

J. A. KEYES.
SOAP PRESS.

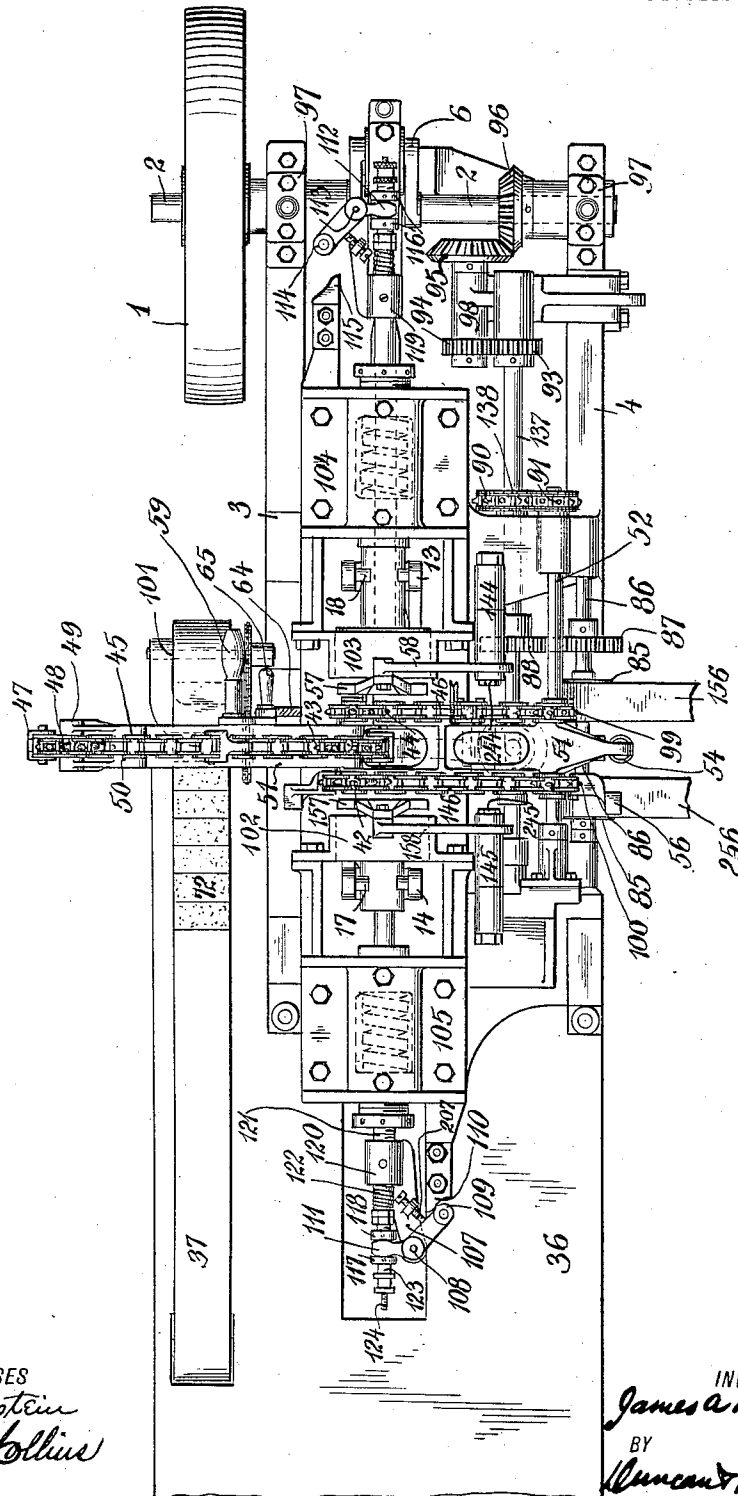
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3 SHEETS—SHEET 1.

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Fig. 1,



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3 SHEETS—SHEET 2.

