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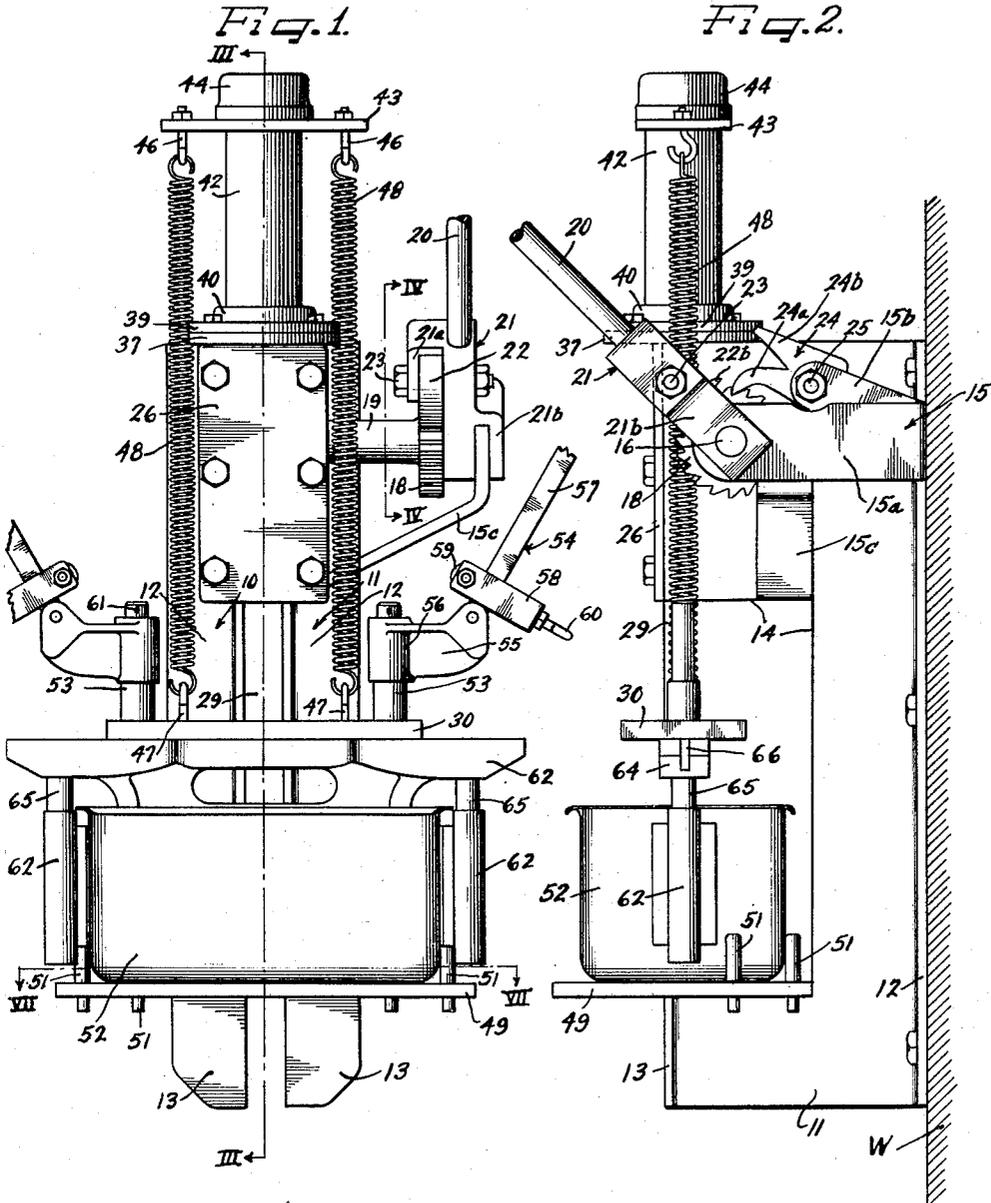
F. H. HOY

