

March 2, 1937.

C. T. WALTER

2,072,694

BELLY PRESS

Filed March 24, 1933

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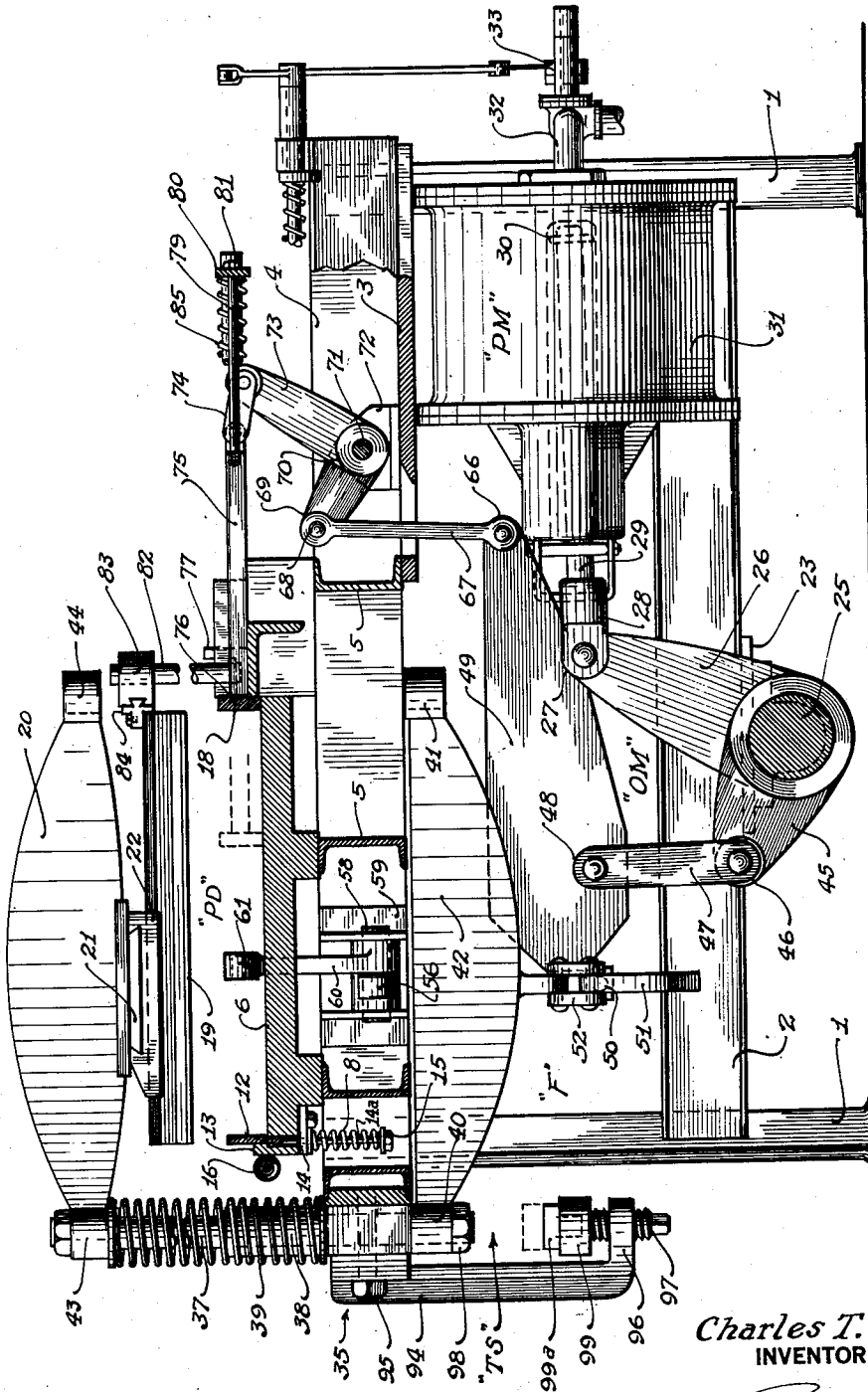


Fig. 1

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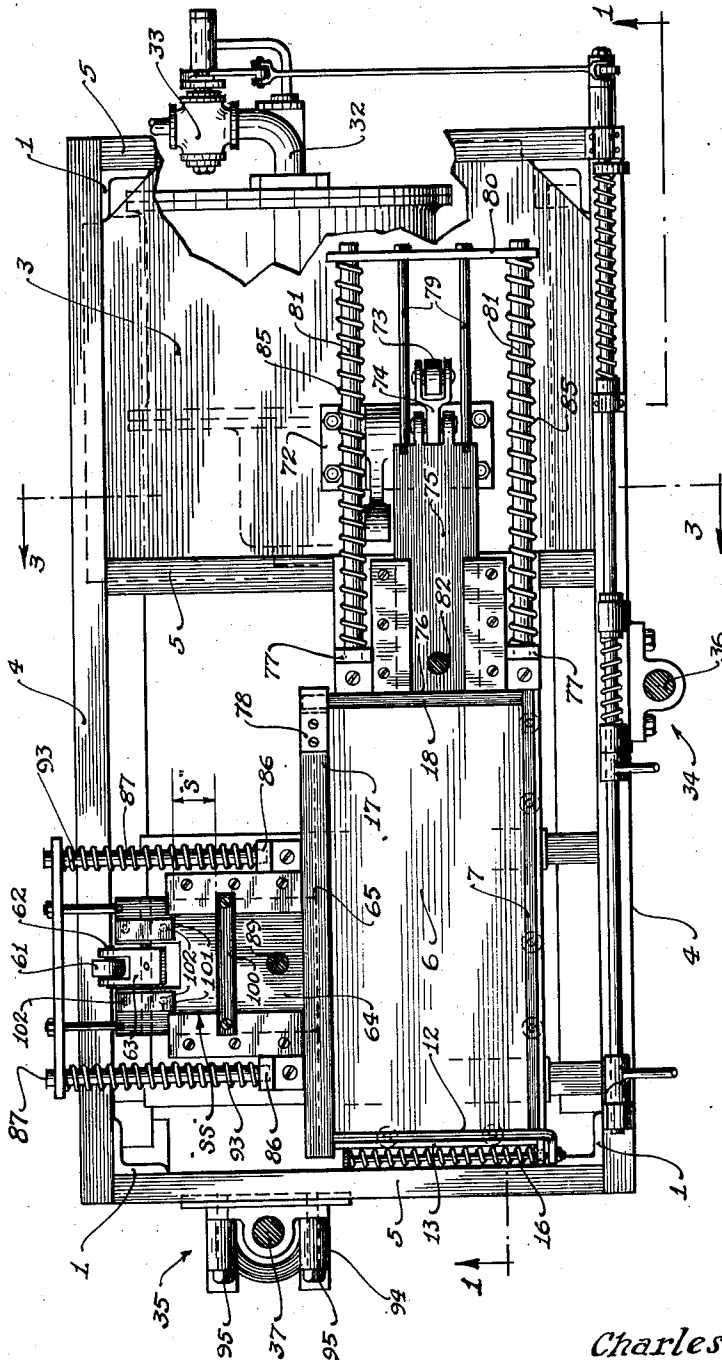


