

April 22, 1941.

O. O. RIESER

2,239,248

PRESS ASSEMBLY

Filed June 8, 1937

4 Sheets-Sheet 2

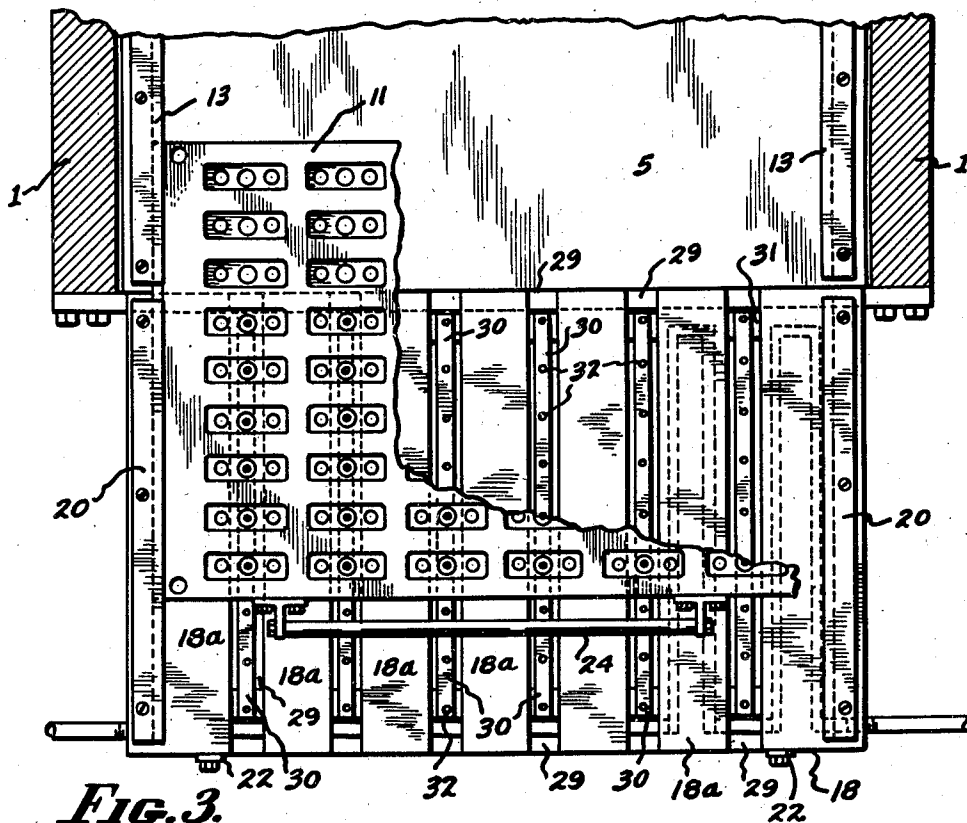


FIG. 3.

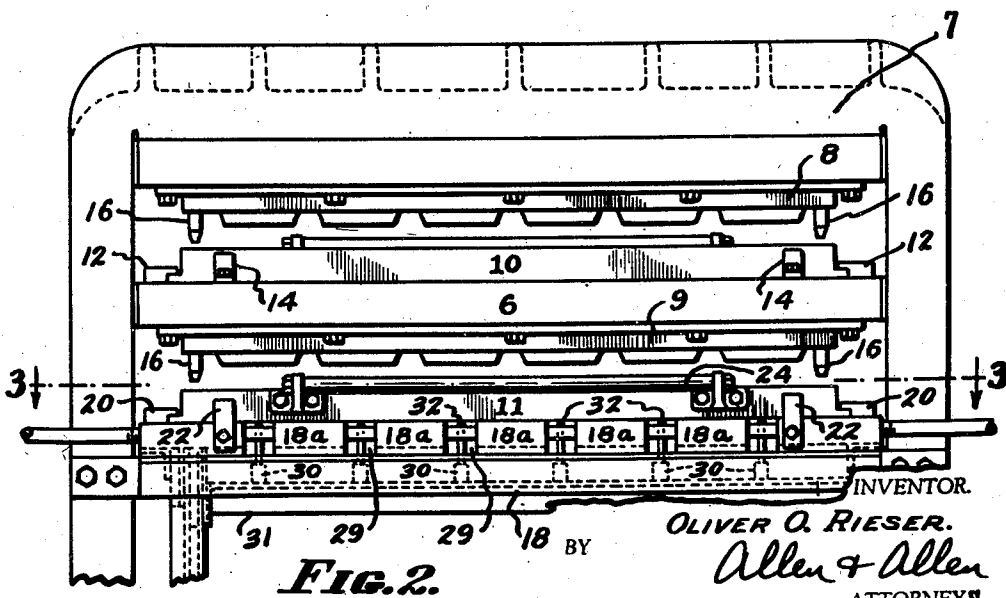


FIG. 2.