2,528,276

PRESS WITH MOLD PLATFORM

Filed Oct. 30, 1944

3 Sheets-Sheet 1



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Oct. 31, 1950

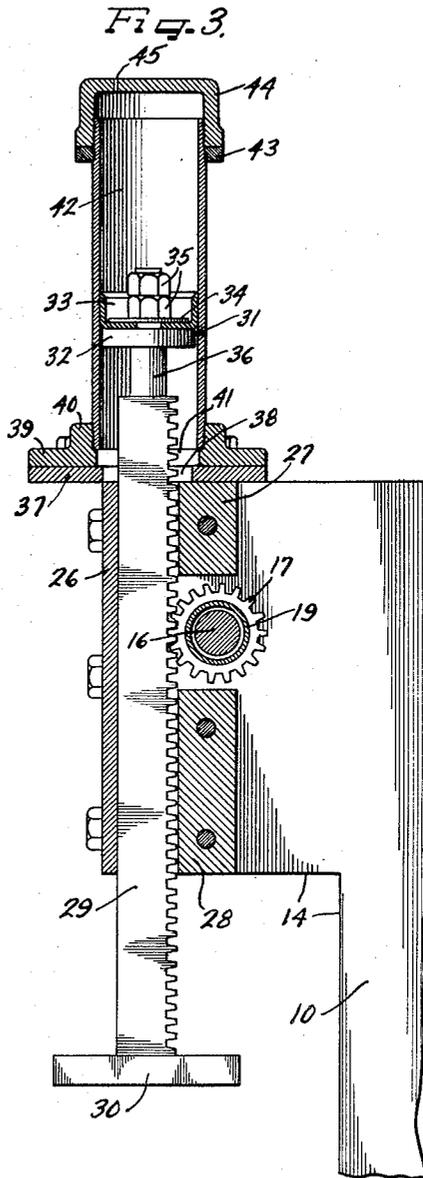
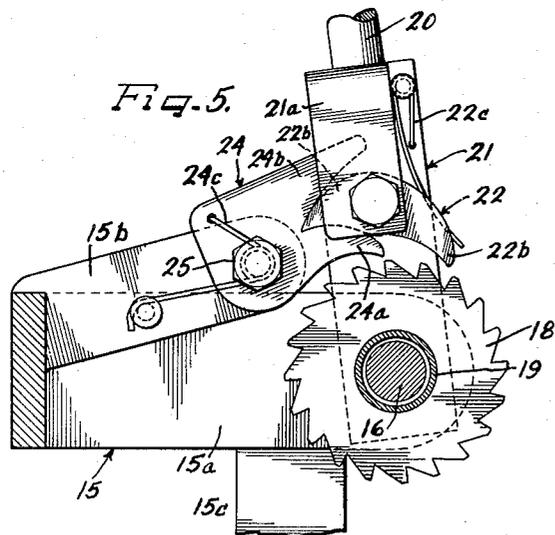
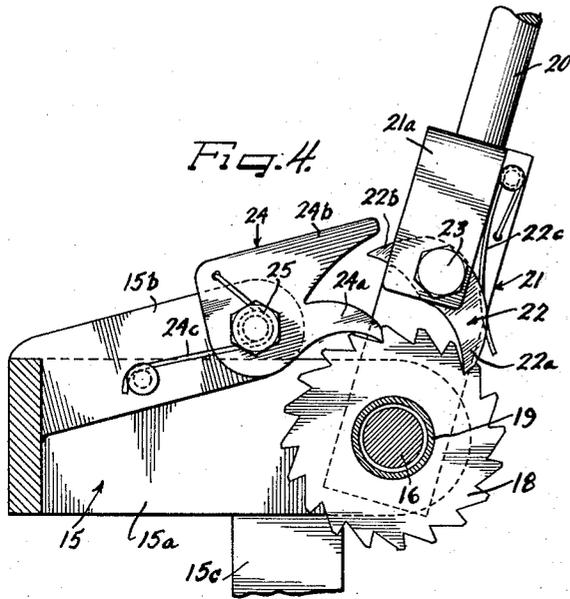
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PRESS WITH MOLD PLATFORM

