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Dohm, Jr.

[11] **3,901,140**

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[54] **BACON PRESS WITH SLAB EJECTOR**

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[73] Assignee: **Cashin Systems Corporation**, Long Island City, N.Y.

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[52] **U.S. Cl.** ..... **100/53**; 100/218; 100/232; 100/269 R; 100/DIG. 10; 425/444

[51] **Int. Cl.**[2] **B30B 15/16**; B30B 15/32

[58] **Field of Search** ..... 100/218, 232, DIG. 10, 100/42, 53, 269 R; 425/352, 444

[56] **References Cited**

UNITED STATES PATENTS

2,229,862	1/1941	Menges	100/232
2,850,966	9/1958	Dohm	100/232
2,985,101	5/1961	Hillstrom	100/232 X
3,146,697	9/1964	Dohm et al.	100/53
3,285,161	11/1966	Clemens et al.	100/232 X
3,285,162	11/1966	Schneider et al.	100/42

Primary Examiner—Billy J. Wilhite

Attorney, Agent, or Firm—Koenig, Senniger, Powers and Leavitt

[57] **ABSTRACT**

A press for compressing slabs of bacon or the like including a base, a plurality of platens carried by the base forming a chamber adapted for heightwise, lateral and endwise compression of a slab of bacon placed in the chamber to a desired thickness. One of the platens, constituting a rear platen, is stationary relative to the base and the other platens are movable relative to the stationary rear platen and relative to one another for compressing and molding the bacon slab. The forward end platen is movable to a retracted or displaced position clear of the forward end of the chamber. Ejection means are carried by the stationary rear platen including a pusher forming a part of the rear platen, the pusher being movable forwardly therefrom for pushing the molded bacon slab forwardly out of the chamber so as to enable an operator standing at an operating station readily to remove the compressed bacon slab without having to reach into the chamber or to move from his operating position.

