No. 817,735. PATENTED APR. 10, 1906.

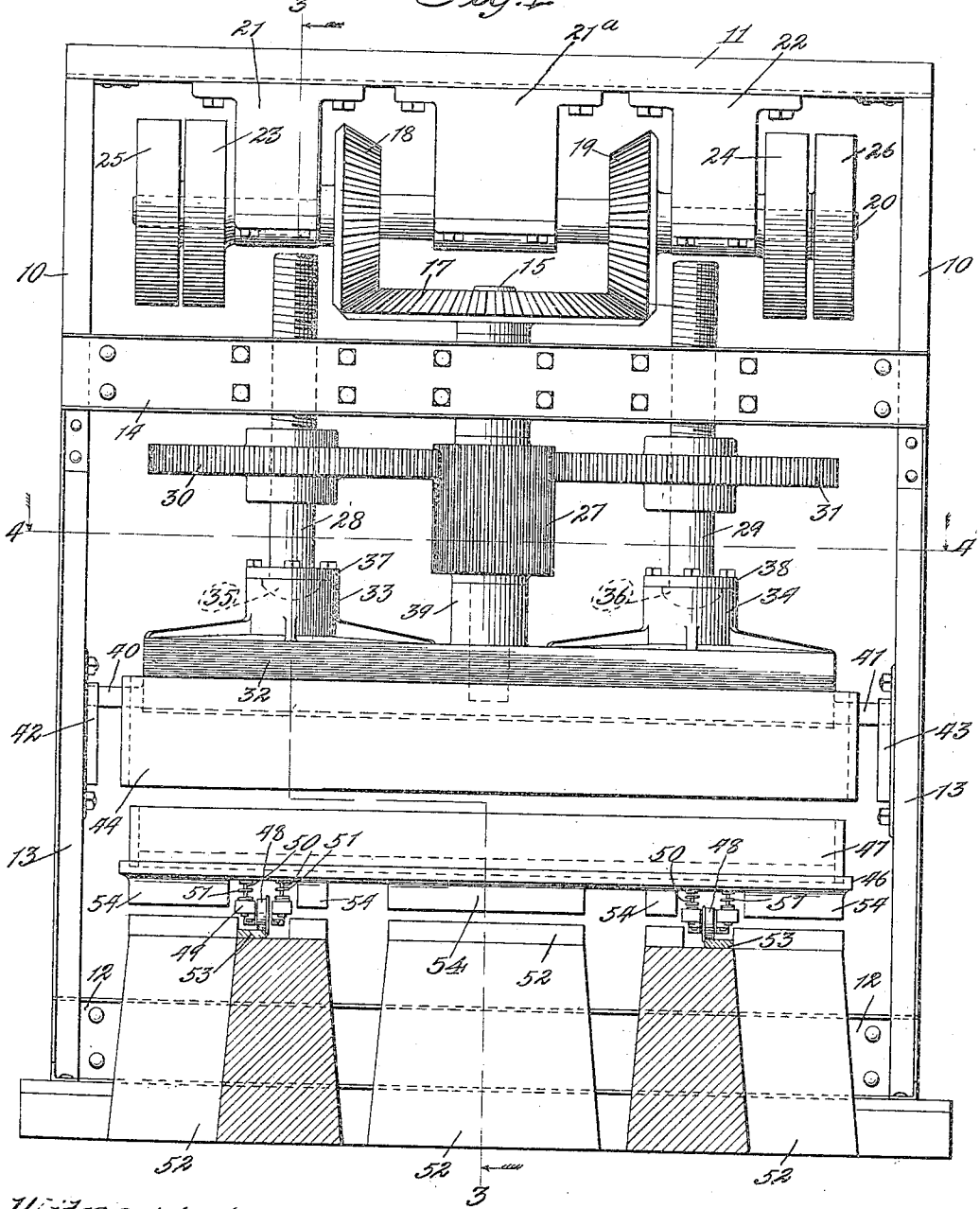
R. B. CAMPBELL.

PRESS.

APPLICATION FILED OCT. 13, 1905.

4 SHEETS—SHEET 1.

Fig. 1.



