July 27, 1926. 1,593,565

A. BREDENBERG

PRESS FOR OPERATING UPON SHEET MATERIAL

Filed Oct. 29, 1924 5 Sheets-Sheet 1

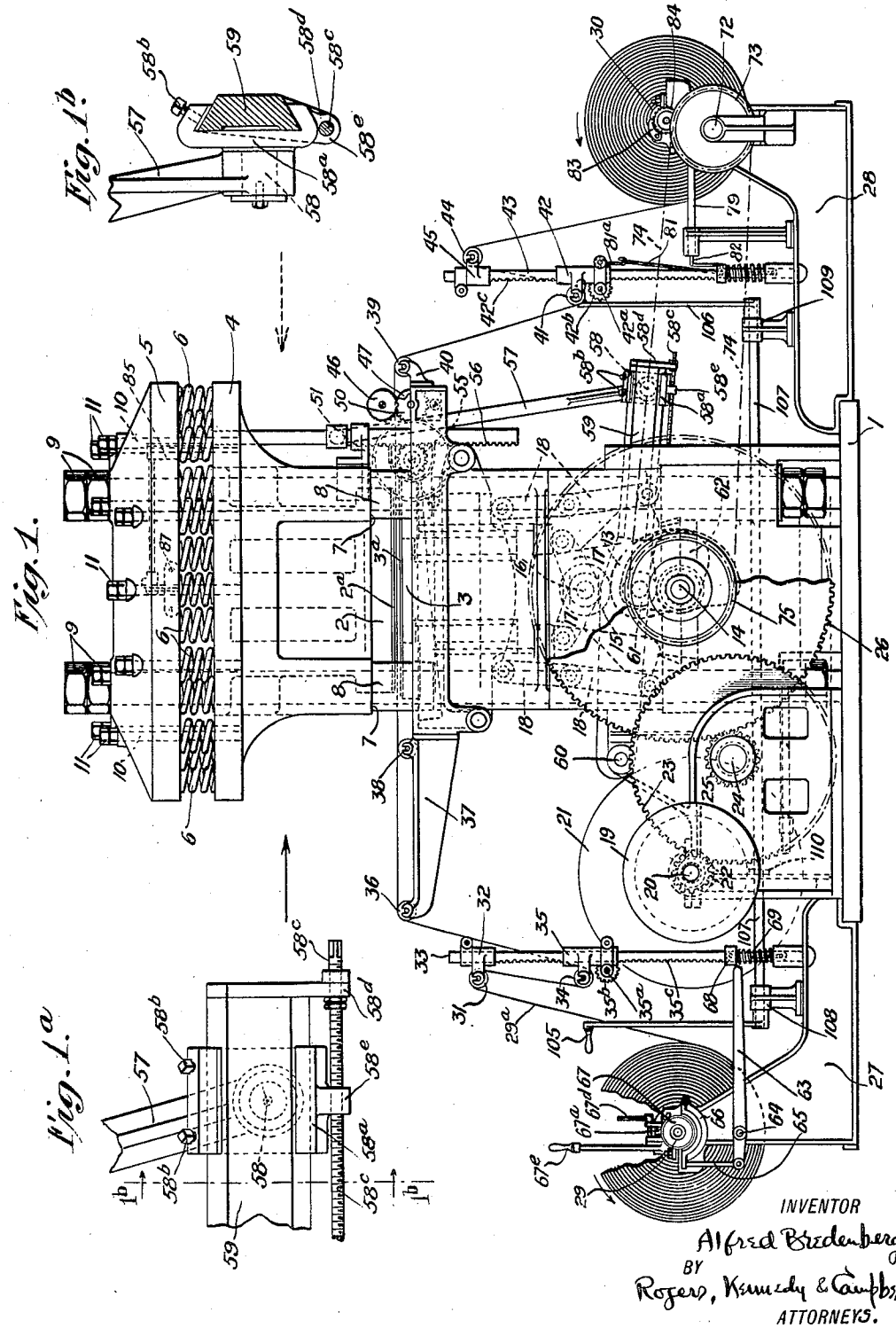


Fig. 1.

Fig. 1a.

Fig. 1b.

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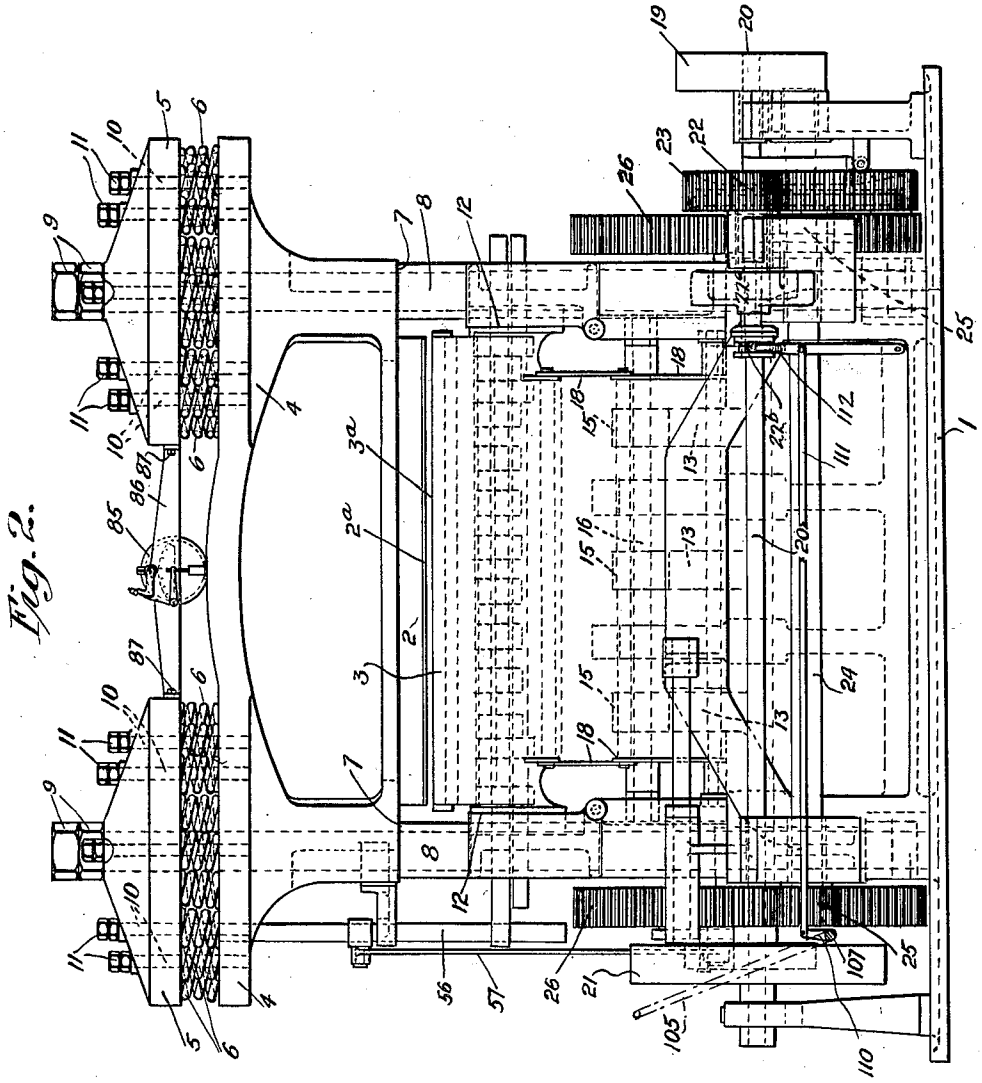