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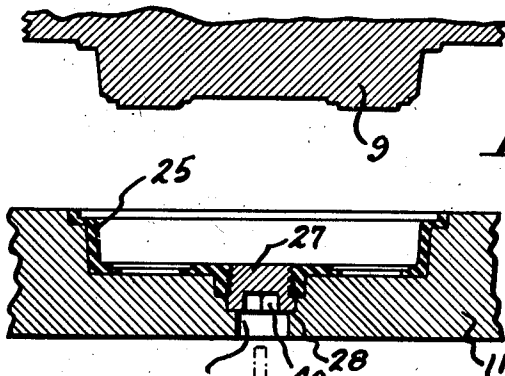


FIG. 4.

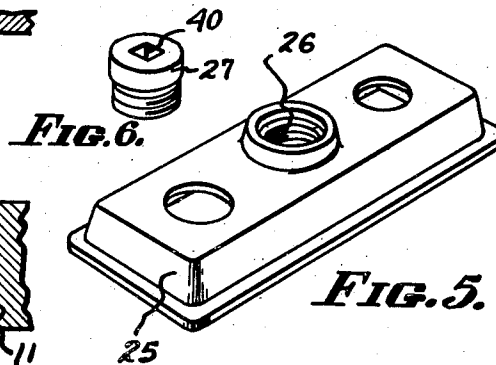


FIG. 5.



FIG. 8.

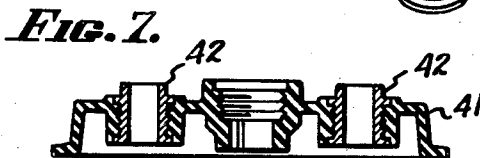


FIG. 7.

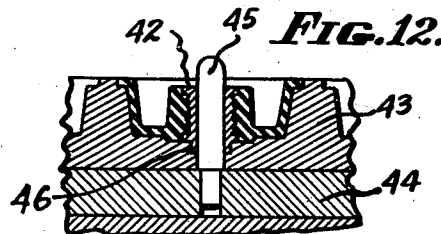


FIG. 12.

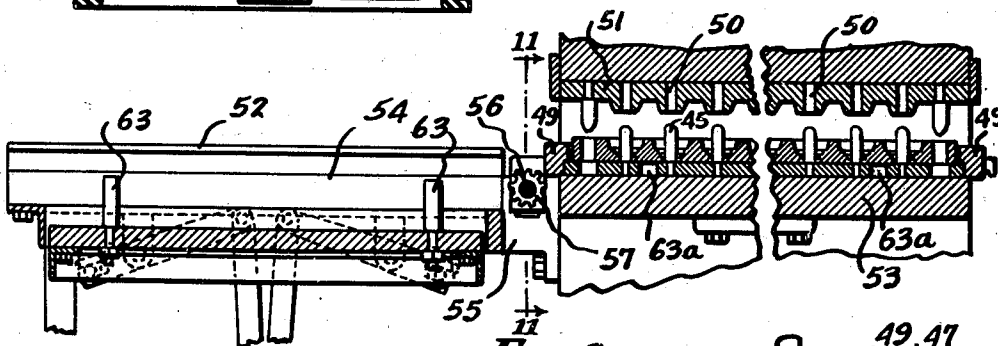


FIG. 9.

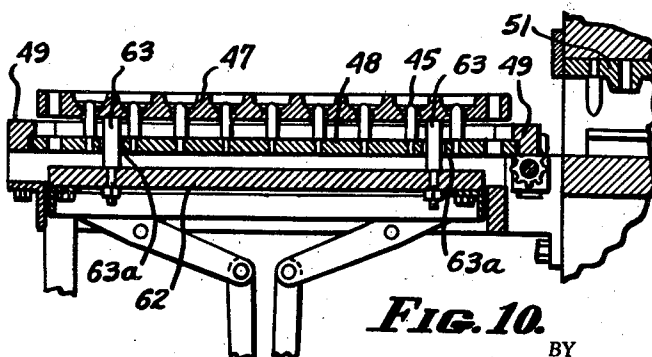


FIG. 10.

