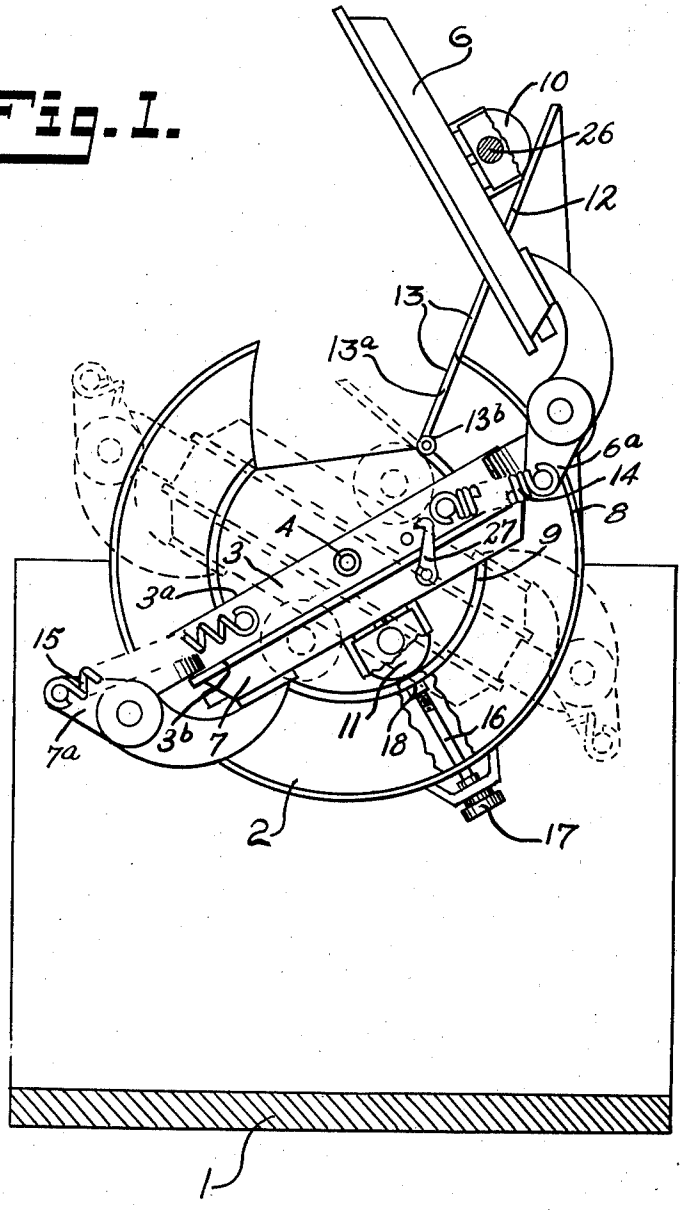
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PRESSING MACHINE

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Fig. 1.