8 Claims, 5 Drawing Figures

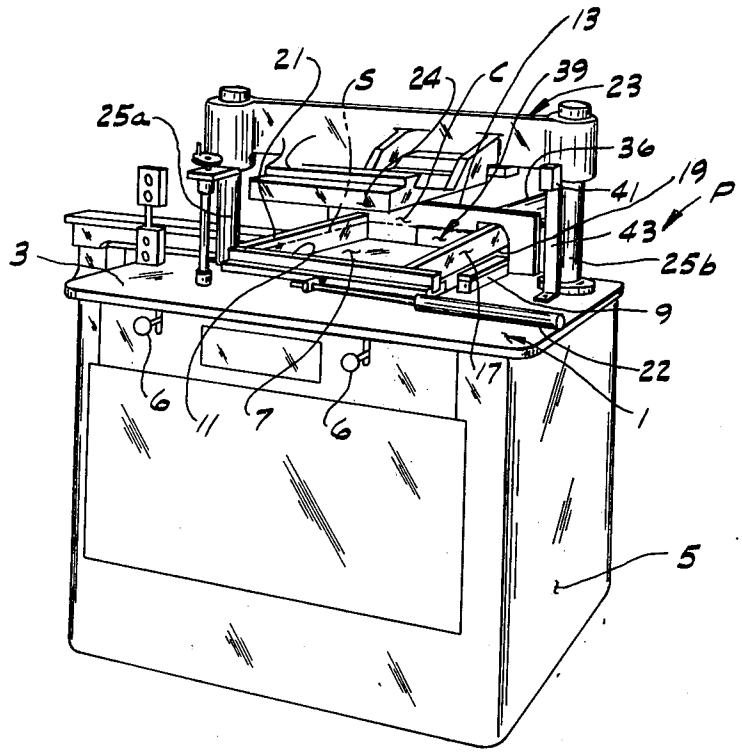


FIG. 1

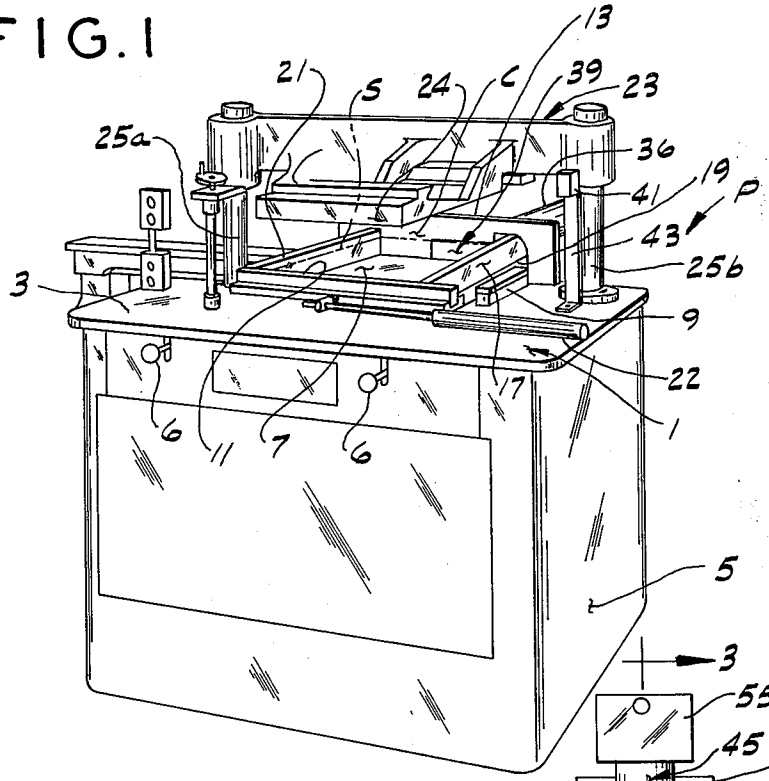
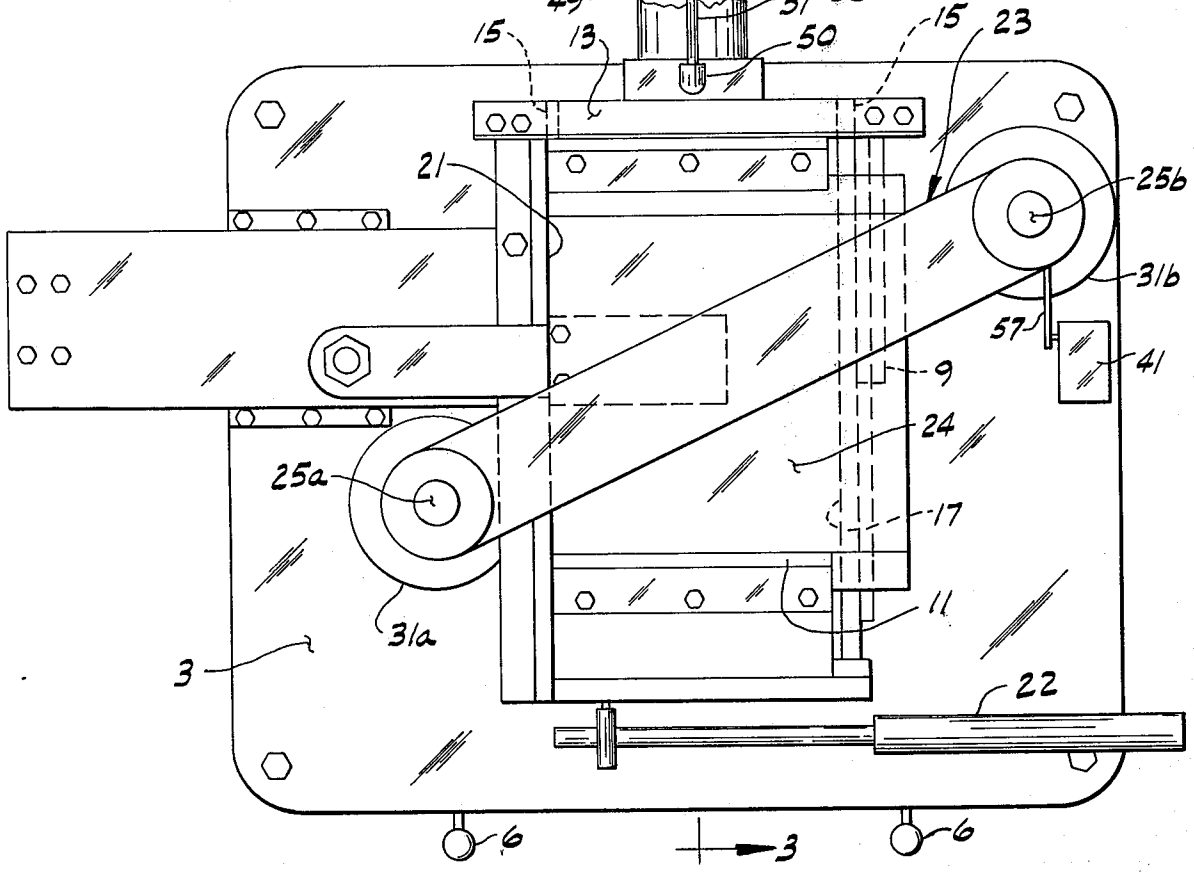