BY

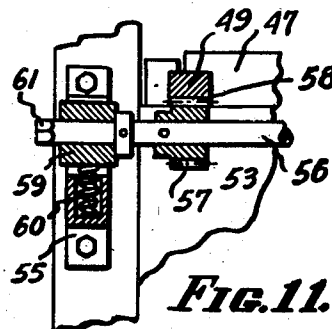


FIG. 11.

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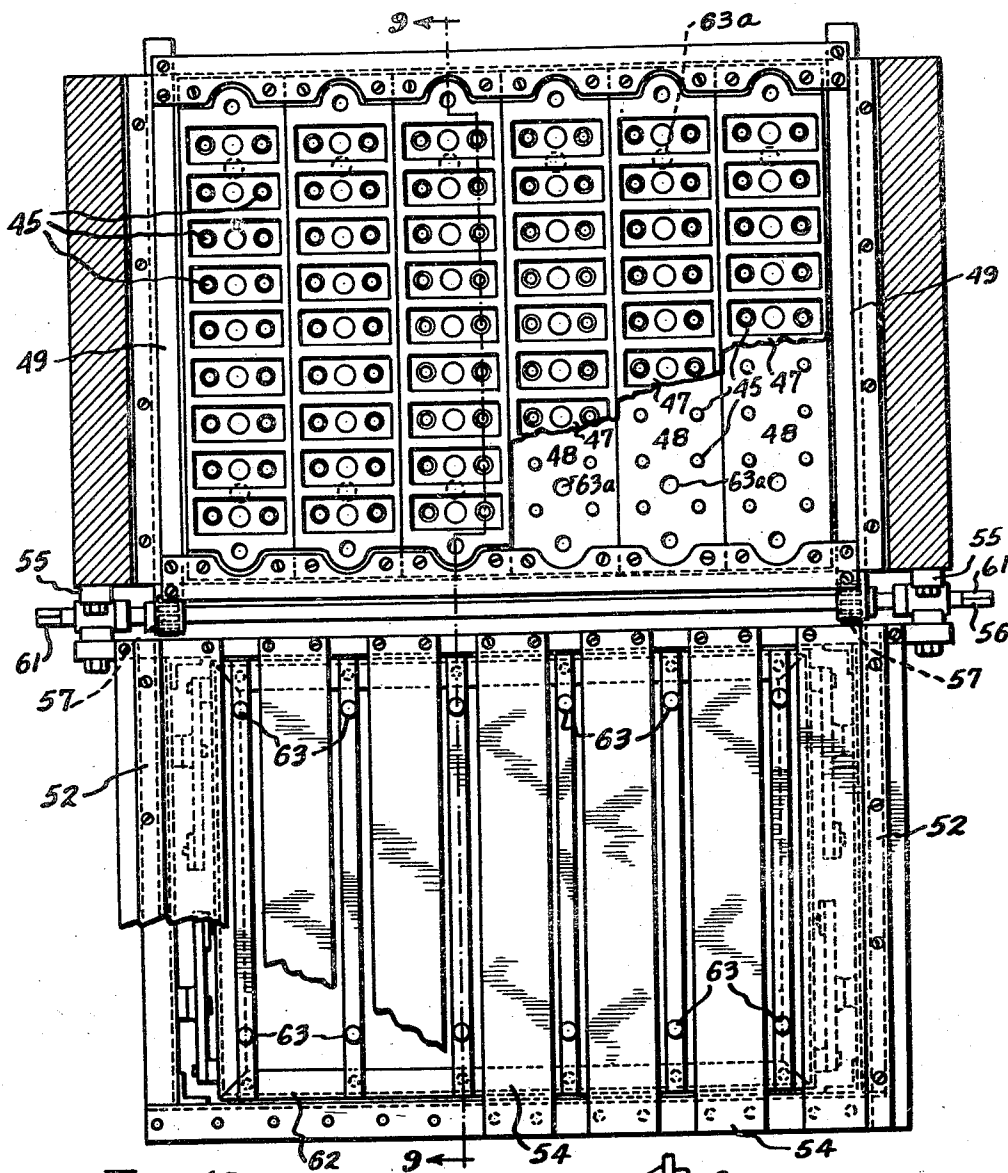


FIG. 13.