Fig. 2

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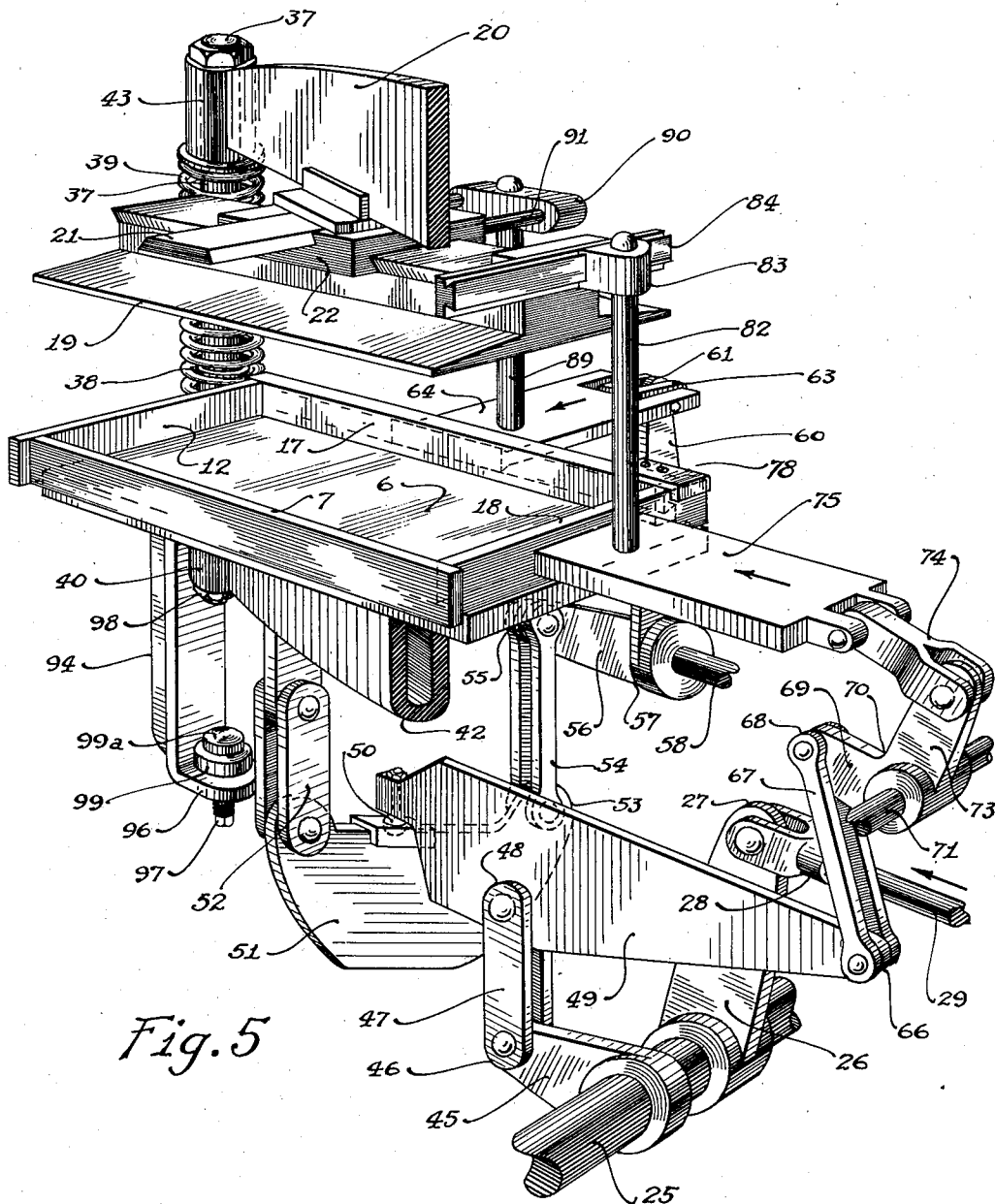
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2,072,694

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Application March 24, 1933, Serial No. 662,496

29 Claims. (Cl. 100—57)

The invention relates and is applicable to a press for general use.

The invention particularly relates to a press for compressing bacon.

According to the invention, there is realized a commercial and practical machine which is simple in operation, efficient, and strong, and in which the parts are arranged so as to simultaneously apply downward pressure to a top portion of a body being pressed or compacted, such as the large top portion of a bacon slab; lateral or transverse pressure to a side or side portion of the body; and longitudinal pressure to an end or end portion of the body; with the result that the top and bottom faces of the body—as the bacon slab—are flattened, and the side and end faces thereof are straightened and squared, whereby when the body is removed from the press, it is in the defined form of a well shaped rectangular parallelepiped.

The present invention, from certain aspects thereof, may be considered as an improvement on a machine which is the basis of Patent No. 2,046,366, issued June 9, 1936, to Joseph Bech and entitled "Bacon press".

According to the construction of the press disclosed in said Bech patent, and also according to the construction of the press illustrated and described in this application, there is employed in operative relationship and arrangement, a lower supporting die or bottom plate; a downwardly-movable or depressible, longitudinally-extending, pressure-resisting or side-resisting plate; a downwardly-movable or depressible, transversely-extending, longitudinally-movable end-pressing plate; a longitudinally-extending, transversely-movable and longitudinally-shiftable side-pressing plate; and a vertically-movable, top-pressing plate which is forced downwardly during the pressing operation toward the bottom or lower supporting plate but which is mounted so that during its vertical movement it can shift longitudinally and also transversely over the depressible side and end-resisting plates and also so that during its downward movement it moves vertically along the pressing surfaces of the side and end-pressing plates.

In the Bech patent and also in the present application, the arrangement is such that the depressible end-resisting plate can shift in a transverse direction across but closely in respect to one end, to wit, the forward end of the depressible side-resisting plate; so that the end-pressing plate moves longitudinally along the supporting plate and also along and in close relationship

with respect to the depressible side-resisting plate; so that the side-pressing plate can be moved transversely across the supporting plate and along the end-pressing plate but so that the side-pressing plate can shift longitudinally with and as the end-pressing plate is moved longitudinally in a forward direction; and also so that an end of the end-resisting plate—which end-resisting plate is shiftable in a transverse direction—is maintained in close arrangement with respect to the side-pressing plate as the latter is forced in a transverse direction as the pressing operation proceeds.