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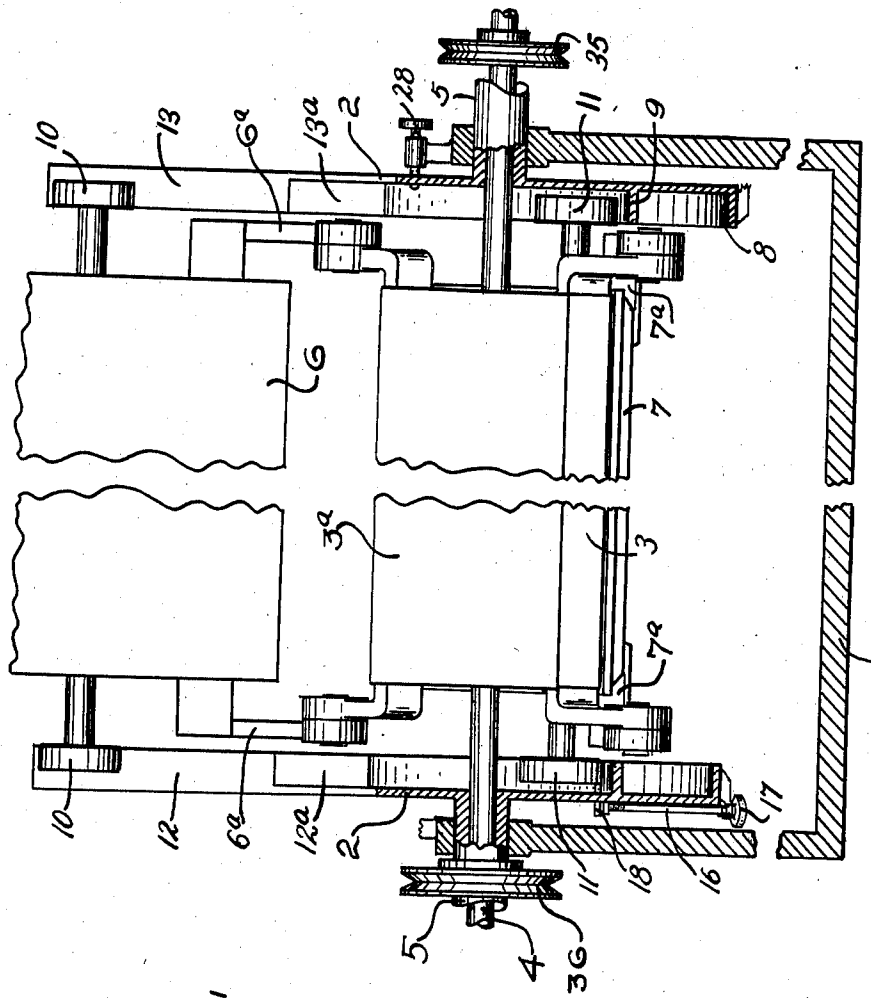


Fig. 2.

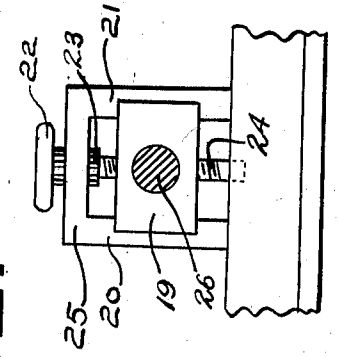


Fig. 3.

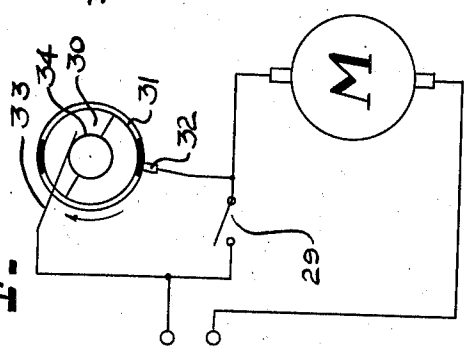


Fig. 4.

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Patented Feb. 20, 1940

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UNITED STATES PATENT OFFICE

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PRESSING MACHINE

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Application September 8, 1936, Serial No. 99,774

16 Claims. (Cl. 38—22)

This invention relates to garment and laundry pressing machines and particularly to those employing motive power to actuate the press mechanism.

The pressing operation after the pressing elements are pressed together on the ordinary pressing machine requires a certain amount of time and for this reason in many operations, the operator places the article to be pressed between the pressing elements of the press, closes the press and then stands idle or goes to a second press and repeats this operation.

After the second press has been closed then the operator returns to the first press which has now had time to complete the pressing operation and is ready to be opened and another pressing cycle started, after which the second press is ready to be opened, and so on.

In this manner the operator is able to turn out almost double the amount of work possible with one press but it is obvious that a great deal of time and effort is wasted in having to move continuously back and forth from one press to the other.

One of the objects of this invention is to provide simple and efficient means to accomplish the same amount or more of productive labor on one machine without the necessity of the operator moving from one machine to another.

Another object is to provide means which will enable the operator to sit down while at work and thus avoid fatigue consequent to continuously standing and also moving from one machine to the other.