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3 Sheets-Sheet 2



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Oct. 31, 1950

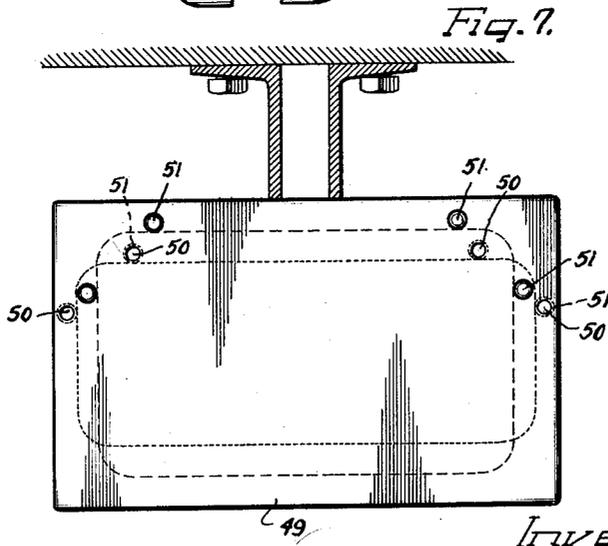
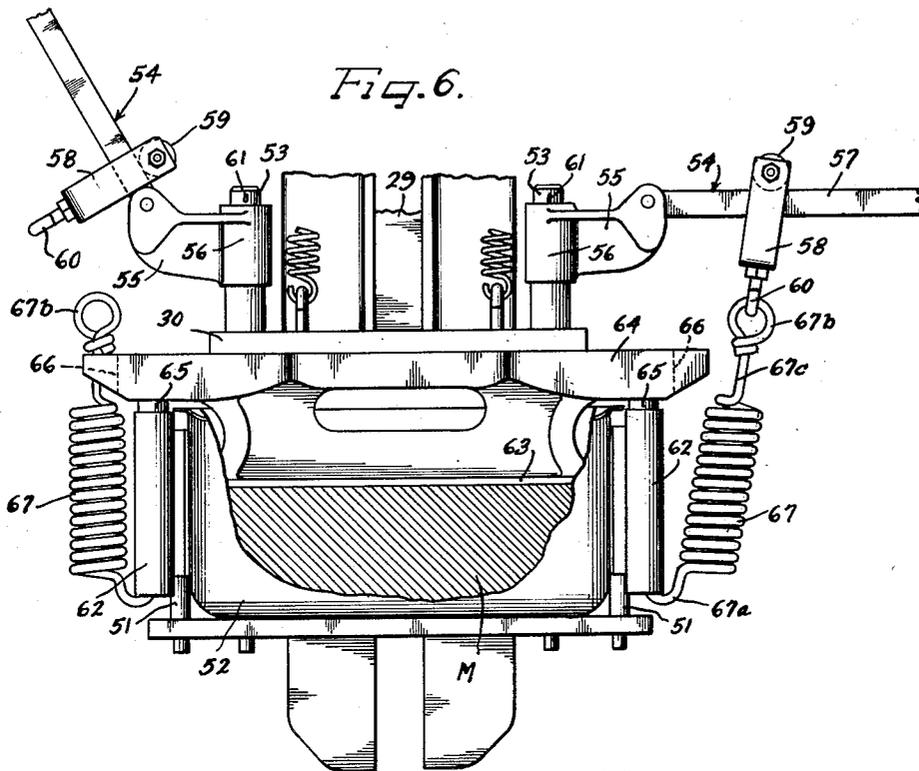
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PRESS WITH MOLD PLATFORM

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,528,276

PRESS WITH MOLD PLATFORM

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15 Claims. (Cl. 100—57)

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This invention relates to a press having a mold platform.

More particularly, the invention relates to a press with an integral mold platform, for molding materials such as luncheon meats, boned ham and the like.

It is an object of this invention to provide a press having a mold platform and ram so disposed relative to each other that substantially the same pressure is applied to the material in each mold.

Another object of this invention is the provision of a press adapted for mounting on a wall and having a mold platform holding a mold in fixed height relation in the press.

It is another object of the invention to provide a press actuated and released by a novel pawl and ratchet arrangement.

It is also an object of this invention to provide a molding press in which the rack bar of a rack and pinion arrangement serves as the ram, pawl and ratchet means being provided to rotate the pinion.

An additional object of the invention is to provide a press having a platform with variable means for positioning molds of various sizes and shapes thereon in proper alignment with the ram.

Still another object of the invention is to provide a press having means on the ram to limit the pressing stroke of the ram and to cushion the retracting stroke.