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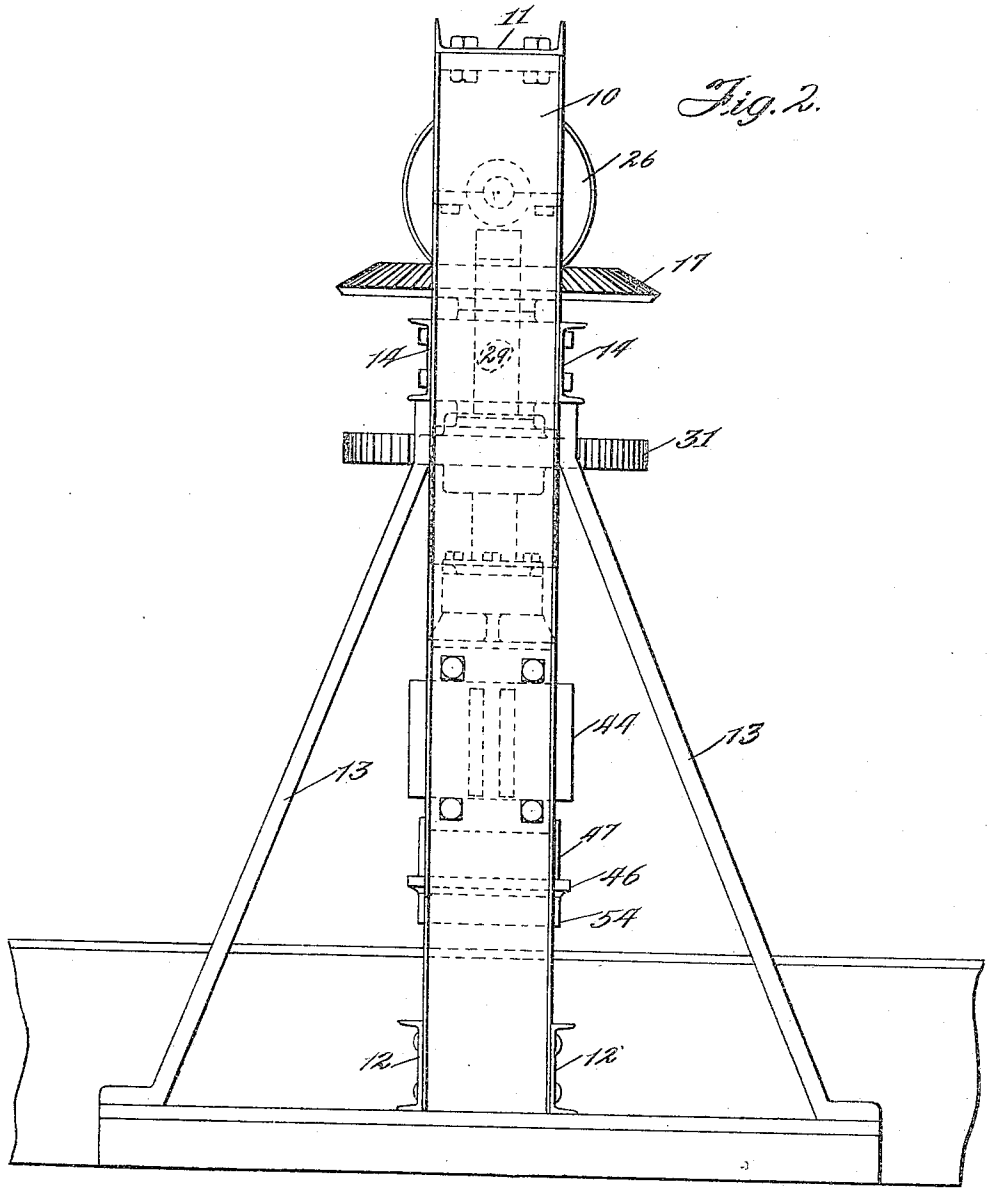
4 SHEETS—SHEET 2.

Fig. 2.