A further object is to provide means for producing a pressing machine which, although able to accomplish as much as a multiplicity of regular machines, yet will occupy only as much floor space as one machine.

Another object is to provide a press in which the angle of the pressing surface can be varied to suit the operator to facilitate loading and unloading.

Another object is to provide means for applying the force or pressure for pressing purposes directly on top of the pressing element without passing this force through a plurality of levers in order to reach this final point of application.

Another object is a machine in which the press closes at a different point from, and away from, the point at which the operator places the work on and removes it from the machine.

Other objects and uses will be brought out in the following description.

In the drawings:

Figure 1 is a side elevation viewed from the right side of the press and with the right member and mechanism removed, with the full lines showing one pressing element in the open position and the other element in a closed position; and the dotted lines showing both pressing elements in a closed position.

Figure 2 is a front elevation with the right and left members cut away on their center lines showing the press with one element in an open position and the other element in a closed position.

Figure 3 is a side elevation showing a detail of the pressure adjustment of the roller.

Figure 4 is a wiring diagram showing starting switch and commutator half-cycle control of driving motor or motors.

This pressing machine comprises, generally, cooperative pressing elements having an opening and closing movement, one of said elements, as the buck on which the work is laid, being movable about an axis and the other or others in an arcuate or orbital path about said axis in synchronism with the movement of the buck about its axis, suitable means for actuating the elements, and means for opening and closing said elements during the movement of one about its axis, and the other during its orbital movement.

In the illustrated embodiment of my invention, the element movable about an axis is a buck movable about a horizontal axis and preferably having a plurality of pressing faces on different portions thereof, here shown, as two pressing faces on opposite portions thereof, and the other elements are a plurality of press heads, in the illustrated embodiment two, one for each pressing face of the buck, the heads having radial movements to open and close the press during the orbital movement of the heads, as the buck is rotated, and suitable means for rotating the buck and actuating the heads in their orbital paths synchronously with the rotation of the buck. Preferably, the heads are carried by the usual yoke levers, so that the heads open and close with a pivotal movement during the orbital movement of the heads about the axis of the buck during the rotational movement of the buck, and the means for effecting the opening and closing movement is a cam track having an arcuate portion about the axis of the head, and a radial portion, and a follower on the head or some part thereof rigid therewith, coacting with the cam track. The follower or followers are preferably located relatively to the head or heads

to apply the pressure to the head and buck in a plane extending through or located near the median line of both the head and the buck. Also, in the illustrated embodiment of my invention in which a plurality of heads coact with a plurality of pressing faces on the buck, the buck rotates through a complete circle in a complete cycle of movement, and the heads also move through an arc of 360° through a complete cycle, and the radial or opening and closing movements take place successively at the same point in their orbital cycles. Owing to this rotational and orbital movements, the work, after being placed on the pressing face of the buck, that is uppermost, moves away practically out of reach of the operator before the head closes down on the buck, and hence out of position dangerous to the operator, so that safety devices and two hand controls, etc. are not necessary.

In order to simplify the description, since both sides of the press are alike, only one side is described.

Referring to the drawings, 1 is the main frame of the machine, upon which is adjustably and pivotally mounted a member 2 (Figures 1 and 2) which constitutes means for opening and closing the press and holding it closed.

The buck or pressing element 3 is also rotatably mounted on the same axis as the member 2 by means of the hollow shaft 4, said shaft passing through the horizontally projecting sleeve or hub 5 of the member 2 (Figures 1 and 2).

Any conventional power means is connected to the shaft 4 or the hub or sleeve 5 on the member or members 2 and is so arranged as to rotate the buck 3 in a clockwise direction, or the member 2 in a counter-clockwise direction.

The buck 3 has two pressing faces 3^a, 3^b, one on each side thereof. There are a plurality of pressing elements or heads 6, 7 cooperating respectively with the opposite faces of the buck 3. These are here shown as carried by levers 6^a, 7^a carried by and pivoted to the buck 3, so that the levers and heads move orbitally during the rotation of the buck 3 and the levers can also move about their own pivots to open and close the heads relative to the buck.