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FIG. 2


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31a
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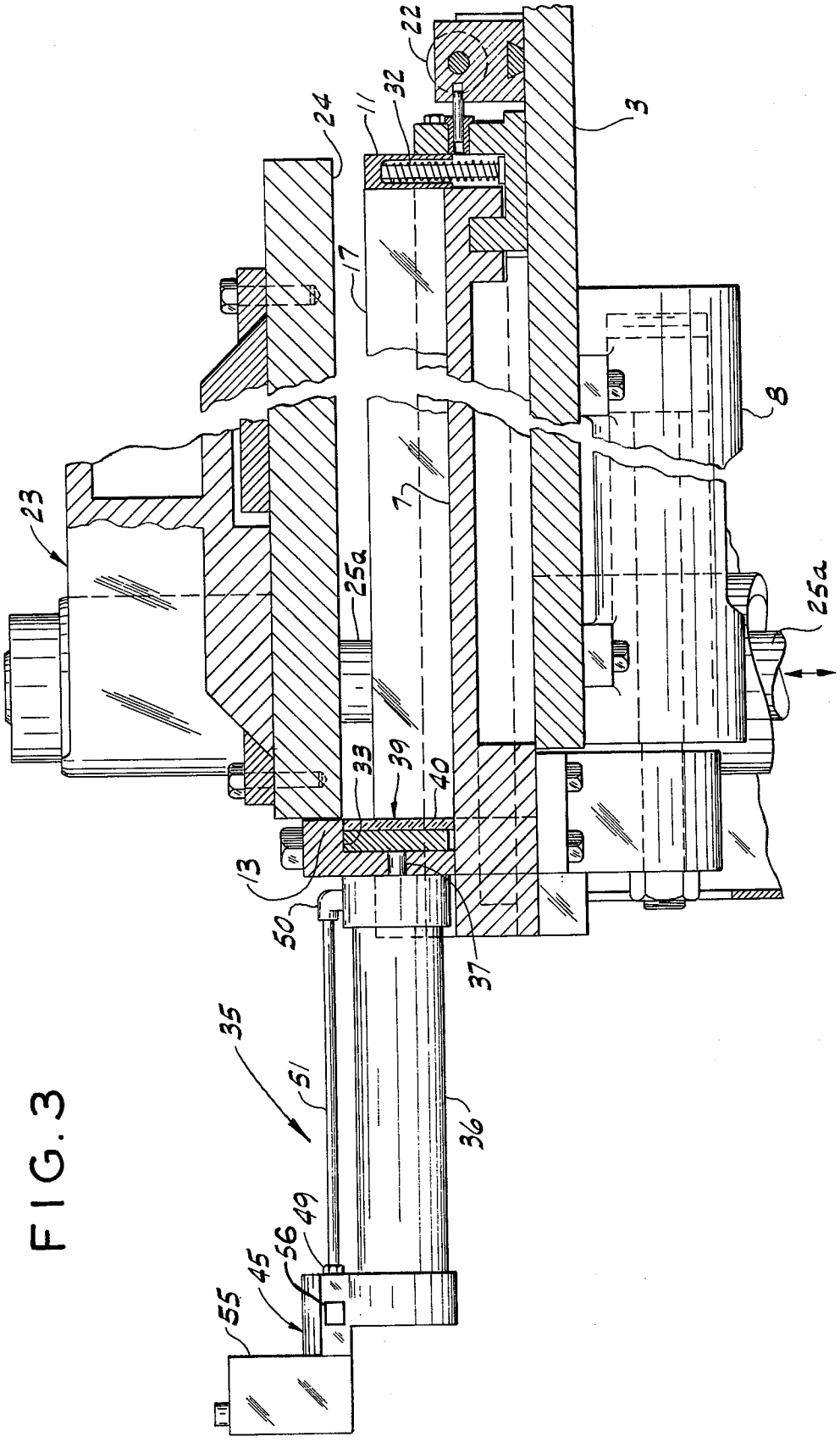


