagonal bearing surface 102 in complementary flat face engagement with a guide gib 104 having a grease groove 105 in the platen engaging face thereof. The gib 104 is formed with a flange or lug 106 having a plurality of vertically spaced elongated holes or openings 108. Each opening 108 receives a bolt 110 secured to the side panel 2 as by threading at 112 and having an adjusting nut 114 threaded on its outer end to provide adjustment for the gib 104, fore and aft of the press. The gib 104 is adjusted laterally of the press by a plurality of vertically spaced adjusting screws 116 threaded at 118 in the panel 2 and bearing against the gib as at 120. Each screw 116 is provided with a lock nut 122 threaded thereon to maintain the screw at any desired adjustment. It will be understood that by means of the above-described arrangement each gib 104 may be readily adjusted transversely of the press as well as fore and aft thereof to afford proper bearing at 102 between each corner of the platen 82 and the mating gib 104. This adjustment reduces machining costs on the platen and guide gibs to a minimum.

A lower platen or bed casting 124 is in flat face engagement with respective panels 2 and is welded to each panel 2 at the front and rear margins thereof as at 126 and at the front and rear margins of the slot 6 as at 128. The platen 124, as best seen in Figures 1 and 8, is a generally rectangular box-like structure comprising top and bottom walls 130 and 132 connected by spaced side walls 134 and front and rear walls 136. The structure is reinforced by a pair of spaced ribs 138 extending generally parallel to the side walls 134 and connected between the top and bottom walls 130 and 132 and the front and rear walls 136. An additional reinforcement is provided by another pair of spaced ribs 140 extending laterally of the press frame between the top and bottom walls 130 and 132 and the side walls 134.

The lower edge of each panel 2 is secured as by welding to a flat plate 142 reinforced by a plurality of gusset plates 144 welded between the plate 142 and the panel 2. The plate 142 is perforated as at 146 for the reception of any suitable securing means, such as bolts (not shown).

A rectangular frame 148 is secured to the upper edge of the panels 2 in any convenient manner, as by bolts, and a steel tank or shell 150 is welded to the frame 148 to afford a reservoir of hydraulic fluid for actuation of the ram 34 by an associated hydraulic circuit (not shown), as will be readily understood by those skilled in the art.

As best seen in Figure 1, the cylinder casting 26 and the platen 124 are entirely disposed between the planes of the inner or adjacent sides of the panels 2 against which the casting 26 and platen 124 are seated in flat face engagement therewith, thereby affording a rigid structure without the costly necessity of dovetailing these parts.

It is to be understood that I do not wish to be limited by the exact embodiment of the device shown which is merely by way of illustration and not limitation as various and other forms of the device will, of course, be apparent to those skilled in the art without departing from the spirit of the invention or the scope of the claims.

I claim:

1. A fabricated press frame comprising spaced substantially vertical flat side panels having substantially parallel, mutually facing inner surfaces respectively, the respective panels having elongated slots therethrough extending lengthwise thereof in a generally vertical direction and interrupting said surfaces, a cylinder support substantially rectangular in form and having flat faces in engagement with respective surfaces, said faces extending substantially from front to rear and substantially from top to bottom of said support, and said support being entirely disposed between the planes of said surfaces, vertical welds in each slot at opposite margins thereof securing the related panel to said support from top to bottom of its related face, other vertical welds along the front and rear edges of each panel securing it to said support from top to bottom of its related face, the respective panels having other elongated slots therethrough interrupting said surfaces and extending lengthwise of said panels in a generally vertical direction, a substantially rectangular stationary platen having flat faces in engagement with respective surfaces, said platen being entirely disposed between said planes, the last mentioned faces extending substantially from front to rear and substantially from top to bottom of said platen, a vertical weld at opposite margins of each of the second mentioned slots securing the related panel to said platen from top to bottom of its related face, and vertical welds along the front and rear edges of each panel securing it to said platen from top to bottom of its related face, and means on said support for attaching an associated hydraulic cylinder thereto, said surfaces defining a work receiving opening extending from front to rear of the frame between said support and said platen.

2. A fabricated press frame, according to claim 1, wherein each weld associated with the cylinder support is substantially in vertical alignment with the corresponding weld associated with the platen.

3. A fabricated press frame, according to claim 1, wherein the lower extremities of the slots are formed with arcuate portions, and the welds within the slots are spaced from said arcuate portions to minimize stresses therealong.

4. A fabricated press frame, according to claim 1, wherein the lower edges of the support and platen are disposed above the lower extremities of the related slots, and the welds in said slots are spaced above said extremities to prevent stress concentrations therealong.

5. A fabricated press frame, comprising spaced flat side panels having substantially parallel inner surfaces respectively, each panel having an elongated slot therethrough interrupting its surface approximately centrally thereof and extending lengthwise of the panel, a cylinder support having flat faces extending substantially from front to rear and substantially from top to bottom thereof and disposed in tight engagement with respective surfaces, said support being entirely

disposed between the planes of said surfaces, elongated welds in each slot at opposite margins thereof extending in parallel relationship lengthwise of the related panel and securing the same to the related face, other welds at the front and rear edges of each panel extending lengthwise thereof and securing the same to said support from top to bottom of its related face, the last mentioned welds being approximately parallel to the first mentioned welds, other respective panels having other elongated slots therethrough interrupting said surfaces approximately centrally thereof and extending lengthwise of said panels, a stationary platen having flat faces in engagement with respective surfaces, said last mentioned faces extending substantially from front to rear and from top to bottom of said platen, said platen being entirely disposed between said planes, elongated welds at opposite margins of each of the second mentioned slots securing the related panel to said platen, said last mentioned welds being approximately parallel to each other, and elongated welds at the front and rear edges of each panel securing the same to said platen from top to bottom of its related face and extending approximately parallel to the last mentioned welds, and the support having an opening therethrough formed and arranged for reception of an associated hydraulic cylinder, said surfaces defining a work receiving opening through the frame from front to rear thereof between said support and said platen.

6. A fabricated press frame, according to claim 5, wherein the first mentioned slots interrupt the top surfaces of the panels.

7. A fabricated press frame according to claim 5, wherein the lower ends of the slots are arcuate in form, and the welds in the slots are spaced from said lower ends thereof.

8. A fabricated press frame, according to claim 5, wherein each weld associated with the support is in vertical alignment with and is spaced from the corresponding weld associated with the platen.

9. A fabricated press frame comprising spaced flat side panels having substantially parallel inner surfaces respectively, said surfaces facing each other, the respective panels having elongated slots therethrough interrupting said surfaces and extending lengthwise thereof, a cylinder support having flat uninterrupted faces in engagement with respective surfaces, said support faces being entirely disposed between the planes of said surfaces, spaced vertical welds in each slot at opposite margins thereof securing the related panel to said support, other vertical welds at the front and rear edges of each panel securing it to said support, the respective panels having other elongated slots therethrough interrupting said surfaces and extending lengthwise of the panels, a stationary platen having uninterrupted flat faces in engagement with respective surfaces, said platen faces being entirely disposed between the planes of said surfaces, elongated welds at opposite margins of each of the second mentioned slots securing the related panel to said platen, and elongated welds at the front and rear edges of each panel securing it to said platen, said support having means for securing an associated cylinder thereto, said surfaces defining a work receiving opening through the frame from front to rear thereof between said support and said platen.

ROBERT K. SEDGWICK.

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