The member 2 has outer and inner arcuate surfaces or tracks 8 and 9 extending around and nearly concentric with the axis of the buck 3 and radial tracks at like ends of the arcuate tracks, and followers or rollers 10 and 11 rotatably mounted on the heads 6 and 7 are adapted to engage the radially extending surfaces or tracks 12 and 13 and also the arcuate surfaces or tracks 8 and 9 of the members 2 (Figures 1 and 2).

Portions 12^a, 13^a of the surfaces or tracks 12, 13 are on shiftable parts, each of which is pivotally mounted at 13^b on the member 2, and can be swung to the left, as shown by the dotted lines in Figure 1. Each part as pivoted at 13^b is virtually a switch member shiftable into a position so that the rollers 10, 11 follow the outer track 8 instead of the inner track 9.

Retracting springs 14 and 15 connected to the levers 6^a, 7^a act to hold the rollers 10 and 11 against the track 8 or 9 of the member 2 (Figures 1 and 2).

It will now be apparent that with the press in the open position, as shown by the full lines in Figure 1, if the members 2 are held stationary and the buck 3 is revolved in a clockwise direction, such rotation will cause the rollers 10 of the head 6 to roll downwardly along the surfaces 12 and 13 until the rollers 10 reach the position as shown by the dotted lines in Figure 1 with the rollers 10 resting on the beginning of the curved surfaces or tracks 9, and this movement will bring the head 6 down upon the buck (Figure 1).

Continuing of the rotation, the rollers 10 will continue to roll in a clockwise direction along the tracks 9 until the buck 3 has made a half rotation.

During said clockwise rotation, the rollers 11 of the head 7 will also have rolled along the surface 9 until the rollers 11 reach the end of said track and the retracting springs then swing the head 7 to open position with the rollers 11 resting against the surface 12 in the position formerly occupied by the rollers 10, Figure 1.

It will now be apparent that the other surface of the buck 3 is now presented to the operator for unloading and loading while the face of the buck formerly presented, is under pressure from the head 6, Figure 1.

In other words, during each pressing cycle, the buck 3 rotates one half revolution in a clockwise direction presenting a different pressing face each time it stops and the operator can unload and load the pressing face presented to him while the other pressing face is engaged in the pressing operation.

If it is desired to operate the press mechanism and yet not have the head come in contact with the buck, then the hinged parts or switch members 13^a are swung into a position, as shown by the dotted lines in Figure 1, and then the rollers 10 or 11 are free to roll from the surface 12 onto the surface 8, and thus the head 6 will not come in contact with the buck 3 (Figure 1). The press may be operated in this way preliminarily to leaving it idle for long periods.

A threaded stud 16 with a hand adjustment wheel 17 at one end is rotatably mounted on the member 2 and the other end of said stud engages with the pressure block 18 slidably mounted in the surface 9, and it will be apparent that by rotating the hand wheel 17 in either direction, so as to move the pressure block 18 toward or away from the center of the shaft 4, the pressure between the head and buck can be increased or decreased, when the pressure rollers 10 and 11 engage with the pressure block 18 (Figure 1). The block 18 is in effect a radially adjustable cam on which the rollers 10 or 11 ride when the head 6 has made a half revolution from open or closed position.

Further pressure adjustment of the rollers 10 and 11 is provided by pillow blocks 19 slidably mounted between the guides 20 and 21 on the head 6 (Figure 3) and means, as screws, for adjusting or setting the blocks. As shown a hand adjustment wheel 22 and a collar 23 are mounted on the end of the threaded adjustment rod 24, said rod being rotatably mounted in a cross bar 25 between the guides 20, 21, and engaging with the threads in the pillow block 19, and a shaft 26 mounted in the pillow blocks, on which shaft the rollers 10 and 11 are mounted. It will be apparent that raising or lowering of the blocks 19 by means of the hand wheels 22 will move the shaft 26 radially and consequently the rollers 10 or 11 toward or away from the pressing surface of the head 6 or 7, and thus decrease or increase the pressure between the head 6 or 7 and the buck 3, when said head is brought down upon the buck 3, as previously described, by means of the rollers 10 or 11 moving along the tracks 12, 13 and 9 (Figures 1 and 3).