FIG. 3

FIG. 4

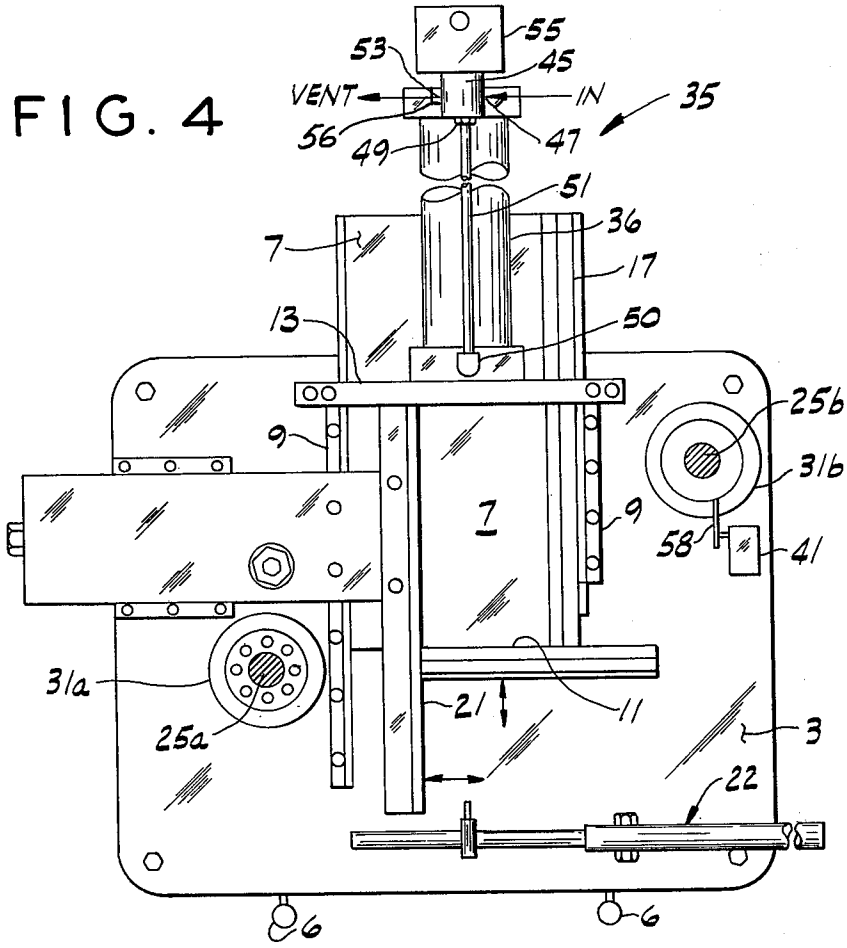
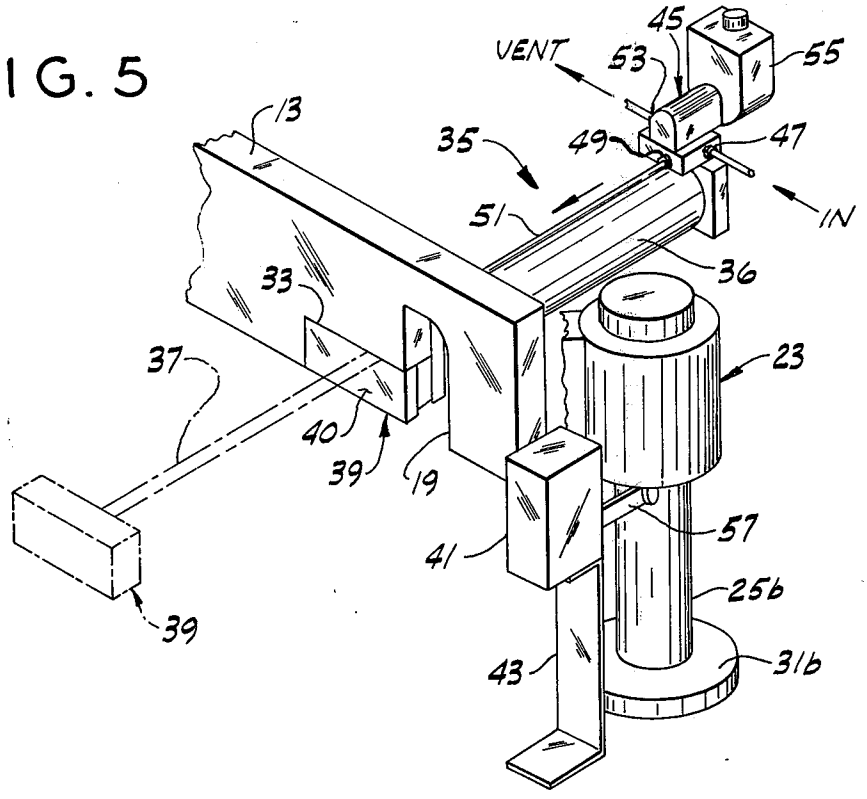