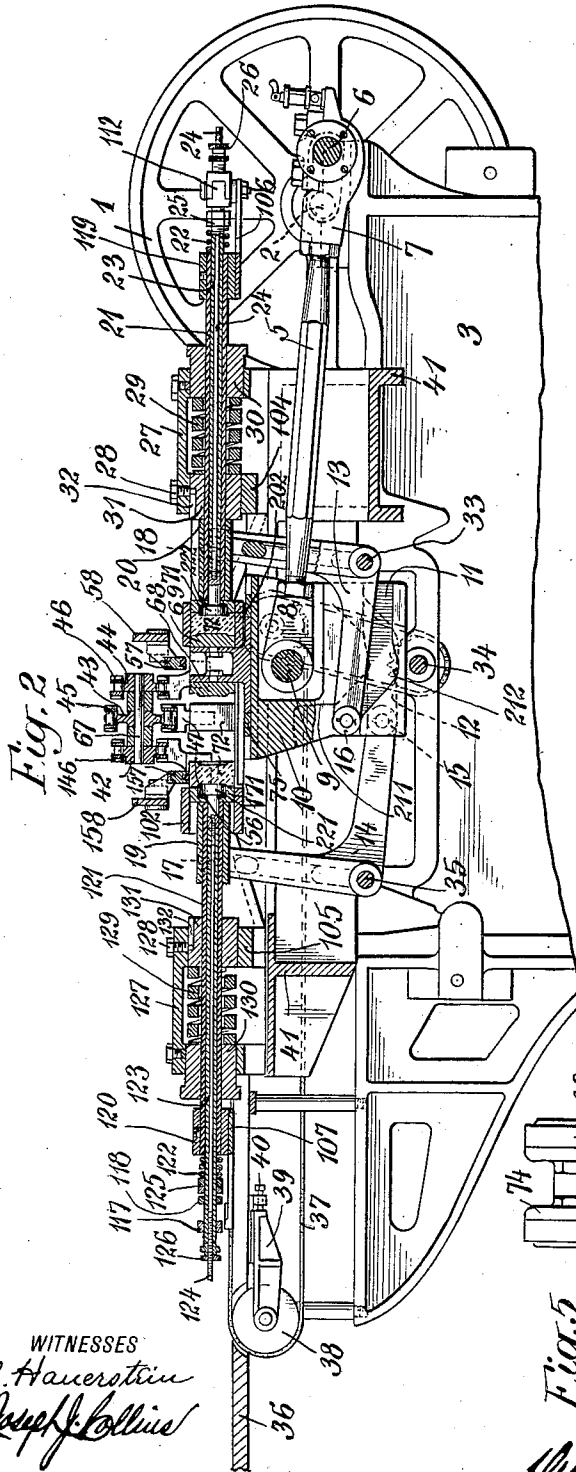


Fig. 2

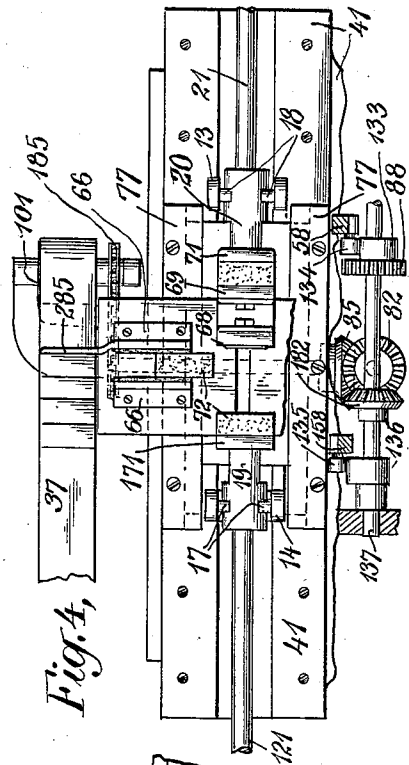


Fig. 4

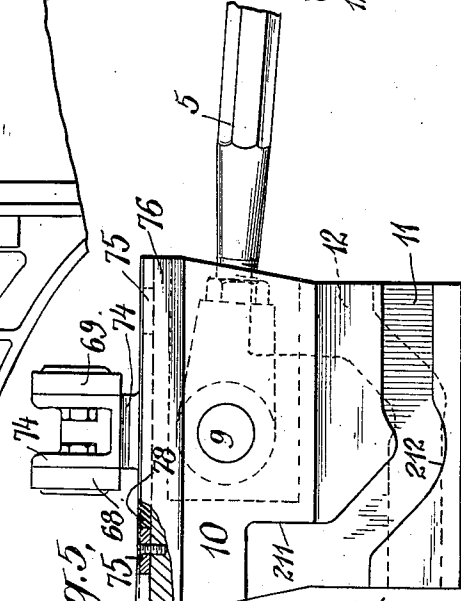


Fig. 5