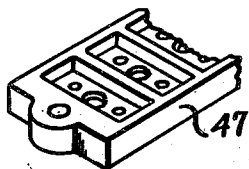


FIG. 14.

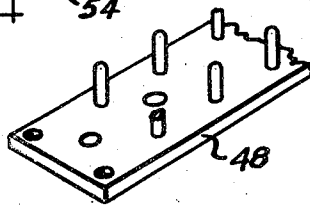


FIG. 15.

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UNITED STATES PATENT OFFICE

2,239,248

PRESS ASSEMBLY

Oliver O. Rieser, Oak Park, Ill., assignor to The Richardson Company, Lockland, Ohio, a corporation of Ohio

Application June 8, 1937, Serial No. 147,083

2 Claims. (Cl. 18—16)

My invention has to do with the moulding and stripping of articles made by a pressing operation; and I shall describe my invention in connection with means and a method for the manufacture of small articles of the nature of cell covers for storage battery cases, it being understood that the invention is applicable to the manufacture of other articles, and that the particular variants of construction which are appropriate to the manufacture of storage battery cell covers do not constitute a limitation upon the broader aspects of my invention, as hereinafter claimed.

In the manufacture of storage battery cell covers a press is provided having a broad flat platen. Such presses usually have a bed (which contains the main hydraulic ram) uprights, and a cross-bar or bridge at the top, against which the pressure is exerted. Frequently such presses have an intermediate platen, so that two moulds may be used at once. There are return cylinders to push downwardly the main platen after a moulding operation and where an intermediate platen is used there are cooperative parts to depress the supplementary platen part-way and then hold it from further lowering while the main platen sinks to its lowermost position, as is well understood in the art.

The moulds, which are broad and flat and of course comprise appropriate male and female members for the moulding of a large number of cell covers at one time, are loaded on a table and the mould parts assembled together. Then they are hauled upwardly by a winch or the like, and are slid into the press, coming to rest upon the main platen or the supplementary platen and the pressing operation is then carried out. Where, as is usual, the cell covers are being made of a rubber composition requiring vulcanization, heat is applied to the mould parts, for example, by means of steam connections.

After the close of the moulding cycle the pressure on the main cylinder is relieved and the platens are depressed by the supplementary cylinders, as aforesaid. The mould assemblies in a very hot condition are removed with the aid of a winch from the table and the mould parts pried apart. Then the cell covers are removed from the lower mould part by hand, and new charges of moulding material are placed in the several mould cavities.

It will be realized that this is a laborious, time consuming and inconvenient operation which also under certain circumstances may in-

volve some danger to the operator. The fundamental objects of my invention are to provide a much more simple and rapid operation, an operation having less danger and an operation in which at least a partial unloading of the mould members is performed by mechanical devices.

The ancillary objects of my invention will be set forth hereinafter or will be apparent to one skilled in the art upon reading these specifications. I accomplish the several objects of my invention by that certain construction and arrangement of parts and in that process of which I shall now describe the aforesaid exemplary embodiment in two forms. Reference is now made to the drawings wherein:

Figure 1 is an elevational view with parts in section of a press, loading and unloading means and mould assemblies for the manufacture of cell covers not having inserts.

Fig. 2 is a partial elevational view of a press with mould assemblies therein.

Fig. 3 is a plan view showing a platen, a table and a mould member being removed from the platen onto the table, parts of the press being shown in section, the view being taken along the lines 3—3 of Fig. 2.

Fig. 4 is a partial sectional view through the cooperative mould members in open condition.

Fig. 5 is a perspective view of a storage battery cell cover made with the devices of the foregoing figures.

Fig. 6 is a perspective view of threaded moulding members for the vent plug of storage battery cell covers.

Fig. 7 is a sectional view through a cell cover of a type having metallic inserts.

Fig. 8 is a perspective view of a metal insert.

Fig. 9 is a sectional view through a portion of a press, mould members, and a loading and unloading table designed for the manufacture of storage battery cell covers of the type shown in Fig. 7. The plane of this section is taken along line 9—9 of Fig. 13.

Fig. 10 is a similar view but showing the mould member positioned upon the table.

Fig. 11 is a fragmentary view with parts in section showing the operation of the means for moving the mould member from the platen to the table or vice versa.