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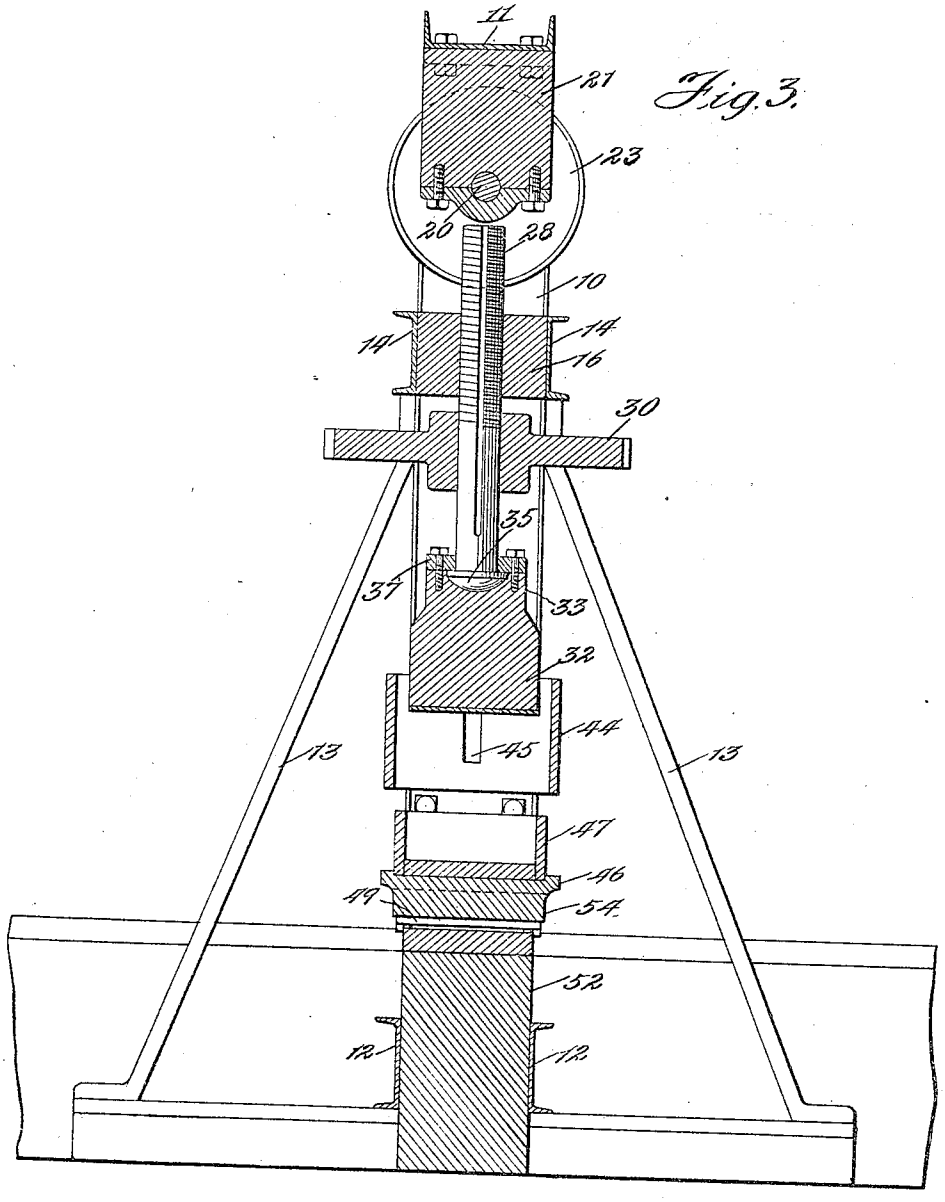
4 SHEETS—SHEET 3.

Fig. 3.



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4 SHEETS—SHEET 4.

Fig. 4.