According to the specific disclosure of the Bech patent, the top-pressing plate thereof is operated by one power-operating cylinder, the side-pressing plate thereof is operated by another power-operating cylinder, and the end-pressing plate thereof is operated by a third power-operating cylinder. According to the drawing of said Bech patent, each of these cylinders is separately controlled.

According to the present invention, a common operating means is employed whereby as from a common operating cylinder or other common operating means, the top-pressing plate, the side-pressing plate, and the end-pressing plate, are caused to automatically operate to effect a pressing operation by the single movement of the piston within the single operating cylinder or by the single movement of a common operating member.

Also according to the present invention, certain floating levers are employed whereby the desired degree of pressing effect is automatically realized as the common operating member such as the pressing cylinder functions to effect the desired movements of the several pressing plates during the pressing operation.

It is desirable in machines of this class to have certain predetermined dimensions for the resulting pressed product or body. For example, it is desirable to press a bacon slab to a definite thickness and to a definite width so that when the bacon slabs are subsequently subjected to slicing operations, such as is common in the packing industry or butchering business of today, the resulting slices of uniform thickness will be of uniform weight, thus facilitating the realization of a standard weight of a package.

As a further example, it may be desirable to obtain six slices of uniform thickness and area in order to provide a group of one-half pound, and such a grouping is enabled and realized if the cross-sectional area of a bacon slab is pro-

duced by a proper pressing and shaping operation.

One object or aspect of the present invention relates to the provision of a press with suitable stops, whereby the top-pressing plate and the side-pressing plate will each be automatically arrested as to its pressing movement when the desired slab thickness and width are obtained. However, the arrangement is such that even though the top-pressing plate and the side-pressing plate have ceased to move because of the functioning effects of the stops, the end-pressing plate can continue to move until the desired degree of pressure or pressing effect has been realized on the slab or body as a whole being pressed.

With these and other objects in view, the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described and illustrated in the accompanying drawings and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

As illustrative of a specific manner in which the invention may be realized, reference is made to the accompanying drawings forming a part of this specification.

Figure 1 is a vertical, longitudinal view, mostly in section, illustrative of a press that realizes the invention. Figure 1 is a view taken as on the vertical plane indicated by the broken line 1-1 of Figure 2, looking in the direction of the arrows.

Figure 2 is a plan view of the press but from this figure, there has been omitted the top-pressing plate and certain of the operating and carrying members therefor.

Figure 3 is a vertical, transverse, sectional view, taken as on the plane indicated approximately by the line 3-3 of Figure 2, looking in the direction of the arrows.

Figure 4 is a plan view of the top-pressing plate and of some of the operating and carrying members therefor.

Figure 5 is a perspective view simplified to show the operation of the device.

The press comprises a main frame collectively designated as F, a collapsible and expansible pressing die collectively designated as PD, operating mechanism OM, and a power-operating means PM providing a common operating means for moving the pressing plates of the pressing die through the medium of the operating mechanism OM.

The press is also provided with a stop for limiting the downward movement of the top-pressing plate, which stop is sometimes referred to as the top-pressing plate stop and is collectively designated as TS. This stop is clearly indicated in Figure 1. The press is furthermore provided with a stop for limiting the transverse movement of the side-pressing plate, which stop is sometimes referred to as the side-pressing plate stop and is collectively designated as SS. The members constituting the important part of this stop SS are clearly indicated in Figure 3, particularly when viewed in conjunction with Figure 2.

Frame

The frame F of the machine comprises up-

right corner posts 1, lower longitudinal side bars 2, an intermediate horizontally-extending plate 3, upper longitudinally-extending channel members 4, and upper transversely-extending channel members 5. Upon the frame composed of members such as above enumerated, the rest of the mechanical parts or elements of the press are suitably supported.

Pressing die

The pressing die PD includes a lower horizontally-extending supporting member or bottom die plate 6 which may be described as having a supporting surface thereupon which extends both longitudinally and transversely, that is, in what may be termed the longitudinal direction of the press and in what may be termed the transverse direction of the press. This bottom-supporting plate 6 is fixedly secured to the main frame and is stationary, as is manifest from an inspection of Figures 1 and 3. At the left-hand side of Figure 3, there is clearly indicated a longitudinally extending side-resisting plate 7 which is mounted in respect to the bottom-supporting plate 6 in such a manner that the side-resisting plate is depressible, that is, movable vertically downwardly along the longitudinal edge of the supporting plate 6 as the pressing operation proceeds. This side-resisting plate is normally maintained in its uppermost position under the influence of a coiled spring 8, the lower end of which spring is welded or otherwise fastened to head 9 on a rod 10. The upper part of spring 8 is suitably welded or otherwise fastened to angle 11, tending to normally force the side-resisting plate 7 in an upward direction to its uppermost position. The arrangement of the parts just mentioned is manifest from an inspection of Figures 2 and 3. Further details of mounting this side-resisting plate are illustrated and described in the Bech patent. The die press also includes an end-resisting plate 12 which is clearly indicated and shown in Figures 1 and 2.

The end-resisting plate 12 is mounted in a slideway frame 13 which has a fixed association with respect to the bottom-supporting plate 6. This frame 13 has slidably mounted thereupon, so that the end-resisting plate 12 can shift in a transverse direction in respect to the press, a carrier member 14 from which there are supported rods 14^a each of which has a head 15 at the lower end thereof for supporting the coiled spring 8 that is relied upon to maintain the end-resisting plate 12 in its uppermost position when allowed to do so, spring 8 being welded or otherwise fastened to member 14 and bolt head 15. This end-resisting plate 12 is depressible against the force of the spring as the pressing operation proceeds and it may be described as the transversely-extending vertically-depressible and transversely-shiftable end-resisting plate with which the die press is provided. This end-resisting plate 12 is maintained in close arrangement with respect to the forward end of the side-resisting plate 7 whereby the resisting plates are always in cooperative arrangement with respect to each other. It will also be noted that the resisting plates 7 and 12 may be described as being maintained in cooperative relationship with respect to the bottom-supporting plate 6 with which they are directly associated. The transverse shifting of the end-resisting plate 12 can take place because of a yieldable transversely-extending spring 16, clearly indicated in Figure 2. The details of this end-resisting plate and

its mode of support are fundamentally the same as the corresponding parts shown in the Bech patent heretofore mentioned.