Other and further objects and advantages of the present invention will be apparent to those skilled in the art from the following description and the appended drawings.

In the drawings:

Figure 1 is a front elevational view of the press of this invention with a mold positioned therein;

Figure 2 is a side elevational view of the press, taken from the right of Figure 1;

Figure 3 is a vertical sectional view taken on the line III—III of Figure 1, with parts in elevation;

Figure 4 is an enlarged sectional view taken on the line IV—IV of Figure 1;

Figure 5 is a view similar to Figure 4, but showing the parts in disengaging position;

Figure 6 is an enlarged fragmentary view of a portion of Figure 1, with a part broken away, and showing the application of securing means to the mold before removal from the press; and

Figure 7 is a horizontal cross-sectional view on the line VII—VII of Figure 1, with parts in elevation and the mold removed.

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The invention is described herein as applied to a press for molding boned hams or the like, but it will be understood that the invention is not limited to this particular application. Also, the press of this invention is shown and described as mounted on a wall, but it will be obvious that it might be otherwise mounted.

The press is mounted on a frame comprising a pair of spaced channel members 10 and 11 of suitable material, such as steel, each having flanges 12 and 13. The press may be mounted on a wall W by bolting or otherwise securing the flanges 12 thereto, as shown in Figure 2. The flange 12 and adjacent portion of the web of each member 10 and 11 are continuous, while an intermediate portion of the flange 13 and the adjacent web are cut away as indicated at 14. From one of the channel members, as 11, near the upper portion thereof, extends a bracket 15 having a horizontal arm 15a paralleling the web of the member 11. Another arm 15b of the bracket 15 is disposed between and parallel to the web of the member 11 and the arm 15a, and with its end slightly above the arm 15a. A brace 15c may be provided extending from the member 11 to the bottom edge of the arm 15a.

A shaft 16 has one end secured in the web of the member 10 and the other extending through the arm 15a of the bracket 15. The shaft 16 is held against rotation in any suitable manner. Journalled on the shaft 16 is a pinion 17 disposed in the space between the members 10 and 11. Also journalled on the shaft 16 adjacent the bracket arm 15a is a ratchet wheel 18. Connecting the pinion 17 and the ratchet wheel 18 and holding the same in fixed relation to each other is a hub or sleeve 19. A suitable aperture (not shown) may be provided in the member 11 for convenience in assembling the shaft 16, pinion 17 and sleeve 19 in the press.

A lever 20 is secured in a lever socket member 21 pivoted on the shaft 16. Integrally formed with the socket member 21 are an upper fork arm 21a inwardly of the socket member in spaced relation thereto, and a lower fork arm 21b outwardly of the socket member and also in spaced parallel relation thereto. Between the arm 21a and the socket member 21 is a pawl member 22 pivoted on a pin or bolt 23 extending through the arm 21a and socket member 21. The pawl member 22 is aligned with the ratchet wheel 18 for engagement with the teeth thereof. The end of the bracket arm 15a extends between the socket member 21 and the lower fork arm 21b, and the socket member 21 is thus held against

movement axially of the shaft 16. The shaft 16 extends through the arm 21b.

The pawl member 22 has a forward pawl tooth portion 22a and a rearward extension forming a curved camming portion 22b. A keeper or detent pawl member 24 is pivotally secured to the bracket arm 15b as by a bolt 25. The forward end of the detent pawl member 24 is notched to provide a lower detent pawl tooth portion 24a and an upper detent releasing portion 24b. The detent pawl member 24, of course, is aligned with the pawl member 22 and the ratchet wheel 18. Upon upward and rearward movement of the lever 20, the pawl member 22 is moved rearwardly to bring the camming portion 22b into contact with the releasing portion 24b of the detent member, and continued rearward movement results in the portion 22b camming the detent releasing portion 24b upwardly, thereby raising the detent pawl tooth 24a out of engagement with the ratchet wheel 18 and releasing the latter for rotation in either direction.

Suitable biasing means, such as the springs 22c and 24c, may be employed to urge the pawl members 22 and 24 respectively into engagement with the ratchet wheel 18.