Fig. 2.

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Fig. 4.

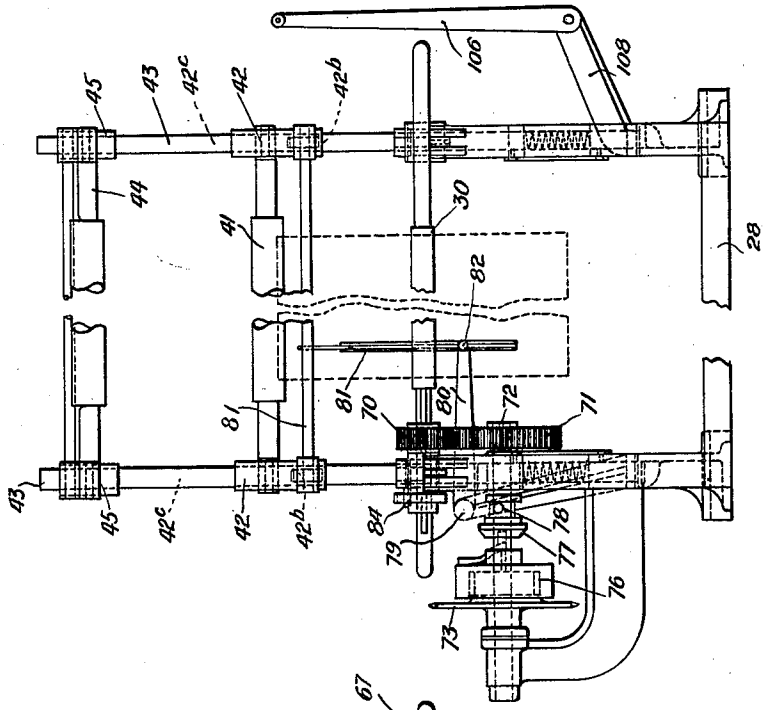
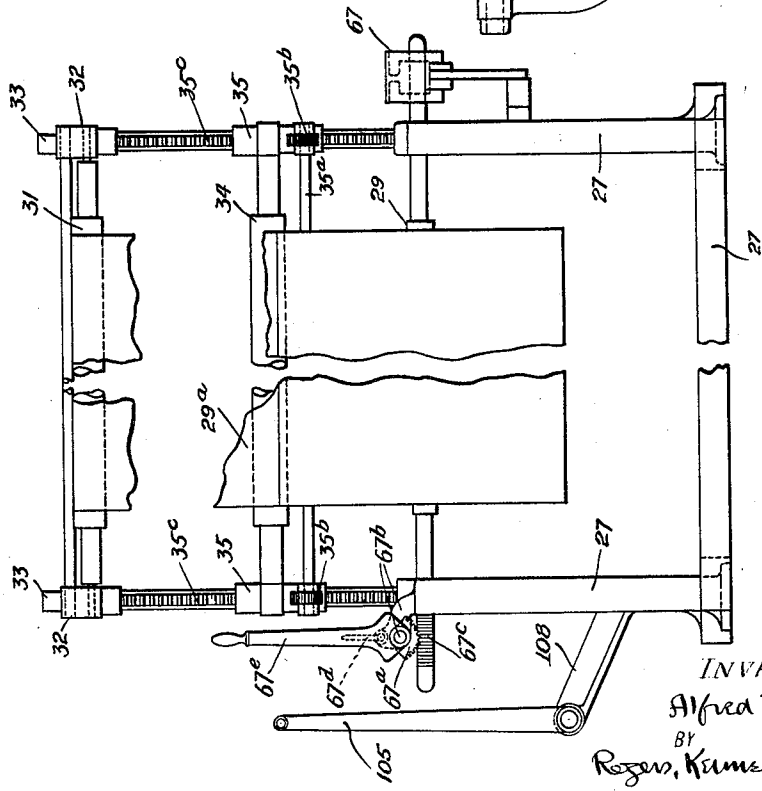


Fig. 3.



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Fig. 5.

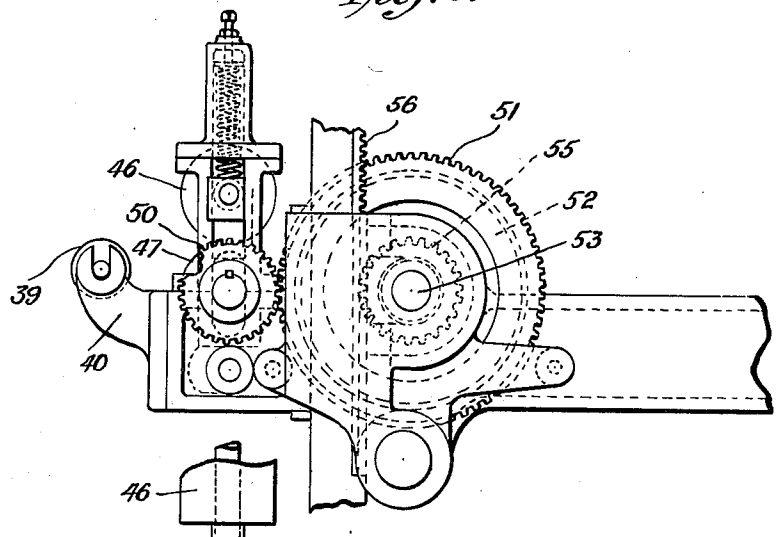


Fig. 6.