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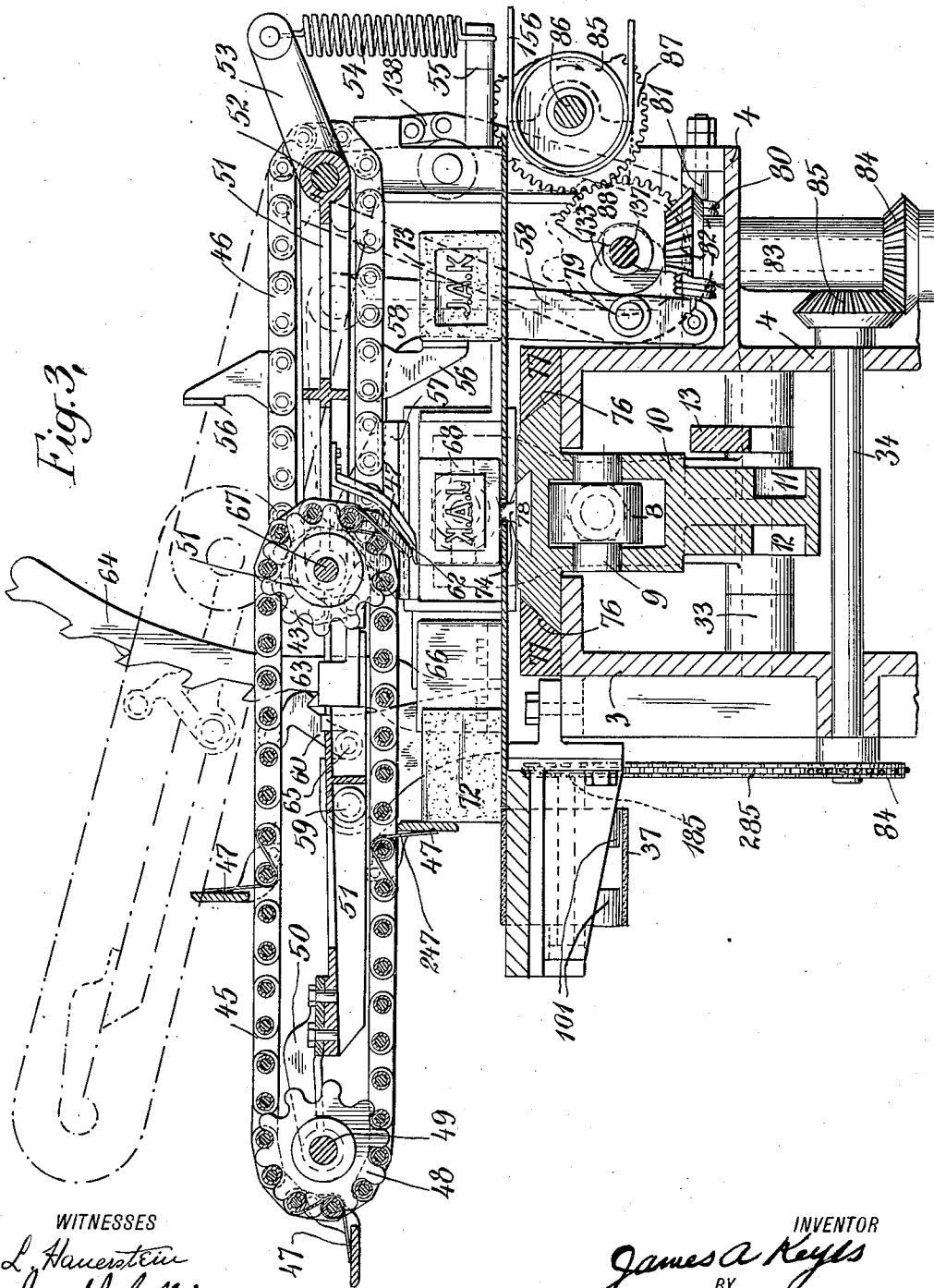
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3 SHEETS—SHEET 3.



