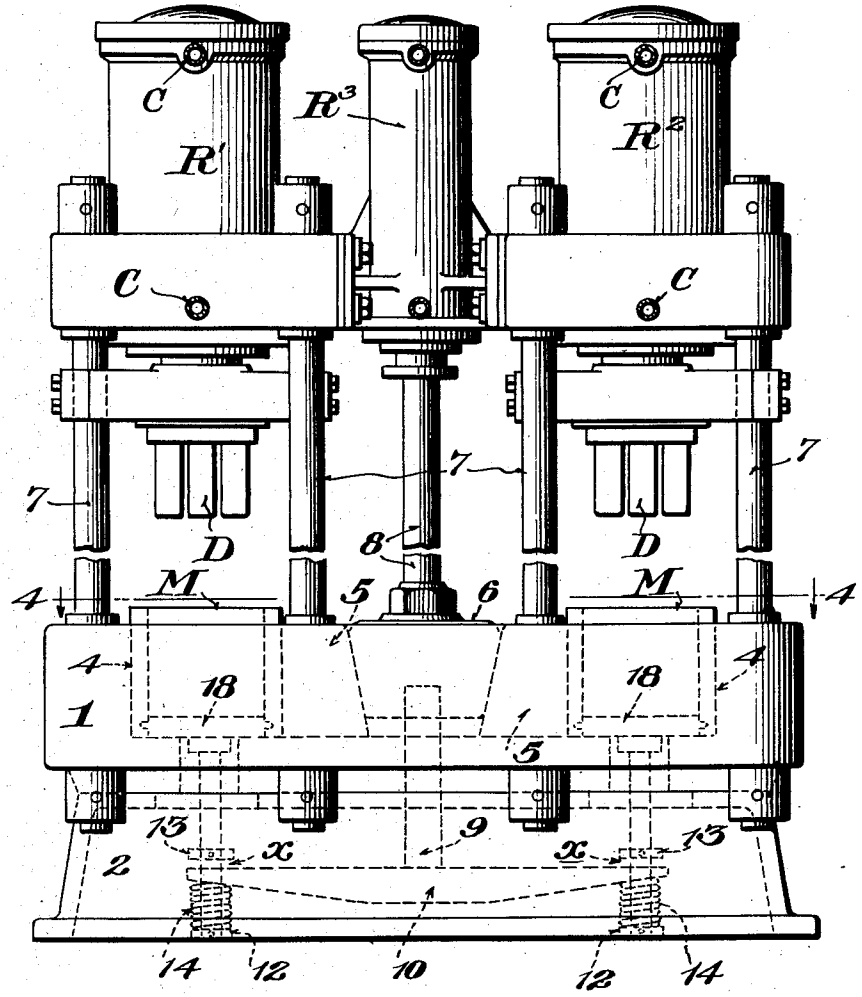
Feb. 25, 1930. L. W. HOTTEL 1,748,176

PRESS CONSTRUCTION

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Fig. 1.



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PRESS CONSTRUCTION

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Fig. 2.

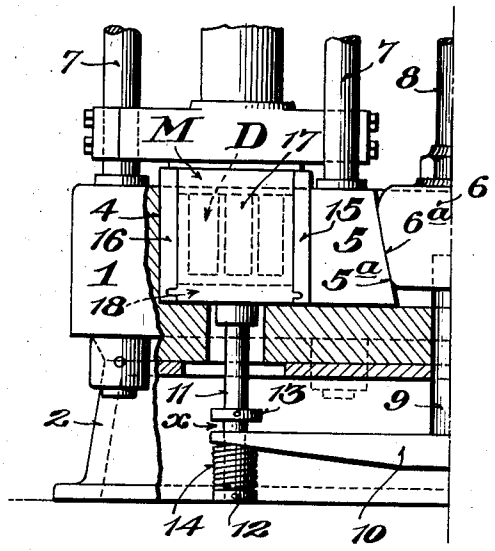


Fig. 3.