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FIG. 5


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25b
43
31b
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BACON PRESS WITH SLAB EJECTOR

BACKGROUND OF THE INVENTION

This invention relates generally to presses, and more particularly to a press for compressing a bacon slab to flatten it to a uniform thickness and to square its ends, whereby uniform slices may be obtained and waste eliminated.

The press of this invention is an improvement of my earlier bacon press described in U.S. Pat. No. **2,850,966** having six platens defining an expansible and contractible bacon compressing and molding chamber, the rearward end platen being stationary while the other five platens are movable relative to one another and to the stationary rear platen so as to compress and mold a bacon slab in the chamber for subsequent slicing. With the bacon press of the above-mentioned prior patent, it was necessary for the press operator to reach his hands into the molding chamber to grasp and remove a molded bacon slab therefrom.

A problem inherent in the known prior art presses has been the removal of molded bacon slabs from the compressing chamber. Often during compressing, the bacon slab tends to stick to the platens making removal difficult. In some cases the operator may use excessive force in removing the slab resulting in stretching of the slab. In some instances, hand tools (e.g., a hook) may be used by the operator to remove the slab. These hand tools may damage the bacon.

Reference may also be made to the coassigned U.S. Pat. No. **3,146,697** and to U.S. Pat. No. **3,285,162** disclosing a bacon press in the same general field as the bacon press of the present invention.

SUMMARY OF THE INVENTION

Among the several objects of this invention may be noted the provision of an improved press for molding slabs of bacon in which the molded slabs are at least partially ejected from the front of the press into the reach of an operator standing at an operator's station for removal of the molded slab by the operator without requiring that the operator move from his station for removal of the molded slabs; the provision of such an improved press which speeds production of molded bacon slabs; and the provision of such an improved press which is relatively safe in operation, which is easy to clean, and which is reliable in operation. Other objects and features of this invention will be in part apparent and in part pointed out hereinafter.

Briefly, the improved press of this invention has a base, controls for operating the press located at the forward end of the base, a plurality of platens movable relative to the base and to one another defining an expansible and contractible six-sided molding chamber adapted to compress and mold a slab of bacon heightwise, laterally, and endwise. One of the platens constitutes a rear platen and is stationary on the base with the other platens being movable relative to the rear platen to contract the molding chamber for molding of the bacon slab. The forward platen opposite the rear platen is movable to a displaced position clear of the forward end of the chamber. In accordance with this invention, ejection means are mounted adjacent the rear platen, this ejecting means including means forming part of the rear platen and being movable forwardly therefrom for pushing the molded bacon slab forwardly out of the forward end of the molding chamber so that the forward end of the molded bacon slab extends out of the chamber.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an improved bacon press of this invention;

FIG. 2 is a plan view of the press;

FIG. 3 is an enlarged section taken on line 3—3 of FIG. 2;

FIG. 4 is a plan view similar to FIG. 2 but illustrating a bottom platen of the press moved rearwardly relative to the base of the press and a side platen and the forward platen moved laterally relative to the bottom platen for effecting lateral and endwise compression of a bacon slab; and

FIG. 5 is an enlarged perspective view of the rear platen of the press with certain parts omitted illustrating details of means for ejecting a molded bacon slab from the press.

Corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, an improved bacon press of this invention, indicated in its entirety at P, compresses and molds bacon slabs S (shown in phantom in FIG. 1) for heightwise, lateral and endwise compressing of the bacon slab. Press P is generally the same as the press shown in the aforementioned U.S. Pat. No. **2,850,966** with certain improvements as will appear. Press P is provided with a fixed bed **1** including a top plate **3** and a cabinet **5**. Dual controls or handoperated hydraulic valves **6** are provided at the front of the machine for operation by both hands of an operator standing at an operator's station generally between the valves to initiate a compression cycle of the press.