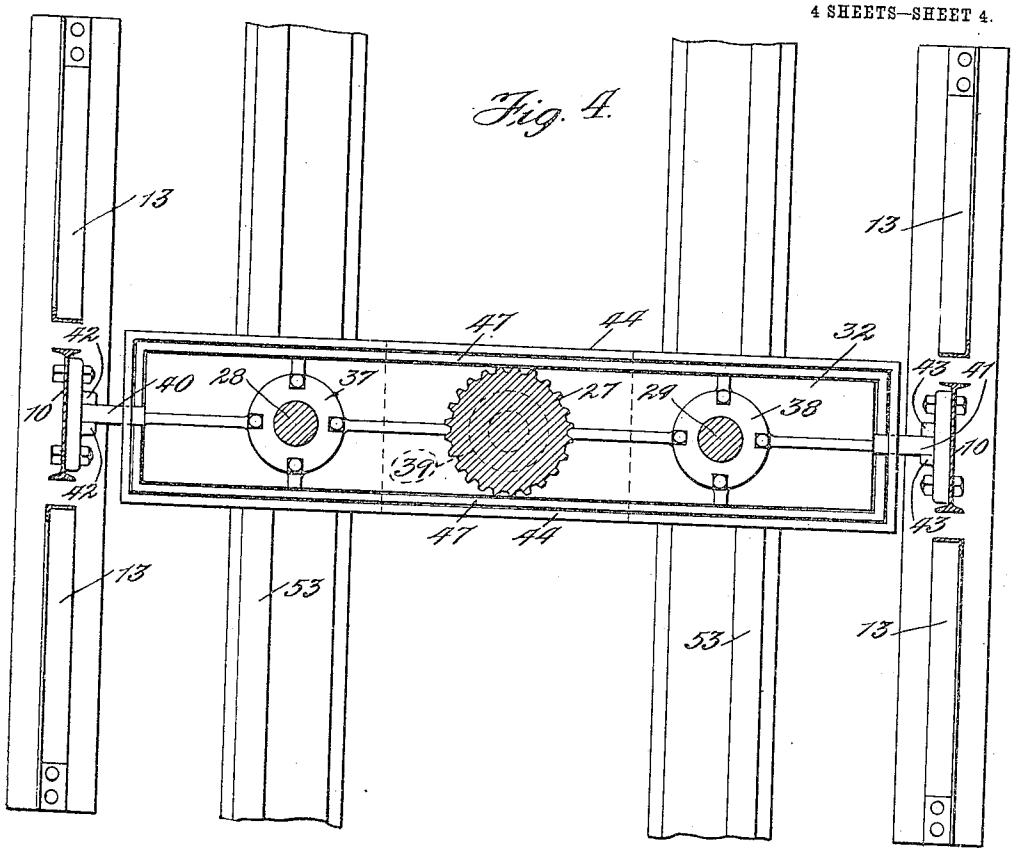


Fig. 5.

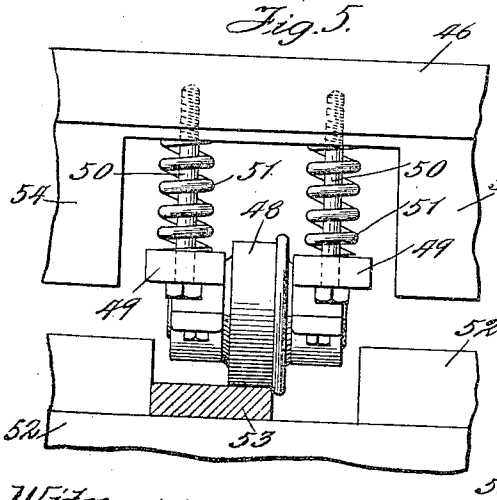
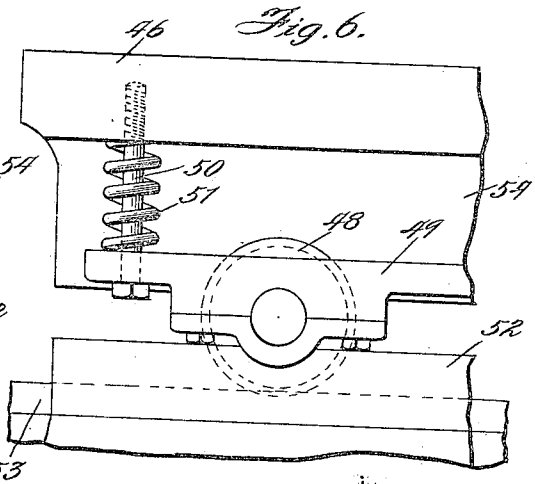


Fig. 6.



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UNITED STATES PATENT OFFICE.

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PRESS.

No. 817,735. Specification of Letters Patent. Patented April 10, 1906.

Application filed October 13, 1905. Serial No. 282,618.

To all whom it may concern:

Be it known that I, ROBERT B. CAMPBELL, a citizen of the United States, residing at Joliet, in the county of Will, State of Illinois, have invented certain new and useful Improvements in Presses, of which the following is a true and complete specification, reference being had to the accompanying drawings.

This invention relates to improvements in presses that are designed primarily for use in compressing plastic material while contained in a form.

The object of the invention is to provide means for readily and quickly moving a mass of such material while contained within a form beneath the press and there subjecting such material to the desired pressure without removing the form from the carriage on which it rests through the pressing operation and as readily and quickly move such material after being pressed out from under the press, so that another mass of material can be subjected to pressure without loss of time. I attain this object by the construction illustrated in the drawings and hereinafter specifically described.