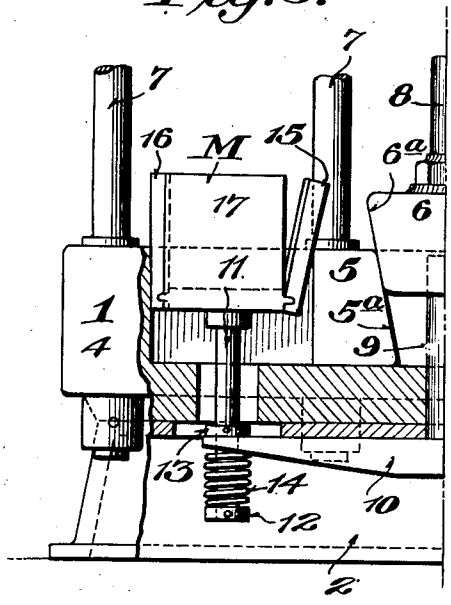
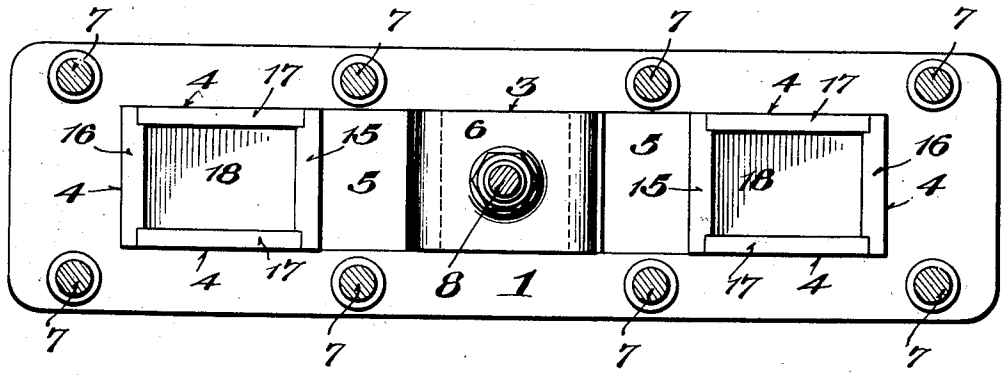


Fig. 4.



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PRESS CONSTRUCTION

Application filed December 22, 1927. Serial No. 241,994.

This invention relates to molding presses adapted for making electrical storage battery boxes and other hollow articles.

A primary object of the invention is to provide a novel construction for manipulating the mold case in such a way as to insure rigidity of the separable mold plates during the pressing operation and to permit of readily and effectually releasing the same when the pressing operation has been completed to facilitate the removal of the article. In that connection, it is proposed to provide a construction which automatically lifts the mold case assembly out of and carries it into the die box of the bed frame gradually and easily, when the mold case is seated in the mold cavity or die box, the mold case operating means will have an idle movement to permit a wedge element to complete its movement to rigidly clamp the separable parts of the mold case prior to the die entering the same, while on the return or upward movement the grip of the wedging means will be automatically released before the mold case manipulating elements come into play.

A further object of the invention is to provide a construction which lends itself to the embodiment of multiple unit construction, and wherein the bed containing the die box can be made in the form of an integral or solid casting having the mold case cavities therein, thereby providing a rigid and substantial bed adapted to adequately withstand the extreme pressures incident to the pressing operation.

With the above and other objects in view which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the invention is shown in the accompanying drawings, in which:—

Figure 1 is a side elevation of the improved press.

Figure 2 is a detail sectional view, partly in elevation, illustrating the relative position of parts when the die is lowered into the die box.

Figure 3 is a view similar to Fig. 2 illustrating the relative position of parts when the means for manipulating the mold case is in its uppermost position.

Figure 4 is a horizontal sectional view taken on the line 4—4 of Fig. 1.

Similar reference characters designate corresponding parts throughout the several figures of the drawings.

The present construction essentially includes in its organization a bed member 1 resting upon a suitable hollow base 2, the said bed member preferably being in the form of a casting having a central chamber or troughed portion 3 which provides within the same at the opposite ends thereof, the mold receiving cavities or die box portions 4 while the intermediate part is adapted to receiving the horizontally movable wedge blocks 5 and a cooperating pressure operated main wedge 6 which forms a part of the mold case manipulating and operating means.

The bed 1 is equipped with the vertically arranged standards 7 which support fluid operated rams R′ and R^2 having suitable fluid connections C through which the controlling fluid for the rams passes to cause the raising and lowering movement of the dies designated generally as D. Between the rams R′ and R^2 there is provided the cylinder of a third ram R^3 having the rod 8 projecting downwardly therefrom and carrying the main operating wedge 6 previously referred to.