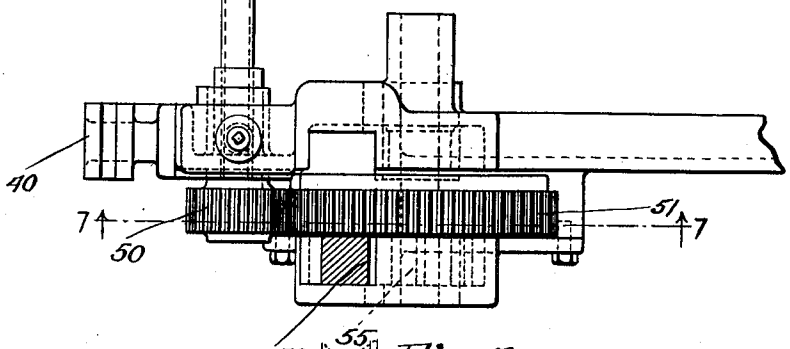
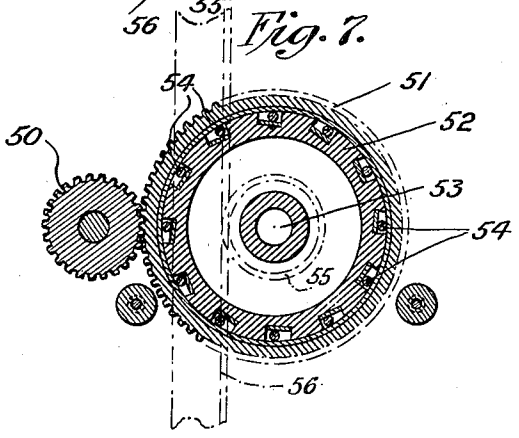


Fig. 7.



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Fig. 8.

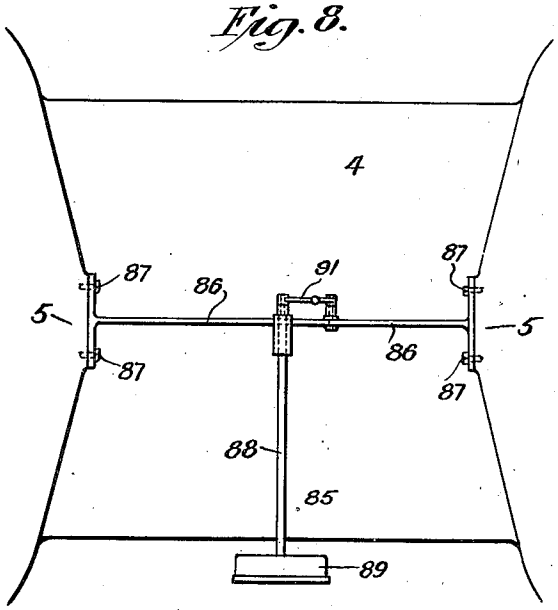


Fig. 9.

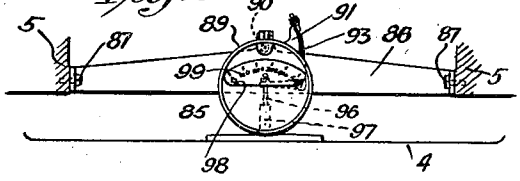


Fig. 9a.

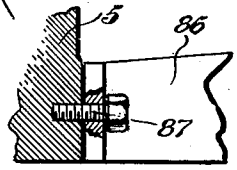


Fig. 11.

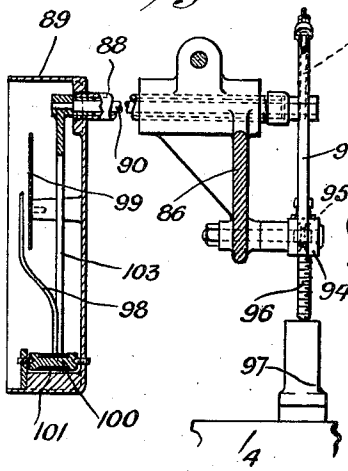
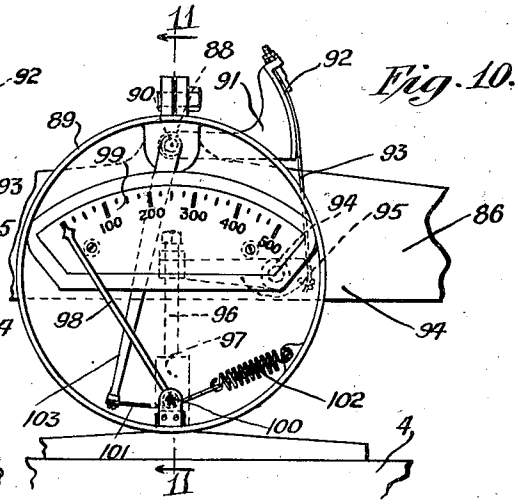


Fig. 10.



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UNITED STATES PATENT OFFICE.

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PRESS FOR OPERATING UPON SHEET MATERIAL.

Application filed October 29, 1924. Serial No. 746,689.

This invention relates to presses for operating on sheet material such as leather to flatten the same and remove the wrinkles, or to emboss the same, or to subject the material to other operations. The invention is more particularly concerned with presses for these purposes which embody a stationary head or member, a movable head or member, and power mechanism for operating the latter, and the invention consists of certain improvements directed to the means for automatically feeding the sheet material between each pressing operation of the press; to means for indicating the degree of pressure to which the material is subjected and for adjusting said pressure, and to other features, which improvements will be fully set forth in the specification to follow, and the novel features of which will be outlined in the appended claims.

In the accompanying drawings:

Fig. 1 is a side elevation of a press having my invention embodied therein.

Fig. 1[a] is an elevation on an enlarged scale of a detail.

Fig. 1[b] is a vertical sectional elevation through the same on the line 1[b]—1[b] of Fig. 1[a].

Fig. 2 is a front elevation of the press with certain parts omitted.

Fig. 3 is a side elevation, as viewed in the direction of the full line arrow in Fig. 1, of the feeding mechanism for the sheet material.