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SOAP-PRESS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES A. KEYES, a citizen of the United States, and resident of the city, county, and State of New York, have made a certain new and useful Invention Relating to Soap-Presses, of which the following is a specification, taken in connection with the accompanying drawings.

This invention relates to soap presses and relates especially to duplex soap presses which may have a single feed and a distributing plunger die cooperating alternately with two rear dies and die boxes, there being double delivery devices for discharging the completed cakes of soap or other generally similar material.

In the accompanying drawings showing in a somewhat diagrammatic way an illustrative embodiment of the invention, Figure 1 is a plan view. Fig. 2 is a longitudinal vertical section. Fig. 3 is a transverse vertical section. Fig. 4 is an enlarged plan view, parts being omitted; and Fig. 5 is an enlarged detail view showing the plunger slide and its cams.

In the illustrative embodiment of this invention shown in the drawings, a heavy frame may be provided, composed of suitable members, such as 3, 4, 41 and have secured thereto a suitable table 36 over which the soap blanks and completed cakes are fed. The machine may be operated by the heavy pulley 1 mounted on the shaft 2 in suitable bearings 97 in the frame and carrying a suitable crank 6. This crank may be connected with the plunger slide 10 by a suitable connector 5 which may be provided with the head 7 engaging the crank 6 and with the head 8 engaging the pin 9 in the plunger slide. This plunger slide, as is shown in Figs. 2 and 3, may be provided with the inclined upper faces 76 cooperating with the guides 77 secured to the frame members 3, 4 so as to rigidly support this plunger slide as it is reciprocated by the crank. As shown in Figs. 2 and 5, the slide may carry a suitable head 74 on which the solid plunger die faces 68, 69 may be secured in any desired way as by the bolts indicated. This head may be removably secured to the slide and given the desired rigidity by providing it with a reduced neck 174 passing through a slot in the table 36 and connected with the foot 78 which as shown in Figs. 3 and 5 engages with a corresponding dovetail slot in the slide. The

blocks 75 may be firmly secured in this slot at either end of the foot as by the screws indicated so as to rigidly support the head and connected reciprocating double plunger die for proper cooperation with the die boxes and rear dies.

Suitable die boxes 102 and 202 which may have any desired contour, such for instance as the substantially rectangular cross-section indicated may be rigidly mounted in any desired way as by securing them to the frame members 41 as indicated in Figs. 1 and 2. The rear dies may be mounted in any desired way to operate within these die boxes and cooperate with the plunger dies and this may be desirably effected by providing suitable spring buffers against which these rear dies engage when in their active compressing position and by moving these rear dies at other times by suitable connections, preferably including cams on the plunger slide itself. For example, the rear die 71 may be secured in any desired way to the sleeve 21 provided with a suitable collar, such as 20, and longitudinally guided from the frame. The spring buffer may comprise the buffer block 30 adjustably mounted in the frame member 41 and the buffer head 31 mounted in the guide 104 provided with a suitable guide-slot 32 with which the screw 28 in the cover 27 may cooperate to limit the forward movement of this buffer head under the influence of the heavy spring 29. By adjusting the position of the buffer block the degree of spring resistance which the rear die meets with in its active compressing condition when the collar 20 engages the buffer head may be adjusted as desired.