Referring further to the means for operating the mold case designated generally as M, and which includes the fluid controlled main operating wedge 6, it will be observed that the said wedge carries at its bottom face a stem 9 which constitutes a part of a yoke

or cross member 10 adapted to slidably receive the mold case supporting rods 11 at its ends. These rods are provided with the spaced lower and upper collars 12 and 13, the said collar 12 constituting an abutment for a compression spring 14 against which the cross member works in pulling the mold case assembly M downwardly into the die box. As will be observed from Figs. 1 and 2 the relative spacing arrangement between the collars 12 and 13 is such that when the cross member 10 of the mold case manipulating means moves to its downward limit to fully compress the spring, there is a space x between the upper surface of the cross member 10 and the collar 13. The purpose of providing this relatively idle movement of the cross member 10 with reference to the rods 11 is to permit the main wedge 6 to cause its wedge face 6^a to engage more or less with the wedge face 5^a of the movable wedge blocks to effectually press the wedge box into rigid binding engagement with the back plate 15 of the mold case assembly to securely hold the latter in the mold cavity of the bed. Also, when the pressing operation has been completed and fluid pressure is applied to the bottom of the center ram to lift the mold case actuating means there will be a correspondingly idle movement of said means before the cross member 10 strikes the upper collar 13 thereby to permit the wedge surfaces 6^a of the main wedge to relieve the pressure on the faces 5^a of the wedge blocks 5 and cause the pressure to be in turn relieved from the interior of the mold case to facilitate easy withdrawal of the dies D from the finished article.

Each of the mold case units M includes the back 15 previously referred to and a front plate 16 connected by the side plates 17, all of said plates being loosely connected by a bottom plate 18 (Figs. 1 and 4) to which the rods 11 are attached.

The operation of the device is as follows:—

The press is made ready for operation by first turning the fluid into the upper end of the cylinder of ram R^3 thereby to force the mold case manipulating means including the wedge 6 and cross member 10 downwardly and compressing the springs 14 to pull the separable mold or liner plates which are loosely interlocked down into the mold cavity, while at the same time, the main wedge 6 forces the wedge blocks 5 into rigid and operative engagement with the back plates 15 of the mold case. As previously explained, the travel of the cross member 10 is somewhat greater than the downward travel of the rods 11 due to the play afforded by the springs 14 thereby to permit of the full efficiency and effectiveness of the main wedge 6. Therefore, the ends of the cross member 10 will leave the upper collars 13 near the end of the final downward movement of the cross member to that the mold case units M are held downwardly under spring tension and locked against movement or separation by the main wedge 6 operating against the wedge blocks 5. The material of which the article is to be formed is then placed in the mold case and the operating fluid is let into the rams R′ and R^2 to thereby force the dies D downwardly and into the mold case units thereby to form the article, which in the illustration shown is a battery box. When the die pressing operation has been completed the center ram R^3 is operated to move upwardly so that there will be a slight initial upward movement of the main wedge 6 before the arms 10 strike the upper collars 13 thereby to release the pressure on the wedge blocks 5 and whereupon the rams R′ and R^2 may be operated to lift the dies out of the molds. When the dies have been completely raised or lifted, the center ram R^3 will again be operated to move upwardly to cause the cross member 10 to lift the mold cases out of the die boxes due to the said member engaging with the collars or abutments 13.

In order to reassemble the apparatus, pressure is applied to the center ram R^3 to lower the wedge 6 and cross member 10 in the manner already described thereby to prepare the press for another operation.

In connection with the plates constituting the mold case M, it will be understood that the outside surfaces of said plates as well as the sides 4 of the die box are provided with sufficient taper to insure the full closing of all of the plates and positively force them together. These features may of course be varied in accordance with the well known practice in constructions of this type, and it will, of course, be understood that changes in design with respect to these features may be readily resorted to within the scope of the invention.

In the present construction, it will be observed that one of the distinctive features thereof is to provide for releasing the pressure on the plates of the mold case before the die or core is pulled from the finished article. The arrangement whereby the mold case manipulating means has a relatively idle movement for a part of its stroke both in its downward and upward movement readily permits of carrying out this important phase of the operation.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention and scope of the appended claims.

I claim:—

1. In a molding press, a bed provided with a mold receiving cavity having a movable

wall member, a mold case registering in said cavity, and power means having operative engagement respectively with said movable wall member and said mold case.