That which I believe to be new will be pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation of my improved press and carriage for moving material to be pressed under and away from the press. Fig. 2 is a side elevation. Fig. 3 is a vertical section at line 3 3 of Fig. 1. Fig. 4 is a cross-section at line 4 4 of Fig. 1. Fig 5 is an enlarged detail, being a front elevation of a portion of the movable carriage and one of its carrying-wheels and a portion of one of the end abutments under the press. Fig. 6 is a view similar to Fig. 5, showing in side elevation the parts shown in Fig. 5.

Referring to the several figures of the drawings, in which corresponding parts are indicated by the same reference-numerals, 10 indicates the vertical side bars of the press connected at the upper ends by cross-bars 11 and at their lower ends by bars 12 and suitably braced by braces 13.

14 indicates other cross-bars secured to the opposite sides of the side bars 10 a short distance below the upper ends of such bars 10. The parts mentioned are preferably constructed of angle-bars or channel-irons, as shown.

15 indicates a vertical shaft having a bearing in a filler-block 16, that extends across the machine between the bars 14, to which it is bolted.

17 indicates a bevel-gear secured to the upper end of the shaft 15 and meshing with two bevel-gears 18 and 19 on a shaft 20, supported in bearings 21, 21ª, and 22, depending from the top of the cross-bar 11, on which shaft at opposite ends are placed driving-pulleys 23 and 24 and loose pulleys 25 and 26. The said shaft 20 is a divided shaft, the inner ends being supported in the bearing 21ª.

27 indicates a gear fast on the shaft 15. 28 and 29 indicate vertical shafts, one at each side of the central shaft 15, each of these shafts 28 and 29 being screw-threaded for a considerable portion of its length. The screw-threaded portions of these shafts work in suitably screw-threaded openings in the filler-block 16. The shaft 28 has secured to it a gear 30, and the shaft 29 has secured to it a similar gear 31, both of said last-named gears meshing with the gear 27, said gear 27 being considerably thicker than the gears 30 and 31, so that to whatever position said gears 30 and 31 may be moved in the operation of the press they will always remain in mesh with the central gear 27.

32 indicates a head extending across the machine, on the upper face of which are formed two sockets 33 and 34, into which the lower ends of the shafts 28 and 29 project. Each shaft 28 and 29 is provided on its lower end with a head 35 and 36, which fit into their respective sockets 33 and 34, the shafts being held against withdrawing by plates 37 and 38, respectively, which are bolted to the tops of the socket-pieces 33 and 34, respectively. It will be apparent that while firmly held against withdrawal these shafts 28 and 29 are free to be rotated in their sockets. A sleeve 39 projects from the upper face of the head 32, through which sleeve the central vertical shaft 15 projects, the lower end of such shaft lying in a socket formed in the head 32 below said sleeve 39, as indicated in dotted lines in Fig. 1. By this arrangement the lower end of the shaft 15 is always afforded a firm bearing, regardless of the position to which the head 32 may be moved.

40 and 41 indicate lateral guide-arms secured at opposite ends of the head 32, such guide-arms projecting at their outer ends be-

tween guides 42 and 43, respectively, such guides being bolted to the inner faces of the side bars 10 in the construction shown; but such guides may of course be formed by cutting suitable slots in said bars 10, if desired.

44 indicates a frame surrounding the head 32 and movable relatively to said head by reason of being provided with slots 45 in its ends, through which pass the guide-arms 40 and 41.

46 indicates the body of the carriage, on which is adapted to be placed a form 47, in which the plastic material to be pressed is placed.

48 indicates the wheels of the carriage, and 49 the trucks in which such wheels are mounted.

50 indicates a rod at each side of each wheel in the construction shown, which is screw-threaded or otherwise firmly secured to the under face of the body 46 of the carriage, its lower end moving freely through holes in the trucks 49 when the body of the carriage is pressed down.

51 indicates coiled springs around the rods 50 and bearing at their ends against the trucks 49 and body 46 and acting to keep said body 46 in a raised position. While I have shown but one spring device at each side of each wheel, it is evident, of course, that as many such devices may be employed as are found necessary or desirable.

52 indicates solid abutments below the press, and 53 indicates rails or tracks carried by the abutments for the wheels 48 to run upon.

54 indicates bearings depending from the lower face of the body 46 of the carriage and adapted when such body is forced down by the action of the press to come in contact with the tops of the abutments 52 or with suitable blocks placed on such abutments, as shown, and suitably secured thereto.

