PRESSING MACHINE HEAD CONTROL

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1 This invention relates to a press of the garment pressing type and wherein there is provided a buck and cooperating head member, the head being movable toward and away from the buck for pressing and non-pressing.

The present invention is more particularly directed to the head control.

The chief object of this invention is to provide a means of the aforesaid general character with a control such that the head, following initial pressing application, may through the continuation of the control impart an extra squeeze or extra pressure to the buck.

Another chief object of the invention is to provide a control for the head such that following the expiration of the pressing interval, the head is automatically released and returned to the reposed position.

The chief feature of the invention consists in providing a control arrangement for a pressing head whereby the aforesaid objects may be accomplished.

Other objects and features of the invention will be set forth more fully hereinafter more particularly with reference to the following:

First, the provision of the head control such that the extra squeeze above mentioned is accomplished; second, the timing device for automatically releasing the head pressing engagement following the expiration of the predetermined pressing interval; and third, the arrangement whereby the head may be automatically opened or elevated as well as manually whenever desired or required.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

In the drawings, Fig. 1 is a side elevational view of the upper portion of a press embodying the invention, same being viewed from the right hand side, the head being in the closed or final pressing position, certain of the parts being broken away to show other parts in section and in greater detail, the hand guard and timing device and associated mechanism not appearing in this view.

Fig. 2 is a view corresponding to Fig. 1 but with the hand guard and timing mechanism included.

Fig. 3 is a view similar to Fig. 2 but with the hand guard in slightly elevated position.

Fig. 4 is a view of the upper part of the press structure looking at the left hand side of the press, the head being shown in full open position and the guard and associated mechanism being illustrated in detail.

Fig. 5 is a diagrammatic plan view of the top of the press and is intended to show the general construction of the press proper, certain uppermost elements such as the timing device and guard retaining means being omitted for clearness.

Fig. 6 is a side elevational view on an enlarged scale of the timing mechanism, the motor being omitted, but same is illustrated in Figs. 2 and 3.

Fig. 7 is a view taken at right angles thereto or looking at the same from the back of the press.

Fig. 8 is a top plan view of the mechanism shown in Figs. 6 and 7.

This invention is an improvement upon the presses illustrated and described in the copending applications entitled, "Press machine," Serial No. 310,800, filed December 22, 1939, now Patent No. 2,302,541, dated November 3, 1942, and "Multiple pressure press and control therefor," Serial No. 374,235, filed January 13, 1941.

The present application, therefore, is similar to said applications in that the present method of mounting the head basically is common with those of the two beforementioned applications and each head is spring constrained to open position and is moved to closed and pressing position by means of a power cylinder and piston structure, although it is noted that in the first mentioned application, the power for moving the head toward the buck and into pressing position is of treadle type as distinguished from cylinder and piston structure operation shown in the latter application and herein.

In Fig. 1 of the drawings, 10 indicates a suitable base structure from which extends upwardly, a neck portion 11 mounting a buck 12 suitably padded or covered as at 13. This is a conventional representation. Adapted for cooperation therewith is a pressing head structure 14 and since the invention is not related to the details of this head and the application of heat and steam for steaming and vacuum for suction, et cetera, a description of the detailed construction of the head and the several pipe connections thereto is intentionally omitted.

Extending upwardly and rearwardly from the base structure 10 is a pair of frame members 15 which are spaced apart. Extending across between the members is the shaft 16 and pivotally mounted thereon is a lever member 17 which more or less appears as a slotted plate in Fig. 5. This member is recessed as at 18 at the rear end and a shaft 19 bridging said recess mounts a roller 20 or cam follower, which is adapted to ride upon a cam member 21 carried by a cam support 22.
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pivoted on the cross member 23 anchored at opposite ends in the side frames 16. The cam member is adjustably supported by the cam support 22 and secured in the adjusted position by means indicated at 24 and 24a. The details of the adjustible mounting is omitted for clearness for it may be conventional.

The rearward and upper end of the cam support member 22 is pivotally connected as at 25 to an adjustible piston 26 which mounts a piston, not shown, within a power cylinder 27. When pressure is applied to the lower end of the cylinder, the same is imposed on the piston and the rod 26 is elevated to the extent noted in Fig. 1, which throws the head 14 forwardly and downwardly into buck engagement.