The die press also includes a side-pressing plate 17 and an end-pressing plate 18. The end-pressing plate 18 extends transversely of the press and it is mounted so that it is moved longitudinally in a forward direction during a pressing operation over and along the bottom-supporting plate 6 with which it is directly associated. One end of the end-pressing plate 18 is arranged close to the side-resisting plate 7 so that there is a cooperative arrangement which always exists between the side-resisting plate 15 and the end-pressing plate. The side-pressing plate 17 extends longitudinally of the press; it is mounted so that it can move during a pressing operation transversely in what may be termed an inward direction and so that it can shift longitudinally as the pressing operation proceeds. As a matter of fact, this side-pressing plate 17 is arranged so that the rear end thereof always remains in close arrangement with respect to the end-pressing plate 18 due to the action of lug 25 18 and the side-pressing plate 17 moves in a longitudinal direction in accordance with the longitudinal movements of the end-pressing plate 18. The end-resisting plate 12 is arranged so that what may be termed the outer end thereof is maintained in close operative arrangement with respect to the side-pressing plate 17 and so that the end-resisting plate 12 moves transversely inwardly as the side-pressing plate 17 moves transversely inwardly but the arrangement is also such that the side-pressing plate 17 can move longitudinally in respect to said outer end of the transversely-extending end-resisting plate 12.

The die press PD is completed by the top-pressing plate 19 which is carried from a top yoke 20 in such a manner that the top-pressing plate can move horizontally in either a longitudinal or transverse direction as the pressing operation proceeds. The yoke 20 is movable downwardly so that as it moves downwardly, it can impart a downward pressing movement to the top-pressing plate 19 carried thereby. The operative arrangement of this top-pressing plate in respect to the rest of the plates of the die press is such that during the pressing operation one end and one side of the top-pressing plate move downwardly along and in close arrangement with the pressing faces of the end-pressing plate 18 and the side-pressing plate 17. The arrangement is also such that as the pressing operation proceeds, the underside or pressing surface of the top-pressing plate 19 engages the top or upper edge portions of the side-resisting plate 7 and the end-resisting plate 12, whereby said resisting plates are depressed according to the requirements of the pressing operation. The top-pressing plate 19 has mechanism associated therewith so that as the pressing operation proceeds, it moves in a longitudinal direction in accordance with the longitudinal movement of the end-pressing plate 18 and in a transverse direction in accordance with the transverse movement of the side-pressing plate 17.

The mounting of the top-pressing plate 19 on the yoke 20 carrying the same is constructed so as to permit this longitudinal and transverse shifting of the top-pressing plate 19 according to the requirements because of the transversely-extending grooved slideway construction provided at 21, as is manifest from an inspection of Figure 1, and because of the longitudinally-extend-

ing grooved slideway construction 22, as is manifest from an inspection of Figures 1 and 3. The description of the mechanism whereby the pressing plates 17, 18 and 19 receive their operative movements will be described under the heading "Operating Mechanism". It will be noted that the die press of the present application is of a construction wherein during a single pressing operation the die press is contractible in every direction no matter from what direction viewed. In short, this press is contractible in a vertical direction, in a horizontal transverse direction, and in a horizontal longitudinal direction, and it will be noted that the movable pressing plates of this press are all operated from a common source of power through a link and lever mechanism which causes and enables the desired contraction of the press as the result of a single movement of an operating plunger or member of the power-operating means. The press die just described may be described as a confining pressing die since the several parts composing the same are constructed and arranged so that during all parts or steps of the pressing operation a piece being pressed is always confined within and by the die which decreases in all directions as the pressing operation proceeds.

The operating mechanism and the power-operating means

In Figures 1 and 3, it will be noted that the lower side bars 2 of the main frame have secured thereto and depending therefrom lower main bearing members 23 in which there are supported the ends 24 of a transversely-extending power transmission shaft 25. This shaft 25 has thereupon a main crank arm 26 constituting part of the operating mechanism therefor, the outer end 27 of which crank arm is connected by a suitable member or connecting element as 28 to a forward end of a rod 29 of a piston 30. This piston is slidably mounted in an operating cylinder 31. This cylinder has fluid under pressure supplied thereto through a pipe 32 for actuating the piston, the flow of which fluid through the pipe 32 to the cylinder 31 is under the control of a valve mechanism collectively designated as 33. That part of the mechanism just mentioned which includes the crank arm 26, the connecting element 28, the piston 30, the cylinder 31, and the valve-controlled pipe 32 leading to the cylinder, collectively may be referred to as the power-operating means PM. The mechanism which includes the shaft 25 and the parts operated therefrom for effecting movement of the pressing plates 17, 18, and 19 may collectively be designated and considered as the operating mechanism OM, previously referred to.

Reference to Figures 1, 2, and 3, and particularly to Figure 2, discloses the fact that the frame carries bracket members 34 and 35, the former of which may be referred to as a side bracket and the latter of which may be referred to as an end bracket, and in which brackets, there are slidably mounted what may be termed, respectively, side and end yoke-connecting and spacing rods, 36 and 37, which rods are more clearly shown in Figures 1 and 3. It will be seen that on each bracket, there is carried a spool member 38 which is shouldered or flanged at the lower end. Each member 38 serves as a member to position and support the lower end of a heavy coiled spring 39. To the lower ends of these rods, there are connected ends 40 and 41 of a lower

yoke 42 and to the upper ends of these rods, there are connected the ends 43 and 44 of the upper yoke member 20, previously referred to. The yoke members 20 and 42 extend diagonally in respect to the pressing die PD and they are arranged for imparting heavy pressing effects in a downward direction to and through the upper pressing plate 19. The heavy coiled springs 39 are sufficiently strong and powerful to maintain in an elevated position the yokes 20 and 42, and the parts carried thereby and connected thereto. These springs 39 and the associated springs in the press are in fact sufficiently powerful to return the top-pressing plate 19, the associated side and end-pressing plates 17 and 18, and the operative parts associated with said pressing plates to their respective normal inoperative positions when allowed to do so after the completion of a pressing operation.

The main or power-transmitting shaft 25 carries a main operating arm 45 constituting a part of the operating mechanism OM which is operated by the power-operating mechanism through the medium of said shaft 25. At the free end 46 of the arm 45, there is connected a vertically-extending link 47 which constitutes a pulling element of the operating mechanism or what may be termed the main operating link mechanism. The upper end 48 of this link 47 is pivotally connected to what may be termed the intermediate or central portion of a main floating or equalizing lever 49. It will be noted, however, that this point of connection is nearer one end of the lever 49 than it is to the other end, whereby there results what may be called a main floating lever having a long and a short arm. The short arm of this lever carries a ball and socket or universal joint connection 50, as is clearly indicated in Figures 1 and 3, whereby from the short arm of the lever 49, there is a pivotal connection to an intermediate or central section of what may be termed a secondary floating or equalizing lever 51 which likewise is connected in such a manner as to provide a short arm and a long arm therefor. The end of the short arm of the secondary floating lever 51 is connected by a suitable link 52 to the lower yoke member 42, previously described, as is manifest from an inspection of Figure 3. The mechanism which includes the floating lever 51, the link 52, the yoke 42, and the parts between the yoke 42 and the top-pressing plate 19 may be collectively referred to as the top-pressing plate link mechanism and which is part of the mechanism whereby the top-pressing plate is caused to move downwardly as the main arm 45 on the main shaft 25 is caused to swing in a downward direction under the influence of the common power-operating means PM.