It is desirable with panel cakes of soap or the like to have a movably mounted panel member mounted in the rear die and this may be conveniently effected by having the panel 222 mounted in a suitable recess in the die 71 and secured to the stem 23 by the rod 24, for example, which may screw into the rear end of this panel member and be drawn rearward therewith by suitable nuts, such as 26. The connections for operating the rear dies may comprise suitable die levers, such as 13 pivoted about the pin 33 and having an inwardly projecting yoke or pin members 18 engaging the collar 20 as shown in Figs. 2 and 4. The free end of this lever may be provided with the roll 16 cooperating with a suitable cam 11 prefer-

ably connected with or formed integral with the plunger slide 10 and this cam may be provided with a relieved portion 211 at its upper end so that during active compression the rear die and buffer may yield to the desired extent so as to insure a definite degree of compression as the plunger die 68 is forced forward by the slide as shown in Fig. 2. The soap cake 72 is thus formed in the desired way and then as the pressure is relieved the spring buffer carries the rear die and its connected lever down into the position shown in Fig. 2 and then the further movement of the plunger slide and its cam 11 brings the rear die 71 forward practically in time with the plunger die 69 until the bottom portion 212 of the cam is reached. At this time a suitable spring gripper, such as 59, is brought firmly into engagement with the soap cake and then the slight rise in the cam 11 retracts the rear die slightly and moves it clear of the soap cake which may be engaged by delivery mechanism to be discharged. This is shown in the case of the soap cake 72 engaged by the spring-pressed gripper 157, the rear die 171 having been retracted out of engagement therewith so that this completed cake when again released by the gripper 157 may be engaged by the delivery finger 56 and carried away over the table 36. This rear die 171 is as indicated similarly connected with the sleeve 121 provided with the collar 19 to co-operate with the buffer head 131 sliding in the guide 105 of the similarly constructed buffer device. The die lever 14 pivoted about the pin 35 is provided with the yoke 17 similarly engaging this collar and its free end may be provided with the similar roll 15 engaging the cam 12 shown in dotted lines in the plunger slide 10. The panel member 221 of this rear die may be similarly connected with its stem 123 by the rod 124 and nuts 126. The panel die member may during this operation be moved sufficiently to assist in disengaging the soap cake from the rear die and this may be accomplished by suitable trip devices such as are shown in Fig. 1. A suitable bracket 107 may be secured by its collar 120 upon the sleeve 121 and a trip 111 may be pivoted about the pin 108 in this bracket so as to co-operate with the two collars 117, 118 secured on the stem 123. The spring 122 normally tends to force the stem and its connected die panel rearward so as to rotate the trip 111 into engagement with its adjustable stop 207 on the bracket, but when this rear die has moved forward to its extreme position the roll 106 on the trip is brought into engagement with the releasing cam 110 on the frame so as to rock this trip about its pin and project the die panel forward beyond its normal position, thus disengaging the soap cake from the die. At this time the spring gripper comes down into engagement with this soap cake 72 and holds it in delivery position while the rear die moves back slightly out of contact therewith. This trip device is identical in construction with that provided in connection with the other rear die, whose trip 112 is mounted about the pin 113 and operates between the collars 116 on the stem so as to project the die panel slightly when the roll 114 on the trip engages the stationary cam 115. The spring grippers 57, 157 referred to may be provided with a yielding face of rubber or other suitable material and may be mounted on the gripper arms 58, 158 which may be disengageably connected with their pivots or stub shafts 144, 145, so that these gripper arms may be released therefrom and bodily swung up away from the dies for inspection or adjustment thereof. Any desired means may be used for this purpose, as for example by releasing the nuts 244, 245 and then swinging the arms upward. As shown in Fig. 3 these gripper arms are provided with depending portions connected with suitable springs, such as 80 connected to the stud 81 in the frame member 4 so as to normally bring the cam roll 79 on this gripper into engagement with its cam 133 on the gripper shaft 137. As shown in Fig. 4, a similar cam roll 135 is brought into coöperation with the cam 136 on this same shaft. In this way, the gripper springs bring the grippers down into momentary engagement with the completed soap cakes at the time the rear dies are being withdrawn therefrom and then the grippers are again raised while the discharger fingers engage and carry away the cakes. As is indicated in Fig. 1, this gripper cam shaft 137 is provided with the gear 93 meshing with the gear 94 on the stub shaft 98 which also carries the beveled gear 95. The corresponding beveled gear 96 on the main shaft 2 drives this cam shaft through these connections.