In this upward counterclockwise movement of the cam 21, the roller 20 is moved thereon and the points between and designated by numerals 23 and 29 constitute the operating range of the cam. The opposite end of the follower supporting plate or lever structure 17 is recessed as at 30 and a shaft 31 extends across the recess and pivotally mounts in the recess one end of the link 32. The other end of this link 32 is pivotally mounted on a shaft member 33 carried by the head control lever member 47. A head support 34 is pivotally mounted on the same shaft 22 which pivot the cam support member. This member 34 is extended rearwardly as at 34a and pivotally associated therewith as at 35 is an adjusting bolt structure 36 which is associated with an extension or tension spring 37 suitable anchored at its lower end as shown in Fig. 5 and to the base structure 10. The nut 38 also is provided for adjustment. This spring 37 is the main power spring for returning the head from the closed to the open position. The cylinder 27 and the piston therein together with the piston rod 26, is the main power for moving the head from the open to the closed and buck engaging position.

The two forward ends of the spaced members 34 are connected together by an open type housing arrangement and the same is provided with flanges 40—see Figs. 2 and 4—and the several bolts 41 constituting the connections between said housing and the head 14. Within the housing 39 and mounted on member 42 is a bellcrank 43. One end of said bellcrank rotatably supports the member 44 and this member is threaded and mounted in the threaded aperture in the screw 45. The lower end of this screw is similarly associated with the member 46 pivotally mounted in one end of the member 41. Lock nuts 48 definitely locate the member 47 with respect to the shaft 44. This is one adjustable connection between the head construction and the head support arrangement. The member 47 is also is pivotally supported on the shaft 23 and it mounts the shaft 33 to which the forward and lower end of the link 32 is pivotally mounted.

The lower and forward end of the bellcrank 43 pivotally supports at 49 the forward end of an adjusting rigid structure 50. The rearward end of which is pivotally supported at 51 and the forward and downwardly directed arm extension 52 of the cam support member 22. As the cam support member is caused to be elevated by the power piston, the lower end or arm portion rotates counterclockwise downwardly and rearwardly and this in turn rocks the bellcrank 43 pivotally so that as a result of this action after the main power application has lowered the head into pressing engagement with the buck, said head applies an extra squeeze to the buck. The relationship is such between the lever 41, the rod 50, the bellcrank, bolt 45 and the arm 34 together with the toggle structure including the lever member 11 and the link 31, that when the toggle mechanism is almost in a straight line position from the point 28 to the point 39, merely maintains the toggle in approximately straight line position and during this maintained condition and for additional travel of the piston in the power cylinder, the extra pressure or squeeze is applied by means of the bellcrank 43 and the adjustable rod structure 50.

The aforesaid constitutes the support of the head and its primary power for returning the same from pressing position to the open position and for moving the same from open position toward the buck and into initial pressing position and then from the initial pressing position into the final pressing position to secure the so-called squeeze action.

In order to protect the operator's hands from injury there are provided two downwardly extending arms 35. On arms 34 are two arms pivotally mounted as at 54 at their rear ends and their forward ends are joined together by a cross member portion 55, see Fig. 5, which extends laterally in opposite directions and terminates in the rearwardly and outwardly directed guard members 56. Above the cross member 53 and connecting the two plates 56 is the web type guard 57. The portion 55 between the portions 53 is a conventional hand gripping portion for manually controlling the head, although, of course, the lateral extensions at either side of the members 53 can also serve as hand control structures but in any event, the operator is prevented from having the hands engaged and injuring the buck and head by reason of the guard described.

Reference now will be had to Fig. 3 wherein there is illustrated the several parts in an intermediate position preliminary to the timing device raising the guard 56 and the power control for the pressure supply is approximately half open. As shown in Fig. 3 there is mounted on the housing 53 a portion 57 in which is mounted a mercury switch 51 that controls a line 62 to a motor indicated generally by the numeral 63. This motor consequently has its circuit energized when the head is down as shown in Fig. 2, and this motor thereupon proceeds to rotate and the extent of the rotation is determinable by a contacting gear arrangement, as it were. When the proper amount of rotation has occurred, the arrangement is slightly elevated from the position shown in Fig. 2 to the position shown in Fig. 3.