Fig. 12 is a sectional view through a portion of a mould member designed for the moulding of articles with inserts.

Fig. 13 is a plan view of a table and a mould

in place on a platen of the press for moulding articles with inserts.

Fig. 14 is a perspective view of a portion of a mould member.

Fig. 15 is a perspective view of a portion of a device for use in connection with the mould member of Fig. 14, showing the means for holding the inserts during the moulding operation.

In Fig. 1 I have shown a press having a frame 1, and a hydraulic cylinder 2 to the piston rod of which the main platen 5 is attached. A supplementary platen is shown at 6. The top frame member or bridge of the press is shown at 7. The push back cylinders and means for stopping the intermediate platen 6 at the desired point are not shown. They are, however, well known in the art. The press in Fig. 1 is shown in open condition.

In my machine I bolt or otherwise fasten the upper mould members to the press and they remain fixedly in position excepting when it is desired to remove them for repairs. I have shown a male member 8 of the upper mould fastened to the bridge 7, and a male member 9 of the lower mould fastened to the under side of the intermediate platen 6. The respective female mould members are indicated at 10 and 11. They rest respectively upon the main and intermediate platens and are slidably guided thereon by means 12 and 13. They are, however, removable by sliding in the guideways for loading and unloading, as will presently be described. The guideways on the main and intermediate platens not only serve to position the female mould members in a horizontal direction but also serve to hold the female members down on the platens during the separating operation. Stops 14 and 15 are provided to position the female mould members in the other horizontal direction. The male members of the moulds may be provided with pins 16 which enter in corresponding holes in the lower mould members and assure accurate relative positioning of the mould members during the pressing operation.

In the practice of my invention I provide tables indicated at 17 and 18 respectively in alignment with the supplementary and main platens in their lowermost positions. These tables are supported in any suitable way, the exact nature of the supporting means not being a limitation upon my invention. The tables are so positioned that the female mould members may be slid from the platens onto the table tops for loading and unloading; and the table tops are provided with guides 19 and 20 to receive and hold corresponding portions of the female mould members. They also may be provided with stops 21 and 22 to limit the range of movement of the mould tables.

At the conclusion of a moulding operation the female mould portions 10 and 11 may be slid respectively onto the tables 17 and 18 manually if desired, and by means of handles 23 and 24.

For an understanding of the nature of the particular article being made, reference may now be had to Figs. 4, 5 and 6. In the first of these figures, the female portion of the mould is shown at 11 and the male portion at 9 in open position. An exemplary form of storage battery cell cover is indicated at 25 in Fig. 5. It will be noted that this cell cover has a threaded vent opening indicated at 26. This is moulded by means of a threaded device 27, as shown most clearly in Fig. 6. This threaded moulding plug rests in a cavity in the female mould upon shoulders 28. The

rubber or other moulding composition being pressed in the mould cavity is moulded with threads against the member 27. The member 27 since it merely rests in a cavity in the female mould may be employed to strip the article therefrom in a way which I shall now describe.

It will be seen that the table top 13 (and the table top 17 is similar) is made up of interspaced strips 18a having interspaces 29 therebetween. In these interspaces additional strips 30 are positioned. These strips are fastened to a framework 31 and they are so constructed as to be rigid in character. The strips 30 bear unloading pins 32 which are so positioned with reference to the construction of the mould member 11 that (as illustrated in Fig. 4) an unloading pin 32 will lie under each of the screw thread moulding members 27. The mould member 11 is perforated beneath each threaded moulding member as shown at 33.

Suitable means are provided for elevating the frame 31 after the mould has been slid onto the table and is properly positioned thereon. I have shown one such means in Fig. 1 where lever arms 34 are pivoted to ears 35 on the main frame of the table. At one end these lever arms have a sliding pivotal connection with ears 35 on the frame 31. The other ends of the lever arms are pivoted to line means 37 which in turn may be pivoted to a treadle lever 38, pivoted to the table frame as at 39. A spring 40 may be provided to hold the treadle in upraised position.

When the treadle is in upraised position the frame 31 is in its lower-most position and the top of the unloading pins 32 lie below the table top. When a female mould portion has been positioned on the table the treadle 38 may be depressed, thus elevating the frame 31 and causing the several unloading pins to push the moulded cell covers out of the female mould cavities by means of the threaded moulding plugs 27.