If it is desired to operate the press, as an ordinary press, using only one surface of the buck 3, then said buck can be held stationary and the members 2 revolved in a counter-clockwise direction, and this rotation will cause the rollers 10 to roll along the surface 12 and 13 and down on the surface 9 and finally the pressure block 18 will be brought in contact with the rollers 10, thus causing any desired preset pressure to be applied between the pressing surfaces of the head 6 and the buck 3 (Figure 1).

A locking latch 27 is provided to prevent the head 7 from moving while operating the press in the manner described above (Figure 1).

After the head 6 has been brought down upon the buck 3 by the counter-clockwise rotation of the member 2, then rotating the member 2 in either direction back to its original position, as shown by the full lines in Figure 1, will allow the head 6 to swing to an open position with the rollers 10 resting against the surface 12, Figure 1.

When the press is used as first described, by the rotation of the buck 3 in a clockwise direction, using first one surface of the buck and then the other, it will be obvious that the operator can stand or sit in front of the press, loading and unloading continuously, and thus accomplishing the work formerly produced by two machines without the necessity of constantly moving from one press to the other, and also that by adjusting the member 2 about its axis, the loading and unloading position or incline of the buck when at the loading and unloading position, can be varied to suit the operator.

A locking pin 28 is slidably mounted in a vertical projection of the frame and is adapted to engage in any of a series of holes in the member 2, so that it is possible to lock said member 2 in any position, and thus control the loading angle of the buck 3.

Referring to the wiring diagram, Figure 4, closing the switch 29 allows current to flow through the motor M and the subsequent rotation of said motor also revolves the commutator 30 to which the motor is mechanically connected in a clockwise direction. Rotation of the commutator brings the segment 31 in contact with the brush 32 and thus allows current to flow through the brush 33, the ring commutator 34, segment 31 and brush 32 to the motor M and continues to supply current until the commutator 30 has made one-half turn.

Any suitable mechanism for actuating and opening and closing the press may be employed and one has a wide selection to choose from. The actuating and control mechanism forms no part of this invention. That shown in Figure 4 is for the purpose of illustration. The motion or power of the motor is transferred to the shaft 4 of the buck 3 when the machine is operated by rotating the buck and moving the heads orbitally through a pulley 35 or other motion transmitting means on the shaft.

When the machine is operated as a single press by locking the buck from rotation and moving the members 2, the motion of the motor is transferred to the hub 5 of one of the members 2 through a pulley 36 or other motion transmitting part on the hub 5.

The heads and buck may be heated by steam circulating through the heads and buck which are chambered, the buck being connected in series with each of the heads through flexible piping, not shown, or in any well known manner, and the steam being supplied to the buck through the hollow shaft 4. The heating system may be of any suitable arrangement and forms no part of this invention.

What I claim is:

1. In a pressing machine, a suitable frame, cooperative pressing elements having an opening and closing movement, one of said elements being rotatably mounted in the frame to move about an axis and the other in an arcuate path through a cycle of movement about said axis and also toward and from the other element at the beginning and end respectively of the arcuate movement, and operator controlled means operable to simultaneously move the first element about its axis and the other in its arcuate path and also toward the first element during the beginning of its cycle of movement in its orbital movement and away from the same at the end of its cycle of movement.

2. In a pressing machine, a suitable frame, cooperative pressing elements having an opening and closing movement, one of said elements being rotatably mounted in the frame to move about an axis and the other in an orbital path about said axis, the latter element being movable radially relative to the axis of the first element toward and from the rotatable element and at a predetermined portion of the rotary and orbital movements of said elements, and operator controlled means for simultaneously rotating the first element and moving the second element in its orbital path and moving the second element radially inward during the initial part of the orbital movement and moving the same outwardly radially during the end of the orbital movement.