At this time, as aforesaid, the pressure supply to the power cylinder 21 is cut off and the power cylinder is vented so that the main return spring 37 is effective for opening the press or for raising the head to the open position. When the head has reached a certain position in its opening movement, the motor circuit through the mercury switch 51 is broken and the contact ceases. As previously stated, the handles 53 of the guard structure are pivotally at 54 and said pivot 54 are carried by the head supporting member 44 pivotally at 23 on the frame 15.

The numeral 64, see Fig. 2, indicates a valve and muffler connection through which 65 is the intake valve exposed stem and 66 is the exhaust valve exposed stem and 67 is the muffler. It will be noted the portion 52a by which the arm 53 is mounted on the shaft 54 is provided with a pair
of adjustably mounted stem actuating bolts 68 and 69, cooperating with the stem 65 and 69, respectively, shown in Fig. 6, is loosened sufficient to free the teeth 81 from the teeth 84 and thus the two serrated members may be bodily separated in the direction of the axis of the support 82 and thence rotated clockwise or counterclockwise to obtain the desired initial position of the gear 85. When this adjustment has been effected, the mounting is reconnected and secured and hence, the press interval is correspondingly adjusted.

The purpose of the clock spring is as follows:

When the gear 85 has been meshed with the motor pinion 94, the segmental gear and rack structure is rotated counterclockwise—see Fig. 6—for the purpose described. Upon effecting that purpose, the head is released from its pressure application maintaining it in the closed or buck engaging position and is released to the opening spring 74 and the head opens. In this movement the segmental gear and rack automatically disengages from the motor pinion 94 and upon such disengagement, the clock spring, which has been previously wound in motor 63 rotation, has power stored therein sufficient to return the gear and rack to initial or starting position. This is determined by the engagement of the abutment 86 with the stop 86, as shown in Figs. 6 and 8 inclusive; hence, the rack and segmental gear are returned to original or starting position.

Reference now will be had to Fig. 4 and in said figure, the left hand end of the press is viewed. In this figure, there is illustrated a combination cam and track lever 940 pivoted at 95 upon the left hand member 94 supporting the head 14. This member 940 has an offset portion 96 with the high point 99a. The member has an angular end 94c to which is connected a spring 97 the same having an adjustable connection 98 with bracket 99 on the member 94. The left hand arm 53 of the guard structure has an extension 100 and pivotally supported thereon adjacent the combination member 940—98 is a roller 101.

It will be observed that the spring 97 normally constrains the combination lever cam 940 into roller contact at all times. It will be remembered that the right hand arm 53 is connected to the shaft 54 by means of the fixture 53a which controls the valves, in turn controlling the application and release of pressure to and from, respectively, the power cylinder. In this Fig. 4 the left hand arm 53 includes the element 102 which includes the extension 100. This extension 100 is slotted at 103 and the roller 101, before mentioned, is adjustably mounted in this slot. Therefore, the desired action in connection with the cam lever 940 is obtained therebetween. This desired action is as follows:

The roller when adjusted effectively acts as a guard retaining member because the spring 97 holds the roller in position above or below the hump 99a and hence, also holds the handle 53 and the entire guard structure in open or closed position; in other words, elevated or lowered, respectively.

It also will be recalled the shaft 54 mounts the arm 70 upon which there is pivoted the arm
74 to which one end of the clock spring is operatively secured at 72. As previously set forth, the purpose of the stop 76 and the spring 78 is to permit the gear 85 to mesh with the motor pinion 92 without dragging on the teeth of either and the associated mechanism. After the meshing is effected, the stop 76 first engages the shoulder 71 and thereafter rotation of the motor pinion 94 secures rotation of the gear 85 independent of any movement of member 74. This since the structure is now utilized, results in the entire structure, including the arm 70, rocking the shaft 54 for valve opening. Thus timing is effected by raising the guard. Opening of the press by raising the head 14 through the power spring 37 is permitted when the power pressure is released.

Note, that between the gear-rack and motor pinion there is a separable type of operative connection. Also between the cam lever and roller between the guard and head support is a yielding connection. Hence, the guard may be manually actuated to open as well as close the press in addition to the automatic holding and releasing functions described.

From the foregoing it will be understood that the guard moves with the head and is movable relative thereto as well, the relative movement being utilized for operation and the control of any portion of the operator's body is engaged sufficient to prevent movement in unison of the head and guard, the latter, in the head closing movement, effects cessation of head closing movement and thus the head is permitted to return to open position. The latter is effected by control of the power pressure for closing and release to the opening spring in the present embodiment.