It will be obvious that oscillation of the lever 20 and pawl tooth 22a about the shaft 16, without bringing the portion 22b into camming relation with the detent pawl releasing portion 24b, will rotate the ratchet wheel 18 and with it the pinion 17 in a clockwise direction as viewed in Figure 4, or counter-clockwise as viewed in Figure 2.

A guide plate 26 is secured by bolts or in any other suitable manner to the outer or forward faces of the flanges 13 above the cut-out portion 14. Upper and lower guide blocks 27 and 28, respectively, are secured between the members 10 and 11, one above and one below the pinion 17. The guide plate 26 and guide blocks 27 and 28 form with the webs of the members 10 and 11 a guideway in which is disposed for longitudinal movement a rack bar 29, the teeth of which mesh with the teeth of the pinion 17. The rack bar 29 serves as a ram for the press, and is moved downwardly for its pressing stroke by rotation of the pinion in a counter-clockwise direction, as viewed in Figure 3. A presser plate 30 is secured to the bottom or pressing end of the rack bar 29.

To the upper end of the rack bar 29 is secured a piston 31 comprising a rigid disk 32, a flexible washer 33 of leather or similar material and a rigid washer 34, the flexible washer 33 being clamped between the disk 32 and the washer 34 by any suitable means, such as nuts 35 screwed on the end of the piston extension 36 of the rack bar 29.

Secured to the upper edges of the guide plate 26, guide block 27, and members 10 and 11 by welding or any other suitable manner is a plate 37 with an aperture 38 through which the rack bar 29 extends, and secured to the apertured plate 37 is a cylinder base plate 39 having a threaded collar 40 surrounding a central aperture 41. The plates 37 and 39 may be secured together by bolts or other suitable means. A cylinder 42 externally threaded at each end is secured to the base plate 39 by screwing into the collar 40. As will be evident from Figure 3, the cylinder 42 receives the piston 31 therein with a snug fit as to the flexible washer 33.

On the upper end of the cylinder 42 is screwed an apertured cross-head plate 43, and a cap 44

having a restricted vent opening 45 is also screwed on the upper end of the cylinder 42 over the plate 43. The cap 44 closes the upper end of the cylinder except for the vent 45. Depending from the plate 43 are hooks 46, and extending upwardly from the upper surface of the presser plate 30 are similar hooks 47. Between each hook 46 and a corresponding hook 47 extends a spring 48. Two such springs are shown, although it will be obvious that the number of springs employed may vary. The springs 48 bias the presser plate 30 and rack bar 29 upwardly, and cause retraction thereof when the rack bar 29 is not held against upward movement. It will be obvious that the piston 31 and cylinder 42 comprise a dash pot arrangement to cushion the retraction or return stroke of the rack bar 29 under the action of the springs 48.

The flanges 13 adjacent the springs 48 are reduced, and the plates 37 and 39 have their edges recessed adjacent the springs 48, so as to clear the springs and prevent binding or scraping thereof.

Secured to the upper edges of the members 10 and 11 and flanges 13 at the cut-out portions 14 is a bed or mold platform 49 substantially centered beneath the rack bar 29 and presser plate 30. At the rear portion of the platform 49 and adjacent the side edges thereof a plurality of apertures 50 is provided. Shouldered pins 51 may be inserted in these apertures to act as stops or positioning means for a receptacle containing material to be pressed, such as the mold 52. The number and location of the apertures 50 may of course be varied as desired or as dictated by the different dimensions of varying receptacles employed with the press. As shown in Figure 7, the pins 51 are placed in apertures 50 so that two rear pins are engaged by the rear wall of a container indicated by the dash line, and a side pin is engaged by each side of the receptacle, which is thus centrally positioned beneath the presser plate 30 and held against accidental displacement from that position. The dotted lines in Figure 7 indicate the insertion of the pins 51 in others of the apertures 50 for the positioning of a longer and narrower receptacle than that indicated by the dash line.

Pins 53 may be provided on the upper surface of the presser plate 30 for the securement of spring lifting levers 54. These levers 54 are employed to stretch and position springs utilized to hold a mold and a cover or follower together under spring pressure, so as to hold the meat or other material in the mold under a desired pressure while it is being processed.