The feed devices may comprise a removable feed frame 51 which may be pivoted about the feed shaft 52. The free end of the frame may be held in any desired position as by providing the latch 60 having the pivoted operating handle 65 so that the latch may coöperate with any one of the catches 64 in the sector 63 mounted on the main frame. The spring locking handle 59 also mounted in this swinging feed frame coöperates with a suitable hole in the sector support so that on pulling out this locking pin shown in Fig. 1, the frame may be swung upward to the desired extent in which it will be held by the latch 60 shown in dotted lines, Fig. 3. The latch may be swung out of engagement with its catch 64

by operating its handle 65 and then the frame may be again lowered. It is desirable to provide a suitable spring 54 to counter-balance the weight of this feed frame and this spring may be connected between the pin 55 and the extension 53 of the swinging frame. The soap blanks 72 may be fed into the machine on the supply belt 37 passing over the roll 38 adjustably mounted in the bracket 39 so as to be taken up by the adjusting screw 40 shown in Fig. 2. This supply belt as indicated in Figs. 1 and 4, passes over the roll 101 at its forward end and feeds a continuous row of the soap blanks against a suitable stop 285 so as to be carried through the felt faced cleaners 66 by the feed fingers 49 on the feed chain 45 shown in Fig. 3. This chain runs on the sprocket 48 having its pin 49 mounted in suitable bearings in the bracket 50 and the chain also runs over the driving sprocket 43 on the shaft 67. The feed finger 47 engages the fixed retractor 62 mounted on the swinging frame and the feed finger is thereby swung up out of engagement with the soap blank which is thereby left in proper position on the table 36. The soap blanks are thus always left by the feed fingers 47 in the central position shown in Fig. 2 and distributed by the reciprocating double plunger die which as it travels to the left feeds the first blank into the left hand die box 102, then as it travels back to the right feeds the succeeding blank into the right hand die box 202 to be pressed in connection with the rear die therein. This feed frame 51 also carries the duplex delivery chains 46 and 146 mounted on suitable sprockets and provided with the delivery fingers 56 arranged at suitable intervals on the chains. These delivery fingers engage the finished soap cakes as 73 in Fig. 3 and carry them forward over the table 36 upon the discharge belts 156 and 256 on the rolls 85 on the shaft 86. This shaft is provided with the spur gear 87 meshing with the gear 88 on the gripper cam shaft 137 operated as described. As shown in Fig. 1, the sprocket wheel 90 of this same cam shaft operates the sprocket chain 138 passing over the corresponding sprocket 91 on the feed shaft 52 so as to operate the feed and delivery chains. Any suitable gearing may be used to operate the supply belt as for instance the sprocket chain 285 passing as shown in Fig. 3 over the sprockets 185 and 84 on the shaft 34 which may carry the beveled gear 85 meshing with the beveled gear on the shaft 83. This shaft also carries the beveled gear 82 which as shown in Fig. 4 meshes with the beveled gear 182 on the gripper cam shaft 137 operated as described.

Having thus described this invention in connection with illustrative embodiments, proportions, shapes and numbers of parts, to

the details of which disclosure the invention is not of course to be limited, what is claimed as new and what is desired to be secured by Letters Patent is set forth in the appended claims.

1. In presses for making cakes of soap or similar material, a frame, a table mounted on said frame, a plunger slide guide to slide in said frame, a crank and connector to reciprocate said plunger slide, a plunger head having a reduced neck passing through a slot in said table and a dove-tailed foot removably secured to said plunger slide, solid plunger die faces mounted on said head, a pair of die boxes mounted on said frame with which the die faces on said double plunger die alternately coöperate, rear dies slidably mounted within said die boxes, sleeves provided with collars secured to said rear dies, adjustable spring buffers coöperating with said collars to limit the compressing pressure of said rear dies, a stem mounted within each sleeve, a panel member forming part of the face of each rear die, a rod within said stem and screwed to said panel member to hold the same on said stem, a spring connected to said stem to normally retract said panel member, a pivoted trip coöperating with a stationary cam to project said panel member when said rear die is moved inward, connections for operating said rear dies from said plunger slide comprising cam grooves on said slide having relieved portions to permit the yielding of said rear dies during active compression and comprising a recess retracting said rear dies after they have reached their inmost discharging position, a removable feed frame comprising feed fingers feeding a series of blanks into alinement with said dies to be engaged by said double plunger die and alternately forced into engagement with said two die boxes and rear dies, detachable spring action grippers to engage the pressed articles from said rear dies and double delivery chains having fingers to engage and discharge said finished articles.