3. In a pressing machine, a suitable frame, cooperative pressing elements having an opening and closing movement, one of said elements being rotatably mounted in the frame to move about an axis and having a plurality of pressing faces on different sides thereof, there being a plurality of the other of said elements movable in an orbital path about the axis of the rotatable element during the rotation of the rotatable element, one for each pressing face, each of said plurality of elements having a substantially radial movement at a predetermined point in the orbit, and means for simultaneously rotating the rotatable element about its axis and moving the plurality of elements in the orbital path and also moving each of the plurality of elements radially inward at the predetermined point in the orbital path at the beginning of the orbital movement and radially outward during the end of the orbital movement.

4. In a pressing machine, a suitable frame, cooperative pressing elements having an opening and closing movement, one being a buck rotatably mounted on the frame to move about a horizontal axis and having a plurality of pressing faces on different sides thereof, the others being heads, one for each pressing face, the heads being movable in an orbital path about the axis of the buck during the rotation of the buck about its axis and also each having a radial movement inwardly at the beginning of the orbital movement and a radial movement outwardly at the end of the orbital movement, to open and close each head relatively to the buck, the heads opening and closing at the same point in the orbital movenent of said heads, and operator controlled means for simultaneously rotating the buck and moving the heads in the orbital path and successively bringing said heads to said predetermined opening and closing point in the orbital path.

5. In a pressing machine, a suitable frame, co-

operating pressing elements having an opening and closing movement, one of said elements being a buck rotatably mounted in the frame and movable about a horizontal axis and the other a head mounted to move in an orbital path about the axis of the buck, means located at a predetermined point in said orbital path for guiding the head, when open, toward closed position during the starting of the rotation of the buck in the orbital movement of the head and for permitting opening of the head as the buck and head approach their initial position and the end of the orbital movement, and actuating means for simultaneously rotating the buck and moving the head in its orbital path and moving the head radially and orbitally.

6. In a pressing machine, a suitable frame, cooperative pressing elements, one of said elements being a buck rotatably mounted in the frame and having a plurality of pressing faces on different sides thereof and the others of said elements being a plurality of heads, one for each pressing face of the buck, the buck being rotatable through a complete circle and the heads being movable in an orbital path about the axis of the buck through a complete circle, the heads being spaced apart along said orbital path, operator controlled means for effecting the radial inward closing movement of the head during the beginning of the orbital movement and for opening each head as it approaches the end of the orbital movement of that head, and actuating means for simultaneously rotating the head and buck and the head in its orbital path and also moving the head radially.

7. In a pressing machine, a suitable frame, cooperative pressing elements having an opening and closing movement, one of said elements being a buck rotatably mounted in the frame and the other a head movable in an orbital path about the axis of the buck, a pivoted lever carrying the head and pivotally connected to the buck, a track having a portion extending around the axis of the head and a portion extending outward therefrom in a radial direction, and a follower associated with the head and coacting with the track, and actuating means for the head and the buck.

8. In a pressing machine, a suitable frame, cooperative pressing elements having an opening and closing movement, one of said elements being a buck rotatably mounted in the frame and the other a head movable in an orbital path about the axis of the buck, a pivoted lever carrying the head and pivotally connected to the buck, a track having a portion extending substantially concentric with the axis of the head and a portion extending outward therefrom in a radial direction, a follower associated with the head coacting with the track, and a spring acting on the lever and tending to move the lever on its pivot in one direction to move the head outward radially and hold the follower against the track, and means for rotating the buck.

9. In a pressing machine, a suitable frame, cooperating pressing elements having an opening and closing movement, one of said elements being a buck rotatably mounted in the frame and the other a head movable in an orbital path about the axis of the buck, a pivoted lever carrying the head and pivoted to the buck, a track having an arcuate portion extending around the axis of the head and a portion extending outward therefrom in a radial direction, and a follower associated with the head and coacting with the track, a part of the arcuate portion of the track being adjustable radially toward and from the axis of the buck to adjust the pressure applied by the head through the lever to the buck, and means for rotating the buck.