While the invention has been illustrated and described in great detail in the drawings and foregoing description, the same is to be considered as illustrative and not restrictive in character.

The modification described herein as well as others which will readily suggest themselves to persons skilled in this art, all are considered to be within the broad scope of the invention, reference being had to the appended claims.

The invention claimed is:

1. In a press a head support movably mounted for moving a pressing head toward and away from a buck, a tiltable guard structure for controlling support movement, means for locking said guard structure in guarding position and said support in pressing position during pressing engagement, time controlled means for tilting the guard structure from guarding position and for releasing the support for head opening, said guard locking means including a structure movable overcenter, and a constraint means for maintaining a portion of the overcenter movable structure in either position overcenter for locking the guard structure in either guarding or non-guarding position, said overcenter movable structure including a cam lever member, and a following member, the latter including means including a spring connected to the lever member.

2. In a press, a head support movably mounted for moving a pressing head toward and away from a buck, fluid pressure means for moving the supporting head pressing position, valve means controlling the application, maintenance, and release of fluid pressure to and from said means, a manual control for said valve means to initiate fluid pressure application, time controlled means to initiate automatically the release of fluid pressure following expiration of the predetermined pressing interval, said time controlled means including an electric device, a switch controlling same normally in open circuit position when the head is open and in closed circuit position when the head is closed or in buck engagement, and means operable by the device for valve means operation for fluid pressure release after a predetermined pressing interval has elapsed.

4. A press as defined by claim 3, characterized by said electric device including a motor driven toothed member and the last mentioned means including a cooperating toothed structure.

5. A press as defined by claim 3, characterized by said small device including a motor driven toothed member and the last mentioned means including a cooperating toothed structure, the toothed member comprising a gear and the structure including a segmental gear with a rack extension.

6. A press as defined by claim 3, characterized by said electric device including a motor driven toothed member and the last mentioned means including a cooperating toothed structure, the toothed member comprising a gear and the structure including a segmental gear with a rack extension, and an articulated support arranged for partial collapse and yieldingly constrained thereagainst, all are considered to be within the broad scope of the invention, reference being had to the appended claims.

7. A press as defined by claim 3, characterized by said electric device including a motor driven toothed member and the last mentioned means including a cooperating toothed structure, the toothed structure being tiltable mounted and movable toward the toothed member for engagement therewith when the head is moved into buck engagement.

8. A press as defined by claim 3, characterized by said electric device including a motor driven toothed member and the last mentioned means including a cooperating toothed structure, the toothed structure being tiltable mounted and movable toward the toothed member for engagement therewith when the head is moved into buck engagement, the toothed member comprising a gear and the structure including a segmental gear with a rack extension.

9. A press as defined by claim 3, characterized by said electric device including a motor driven toothed member and the last mentioned means including a cooperating toothed structure, the toothed structure being tiltable mounted and movable toward the toothed member for engagement therewith when the head is moved into buck engagement, and an articulated support arranged for partial collapse and yieldingly constrained thereagainst.

10. In a garment press having a movable support for a head, the combination of a manual
control pivotally supported by the head support and controlling head movement into open and closed positions, a cam lever pivotally supported on the support and normally subject to constraint, a follower carried by the control and engaging said lever for yieldingly holding the control in one of two positions corresponding to head open and head closed positions, a timing device operatively associated with the control for tilting the control in opposition to the constraint to effect control operation, and means carried by the support, and normally in inoperative condition when the support and head are positioned for non-pressing and in operative condition when the support and head are positioned for pressing, to operate said timing device to move the control to effect automatic movement of the support and head into non-pressing position.

11. In a pressing machine having a pressing head and a buck, a movable head carrying means, pressure means for moving the said carrying means with the head into and out of pressing relation with the buck, a control for the pressure means, an actuator, pivoted for limited oscillation upon and relative to the head carrying means and also movable with the latter, for operating the control, said actuator extending about the front of the head and slightly below the pressing surface of the head when moved to the downward end of its oscillation to effect the closing of the head upon the buck, said actuator moving downward with said head and head carrying means and being oscillated in the opposite direction on the latter when engaged by any part of the operator's body to stop the head closing movement and allow the head to return to open position.

12. A pressing machine as defined by claim 11 wherein the control is mounted on the head carrying means and the actuator extends about the side of the head as well.

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