The long arm of the secondary floating lever 51 is connected at 53 to a vertically-extending link 54, the upper end of which link is connected at 55 to an arm 56 of a bell crank lever 57 which is fulcrumed on a shaft 58 that is in turn pivotally mounted in bearing members 59 mounted on the main frame of the machine. This bell crank lever 57 includes an upstanding arm 60, the upper end of which is pivotally connected at 61 to a pin 62 that is mounted in link 63 located at the outer end of a sliding rod 64 having at the inner end thereof a longitudinally-extending guideway 65 upon which the longitudinally-extending side-pressing plate 17 is mounted so that the side-pressing plate can shift in a longitudinal direction as the pressing operation proceeds. Plate 17 is held in close arrangement with plate 18

during its sliding movement on guideway 65 by means of lug 78. This rod 64 through the medium of the guideway portion 65 at the inner end thereof serves to force the side-pressing plate 17 transversely and inwardly during a pressing operation. This inward movement of the side-pressing plate is effected by the downward movement of the secondary floating lever and the downward movement of the free end 53 of the long arm thereof and the consequent corresponding movements of the parts connecting the end 53 of the long arm to the rod 64 and the side-pressing plate 17 at the inner end thereof. This mechanism, which comprehends the end 53 of the secondary floating member 51 and the parts 54, 57, 62, 63, 64, 65, et cetera, constitutes what may be collectively referred to as the side-pressing plate link mechanism and because of the bell crank member 57 therein, it may be referred to as a mechanism which includes as an essential part thereof a bell crank member.

The secondary floating lever 51 is centrally pivotally connected so that it is free to float and adjust itself to pressure conditions, and it will, therefore, be manifest that both the top-pressing plate and the side-pressing plate can be moved thereby until one or the other is stopped because of undue pressure exerted thereagainst or because of the stop arrangements hereinafter described. Therefore, this floating lever 51 may be considered as a pressure-equalizing lever and this same remark also applies to the floating main lever 49.

Now, reverting to the main floating lever 49 and to Figures 1 and 5, wherein the same is clearly shown, it will be noted that the free end 66 of the long arm thereof is pivotally connected to the lower end of an upwardly-extending link 67, the upper end of which is pivotally connected at 68 to the free end of an arm 69 of a bell crank lever or bell crank lever construction 70. This bell crank lever 70 is fulcrumed on a shaft 71, which is pivotally mounted in bearings 72 carried by the main frame and the free end of an upwardly-extending arm 73 of the bell crank lever 70 is pivotally connected through the medium of a link 74 to the rear end of a longitudinally-movable and longitudinally-extending pusher member or rod 75, the forward end of which is connected at 76 to the transversely-extending end-pressing plate 18. The mechanism which includes the long arm of the floating lever 49, the link 67, the bell crank lever 70, the link 74, and push rod 75 to which the end-pressing plate 18 is connected, may be referred to as the end-pressing plate link mechanism and it may be described as comprehending a bell crank lever construction because of the inclusion therein of the bell crank lever 70.

Referring now to Figures 1, 2, and 5, it will be observed that stationary angle members 77 are provided for the reception of rods 81 carrying coil springs 85. This pair of springs 85 serves to normally assist in retracting the end-pressing plate 18 to its rearwardmost position when free to do so after a pressing operation has been carried out. The angle members 77 previously mentioned being fixed, serve as abutments for the forward ends of the springs 85.

When pressure is asserted through link 74, 70 moving plate 18 and pusher rod 75 forwardly, longitudinally extending rods 79, securely fastened to cross plate 80, compress coil springs 85. Plate 80 is designed with apertures permitting the passage therethrough of rods 81. A vertical

pushing member 82 is provided on the end of plunger or pushing plate 75. Member 82 is designed to produce the endwise motion of top pressing plate 19. Guiding member 83 is mounted on vertical rod 82 so that it is free to move vertically along the upright rod 82. This transversely-extending guideway 83 has slidably mounted therein a transversely-movable connecting member 84 which is directly secured to the top-pressing plate in a manner whereby, due to the mechanism just described, the top-pressing plate will move longitudinally in accordance with the longitudinal movements of the end-pressing plate but so the top-pressing plate can shift transversely as required in order to meet the different conditions of the pressing operation. In other words, due to the construction just described, the top-pressing plate is always maintained in proper operative position in respect to the end-pressing plate so that upon downward pressure being applied to the top-pressing plate, it can automatically move downwardly along the pressing face of the end-pressing plate.

Reference will now be made to Figures 2, 3 and 5 for showing an arrangement for effecting the transverse movement of the top-pressing plate as the side-pressing plate is moved. In the figures last mentioned, it will be noted that stationary angle members 86 serve as spring abutments for coil springs 93 disposed on spaced parallel laterally extending rods 87. The design of the side-pressing retracting mechanism is identical to that of the end-pressing retracting mechanism. The forward movement of pusher plate 64 is retracted by the coil springs 93. Mounted on plunger or pusher plate 64 is a vertical member 89 along which there is a vertically sliding yoke member 90 which is connected to rods 91 that are secured at 92 to the transversely-movable guideway member 22 and due to the construction just described, the top-pressing plate must move transversely in accordance with the transverse movement of the side-pressing plate 17 but the arrangement is such that the top-pressing plate is always maintained in a position whereby upon being depressed, an edge portion thereof can move downwardly and in cooperative relationship with respect to the pressing face of the side-pressing plate. Coiled compression springs 93 serve to assist in retracting the side-pressing plate and the parts associated therewith when free to do so at the end of a pressing operation.

Top-pressing plate stop

The top-pressing plate stop, collectively designated by TS, is shown in Figures 1 and 2 and it collectively comprises a depending bracket member 94, the upper end of which is fixedly secured to the main frame of the machine as through suitable connecting bolts 95, and the lower end of which is screw-threaded as at 96 for the reception of an adjusting stop screw 97. This adjusting screw is in line with the lower end of the rod 37 or, in other words, in line with the axis of the opening at the end 40 of the lower yoke member 42. The lower end of the rod 37 and the holding nut 98 thereupon collectively constitute what may be termed as a movable stop member that is carried by the lower yoke member 42. At the upper end of the adjusting stop screw 97, there is mounted a lower stop member 99 which is relatively stationary but which can be vertically adjusted according to the requirements. At the upper end of this

member 99, there is carried a removable part 99^a. There may be a number of these parts 99^a of different depths or thicknesses and these may be used and selected one block at a time, according to the desired thickness required for the final product. In other words, by employing the proper member 99^a, one can regulate or determine the thickness or depth of the resulting product as pressed between the lower-supporting plate 6 on the one hand and the top-pressing plate 19 on the other hand.