At **7** is indicated a bottom platen which is slidably movable on top plate **3** in a fore-and-aft direction by means of a hydraulic cylinder **8** (see FIG. 3) or the like. This bottom platen is guided and retained on top plate **3** by gibs **9**. A forward end platen **11** is positioned at the front end of the bottom platen. This platen being depressible downwardly in a manner as will appear and being movable either sidewise or downwardly to a retracted or displaced position clear of the front end of the bottom plate for purposes as will appear. At **13** is indicated a stationary end abutment fixed on top of plate **3** at the rear edge thereof. This stationary end abutment is notched, as indicated at **15** (see FIG. 2), to accommodate a side platen **17** carried by bottom platen **7** and to allow both to slide fore and aft therebelow. Forward end platen **11** is movable rearwardly with the bottom platen toward the stationary end abutment to a position (as shown in FIG. 4) for endwise compression of a bacon slab S between forward end platen **11** and the stationary rear end abutment or platen **13**. Side abutment **17** is carried by bottom platen **7** and is movable front to rear along with the bottom platen. Side abutment **17** is fixed against lateral movement relative to the bottom platen. As indicated at **19** (see FIGS. **1** and **5**), stationary abutment or platen **13** is notched to allow for sliding movement of side platen **17** with the bottom platen. At **21** is indicated a pressure applying side platen which extends parallel to the first-

mentioned side platen 17 and which is mounted for movement from a sidewise retracted position (shown in FIGS. 1 and 2) to a compressing position (see FIG. 4) toward side abutment 17 by means of a hydraulic cylinder (not shown herein, but fully described in U.S. Pat. No. 2,850,966) for lateral compression of the bacon slab S between side platens 21 and 17.

Front platen 11 is movable sidewise relative to the bottom platen 7 by inward movement of side platen 21. This sidewise movement of front platen 11 is best shown in FIG. 4. As previously mentioned, front platen 11 is movable to a retracted position. An air cylinder 22, similar to that shown in the above-mentioned U.S. Pat. No. 2,850,966 is provided for moving the front platen sidewise relative to the bottom platen from a compressing position in which it is positioned in front of rear platen 7 to its retracted position.

Alternatively, front platen 11 may be moved to a retracted position below the upper face of bottom platen 7 by retracting the front platen downwardly into a groove at the forward end of the bottom platen in a manner as taught by the coassigned U.S. Pat. No. 3,146,697.

At 23 is indicated a press head mounted for vertical movement toward and away from the top plate 3 of the press. This press head includes a top platen 24 located above bottom platen 7 with head 23 being fixed on the upper ends of a pair of piston rods 25*a*,25*b* which extend up from a pair of hydraulic cylinders (not shown) within cabinet 5 and which effect up-and-down movement of the upper platen for heightwise compression of bacon slab S. In FIG. 2, it will noted that piston rod 25*a* is located to the left side of the bottom platen 7 somewhat forward of the lateral center line of top plate 3, and the other rod 25*b* is located on the other side of bottom platen 7 toward the rear of the top plate so that the plane of the piston rods is angled with respect to the fore-and-after movement of the bottom platen. This locates the center of top platen 24 generally in vertical alignment with the center of a slab S which has been molded. Pistons rods 25*a*,25*b* extend upward from the top of plate 3 through respective cylindric guides 31*a*,31*b* fastened to the top plate. Front platen 11 and side platen 17 are each vertically depressible into respective grooves in bottom platen 7 when contacted by the upper platen 24 and thus move downwardly when the upper platen is lowered to compress a bacon slab. As best shown in FIG. 3, front platen 11 is biased upwardly by springs 32. Side platen 17 is similarly spring loaded upwardly by springs (not shown). Thus, bottom platen 7, fixed abutment or platen 13, front platen 11, side platens 17 and 21, and top platen 24 define a contractible and expansible, six-sided molding chamber C in which slabs of bacon S may be molded and compressed heightwise, laterally and endwise.

Reference may be made to the above-mentioned U.S. Pat. No. 2,850,966 for a detailed description of the various means for moving bottom platen 7 fore and aft to compress slabs S, for moving side platen 21 to laterally compress the slab, and for moving top platen 24 for vertically compressing the slab. The hydraulic and electrical circuits for actuating these means are also described in the above-mentioned patent.