2. In presses for making cakes of soap or similar articles, a frame provided with a table, a plunger slide mounted in said frame, a crank and connector to reciprocate said plunger slide, a plunger head having a reduced neck and removably secured to said plunger slide, opposed die faces mounted on said head, a pair of die boxes mounted on said frame with which the die faces on said double plunger alternately coöperate, rear dies mounted within said die boxes, spring buffers coöperating with said rear dies to exert the compressing pressure thereof, a panel member forming part of the face of each rear die and a trip to project said panel member when said rear die is moved inward, connections comprising cam grooves on said plunger slide to operate said rear

dies in unison with said plunger dies and a feeder to feed a series of blanks into alignment with said dies to be engaged by said double plunger die and alternately forced
5 into engagement with said two die boxes and rear dies.

3. In presses for making cakes of soap or similar articles, a frame, a plunger slide mounted in said frame, means to reciprocate said plunger slide, opposed die faces
10 mounted on said plunger slide, a pair of die boxes mounted on said frame with which said double plunger die alternately coöperates, rear dies mounted within said die
15 boxes, yielding means for causing the compressing pressure of said rear dies and connections comprising cam grooves on said plunger slide to operate said rear dies in unison with said double plunger dies.

4. In presses, a frame, a plunger slide mounted in said frame, means to reciprocate said plunger slide, a die mounted on said slide, a die box coöperating with said
20 plunger die, a rear die mounted within said die box, yielding means to cause the compressing pressure of said rear die and connections comprising cam grooves in said plunger slide to operate said rear die in unison with said plunger die and allow its
25 yielding movement during active compression.

5. In presses, a frame, a plunger slide and connected plunger die mounted in said frame, means to reciprocate said plunger
35 slide and die, a die box coöperating with said plunger die, a rear die mounted to coöperate with said die box and yielding means to cause the active compression pressure of said rear die and connections comprising means on said plunger slide to operate said rear die in unison with said
40 plunger die and allow its yielding movement during active compression.

6. In presses, a frame, a plunger slide and connected plunger die, means to reciprocate said plunger slide and die, a rear die coöperating with said plunger die, yielding means to cause the active pressure of said rear die and connections comprising a cam groove in
50 said plunger slide to operate said rear die in unison with said plunger die and to allow the yielding movement of said rear die during active compression.

7. In presses, a plunger slide and connected plunger die, means to operate said plunger slide and die, a rear die coöperating with said plunger die, a yielding buffer to cause the active compressing pressure of said rear die and connections comprising a
60 cam groove in said plunger slide to operate said rear die in unison with said plunger die and allow the independent yielding movement of said rear die during active compression.

8. In presses, a frame, a plunger slide and

connected plunger die mounted in said frame, means to operate said plunger slide and die, a rear die coöperating with said plunger die and means comprising a cam groove in said plunger slide and a die lever
70 actuated thereby and connected to said rear die to operate said rear die in unison with said plunger die.

9. In presses, a frame, a plunger slide and connected plunger die, means to operate said plunger slide and die, a rear die coöperating with said plunger die and connections comprising a cam groove to operate said rear die by the movement of said plunger slide in unison with said plunger die.
80

10. In presses, rear dies, a plunger slide and connected opposing pair of plunger dies and connections comprising means on said plunger slide to operate said rear dies in unison with said plunger dies.
85

11. In presses, a frame, a plunger slide and pair of opposed plunger dies connected thereto, a pair of rear dies alternately coöperating with said plunger dies and connections including cam grooves in said plunger slide to operate said rear dies in unison with said plunger dies.
90