Fig. 4 is a similar view of said mechanism looking in the direction of the dotted line arrow in Fig. 1.

Fig. 5 is an elevation on an enlarged scale of the feeding rolls for the sheet material and the operating parts associated therewith.

Fig. 6 is a plan view of the same.

Fig. 7 is a longitudinal section taken on the line 7—7 of Fig. 6.

Fig. 8 is a fragmentary plan view of the press showing the application thereto of the pressure indicating mechanism.

Fig. 9 is a front elevation of the same.

Fig. 9[a] is a fragmentary enlarged detailed section showing the manner of supporting the indicating mechanism.

Fig. 10 is a front elevation of the indicating dial and pointer and the operating parts.

Fig. 11 is a vertical section through the same on an enlarged scale, on the line 11—11 of Fig. 10.

Referring to the drawings:

My improved press comprises a fixed base or frame 1, a stationary head 2 overlying said base, and a movable head 3 power operated as will be presently described to move vertically to and from the stationary head, the said stationary head being provided on its underside with a flat surface 2[a], and the movable head being provided on its upper side with a similar surface 3[a], between which surfaces the material is pressed in the operation of the machine.

The stationary head, in accordance with one feature of my invention, comprises a lower main head portion 4, and two upper cap portions 5, between which portions are interposed springs 6 for the purpose presently to be described, the said main portion 4 being supported on shoulders 7 on rods 8 fixed to and rising from the base frame and extending loosely through the head portion 4. The cap portions 5 overlie the opposite ends of the head portion 4 and the rods 8 extend loosely through the cap portions, which latter are confined on the rods by means of nuts 9 screwed on the ends of the rods and bearing on the upper sides of the cap portions. Rods or stems 10 project upwardly from the main head portion 4 through the springs 6 thereon and extend loosely through the cap portions 5, and have nuts 11 screwed on their upper ends which bear against the top of the cap portions, for the purpose more fully described later on.

The vertically movable head 3 slides at its ends in suitable fixed guides 12 sustained by the rods 8, and it is moved to and from the stationary head by means of a series of cams 13 fixed on a main cam shaft 14 journaled in

bearings in the base frame. These cams engage rollers 15 on a horizontal rod 16 guided vertically at its ends in guides on the base frame, and toggle links 17 are pivoted at their inner ends to said rod and extend upwardly therefrom and have their outer ends pivoted to the lower links of toggle links 18, which latter are pivoted respectively to the base frame and to the movable head at the ends of the latter. As a result of the arrangement described, when the cams are rotated, toggle links 17 will be alternately extended and folded and will correspondingly extend and fold the toggle links 18, with the result that the movable head will be forced towards the stationary head with powerful pressure in performing the pressing operation on the material, and will be retracted therefrom in releasing the material for the feed of the latter.

The cam shaft 14 receives its motion through intermediate gearing from a drive pulley 19 on one end of a drive shaft 20 journaled in the base frame, and having fixed to its opposite end a flywheel 21. A pinion 22 mounted loosely on the drive shaft is adapted to be clutched thereto by the clutch 22^a operated by a clutch collar 22^b as will be more fully described later on, and this pinion 22 meshes with a gear 23 on one end of a countershaft 24 journaled in bearings in the base frame. The shaft 24 carries at its opposite ends pinions 25, 25 which mesh with large gears 26, 26 on the cam shaft.

The parts above described, with the exception of the specific form of the stationary head, may be of the usual and ordinary construction well known in this art, and this construction, except in so far as hereinafter indicated, forms no part of the present invention.

One feature of my invention as before stated resides in the mechanism for automatically feeding the sheet material between the stationary and movable heads, and in carrying out this feature of the invention a bracket 27 is fixed to the base frame at the front of the same, and a similar bracket 28 is fixed to said base frame at the rear. On the front bracket 27 a supply roll 29 is rotatably mounted and has wound on it the sheet material 29^a to be operated on, which material is led between the stationary and movable heads and is wound upon a rewind roll 30 mounted for rotation on the rear bracket 28. From the supply roll 29, the sheet material passes over a guide roller 31 journaled in brackets 32 fixed to the upper ends of guide rods 33 fixed to and extending upwardly from the front bracket 27, and from this roller the material passes downwardly and around a guide roller 34 journaled in slides 35 movable up and down on the rods 33, and from the roller 34 the material passes upwardly and over a guide roller 36 journaled in the outer ends of brackets 37 projecting forwardly from the machine frame at about the level of the lower face of the stationary head. From the roller 36 the material passes horizontally rearwardly between the pressing faces of the two heads after passing over a guide roller 38 journaled in the inner ends of the brackets 37, and beyond the presser member it passes over a guide roller 39 journaled in brackets 40 projecting rearwardly from the machine frame, the material thus guided by the three rollers 36, 38 and 39 traveling in a straight horizontal path in a plane substantially coincident to the plane of the meeting faces of the two pressure heads. From the roller 39 the material passes downwardly beneath and around a guide roller 41 journaled in slides 42 movable up and down on rods 43 fixed to and extending upwardly from the rear bracket 28, the material from said roller 41 passing upwardly over and around a guide roller 44 journaled in brackets 45 fixed to the upper ends of the rods 43, whence the material passes downwardly and is wound on the rewind roll 30.

A horizontal shaft 35^a is journaled in the slides 35, and pinions 35^b are fixed to said shaft and engage rack teeth 35^c on the rods 33, whereby the two slides are caused to move up and down on the rods in unison and at equal speeds, and will thereby maintain the parallelism of the rollers 31 and 34. Similarly a horizontal shaft 42^a is journaled in the two slides 42 and has pinions 42^b fixed to it which mesh with rack teeth 42^c on the rods 43, by which arrangement the parallelism of the rollers 41 and 44, in the up and down movements of the slides, will be maintained.