In accordance with this invention, stationary rear abutment or platen 13 is provided with a recessed opening 33 therein adjacent the bottom platen 7. An ejector mechanism, indicated in its entirety at 35, is secured to the rear face of stationary abutment 13 adjacent opening 33 therein. Ejector mechanism 35 is shown to be a fluid power unit or air cylinder 36 having a piston rod or push rod 37 with a push or ejector plate 39 affixed to the outer end thereof. The push plate has a front face 40 of nylon or other suitable material, and is substantially of the same size and shape as opening 33 so as to fit flush therein in a retracted position with its front face 40 in the same plane as the front or inner face of the rear abutment so as to form a portion of the rear abutment and to effect endwise compression of the slab S in chamber C when the bottom platen is moved rearwardly. Air cylinder 36 is operable to extend its push rod 37 at a controlled rate of movement and to thus move push plate 39 from a retracted position in which the push plate is received in opening 33 with front face 40 flush with the inner face of abutment 13 into chamber C and slide it across the upper face of bottom platen 7 to a forward slab ejecting position (as shown in FIG. 5) within chamber C. After a predetermined length of time, air cylinder 36 is actuated to return the push plate to its retracted position. In FIG. 3 it will be noted that face 40 extends slightly below pusher plate 39 and serves as a sliding bearing surface as the pusher slides fore-and-aft on bottom platen 7 between its ejecting and retracted positions.

Movement of pusher plate 39 is automatically controlled in timed relation to movement of press head 23 during operation of the press. More particularly, a switch 41 (e.g., a cam-operated microswitch) is supported by a bracket 43 secured to top plate 3 adjacent piston rod 25*b* (as shown in FIGS. 1 and 2) for actuation by the press head as the latter is raised and lowered. A threeway solenoid air valve 45 is provided having an inlet port 47 which is connected to a compressed air source, a first outlet port (not shown) connected to an inlet port in the cap end of air cylinder 36 for admitting compressed air into the air cylinder to extend its piston rod 37, a second outlet port 49 connected to a port 50 in the rod end of the air cylinder via a line 51 for admitting compressed air to the rod end of the cylinder so as to retract piston rod 37, and a vent port 53 for venting air either from the rod or cap end of the air cylinder. Solenoid 45 is provided with a timer 55 which, after energization of the solenoid valve to admit pressurized air into the cap end of the air cylinder for extending piston rod 37 and push plate 39 to their stated ejecting position and after a time sufficient to allow the push plate to reach its ejecting position, deenergizes the solenoid valve so as to shift its spool and to vent the cap end of the air cylinder and to admit compressed air into the rod end of the cylinder via port 49 and line 51 to retract push plate 39 to its retracted position. A silencer 56 is threaded into vent port 53. This silencer is provided with a throttle or metering valve to control the flow of air from the vent port. Thus by adjusting this metering valve, the flow of air from air cylinder 36 may be regulated and hence the rate of travel of pusher 39 may be adjusted. It will be understood that timer 55 is adjustable to permit adjustment of the above-mentioned time interval and by so adjusting the time interval, the stroke of the push plate may be varied.

More particularly, switch 41 is shown to have an actuating arm 57 positioned adjacent piston rod 25b so as to be engaged by press head 23 as the latter is raised and lowered by the piston rods. It will be understood

that switch 41 is electrically connected to solenoid valve 45 in a conventional manner so as to operate the solenoid valve in a manner as will be described hereinafter.

In operation of press P, an operator standing at an operator's position at the forward end of the press actuates dual control valves 6 to initiate a bacon slab compressing cycle of the press. During the compression cycle, bottom platen 7 is movable rearwardly on top plate 3 in response to actuation of hydraulic cylinder 8. The forward end platen 11, when in its compressing position, is movable rearwardly with the bottom platen 7 through notch 19 in stationary end abutment 13. Side abutment 17 is also movable rearwardly with bottom platen 7. Side platen 21 is laterally movable toward abutment 17 thereby to compress the sides of the bacon slab, and as heretofore described one end of front platen 11 (its left end as viewed in FIG. 4) is engageable by and is movable with side platen 21 as the latter moves toward its compressing position. Simultaneously with movement of the bottom platen 7 and side platen 21, press head 23 is lowered to bring top platen 24 down into engagement with the upper face of the bacon slab so as to compress the thickness of the slab. Thus, the various abutments and platens forming the walls of the compression chamber C all move relative to the stationary rear abutment 13 toward their respective compressing positions as to effect compressing of the bacon in heightwise, lateral and endwise directions.