The moulded articles thus displaced from the mould may quickly be removed by hand. When this is done a new set of the threaded moulding plugs 27 are placed in the various mould cavities and new charges of moulding material are placed in these cavities. Thereupon the female mould parts 10 and 11 are slid back into the press and onto the platens respectively, and the cycle of operations is repeated. It will be understood that by these means the loading and unloading is not only made very much faster but is made very much less laborious and is also made safer. No winches or the like need be used.

The moulded articles which are removed from the female cavity, of course, contain the threaded mould plugs 27. These may be unscrewed by engaging a suitable wrench or the like in the cavity 40 in each such plug. The stripping of the plug may be, and preferably is, carried on by operators other than the press tenders, so that the operation of pressing will not be held up thereby. For these reasons, it is preferable to provide several sets of the threaded moulding plugs for each mould assembly.

In Fig. 7 and following, I have illustrated a type of mechanism suitable for the moulding of a slightly different type of article, namely an article with a metal insert. Such an article is shown in section at 41 in Fig. 7 with metal inserts indicated at 42. The type of metal insert does not require special description. It is, however, necessary to position the metal insert properly in the mould during the moulding operation and also to plug up the center of it, to prevent

its being filled with the moulding composition. In Fig. 12 I have shown a female mould consisting of an upper part 43 and a lower part 44. The lower part bears pins 45, the purpose of which is to position the metal inserts. The necks 46 of the metal inserts rest in depressions, as shown, in the mould member 43. Moulds of this type are usually formed from members such as are shown at 47 in Fig. 14, which constitute groups of female mould members and members such as shown at 48 in Fig. 15 which underlie these members. By reference to Fig. 10, it will be understood that the parts 48 are fastened to a main mould frame 49, and that the parts 47 rest upon the parts 48, the pin members 45 serving to position them. The upper ends of the pins 45, as shown in Fig. 9, are received in holes 50 in the male mould member 51.

In this type of mould it is a frame member 49 which is guided both upon the platen of the press and upon the table. The table guide is shown at 52.

Since these moulds are usually quite large and heavy, it is advantageous to provide mechanical means for sliding the female portion from the platen 53 of the press onto the table top 54. For this purpose I provide a bracket 55 on the frame of the press, and I journal in this bracket a shaft 56 bearing a pinion 57. I form a rack 58 on the frame 49 with which the teeth on the pinion 57 mesh. The shaft 56 is preferably mounted in a slidable bearing member 59, urged upwardly in the bracket 55 by means of a spring 60. The end of the shaft 56 may be squared as at 61. If a wrench or handle is engaged with the squared end of the shaft it will be apparent that by rotating the shaft I can cause the mould assembly to move from the platen 53 onto the table 54.

It will be clear that the moulding of this type of device requires a somewhat different stripping operation. As a consequence, I provide a movable frame 62, which may be moved by means similar to that described for the frame 31. The frame 62 bears a series of heavy pins 63 which pass through appropriate openings 63a in the mould member 48 and push upwardly the mould members 47. This draws the positioning pins

45 downwardly, stripping them from the metal fittings 42, thereby releasing the moulded articles in the moulding cavities. During this stripping operation the mould portions comprising the main frame 49 and the members 48, are held down onto the table, of course, by the guide means 52. When the moulded articles have thus been released in the mould cavities they may be picked up by hand.

It would also be within the scope of my invention to combine the showing, say of Fig. 1, and of Fig. 10, so as to provide a double stripping operation by providing both a reciprocable frame 62 with its attendant parts and a reciprocable frame 31 with its attendant parts in the same table. Under these circumstances it would be possible first to release the moulded articles in the mould cavities by the means which have just been described, and then push the moulded articles out of the mould cavities by means of the threaded mould plugs 27, as has previously been described.

Modifications may be made in my invention without departing from the spirit thereof.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In combination, a stripping table, a mould member thereon comprising a frame, a base member bearing locating pins on said frame and a cavity member vertically displaceable from said base member and having perforations to receive said locating pins, and means mounted on said stripping table for displacing said cavity member from said base member.

2. In combination, a stripping table, a mould member thereon comprising a frame, a base member bearing locating pins on said frame and a cavity member vertically displaceable from said base member and having perforations to receive said locating pins, and means mounted on said stripping table for displacing said cavity member from said base member, said means comprising a reciprocable frame, means for reciprocating said frame, and displacement means mounted on said frame.

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