In operation, with the parts as shown in Fig. 1, a carriage will be loaded with a form 47, containing the plastic material that is to be pressed, and run along the tracks 53 until directly under the head 32 of the press. By shifting a driving-belt to one of the fast pulleys on the shaft 20 the vertical shaft 15 through the bevel-gears 17, 18, and 19 will be rotated and through the intermeshing of the gear 27 with the gears 30 and 31 will cause the screw-threaded shafts 28 and 29 to so turn as to force down the head 32, the gears 30 and 31 remaining in mesh during the entire time of their downward movement with the gear 27, as will be readily understood. As the head 32 descends the frame 44, which is preferably of metal, will of course also descend and will fit over and snugly surround the form 47. This surrounding of the form 47 by the frame 44 will be accomplished before the head 32 has reached the mass of material in the said form, and consequently by the time that pressure is brought to bear on such material the form 47, which will ordinarily be of lighter material and much weaker than the frame 44, will be adequately supported by such frame, so as to be able to withstand the great lateral pressure to which it will be subjected by the action of the head on the material. The pressure which is exerted against the material will very quickly overcome the force of the springs 51 and cause the bearing-blocks 54 to come in contact with the abutments 52 or the blocks that may be secured thereon, and it will thus be seen that great pressure can be applied to the material in the form without injuriously affecting the carriage or any of its parts, which could not be the case unless provision were made, as is here done, for taking the pressure imparted by the press off of the trucks and springs and imparting it directly to the solid abutments. The blocks 54, carried by the body 46 of the carriage, will be of sufficient width so that practically the entire body 46 is solidly supported during the pressing operation. When the material has been pressed to the desired degree, the driving-shaft 20 is caused to turn in the opposite direction by the application of power to one of the fast pulleys, and through the gearing described the screw-threaded shafts 28 and 29 will be caused to turn upward through their screw-threaded openings in the filler-block 16, thus raising the head 32 from pressing position, and of course the strengthening-frame 44 will also be raised away from the form 47. As the pressure is taken off of the carriage the coiled springs 51 will raise the body 46, so that its bearing-blocks 54 will be free from the abutments, and when the strengthening-frame 44 has been raised entirely clear of the form 47 the carriage with the pressed material in said form 47 can be quickly moved off, and while its load is being removed another similar carriage with a fresh mass of material can be run into place beneath the press. By my invention it will be seen, therefore, that great economy of time is secured, as the press can be kept in almost constant use.

My invention is of especial value in the pressing of large articles made from concrete or cement or similar plastic material, such as railway-ties; but of course I do not limit it to such use, as it will be found of value in connection with the manufacture of various articles requiring treatment by pressure.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a press comprising a reciprocating head and means for operating the same, of a carriage adapted to be moved under and away from said head, yielding supports for said carriage, and a solid support on which said carriage rests

while under said press when said carriage has been forced down, substantially as specified.

2. The combination with a press comprising a reciprocating head and means for operating the same, of a carriage adapted to be moved under and away from said head, spring-supports under said carriage, and a solid support on which said carriage rests while under said press when said spring-supports have been compressed, substantially as specified.

3. The combination with a press comprising a reciprocating head and means for operating the same, of a carriage adapted to be moved under and away from said head, spring-supports under said carriage, blocks dependent from said carriage, and a solid support on which said carriage rests while under said press and against which said blocks are adapted to bear when said spring-supports have been compressed, substantially as specified.

4. The combination with a press comprising a reciprocating head and means for operating the same, of a wheeled carriage adapted to be moved under and away from said head, springs interposed between the wheeled supports and the body of the carriage, blocks dependent from said carriage-body, and a solid support on which said carriage rests while under said press and against which said blocks are adapted to bear when said springs have been compressed, substantially as specified.

5. The combination with a press comprising a reciprocating head and means for operating the same, of a carriage adapted to be moved under and away from said head and adapted to support material thereon to be pressed, and a frame carried by said head and movable relative thereto, said frame being adapted to surround the material on the carriage during the pressing operation, substantially as specified.

6. The combination with a press comprising a reciprocating head, a movable frame and means for moving said frame around the material to be pressed in advance of the contact of the head with the material, substantially as specified.

7. The combination with a press comprising a reciprocating head, of a movable frame slidingly connected with said head, and means for moving said frame around the material to be pressed in advance of the contact of the head with the material, substantially as specified.

8. The combination with a press comprising a reciprocating head, of a guide at opposite sides thereof, arms projecting from said head into said guides, a frame surrounding said head and having slots through which said arms project, and means for moving said head and attached frame, substantially as specified.

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