The spring lifting levers 54 each comprise a fulcrum portion 55 having a tubular portion 56 at one end and having pivotally secured at the other end an end of a lever arm 57 which may have a suitable handle or grip portion (not shown) at its other end. A yoke or forked member 58 has its arms straddling the lever arm 57 with a roller 59 rotatably mounted between the upper ends of the yoke arms to roll on the upper surface of the lever arm 57. Depending from the bight of the U-shaped or yoke member 58 is a hook 60. The spring lifting lever 54 is mounted on the press by slipping the tubular portion 56 over the pin 53, and it may be secured on the pin 53 in any suitable manner, as by a cotter pin 61. It will be obvious that the lifting lever 54 may rotate about the pin 53.

The use of the spring lifting levers 54 is most clearly illustrated in Figure 6. The mold 52

containing material M to be pressed, such as a boned ham, is provided with a vertical tubular guide sleeve at each end, indicated at 62. A cover member 63 is inserted in the mold on the material M. Secured to the upper surface of the cover member 63 in spaced relation thereto is a pressing bar 64 longer than the mold, so that the ends thereof extend beyond the ends of the mold and beyond the guide sleeves 62. Adjacent each end the pressing bar 64 has a depending guide stud 65 having a sliding fit in the guide sleeve 62. A slot 66 is formed in each end of the pressing bar 64.

At each end of the mold 52, a spring 67 has one end 67a hooked in the bottom end of the guide sleeve 62, and its other end formed as a loop 67b surmounting a straight portion 67c extending from the coils of the spring. After the material M has been compressed by a press acting on the cover member 63 through the pressure bar 64, it is maintained under desired pressure by stretching springs 67 to slide the straight portions 67c of the springs into the slots 66 with the loops 67b bearing on the upper edges of the slots. This is clearly shown at the left in Figure 6.

At the right in Figure 6, the operation of the spring lifting lever 54 in accomplishing the desired positioning of the spring 67 is clearly shown. The lever arm 57 is lowered as may be necessary and the hook 60 is engaged in the loop 67b. The lever arm 57 is then raised, thus stretching the spring 67 sufficiently to bring the loop 67b above the upper surface of the presser bar 64. The straight portion 67c of the spring and the slot 66 are brought into alignment by rotation of the lever 54 about the pin 53, if necessary. The inclination of the lever arm 57 when the desired height is reached, and the tension of the spring 67, result in the yoke member 58 moving toward the fulcrum portion 55, by means of the roller 59. This movement of the yoke member 58 carries the straight portion 67c of the spring into the slot 66, and the hook 60 may now be removed from the loop 67b, since the tension of the spring is now borne by the loop engaged above the slot.

The operation of the press should be clear from the foregoing description. With the ram or rack bar 29 and its presser plate 30 in retracted position, the ratchet may be operated to rotate the pinion 17 in a counter-clockwise direction as viewed in Figure 3, thus moving the presser plate 30 downwardly until the extreme pressing position is reached. The engagement of the disk 32 of the piston 31 against the plate 37 limits the downward movement.

The ratchet arrangement of course, permits the presser plate 30 to be moved downwardly to any point between its retracted and extreme pressing positions, but a feature of this invention is the uniformity of pressure achieved by means of the fixed molding platform 49 and the movement of the presser plate to its extreme pressing position above the platform. Regardless of differences in strength of press operators, uniform pressure is applied to the material M.

As the presser plate 30 moves downwardly, it engages the presser bar 64 of the mold cover member 63 arranged in relation to the mold as previously described, and compresses the material M in the mold; the guide sleeves 62 and guide bars 65 insuring proper relative movement between the cover and mold, and when the presser plate 30 has reached its extreme pressing position the material M is under the desired pres-

sure. The springs 67 may then be applied as already described, and the ratchet lever 20 moved clockwise as viewed in Figure 2 to release the detent pawl 24a as previously described, thus permitting retraction of the presser plate 30 by the springs 48. The mold with its cover member may then be removed and conveyed to apparatus for processing the material M.

It will, of course, be understood that various details of construction may be varied through a wide range without departing from the principles of this invention and it is, therefore, not the purpose to limit the patent granted hereon otherwise than necessitated by the scope of the appended claims.