The sheet material guided as above described from the supply roll 29 to the rewind roll 30, is positively advanced periodically between each pressing operation, so that fresh portions of the material will be brought in position between the pressing heads to be acted on thereby. In the present instance this feed of the material is effected by an upper feed or draw roller 46 and a lower feed or draw roller 47, which rollers are journaled one over the other on the machine frame at a point in rear of the presser heads and just forwardly of the guide roller 39, and in position to receive between them the horizontal stretch of the sheet material in its passage between the heads. The lower roller has a pinion 50 fixed to it which engages a gear ring 51 mounted loosely on a clutch ring 52 which in turn is mounted loosely on a shaft 53 sustained by the machine frame. The clutch ring is provided in its peripheral surface with a number of open pockets in each of which is mounted a clutch roller 54 adapted when the ring is moved in one direction to

bind against the inner peripheral face of the gear ring 51 and to thereby drive the same and adapted when moved in the opposite direction to disengage the gear ring and move relatively thereto. The hub of the clutch ring 52 has fixed to it a pinion 55 which is engaged by a vertical reciprocating rack 56 guided in the machine frame and stationary head, and to this rack the upper end of a link 57 is pivoted and has its lower end pivoted as at 58 to the rear end of a horizontal vibrating lever 59 which extends forwardly above the cam shaft and is pivoted at its far end as at 60 to the machine frame at the front. The lever 59 carries a roller 61 acted on by a cam 62 fixed to the cam shaft 14 which cam, in each rotation of the shaft, will rock the lever 59 upwardly and thereby move the rack 56 upwardly and rotate the drawing rolls and feed the material a predetermined distance forward.

The cam 62 and parts operated thereby are so related to the cams 13 operating the movable presser head, that the rack bar 56 will be moved upwardly and will operate the feed rollers to advance the material, when the movable presser head descends after each pressing operation, and on the ascent of the presser head in the next pressing operation, the rack bar will be moved downwardly, and due to the provision of the one-way clutch between the gear ring 51 and the pinion 55, such downward movement will not affect the feed rolls. Therefore the material will be fed forward a predetermined distance between each pressing operation, and remain stationary during pressing.

In order that the pivotal connection of the link 57 with the lever 59 may be adjustable longitudinally of the lever for the purpose of varying the throw of the rack 56, the pivot 58 of the link is formed on a block 58^a which is recessed in its face to fit and slide along the lever, set screws 58^b being carried by the block and engaging the edge of the lever to hold the block in its different adjusted positions thereon. The block is adjusted lengthwise of the lever by means of an adjusting screw 58^c which is screwed through a lug 58^d depending from the end of the lever and through a lug 58^e depending from the block, the rotation of this screw in opposite directions shifting the block to the right or left as the case may be and correspondingly effecting the adjustment of the pivotal connection of the link 57 with the lever, longitudinally of the latter.

On the forward feed of the material by the feed rollers a tension will be created on the web at the supply side of the machine, and a slack will be created in the web on the rewind side of the machine. Such tension will raise slides 35 on their guide rods, and the upward yielding of these will prevent any jerk on the heavy roll of material, it being understood that there will be sufficient material in the stretch between the guide rollers 31 and 34 to furnish the requisite degree of feed of the material by the feed rollers on the ascent of the slides 35 as described. When the forward feed of the material ceases, the slides 35 will slowly descend by their weight from their raised position, and will unwind from the supply roll sufficient material for the next feeding operation. The roller 34 movable up and down with the slides on the guide rods 33, constitutes in effect a yielding means which when it moves in one direction, downwardly in the present case, will act as hereinbefore described to unwind a length of material from the supply roll, and which is adapted to be operated and moved upwardly by the pull of the material thereon in the operation of the feeding mechanism.

When the slides 35 reach a certain point in their descent, the shaft 35^a will engage the inner end of a lever 63 pivoted as at 64 on the bracket 27 and having its forward end connected by a link 65 with a friction brake 66 acting on a brake drum 67 on the journal of the supply roll, and the descending shaft by depressing said lever will force the brake into engagement with the brake drum and will thereby stop the further unwinding movement of the roll, the stretch of the material between the guide rollers 31 and 34, when the slides are in their lowermost position, being sufficient as before mentioned, to furnish the requisite amount of material for the next feeding operation. The descent of the slides 35 is cushioned by buffer collars 68 sliding on the rods 33 and resting on springs 69 encircling said rods and supported on the bracket 27.

The journal of the supply roll 29 is mounted in its bearings so that it can be shifted endwise in order to properly center the roll with reference to the presser heads and to correct any misalignment that might in the operation of the machine take place. This journal is locked for the time being in position by means of a segmental rack 67^a pivoted to a bracket 67^b sustained by the journal bearing, which segmental rack is engaged by a peripheral rack 67^c formed on the end of the journal, the segmental rack being releasably locked in position by means of a locking device 67^d. The segmental rack has fixed to it an operating lever 67^e by means of which the rack may be swung on its axis and by engagement with the rack teeth, effect the endwise shifting of the journal, it being understood that the locking device 67^d will be operated to release the segmental rack when the adjustment of the roll is to be made and is to be thereafter operated to again lock the segmental rack in order to maintain the adjusted position of the roll.

The slack in the material created on the rewind side of the machine by the forward feed as described, is taken up by the descent of the slides 42 on their guide rods 43, and when the slides reach a certain point in their descent, they will act automatically, as will now be described, to start the rotation of the rewind roll to wind up the pressed material, and when the material has all been wound, the rewind roll will be automatically brought to rest.

The rewind roll has fixed to its journal a pinion 70 with which meshes a pinion 71 fixed to a shaft 72 mounted for rotation in bearings sustained by the bracket 28. Near its outer end the shaft has mounted for rotation thereon a sprocket wheel 73 which is driven constantly from the shaft 14 by a sprocket chain 74 passing over said sprocket wheel and over a sprocket wheel 75 on shaft 14. The sprocket wheel 73 is adapted to be clutched to the shaft 72 by a clutch mechanism 76 operated by a clutch collar 77 splined to the shaft 72. The clutch collar is engaged by a fork 78 depending from a horizontal fore-and-aft extending shaft 79 mounted in a bearing sustained by the bracket 28, and extending forwardly, and an arm 80 is fixed to the end of the shaft 79 and extends inwardly laterally of the machine, and to the end of this arm the lower end of a chain or cable 81 is fastened, which has its upper end coupled to a horizontal rod 81^a connected with the slides 42. The form and relation of the parts described is such that the clutch will be thrown into action to start the rotation of the rewinding roll when the slides 42 descend in the creation of the slack in the web on the feed of the same, such descent of the slides causing the rod 81^a, to engage a pin 82 projecting forwardly from the end of the arm 80 and by such engagement shifting the clutch fork and connecting the clutch. As the rewind roll rotates and winds the finished material on it, the slides will be pulled up on their rods, and when they reach their uppermost position they will pull up on the chain and will shift lever 80 and thereby disconnect the clutch and stop the motion of the rewind roll.