The structure just referred to constitutes what is herein termed as the top-pressing plate stop because its direct function is to limit the downward movement of the top-pressing plate and thereby determine the extent of its pressing operation. One or more of these stops may be employed, as desired.

Side-pressing plate stop

The construction of the side-pressing plate stop is apparent from an inspection of Figures 2 and 3. The fixed stop member of this particular piece of mechanism is provided by a longitudinally-extending bridge member 100 which is rigidly fastened to the frame of the press. There are blocks 101 which are rigidly but detachably secured to the sliding plunger or pusher plate 64. These detachably secured blocks 101 may be secured in place as by means of pegs 102 rigidly fastened to the blocks and adapted to fit snugly into the holes in the plunger member. By such a fastening means, these blocks 101 may be easily and quickly changed. The purpose thereof and the desirability of changing them are to provide an adjustable control means for regulating the length of the stroke of the side-pressing plate plunger 64. In operating the side plunger, it will be noted that it will move inwardly toward the center of the press until the blocks 101 strike the bridge or stationary stop member 100, at which point the side plunger can and will come to rest, thereby limiting the side or transverse compression of the bacon slab or other product being pressed and thereby controlling the transverse dimension thereof.

For different weight classifications of bacon slabs, it will be necessary to have this transverse dimension variable and this is accomplished by providing blocks 101 of different lengths for limiting the compression in a transverse direction of the bacon slabs being pressed.

General

From what has preceded, it will be manifest that by adjusting the stop member 99, or, in other words, by properly selecting the required block member 99^a therefor, the vertical dimension of the final product can be controlled. By properly selecting the side blocks 101, the transverse dimension of the resulting product can be controlled, and due to the floating lever—or equalizing lever—construction described, it will be manifest that the press can operate in such a manner that it is immaterial which stop first comes into play to function in stopping the movement of the part controlled thereby. It will be apparent that it is possible for the top-pressing plate to come to final pressing position; that it is possible for the side-pressing plate to thereafter come to final pressing position; and for these movements to be followed by a further compressing, due to the end-pressing plate continuing to move. Consequently, when the desired pressing effect has been carried out, there

is produced a product of predetermined thickness, of predetermined transverse dimension or width, but, of indefinite length, to wit, of a length according to the volume of material in the particular product being pressed.

Where bacon is being pressed, the fixed cross-sectional dimensions will be classified according to the number of slices per unit of weight and approximate width of the bacon slabs being pressed. With this classification, it will be necessary only to change the side-pressing plate stops to meet the classification and it will not be necessary to change these blocks for each piece of bacon that is pressed, provided the bacon has been classified into groups and all the individual pieces in a given group are pressed before operating on another group. It is quite feasible to have the press accompanied by a simple table which will instruct the operator as to the proper combination of the blocks 101 and 89^a to be used for the control of the motion of the side-pressing plate plunger and the top-pressing plate for each given classification of bacon. In the form of machine shown, a single top-pressing plate stop is illustrated. It will be manifest, however, that it will be feasible to use a duplicate set of these top-pressing plate stops, for example, one at each end of the lower yoke 42.

What is claimed is:

1. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting plates, slidable side-pressing and end-pressing plates, and a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate; a common operating means comprising a main floating lever having a pivotal movement on an axis located intermediate the ends of the main floating lever and forming a long arm and a short arm; a secondary floating lever also having pivotal movement on an axis located intermediate the ends of the secondary floating lever and forming a long arm and a short arm; a top-pressing plate link mechanism; a side-pressing plate link mechanism; an end-pressing plate link mechanism; a main operating lever mechanism; and an operating cylinder and piston, the piston being connected to one portion of the main link-operating mechanism; the main floating link having the central or intermediate section thereof pivotally connected to another portion of the main link-operating mechanism, the end-pressing plate link mechanism serving as a means whereby the long lever arm of the main floating link is connected to the end-pressing plate so as to effect pressing movement of the latter, which end-pressing plate link mechanism includes a bell crank lever as a part of the train of said link mechanism, the secondary floating lever having the central or intermediate portion thereof pivotally connected to the short lever arm of the main floating lever, the top-pressing plate link mechanism serving as means for connecting the short arm of the secondary floating lever with the members that impart downward pressing movement to the top-pressing plate, the side-pressing plate link mechanism serving as means to connect a long arm of the said floating secondary lever to the side-pressing plate, which side-pressing plate link mechanism includes a bell crank lever as a part of said link mechanism.

2. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting plates, slidable side-pressing and end-pressing plates, and a top-pressing plate, each of said

side and end plates and said top-pressing plate being in operative relation with said stationary plate; a power operating mechanism common to the pressing plates having a single controlling device and comprising a main floating lever having pivotal movement on an axis intermediate the ends of the main floating lever and forming a long arm and a short arm; an operating cylinder; a piston therein; a bell crank mechanism, one arm of which is operated by the piston and the other arm of which is connected to the main floating lever; a secondary floating lever; a top-pressing plate link mechanism; a side-pressing plate link mechanism; an end-pressing plate link mechanism; the end-pressing plate link mechanism being associated with the long lever arm of the main floating link and serving as the means through which the end-pressing plate is moved to full pressing position; the secondary floating lever being pivotally supported by and carried from the short arm of the main floating lever; the top-pressing plate link mechanism being associated with one arm of the secondary lever and serving as means through which the top-pressing plate is moved downwardly to full pressing position; the side-pressing plate link mechanism being associated with another arm of the secondary lever and serving as means through which the side-pressing plate is moved to full pressing position.

3. In a press, the combination with a contractible die having a plurality of movable pressing elements, of an equalizing lever mechanism including longitudinal and transverse floating levers through which the pressing forces are transmitted from a common source of operating power to the movable pressing elements.

4. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting plates, slidable side-pressing and end-pressing plates, and a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate; a common-operating means mounted on the frame and having an operating member extending therefrom, a main floating lever, the intermediate portion of which is operatively connected with said operating member so as to provide the main floating lever with a short arm and a long arm, a secondary floating lever, the intermediate portion of which is operatively connected with the short arm of the main lever so as to provide the secondary lever with a short arm and a long arm, three sets of connecting means, one of which sets serves to connect the short arm of the secondary floating lever with one of the movable pressing plates, another of which sets serves to connect the long arm of the secondary lever with another of the movable pressing plates, and the third set of which serves to connect the long arm of the main floating lever with the other of the movable pressing plates, two of said movable pressing plates having associated therewith movable stop elements, each of which movable stop elements cooperates with a corresponding stationary stop element secured to the frame, said stationary stop elements being arranged so that as a pressing operation proceeds the two pressing plates having the movable stop elements associated therewith may be automatically stopped against further pressing movement but under conditions which allow a movement of the other pressing element to full pressing position.

5. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting

plates, slidable side-pressing and end-pressing plates, and a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate; a
 5 common operating mechanism for effecting during a single operation thereof movement of the movable plates including means for moving the top-pressing plate towards the stationary plate, means for moving the side-pressing plate towards
 10 the side-resisting plate, and means for moving the end-pressing plate towards the end-resisting plate.

6. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting
 15 plates, slidable side-pressing and end-pressing plates, and a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate; a common operating means for effecting during a
 20 single operation thereof the movement of the top-pressing plate towards the stationary plate, of the side-pressing plate towards the side-resisting plate, and of the end-pressing plate towards the end-resisting plate, a set of stop elements, one of
 25 which elements is associated with one of the pressing plates and the other of which is stationary, one of said stop elements being positioned in respect to the plate by which it is carried whereby the extent of pressing operation by the
 30 particular plate with which the stop element is operatively associated can be regulated.

7. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting
 35 plates, slidable side-pressing and end-pressing plates, and a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate; a power operating means common to said pressing plates, said common-operating means comprising
 40 a main floating lever, a member pivotally connected with the main floating lever intermediate the ends thereof for forcibly moving the main floating lever towards full pressing position, link mechanism operatively connected with one end of
 45 the main floating lever for moving to pressing position one of the pressing plates, a secondary floating lever pivotally connected intermediate its ends with the other end of the main floating lever, mechanism operatively connected with one end of
 50 the secondary floating lever for effecting movement to pressing position of another of said pressing plates, and means operatively connected with the other end of the secondary floating lever for effecting movement to pressing position of the
 55 third of said pressing plates.

8. In a press as defined in and by claim 7, two sets of stops one of which sets is associated with the top-pressing plate and a stationary part, to wit, the frame of the press, and the other of
 60 which sets is associated with the side-pressing plate and a stationary part, to wit, the frame of the press.

9. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting
 65 plates, slidable side-pressing and end-pressing plates, and a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate; a common operating means for effecting pressing
 70 movement of the top-pressing plate, the side-pressing plate and the end-pressing plate, and means for operatively positioning said top-pressing plate with relation to said side-pressing and end-pressing plates throughout the operation of
 75 said common operating means.

10. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting
 plates, slidable side-pressing and end-pressing
 plates, and a top-pressing plate, each of said side
 and end plates and said top-pressing plate being
 5 in operative relation with said stationary plate; a common operating mechanism including a float-
 ing lever and means operatively connected with the floating lever and actuated by the same dur-
 10 ing a single operation of the said mechanism for effecting movement of the said pressing plates.

11. In a press having a stationary bottom die plate, depressible side-resisting and end-resist-
 ing plates, slidable side-pressing and end-press-
 ing plates, and a top-pressing plate, each of said
 15 side and end plates and said top-pressing plate being in operative relation with said stationary plate; a common operating mechanism including a float lever, means operatively connected with the floating lever and actuated by the same
 20 during a single operation of said mechanism for effecting movement of said pressing plates and two sets of stops, one of which sets is associated with one of the pressing plates and a stationary
 25 part of the press, the other of which sets is associated with another of the pressing plates and a stationary part of the press, each of which sets is constructed so as to provide a positionable stop member.

12. In a press having a stationary bottom die
 30 plate, depressible side-resisting and end-resist-
 ing plates, slidable side-pressing and end-press-
 ing plates, and a top-pressing plate, each of said side and end plates and said top-pressing plate
 35 being in operative relation with said stationary plate; a power operating mechanism common to the pressing plates having a single controlling device and including means for moving the top-
 pressing plate towards the bottom die plate, means for moving the side-pressing plate towards
 40 the side-resisting plate, means for moving the end-pressing plate towards the end-resisting plate and means for operatively positioning said top-pressing plate with relation to said side-
 45 pressing and end-pressing plates throughout the operation of said common operating means.

13. In a press having a stationary bottom die plate, depressible side-resisting and end-resist-
 ing plates, slidable side-pressing and end-press-
 ing plates, and a top-pressing plate, each of said
 50 side and end plates and said top-pressing plate being in operative relation with said stationary plate; a power operating means common to said pressing plates, said common operating means comprising a floating lever that is pivotally con-
 55 nected intermediate its ends to a member which forcibly moves the floating lever toward full pressing position, from one end of which floating lever one of said pressing plates is operated, and from the other end of which floating lever the
 60 other pressing plates are operated.

14. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting
 plates, slidable side-pressing and end-pressing
 plates, and a top-pressing plate, each of said side
 65 and end plates and said top-pressing plate being in operative relation with said stationary plate; a common operating means having a single controlling device for actuating said movable press-
 ing plates and for forcing the same toward full
 70 pressing position, means associated with said operating means for operatively positioning said top pressing plate with relation to said side-pressing and end-pressing plates throughout the op-
 75 eration of said common operating means and

automatically operable auxiliary means cooperating with said actuating means for returning the movable pressing plates to their initial position.

15. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting plates, slidable side-pressing and end-pressing plates, and a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate; a common operating means having a single controlling device for forcing said movable pressing plates in a manner to effect a contracting of the die in all directions as the pressing operation proceeds, means associated with said operating means for operatively positioning said top-pressing plate with relation to said side-pressing and end-pressing plates throughout the operation of said common operating means and automatically operable yieldable means cooperating with the common operating means to return the pressing elements to their initial position.

16. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting plates, slidable side-pressing and end-pressing plates, and a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate; a pressing cylinder having a piston operatively mounted therein, and operating means whereby from said piston said pressing plates are moved to full pressing position, said operating means comprising a main floating or compensating lever operatively moved by said piston, a secondary floating or compensating lever operatively moved by one arm of the main lever, means for connecting another arm of the main lever to one of the movable pressing plates, and means for connecting the ends of the secondary lever to the other of said movable pressing plates.

17. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting plates, slidable side-pressing and end-pressing plates, and a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate; a pressing cylinder having a piston operatively mounted therein, and operating means whereby from said piston said pressing plates are moved to full pressing position, said operating means comprising a main floating or compensating lever operatively moved by said piston, a secondary floating or compensating lever operatively moved by one arm of the main lever, means for connecting another arm of the main lever to one of the movable pressing plates, means for connecting the ends of the secondary lever to the other of said movable pressing plates, and two sets of stop elements, one stop element of each of the sets being positionable, one of which sets has a stop element operatively associated with one of the pressing plates while the other stop element thereof is mounted on the frame, and the other of which sets has a stop element operatively associated with another of the other pressing plates while the other stop element thereof is mounted on the frame.

18. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting plates, slidable side-pressing and end-pressing plates, and a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate; an equalizing lever mechanism including

a plurality of floating levers through which the pressing forces are transmitted from a common source of operating power to the movable pressing plates and a set of positionable stop elements, one of which stop elements is operatively associated with one of the pressing plates and the other of which is mounted on a stationary part of said press.

19. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting plates, slidable side-pressing and end-pressing plates, a top-pressing plate, each of said side and end plates and said top pressing plate being in operative relation with said stationary plate and means for slidably mounting said top-pressing plate to provide sidewise and endwise movement of said plate while being pressed; guide means controlled by the movement of said side-pressing and end-pressing plates for moving said top-pressing plate to maintain a positive operative relation between said side-pressing and end-pressing plates throughout the pressing movement.

20. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting plates, slidable side-pressing and end-pressing plates, a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate and means for slidably mounting said top-pressing plate to provide sidewise and endwise movement of said plate while being pressed; guide means controlled by the movement of said side-pressing and end-pressing plates for moving said top-pressing plate to maintain a positive operative relation between said side-pressing and end-pressing plates throughout the pressing movement and a set of positionable stop elements, one of which stop elements is operatively associated with one of the pressing plates and the other of which is mounted on a stationary part of the press.

21. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting plates, slidable side-pressing and end-pressing plates, a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate and means for slidably mounting said top-pressing plate to provide sidewise and endwise movement of said plate while being pressed; guide means controlled by the movement of said side-pressing and end-pressing plates for moving said top-pressing plate to maintain a positive operative relation between said side-pressing and end-pressing plates throughout the pressing movement, and two sets of stops, one of which sets is associated with one of the pressing plates and a stationary part of the press, the other of which sets is associated with another of the pressing plates and a stationary part of the press, each of which sets is constructed so as to provide a positionable stop member.

22. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting plates, slidable side-pressing and end-pressing plates, a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate and means for slidably mounting said top-pressing plate to provide sidewise and endwise movement of said plate while being pressed; guide means controlled by the movement of said side-pressing and end-pressing plates for moving said top-pressing plate to maintain a positive opera-

tive relation between said side-pressing and end-pressing plates throughout the pressing movement and automatically operable yieldable means associated with said side-pressing and end-pressing plates to return said side-pressing and end-pressing plates to their initial position after completion of the pressing movement, which yieldable means through said guide means also serve to return said top-pressing plate to its initial sidewise and endwise position after completion of the pressing movement.

23. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting plates, slidable side-pressing and end-pressing plates, a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate and means for slidably mounting said top-pressing plate to provide sidewise and endwise movement of said plate while being pressed; means operable from a common source of power for effecting pressing movement of said side-pressing, end-pressing and top-pressing plates, and guide means controlled by the movement of said side-pressing and end-pressing plates for moving said top-pressing plate to maintain a positive operative relation between said side-pressing and end-pressing plates throughout the pressing movement, said guide means comprising a guide rod rigidly secured to said side-pressing means and said top-pressing plate and a guide rod rigidly secured to said end-pressing means and slidably connected to said top-pressing plate.

24. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting plates, slidable side-pressing and end-pressing plates, a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate and means for slidably mounting said top-pressing plate to provide sidewise and endwise movement of said plate while being pressed; means operable from a common source of power for effecting pressing movement of said side-pressing, end-pressing and top-pressing plates, guide means controlled by the movement of said side-pressing and end-pressing plates for moving said top-pressing plate to maintain a positive operative relation between said side-pressing and end-pressing plates throughout the pressing movement, said guide means comprising a guide rod rigidly secured to said side-pressing means and said top-pressing plate and a guide rod rigidly secured to said end-pressing means and slidably connected to said top-pressing plate, and a set of positionable stop elements, one of which stop elements is operatively associated with one of the pressing plates and the other of which is mounted on a stationary part of the press.

25. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting plates, slidable side-pressing and end-pressing plates, a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate and means for slidably mounting said top-pressing plate to provide sidewise and endwise movement of said plate while being pressed; means operable from a common source of power for effecting pressing movement of said side-pressing, end-pressing and top-pressing plates, guide means controlled by the movement of said side-pressing and end-pressing plates for moving said top-pressing plate to maintain a positive operative relation between said side-pressing and end-

pressing plates throughout the pressing movement, said guide means comprising a guide rod rigidly secured to said side-pressing means and said top-pressing plate and a guide rod rigidly secured to said end-pressing means and slidably connected to said top-pressing plate, and automatically operable yieldable means associated with said side-pressing and end-pressing plates to return said side-pressing and end-pressing plates to their initial position after completion of the pressing movement, which yieldable means through said guide means also serve to return said top-pressing plate to its initial sidewise and endwise position after completion of the pressing movement.

26. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting plates, slidable side-pressing and end-pressing plates, and a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate; a common operating means having a single controlling device for actuating said movable pressing plates and for forcing the same toward full pressing position, and means associated with said operating means for operatively positioning said top-pressing plate with relation to said side-pressing and end-pressing plates throughout the operation of said common operating means.

27. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting plates, slidable side-pressing and end-pressing plates, and a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate; a common operating means having a single controlling device for forcing said movable pressing plates in a manner to effect a contracting of the die in all directions as the pressing operation proceeds, and means associated with said operating means for operatively positioning said top-pressing plate with relation to said side-pressing and end-pressing plates throughout the operation of said common operating means.

28. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting plates, slidable side-pressing and end-pressing plates, and a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate; a set of stop elements, one of which elements is associated with one of the pressing plates and the other of which is stationary, one of said stop elements being positioned in respect to the plate by which it is carried whereby the extent of pressing operation by the particular plate with which the stop element is operatively associated can be regulated.

29. In a press having a stationary bottom die plate, depressible side-resisting and end-resisting plates, slidable side-pressing and end-pressing plates, and a top-pressing plate, each of said side and end plates and said top-pressing plate being in operative relation with said stationary plate; two sets of stops, one of which sets is associated with one of the pressing plates and a stationary part of the press, the other of which sets is associated with another of the pressing plates and a stationary part of the press, each of which sets is constructed so as to provide a positionable stop member.

CERTIFICATE OF CORRECTION.

Patent No. 2,072,694.

March 2, 1937.

CHARLES T. WALTER.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, first column, line 24, for the patent number "2,046,366" read 2,043,366; page 7, second column, line 19, claim 11, for the word "float" read floating; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 20th day of April, A. D. 1937.

(Seal)

Henry Van Arsdale
Acting Commissioner of Patents.