12. In presses, a frame, a plunger slide and connected pair of opposed plunger dies, a pair of rear dies alternately coöperating with said plunger dies, yielding means to cause the active compressing pressure of each of said rear dies and connections comprising means on said plunger slide to operate said rear dies in unison with said plunger dies and allow their independent yielding movement during active compression.
95

13. In presses, a frame, a plunger slide and connected pair of opposed plunger dies, yielding means to cause the active compressing pressure of said dies and cam operated connections comprising means on said plunger slide to operate said rear dies in unison with said plunger dies.
100

14. In presses, a frame, a plunger slide and connected pair of opposed plunger dies, a pair of rear dies alternately coöperating with said plunger dies and operating connections comprising levers and cam grooves on said plunger slide to operate said rear dies in unison with said plunger dies.
105

15. In presses, a frame, a plunger slide and connected pair of opposed plunger dies mounted in said frame, a pair of rear dies alternately coöperating with said plunger dies, yielding buffers to cause the active compressing pressure of said rear dies and connections comprising levers connected to said rear dies and cam grooves in said plunger slide to operate said rear dies in unison with said plunger dies.
110

16. In presses, a frame, a plunger slide, a connected pair of opposed plunger dies mounted in said frame, rear dies alternately coöperating with said plunger dies, spring
115

5 buffers connected with said rear dies to cause their active compressing pressure and connections comprising levers connected with said rear dies and cam grooves in said plunger slide to operate said rear dies in unison with said plunger dies and allow their independent yielding movement during active compression.

10 17. In presses, a frame, a plunger slide and connected pair of opposed plunger dies mounted in said frame, a pair of box dies and of rear dies alternately cooperating with said plunger dies, spring buffers connected with said rear dies to cause their active compressing pressure and connections comprising levers connected with said rear dies and cam grooves in said plunger slide to operate said rear dies in unison with said plunger dies and allow their independent yielding movement during active compression.

25 18. In presses, a frame, a plunger slide and connected pair of opposed plunger dies mounted in said frame, a pair of box dies and of rear dies alternately cooperating with said plunger dies, yielding means to cause the active compressing pressure of said rear dies and connections comprising levers connected with said rear dies and cam grooves in said plunger slide to operate said rear dies in unison with said plunger dies and allow their independent yielding movement during active compression.

30 19. In presses, a frame provided with a table, a plunger slide mounted in said frame and carrying a pair of opposed plunger dies above said table, a pair of die boxes and of rear dies alternately cooperating with said plunger die, yielding means to cause the active compressing pressure of said dies and cam connections comprising means on said plunger slide to operate said rear dies in unison with said plunger dies and allow their independent relative yielding movement during active compression and a feeder delivering a series of blanks in alinement with said dies to be engaged alternately by

each of said plunger dies and fed into the cooperating box and rear die.

20. In presses, a frame comprising a table, 50 a plunger slide mounted in said frame and carrying a pair of opposed plunger dies above said table, a pair of box dies and of rear dies alternately cooperating with said plunger dies, a feeder to supply a single 55 line of blanks along said table between and into alinement with said box dies to be alternately engaged by each of said plunger dies and fed thereby into the cooperating box and rear dies and double delivery devices engaging and discharging the completely pressed articles from said dies.

21. In presses, a frame comprising a table, a pair of opposed plunger dies mounted above said table, a pair of rear dies alternately cooperating with said plunger dies, 65 a feeder feeding a single line of articles over said table between and into alinement with said rear dies to be alternately engaged by each of said plunger dies and fed thereby 70 into engagement with the cooperating rear die and a pair of delivery devices engaging the pressed articles and delivering them from said dies over said table.

22. In presses, a frame provided with a 75 table, a pair of opposed plunger dies operating above said table, a pair of box dies and rear dies alternately cooperating with said plunger dies, a swinging feed device mounted above said table and comprising a chain 80 feeder provided with yielding feed fingers to feed a series of articles over said table and leave them in alinement with said dies and comprising a pair of delivery chains provided with fingers to engage the completely pressed articles and discharge them 85 from said dies over said table and means to bodily swing said feed device away from said dies.

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