It is seen therefore that the rewind roll is automatically started to take up the slack in the web caused by the forward feed of the material, and when said slack has all been wound on the roll, the rotation of the latter will be automatically arrested. Retrograde movement of the rewind roll is prevented by means of a ratchet dog 83 engaging a ratchel wheel 84 on the journal of the rewind roll. The roller 41 movable up and down with the slides 42 on the guide rods 43, constitutes in effect a yielding means which when moved in one direction, downwardly in the present instance, will act as described to take up the slack in the pressed material created by the feed of the material, and which is adapted to be operated and elevated when the rewind roller is rotated to wind up said slack.

By the mechanism above described for feeding the sheet material, no greater strain is imposed on the feed rollers than is necessary to raise the slides 35 and the parts carried thereby. The weight of these parts is comparatively inconsiderable, and as the rolls of the material weigh many hundreds of pounds on account of the great lengths handled, it would not be possible, by reason of the correspondingly great inertia of the roll, to start the same by the direct pull thereon of the feed rollers. The feed rollers have only the work imposed on them of lifting the slides, and the slides by their gradual and slow descent on the termination of the feed by the feed rollers, will act to start the rotation of the supply roll gradually and easily, and will thus overcome the inertia without jerk or undue strain.

In operating on sheet material in presses of this type, more particularly in embossing leather or so-called artificial leather, it is desirable to know the exact pressure applied per square inch, and it is desirable to have the pressure flexible so that if the material varies in thickness, the pressure will be approximately the same for different thicknesses. To meet these conditions the special form of stationary presser head before referred to is adopted, said head comprising, as hereinbefore described, a lower main portion or head proper 4, upper cap portions 5, and two groups of interposed springs 6. These springs are placed under initial tension by compressing them between the two portions of the head so that if the aggregate resistance represented by the springs is overcome in the upward movement of the movable head 3 in the pressing operation on the material, the lower portion 4 of the stationary head will yield upwardly relative to the cap portions. Such relative movement of the parts is utilized to operate an indicating mechanism 85 shown in Figs. 2, and 8 to 11, which mechanism is constructed and applied in the following manner.

A horizontal frame or cross bar 86 is set in between the two cap portions 5 and is fastened loosely thereto as by the bolts 87, and a horizontal tube 88 is fixed at its rear end to said bar and extends forwardly therefrom to the front of the press where it has fixed to it a dial casing 89. Mounted to oscillate in this tube is a shaft 90 having fixed to its rear end an arm 91 provided with a segment surface 92. A steel band 93 is connected at one end to said arm at the end of the segment surface and is connected at its opposite end to the hub 94 of a lever 95 journaled on a fore-and-aft axis on the

cross bar 86. At its free end the lever 95 carries a downwardly extending set screw 96 which rests on a lug 97 projecting upwardly from the lower main portion 4 of the stationary presser head, so that any upward movement of the head 4 relative to the cap portions 5 and the cross bar 86, when the resistance of the springs is overcome, will rock lever 95 and through the medium of band 93 and arm 91, will correspondingly rock shaft 90. The movement of shaft 90 is transmitted to a dial pointer 98 to cause the same to traverse a dial 99 fixed within the dial casing and provided with graduations calibrated with reference to the resistance of the springs. This pointer is fixed at its lower end to a drum 100 mounted for oscillation in the base of the dial casing, and a steel belt 101 is passed several times around the drum and is connected at one end to a spring 102 anchored in the dial casing. The other end of the belt is fixed to the free lower end of an arm 103 whose upper end is fixed to the forward end of the shaft 90 within the dial casing.

The form, construction and relation of the foregoing parts is such that when the springs 6 are relaxed and free from tension the pointer will be on the zero mark as shown in Fig. 10, and when the springs are set under the tension necessary for the maximum pressure to which the material is to be subjected, the pointer will register with the particular graduation on the dial indicating such pressure. When under such setting of the parts, the pressure is exceeded to the slightest degree, the pointer will be moved and will indicate such excess. In this way, the operator will be apprized at all times of the exact pressure to which the material is being subjected in the operation of the press and will be immediately warned when such pressure is exceeded. The mechanism therefore affords means for preventing the material from being subjected to a greater degree of pressure than is desired, and it prevents injurious strains and stresses on the operating parts of the mechanism.

In tensioning the springs for the desired resistance, the parts are manipulated as follows. The nuts 11 are screwed down into contact with the caps 5. The press is then "turned over" and the movable head caused to push the lower portion 4 of the stationary head upwards, thereby forcing the caps 5 against the nuts 9, compressing the springs a slight amount, and lifting the portion 4 slightly off its supporting shoulders 7 on the rods 8. While the portion 4 of the stationary head is at its highest point, the nuts 11 which had been lifted out of contact with the caps on the upward movement of the portion 4, are screwed down again into contact with the caps, thereby holding the springs under compression. When the movable head descends, the lower portion 4 of the stationary head will follow and seat again on the shoulders 7 on the upright rods 8, and these operations are repeated until the springs are placed under the tension necessary for the maximum pressure to which the material is to be subjected.

As before stated the cross bar 86 carrying the indicating mechanism is set in between the cap portions 5 loosely by means of the bolts 87, the purpose being to enable the indicator to properly respond to the relative movement of the parts and indicate the true pressure, although the material under pressure may be thicker at one side than at the other. The looseness referred to is a looseness in the longitudinal direction of the bar 86 and is best shown in Figs. 9 and 9[a] where it will be seen that a slight play is permitted between the head of the bolts 87 and the inner adjacent faces of the cap portions 5. These bolts fit snugly both in the holes in the cross bar and in the cap portions so that there is no relative vertical movement of the parts permitted but only a relative movement longitudinally of the bar.

The machine is controlled in its operation, that is it is started and stopped by means of two hand levers 105 and 106 respectively at the front and rear of the machine as best seen in Fig. 1. At their lower ends these levers are fixed to the opposite ends of a fore-and-aft extending rock shaft 107 mounted in bearings 108 and 109 supported respectively by the front and rear brackets 27 and 28. At a point in line with the axis of the drive shaft 20 the rock shaft 107 has fixed to it an upwardly extending arm 110 pivoted to one end of a link 111 which extends below shaft 20 and has its opposite end pivoted to a lever 112 pivotally supported at its lower end by the base frame of the machine and forked at its upper end to engage and operate the clutch collar 22[b] before referred to. Due to this construction and arrangement of the parts, the pinion 22 on the drive shaft may be clutched to or unclutched therefrom so as to connect the drive shaft with or disconnect the same from the operating mechanism of the machine.