What I claim is:

1. A press comprising a pair of supports, a bracket on one of said supports, a platform carried by said supports and permanently fixed thereto, a rack bar, a pinion meshing with said rack bar, a ratchet wheel mounted for co-rotation with said pinion, a lever pivoted to said bracket, a pawl pivoted on said lever to actuate said ratchet wheel, a releasable keeper pivoted to said bracket normally engaging said ratchet wheel, resilient means biasing said rack bar toward retracted position, a dashpot cylinder having a vent opening, a piston on said rack bar reciprocable in said cylinder, stop means including said piston adapted to keep the rack bar from going past the full pressing position, and a plate on the pressing end of said rack bar spaced from said platform when the rack bar is in full pressing position.

2. A mold press comprising a support, a table fixed on said support to hold a mold containing material to be pressed, a ram, a presser plate on one end of said ram, a cylinder with a closed end having a vent therein, a piston on the other end of said ram working in said cylinder, means for moving said ram to extreme pressing position, and means including said piston limiting said pressing movement to hold said presser plate spaced from said table when said ram is in its extreme pressing position, whereby the same pressure is applied to a given quantity of material upon each operation of the press.

3. A press comprising support means including a pair of spaced members, a cover plate bridging the space between said members, a pair of spaced blocks between said members having aligned faces parallel to said cover plate, said members, cover plate and blocks providing a guideway, a rack bar disposed in said guideway, a pinion disposed between said blocks engaging said rack bar, means to rotate said pinion to move the rack bar in one direction, resilient means to move the rack bar in the other direction, a dashpot cylinder adjacent one end of the rack bar, a piston in said cylinder secured to said end, a presser plate on the other end of the rack bar, and a mold platform on said support means disposed parallel to said presser plate, said platform having adjustable means for positioning a receptacle containing material to be pressed.

4. In a press, in combination, support means with a platform permanently attached thereto; a reciprocable ram, means to move said ram to pressing position, detent means to prevent movement of the ram to retracted position, means to release said detent means, means biasing said ram toward retracted position and operable upon release of said detent means to move the ram to retracted position, means to cushion retracting movement of the ram including a dashpot

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cylinder and a piston in said cylinder rigidly connected to said ram, and stop means adjacent said cylinder engageable by said piston to limit pressing movement of said ram.

5 5. A molding press comprising a support structure, a platform carried by said structure to support a mold, adjustable locating means on said platform to position a mold thereon, a guideway in said structure, a ram perpendicular to said platform extending through said guideway, gear teeth on said ram, a pinion meshing with said ram gear teeth, a ratchet wheel secured to said pinion for corotation therewith, a first pawl member for rotating said ratchet wheel in one direction to impart pressing movement to said ram, a second pawl member for holding the ratchet wheel against rotation in the other direction, said first pawl member being engageable with said second pawl member to move the same for permitting movement of the ratchet wheel in either direction, resilient means to retract said ram upon said movement of said second pawl member, a cylinder on said support structure remote from said platform, a piston on said ram working in said cylinder to cushion retraction of the ram, and an abutment between the cylinder and the platform engageable by said piston upon pressing movement of the ram to terminate said pressing movement short of said platform.

6. In a press, in combination, a ram, means to impart pressing movement to said ram, means to retract said ram, a presser plate on the pressing end of said ram, a platform below said presser plate to receive a receptacle containing material to be pressed, adjustable means on said platform to position a receptacle beneath said presser plate, a lever pivotally mounted on said presser plate for rotation in a plane parallel thereto and also in a plane normal thereto, and catching means carried on said lever freely movable longitudinal thereof, said lever and catching means cooperating to apply to said receptacle when positioned on said platform after the material therein has been pressed resilient means under tension for maintaining the material under pressure.

7. In a press, in combination, a pressing element, means for actuating said element, means for retracting said element, a press bed having adjustable positioning means to hold in desired relation to said pressing element a receptacle of material to be pressed having a cover member, a lever mounted on said pressing element for rotation parallel to and also normal to said press bed, and engaging means freely movable on said lever and coacting therewith to apply resilient means under tension to said receptacle and cover to maintain said material under pressure, said pressing element and said positioning means maintaining said receptacle in position during the operation of said lever and engaging means.