2. In a molding press, a bed provided with a mold receiving cavity having a movable wall member, a mold case registering in said cavity, and power means having operative engagement respectively with said movable wall member and said mold case, said power means operating to release pressure from the movable wall member in advance of lifting the mold case from said cavity.

3. In a molding press, a bed having a mold receiving cavity, a movable wedge element constituting one side of the cavity, a mold case adapted to enter said cavity, and means for raising and lowering said mold case and shifting said movable wedge block.

4. A molding press for hollow articles including a bed providing a die box, a mold case including separable mold plates, a sliding wedge block for cooperating with said mold case, and means for raising and lowering said mold case into and out of the die box and simultaneously moving said wedge block.

5. A mold press for molding hollow articles including a mold case consisting of separable mold plates, a bed having a cavity for receiving the mold case, mold case manipulating means including cooperating wedge elements and means for moving the mold case, and means providing a relatively idle movement in the actuation of the mold case whereby the wedging means may be further operated in said period of idle movement.

6. In a molding press, a bed member having a mold receiving cavity, a horizontally shiftable wedge element forming one side of the cavity, a mold case including separable mold plates adapted to be moved into and out of said cavity, and a fluid actuated member having means for moving said wedge element and also moving said mold case.

7. In a molding press, a bed member having a mold receiving cavity, a shiftable wedge forming one side of the cavity, a mold case assembly including mold plates and adapted to fit in said cavity, a rod engaging said mold case, and a fluid actuated member having means for moving said wedge and connected to said rod of the mold case for raising and lowering the same.

8. In a molding press, a bed member having a mold receiving cavity, a slidable wedge forming one side of the cavity, a mold case assembly adapted to fit in said cavity, a member projecting from the mold, and a fluid pressure operated member having means for moving said wedge and having an arm for loosely engaging with the member projecting from the mold case.

9. In a molding press a bed member having a mold receiving cavity, a slidable wedge forming one side of the cavity, a mold case assembly including separable mold plates and fitting in said cavity, a rod carried by the mold case and projecting through the bed, spaced abutments on said rod, means operatively engaging with said rods between the abutments for raising and lowering the mold case, and means for moving the wedge.

10. In a molding press, a bed member having a mold receiving cavity, a slidable wedge forming one side of the cavity, a mold case assembly including separable mold plates movable into and out of said cavity, a rod carried by the mold case, spaced abutments on said rod, a fluid pressure operated member, means on said member for moving said wedge into engagement with the mold case, a laterally projecting arm carried by said fluid operated member and operating between said abutments, and a compressible spring arranged between the said laterally projecting arm and one of said abutments.

11. A mold press for molding hollow articles comprising in combination, a bed having a mold receiving cavity, a movable wedge element forming one side of the cavity, a mold case assembly adapted to enter said cavity, a die cooperating with the mold case, and means for simultaneously moving said slidable wedge element and the mold case assembly and effecting a part of the movement of the wedge before the die is pulled from the mold case whereby locking pressure may be relieved from the wedge.

12. A mold press for molding hollow articles including in combination, a bed having a mold receiving cavity, a horizontally slidable wedge forming one side of the cavity, a mold case assembly adapted to enter said cavity, a die for cooperating with said mold case assembly and a vertically movable member having a wedge portion for shifting the horizontally slidable wedge into binding engagement with the mold case assembly and also having a laterally offset arm portion operatively connected with said mold case assembly.

13. A mold press for forming hollow articles including a bed having formed at opposite ends thereof mold receiving cavities, fluid operating dies mounted on the bed above said cavities, mold cases mounted in said cavities, wedge blocks forming the inside walls of said cavities and slidable in a horizontal direction, and a vertically moving rod element having a wedge common to both of said wedge blocks, and a cross member carried by the end of said wedge member and operatively connected with the mold cases.

14. A mold press for forming hollow articles including a bed having formed at opposite ends thereof mold receiving cavities, fluid operated dies mounted on the bed above said cavities, mold cases mounted in said cavities, wedge blocks forming the inside

walls of said cavities and slidable in a horizontal direction, and a vertically moving rod element having a wedge common to both of said wedge blocks, and a cross member carried by the end of said wedge member and operatively connected with the mold cases, the said operative connection consisting of a rod carried by the mold case and having spaced abutments thereon and a spring confined between one of said abutments and said arm.

In testimony whereof I hereunto affix my signature.

LOUIS W. HOTTEL.