It will be understood that the principles of this invention cover numerous variations of embodiment and various applications and uses. When sheet material is referred to this may include a mere carrying sheet or web on which may be positioned independent or small leather or other pieces to be pressed. An endless web may be used to support the material to be pressed. The pressure indicating mechanism may be employed with any type of feed mechanism. Since many matters of operation, arrangement, combination, structure and detail may be variously modified without departing from the underlying principles, it is not in-

tended to limit the invention to such matters except so far as specified in the appended claims.

Having thus described my invention, what I claim is:

1. In a press of the character described, the combination of presser heads operable upon the material fed between them, a rotatably mounted supply roll adapted to hold a supply of the material, yielding actuating means acting on the stretch of material between the supply roll and presser heads and operable to unwind lengths of material from the supply roll, and feeding mechanism acting on the material after it leaves the presser heads and functioning both to operate the yielding actuating means and to advance the unwound material between the presser heads.

2. In a press of the character described, the combination of presser heads operable periodically on the sheet material fed between them, a rotatably mounted roll adapted to hold a supply of the sheet material, feeding means acting on the material to advance the same between the presser heads in the intervals between the pressing operations and thereby create slack in the pressed material, yielding actuating means acting on the stretch of material between the feeding means and supply roll and operating to unwind a supply of material from the roll, a rewind roll adapted to receive the pressed material, and a yielding actuating member acting on the stretch of material between the feeding means and rewind roll and operating to take up the slack in said material, said actuating member being operated by the rotation of the rewind roll.

3. In a press of the character described, the combination of presser heads operable periodically on the sheet material fed between them, a rotatably mounted roll adapted to hold a supply of the sheet material, feeding means acting on the material to advance the same periodically between the presser heads in the intervals between the pressing operations, a vertically movable gravitating member acting on the stretch of material between the feeding means and supply roll and operating by its descent to unwind a supply of material from the roll, and thereby create slack in the pressed material, a rewind roll adapted to receive the pressed material, and a vertically movable gravitating member acting on the stretch of material between the feeding means and rewind roll and operating by its descent to take up the slack in the material created by the feed of the same.

4. In a press of the character described, the combination of presser heads operable periodically on the material fed between them, a rotatably mounted rewind roll to receive the pressed material from the presser heads, means for feeding the material between the heads and thereby creating slack in the material between the presser heads and rewind roll, and a yielding actuating member between the presser heads and rewind roll and acting to take up said slack, said member being operated by the rotation of the rewind roll.

5. In a press of the character described, the combination of presser heads operable periodically on the material fed between them, means for feeding the material between the heads in the intervals between the pressing operations, and thereby creating slack in the pressed material, a rotatably mounted rewind roll to receive the pressed material, and a vertically movable member acting on the pressed material and adapted by its descent to take up the slack created by the feed of the material.

6. In a press of the character described, the combination of presser heads operable periodically on the material fed between them, means for feeding the material between the heads in the intervals between the pressing operations, a rotatably mounted roll to receive the pressed material, power means for operating the same, and means governed by the feed of the material for controlling the action of the power means on said roll.

7. In a press of the character described, the combination of a stationary presser head, a presser head movable to and from the stationary head, power means for operating the movable head, a rotatably mounted roll adapted to hold a supply of sheet material to be pressed, a rotatably mounted rewind roll in position to receive the pressed material, means for rotating said rewind roll, front and rear guiding rolls in position to direct the material in a straight line between the presser heads, feeding means acting on the material to advance fresh portions of the same to the action of the presser heads, a yielding actuating roller acting on the stretch of material between the supply roll and front guide roller and adapted by the feed of the material to be moved bodily in one direction, and operating by its movement in the opposite direction to unwind a fresh supply of the material from the supply roll, and a yielding actuating roller acting on the stretch of material between the rear guide roller and the rewind roll and adapted when the rewind roll winds up the pressed material, to be moved bodily in one direction, and operating when moved in the opposite direction to take up the slack in the material caused by the feed of the same.

8. In a press of the character described, the combination of a stationary head, a head movable to and from the stationary head, power means for operating the movable head, a rotatably mounted roll adapted to hold a supply of sheet material to be

pressed, a rotatably mounted rewind roll in position to receive the pressed material, means for rotating said rewind roll, front and rear guiding rolls in position to direct the material in a straight line between the presser heads, feeding means acting on the material to advance fresh portions of the same to the action of the presser heads, a vertically movable roller acting on the stretch of material between the supply roll and front guide roller and adapted to be elevated in the feed of the material, and operating by its descent to unwind a fresh supply of the material from the supply roll, and a vertically movable roller acting on the stretch of material between the rear guide roller and the rewind roll. and adapted to be elevated when the rewind roll is rotated to wind up the pressed material, and operating by its descent to take up the slack in the material caused by the feed of the same.

9. In a press of the character described, the combination of presser heads operable periodically on the material fed between them, means for feeding the material between the heads in the intervals between the pressing operations and thereby creating slack in the pressed material, a rotatably mounted rewind roll to receive the pressed material, power means for operating said roll, a clutch controlling the operation of said power means on the roll, a yielding member acting on the pressed material to take up said slack, and means governed by the movement of said yielding member for controlling the clutch.

10. In a press of the character described, the combination of presser heads operable on the material fed between them, a rotatably mounted supply roll adapted to hold a supply of said material, means for unwinding a length of the material from the roll, means for feeding said length of material between the presser heads, and means controlled by the unwinding means for applying a braking action to the said roll.

11. In a press of the character described, the combination of presser heads operable on the material fed between them, a rotary roll adapted to hold a supply of the material, feeding means acting on the material to pull the same forwardly between the presser heads in the intervals between the pressing operations, and thereby put the material under tension between the feeding means and supply roll, and a rectilinearly movable yielding member acting on the stretch of material between the supply roll and presser heads and operating when moved in one direction to unwind lengths of material from the supply roll, and adapted to be moved in the opposite direction by the pull of the material in its feeding action.