8. In a press for compacting meat in a molding pan, a supporting platform having a top surface on which a molding pan may be placed, a ram above the platform for insertion in the open side of the pan, said platform including adjustable means for positioning the pan in alignment with the ram, a stop means attached to said ram to terminate pressing movement short of said platform, a jack mechanism connecting to said ram, and bracket means extending upward from, permanently attached thereto, and carrying said platform and on which said stop means,

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ram and jack mechanism are carried, said bracket means being formed for attachment to a wall to locate the platform and jack mechanism at a height suitable for ready manual manipulation of the pan and of the jack mechanism.

9. In a press, a movable platen, means for actuating said platen, and for retracting said platen, a mold platform, an adjustable positioning means on said platform to position a receptacle beneath said platen, said receptacle adapted to contain material to be pressed, resilient means for holding the material in a compressed condition after the pressing operation, means on said receptacle for attachably receiving said resilient means, and means carried by said movable platen for assisting in the attaching of said resilient means to said receptacle.

10. In a press, in combination, a ram, means for imparting pressing movement to said ram, and for retracting said ram, a pressure plate on the pressing end of said ram, a platform below said pressure plate to receive a receptacle adapted to contain material to be pressed, adjustable means on said platform to position a receptacle beneath said pressure plate, a resilient means and a movable element mounted on said pressure plate for swinging movement relative to said plate, said movable element being operable to apply said resilient means to said receptacle on said platform after the material therein has been pressed, for maintaining the pressed material under resilient pressure after retraction of said pressure plate.

11. In a press, in combination, a movable platen, means for actuating said platen, and for retracting said platen, a mold platform, adjustable positioning means on said mold platform, a receptacle for material to be pressed having a cover member, said adjustable positioning means holding said receptacle in desired relation to said movable platen, a movable element mounted on said movable platen having engaging means thereon, and a resilient means, said movable element and said engaging means coacting to apply said resilient means under tension to said receptacle and cover to maintain said pressed material under resilient pressure after retraction of said platen and said positioning means also centering said receptacle to receive said resilient means under tension.

12. In a press including a support on which work to be compressed can be carried and a movable platen for engaging and compressing said work, means carried by the movable platen operable after the pressing operation for engaging spring means with the work to resiliently hold said work in its compressed condition, said means including a movable element on the platen, and a resilient element attached to one end of the work and movable by said moving element into engagement at its other end with the work to hold the work in compressed condition upon retraction of the platen, said support having positioning means for maintaining said work in desired relation to said movable platen and also maintaining said work in desired relation to receive said resilient holding means.

13. In combination in a mold press, a support adapted for mounting on a wall or the like, a table on said support, a mold on said table adapted to receive material to be pressed, adjustable means on said table to retain said mold in a predetermined relation thereto, cooperable gear elements, means including a fluid pressure cylinder connected to a first gear element, a

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presser plate connected to a second gear element, means for rotating said second gear element in one direction to move said presser plate toward said table, other means including said first gear to move said presser plate away from said table, means including said cylinder for limiting said pressing movement and to hold said presser plate spaced from said table when said second gear element is in extreme pressing position so that the same pressure is applied to a given quantity of material in the mold upon each operation of the press, a movable element on said plate having engaging means thereon, a resilient element, and means on said mold to receive said resilient element, said movable element and said engaging means cooperable in the attaching of said resilient member under tension to said mold to hold said material in compressed condition upon retraction of the presser plate, said adjustable means on said table positioning said mold so as to be in proper relation to said presser plate and also in proper relation to said means for attaching said resilient element under tension.

14. A press including a support on which work to be compressed can be carried, a movable platen for engaging and compressing said work, lever means carried by the movable platen and a clamping means operable by the lever means after the pressing operation for engaging the clamping means with the work to hold the work in a compressed condition, said clamping means including a spring element attached to one end of the work and movable by said moving lever into engagement at its other end with the work to resiliently hold the work in a compressed condition upon retraction of the platen.

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15. In a press, a movable platen, means for actuating said platen and for retracting said platen, a mold platform directly beneath said movable platform for receiving a receptacle adapted to retain the material to be pressed, linkage means for holding material in a compressed condition after the pressing operation, means on said receptacle for attachably receiving said linkage means, and means carried by said movable platen for assisting in the attaching of said linkage means to said receptacle.

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