10. In a pressing machine, a suitable frame, cooperative pressing elements having an opening and closing movement, one of said elements being a buck rotatably mounted in the frame and the other a head movable in an orbital path about the axis of the buck in synchronism with the rotational movement of the buck, a track having an arcuate portion arranged concentric with the axis of the buck and a radial portion, a lever pivotally connected to the buck and supporting the head and a follower associated with the head and movable along the radial and arcuate portion of the track, and means for rotating the buck.

11. In a pressing machine, a suitable frame, cooperative pressing elements having an opening and closing movement, one of said elements being a buck rotatably mounted in the frame and the other a head movable in an arcuate path about the axis of the buck in synchronism with the rotational movement of the buck, a track having an arcuate portion arranged concentric with the axis of the buck and a radial portion, a lever pivotally connected to the buck and supporting the head and a follower associated with the head and movable along the radial and arcuate portions of the track, said follower being located intermediate the front and rear edges of the head to apply the pressure while traveling along the arcuate portion of the track substantially at the median lines of the head and the buck, and means for actuating the buck about its axis.

12. In a pressing machine, a suitable frame, cooperative pressing elements having an opening and closing movement, one of said elements being a buck rotatably mounted in the frame and the other a head movable in an arcuate path about the axis of the buck in synchronism with the rotational movement of the buck, a track having an arcuate portion arranged concentric with the axis of the head and a radial portion, a lever pivotally connected to the buck and supporting the head and a follower associated with the head and movable along the radial and arcuate portions of the track, the radial track including a switch portion shiftable into position to prevent the follower from coacting with the arcuate portion of the track and thereby holding the head from coming in contact with the buck during the rotation of the buck in the arcuate movement of the head, and means for moving the buck about its axis.

13. In a pressing machine, a suitable frame, cooperative pressing elements having an opening and closing movement, one of said elements being a buck rotatably mounted in the frame and the other a head movable in an arcuate path about the axis of the buck in synchronism with the rotational movement of the buck, a track having an arcuate portion arranged concentric with the axis of the head and a radial portion, a lever pivotally connected to the buck and supporting the head and a follower associated with the head and movable along the radial and arcuate portions of the track, the radial track portion including a switch shiftable into position to prevent the follower from coacting with the arcuate portion of the track and thereby holding the head from coming in contact with the buck during the rotation of the buck in the arcuate movement of

the head, a second track substantially concentric with the former track and having a greater radius than the former track for coacting with the follower when the switch is shifted out of its normal position, and actuating means for moving the buck about its axis.

14. In a pressing machine, a suitable frame, cooperative pressing elements, one a buck and the other a head movable toward and from the buck, the buck being mounted in the frame to have an adjustable tilting movement about an axis extending lengthwise of the buck and thus change the angle of the pressing face of the buck, means for holding the buck in any angular position, a lever supporting the head for movement toward and from the buck, connections between the lever and the buck to transmit the tilting movement of the buck to the head, whereby the head and buck are shifted synchronously when the buck is shifted to change the angle of the buck in its position assumed, when the press is open.

15. In a pressing machine, a suitable frame, cooperative pressing elements, one being a buck movable about a horizontal axis and the other a head movable in an arcuate path about the axis of the buck and also radially toward and from the buck to open and close the press including a track having an arcuate portion and a radially extending portion, the head having a follower movable along the track, the track being shiftable about the axis of the buck, and connections between the buck and the head whereby the track and the buck are shifted synchronously during the shifting of the track about the axis of the buck, and means for holding the track in its adjusted position, whereby the buck can be shifted to change the angle of the pressing face thereof, when the buck is in its position assumed when the press is open, and the track shifted synchronously therewith.

16. In a pressing machine, cooperative pressing elements, one being a buck movable about an axis and the other a head movable toward and from the buck, a track having an arcuate portion about the axis of the buck and a radial portion at one end of the arcuate track, a lever carrying the head and pivotally connected to the buck, a follower associated with the head and coacting with the track, and means for moving the buck about its axis and synchronously moving the head and the lever to move the follower along the track.

HERBERT E. PAGE.