12. In a press of the character described, the combination of presser heads operable on the material fed between them, a rotatably mounted roll adapted to hold a supply of the material, feeding means acting on the material to advance the same between the presser heads in the intervals between the pressing operations, upright guides between the supply roll and presser heads formed with racks, slides movable up and down on said guides, pinions journaled in the slides and engaging the racks, and a guide roller journaled in the slides and engaging the stretch of material between the supply roll and presser heads and operating by its descent to unwind lengths of material from the supply roll, said guide roller being adapted to be elevated by the pull of the material thereon in its feeding action.

13. In a press of the character described, the combination of presser heads operable on the material fed between them, a rotatably mounted supply roll for holding a supply of the material, feeding means acting on the material to advance the same between the presser heads in the intervals between the pressing operations, upright fixed guides between the supply roll and presser heads, a fixed material guiding member on said guides over which the material passes from the supply roll, and a member movable up and down on said guides under which the material passes to the presser heads, said movable member acting in its descent to unwind lengths of material from the supply roll, and being adapted to be elevated by the pull of the material thereon in its feeding action.

14. In a press of the character described, the combination of presser heads operable on the material fed between them, means for holding a supply of the material, a rotatably mounted rewind roll to receive the pressed material from the presser heads, means for feeding the material between the presser heads and thereby creating slack in the pressed material, upright fixed guides between the presser heads and rewind roll, and a member movable freely up and down on said guides and bearing on the stretch of material between the presser heads and rewind roll, said member in its downward movement acting to take up the slack created by the feed of the material, and adapted to be moved upwardly by the winding action of the rewind roll.

15. In a press of the character described, the combination of presser heads operable on the material fed between them, means for holding a supply of the material, a rotary rewind roll to receive the pressed material from the presser heads, means for feeding the material between the presser heads and thereby creating slack in the pressed material, power means for rotating the rewind roll, a clutch mechanism con-

trolling the operation of the power means on the rewind roll, a member movable in opposite directions and engaging the stretch of material between the presser heads and rewind roll, and operating when moved in one direction to take up the slack created by the feed of the material, and adapted to be moved in the opposite direction by the winding action of the rewind roll, and means operated by the movement of said member in taking up the slack for throwing the clutch into action.

16. In a press of the character described, the combination of presser heads operable on the material fed between them, means for holding a supply of the material, a rotary rewind roll to receive the pressed material from the presser heads, means for feeding the material between the presser heads and thereby creating slack in the pressed material, power means for rotating the rewind roll, a clutch mechanism controlling the operation of the power means on the rewind roll, a roll movable freely up and down between the presser heads and rewind roll and bearing on the stretch of material between said parts, said roll acting in its descent to take up the slack created by the feed of the material, and adapted to be moved upwardly by the rotation of the rewind roll, and means acting when the said movable roll reaches the end of its downward movement to throw the clutch into action and thereby start the rotation of the rewind roll.

17. In a press of the character described, the combination of a stationary presser head comprising an upper fixed portion, a lower movable portion, and a series of interposed springs, a movable presser head, means for operating the latter, and a pressure indicating mechanism adapted to be operated by the movement of the lower portion of the stationary head when the resistance of the springs is overcome by the pressure of the movable head.

18. In a press of the character described, the combination of a stationary presser head comprising upper fixed cap portions, a lower movable portion, and two series of springs interposed between the lower portion and cap portions respectively, a movable presser head, means for operating the latter, a cross member extending between and connected to said cap portions, and a pressure indicating mechanism sustained by said cross member and comprising a movable part adapted to be operated by the movement of the lower portion of the stationary head when the resistance of the springs is overcome by the pressure of the movable head.

19. In a press of the character described, the combination of a stationary presser head comprising an upper fixed portion, a lower movable portion, a series of interposed springs, and means for adjusting the tension of the springs, a movable presser head, means for operating the latter, and a pressure indicating mechanism adapted to be operated by the movement of the lower portion of the stationary head when the resistance of the springs is overcome by the pressure of the movable head.

20. In a press of the character described, the combination of a stationary presser head comprising an upper fixed portion, a lower movable portion, stems connected with the movable portion and extending through the fixed portion, nuts applied to said stems and adapted to engage the fixed portion, and a series of springs interposed between said portions, a movable presser head, means for operating the latter, and a pressure indicating mechanism adapted to be operated by the movement of the lower portion of the stationary head when the resistance of the springs is overcome by the pressure of the movable head.

21. In a press of the character described, the combination of a base frame, posts rising therefrom and provided with sustaining shoulders, a stationary presser head comprising an upper fixed portion mounted on said posts, a lower movable portion also mounted on said posts and adapted to rest upon the sustaining shoulders, and a series of springs interposed between said two portions of the stationary head, a movable presser head, means for operating the latter, and a pressure indicating mechanism adapted to be operated by the movement of the lower portion of the stationary head when the resistance of the springs is overcome by the operation of the movable head.

22. In a press of the character described, the combination of a base frame, vertical rods rising therefrom and provided with sustaining shoulders, a stationary presser head comprising a lower movable portion mounted on said rods and resting on the sustaining shoulders and provided with fixed upwardly extending stems, upper cap portions mounted on said rods and provided with holes loosely receiving said stems, nuts screwed on the upper ends of the stems and bearing on the upper sides of said cap portions, nuts screwed on the upper ends of the rods and bearing on the upper sides of said cap portions, and springs interposed between the fixed and movable portions of the stationary head, a movable presser head, means for operating the same, and a pressure indicating mechanism adapted to be operated by the movement of the lower portion of the stationary head when the resistance of the springs is overcome by the movable head.

23. In a press of the character described, the combination of presser heads movable relatively to press the material between them, one of said heads consisting of sec-

tions movable relatively to each other with interposed yielding means resisting said relative movement, means for effecting the relative movement of the presser heads, and a pressure indicating mechanism operated by the movement of said sections relatively to each other when the yielding means yields in the operation of the press.

24. A press as in claim 23 and wherein the sectional presser head comprises spaced apart platens, one directly contacting with the material during pressing, the other fixed stationarily, and the interposed yielding means consisting of numerous compressed springs arranged to press apart said section across their length and breadth, and a stop for the yielding platen.

In testimony whereof, I have affixed my signature hereto.

ALFRED BREDENBERG.