Upon applying a predetermined amount of compressive force to the bacon slab, the various abutments and platens are returned to their retracted positions. As press head 23 is raised to its retracted position, air cylinder 22 is actuated to move front platen 11 sidewise to its displaced position clear of the front of compression chamber C. As the press head and top platen 24 attain their fully retracted position, they move clear of actuating arm 57 of switch 41 thus tripping the switch and energizing solenoid valve 45 and timer 55. Upon energization of the solenoid valve, compressed air is admitted into the cap end of air cylinder 36 to thus extend its piston rod at a controllable speed and to move push plate 39 from its retracted position to its ejecting position and to thus at least partially eject slab S endwise from compression chamber C. With the forward end of the bacon slab extending out beyond the forward end of the compression chamber, an operator standing at an operator's station generally between control valves 6 at the forward end of the press P may conveniently grip the portion of the molded bacon slab extending from the chamber and thus remove it from the press. This eliminates the necessity of having the operator reach his hands into the compression chamber and thus reduces the time required to load and unload the press and thus increases production. Additionally, by eliminating the necessity for the operator to reach into the compression chamber, the apparatus of this invention is rendered safer because the possibility of injury to the operator is lessened.

After a predetermined time interval, as controlled by timer 55, solenoid valve 45 is deenergized by the timer thus venting the cap end of air cylinder 36 and admitting compressed air into the rod end of the air cylinder via line 51 so as to retract piston rod 37 and to return push plate 39 to its retracted position within opening 33 in rear abutment 13. Upon the return of the push plate to its retracted position, press P is again ready to receive another slab for compression and molding.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As various changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. In a press having a fixed bed, controls for operating the press located at one end thereof constituting the forward end of the press and thus defining an operator's station where an operator stands to operate the press, a plurality of platens defining a chamber in which a slab of bacon or the like may be molded, means for moving at least one of the platens relative to the others for heightwise, lateral and endwise compression of the slab, one of said platens constituting a rear platen being fixed relative to said bed, another of said platens constituting a front platen adjacent said operating station being movable between a compressing position in which it closes the front of the compressing chamber and a retracted position in which it is clear of the front of the chamber to permit a slab in the chamber to be ejected endwise therefrom, and another of said platens constituting a bottom platen being movable fore and aft relative to said bed below said rear platen, said bottom platen carrying said front platen when the latter is in its compressing position for endwise compression of the slab between said fixed rear platen and said movable front platen; means for at least partially ejecting a slab from the front of the chamber, said ejecting means comprising a fluid power unit secured to the back face of said fixed rear platen and immovable relative to said fixed bed, a piston rod extending through said rear platen, and a pusher carried by said rod, said fixed rear platen having an opening therein for reception of said pusher, the latter being movable between a retracted position in which it is received within said opening in said rear platen and forms a part thereof with its face flush with the face of said rear platen for engagement with the slab and for endwise compression of the slab and a forward ejecting position in which at least the forward end of the molded slab extends out of the chamber.

2. In a press as set forth in claim 1, said fluid power unit having a stroke of such length that the ejected slab extends out through the open forward end of the chamber thereby to be manually grasped by the operator standing at the operator's station for removal of the slab from the molding chamber.

3. In a press as set forth in claim 1 wherein said pusher is movable from its retracted position to its ejecting position across the top face of said bottom platen for ejecting said slab from the chamber.

4. In a press as set forth in claim 3 wherein another of said platens is a top platen movable downwardly to compress said slab in the chamber and movable upwardly to permit ejection of said slab, said fluid power unit being actuable in response to movement of said top platen to its raised position thereby to initiate operation of the ejecting means for ejecting a slab from said chamber.

5. In a press as set forth in claim 4 wherein said ejecting means comprises a solenoid valve actuable to admit fluid under pressure into one end of said fluid power unit thereby to effect movement of said pusher from its retracted to its ejecting position and then to admit fluid under pressure into the other end of said fluid power unit to return the pusher to its retracted position.

6. In a press as set forth in claim 5, said ejecting means further comprising a switch actuable by said top platen as it returns to its raised retracted position thereby to energize said solenoid valve to effect movement of the pusher from its retracted position to its extended position.

7. In a press as set forth in claim 6, said ejecting means further comprising a timer operable to deenergize said solenoid after a predetermined time interval thereby to effect movement of said pusher from its ejecting position to its retracted position.

8. In a press as set forth in claim 3 wherein said fluid cylinder unit is spaced above said bottom platen thereby to permit fore-and-aft movement of the latter.

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