July 1, 1958 K. E. HALE ET AL 2,840,938

GARMENT PRESSING MACHINE

Filed Oct. 18, 1954 3 Sheets-Sheet 1

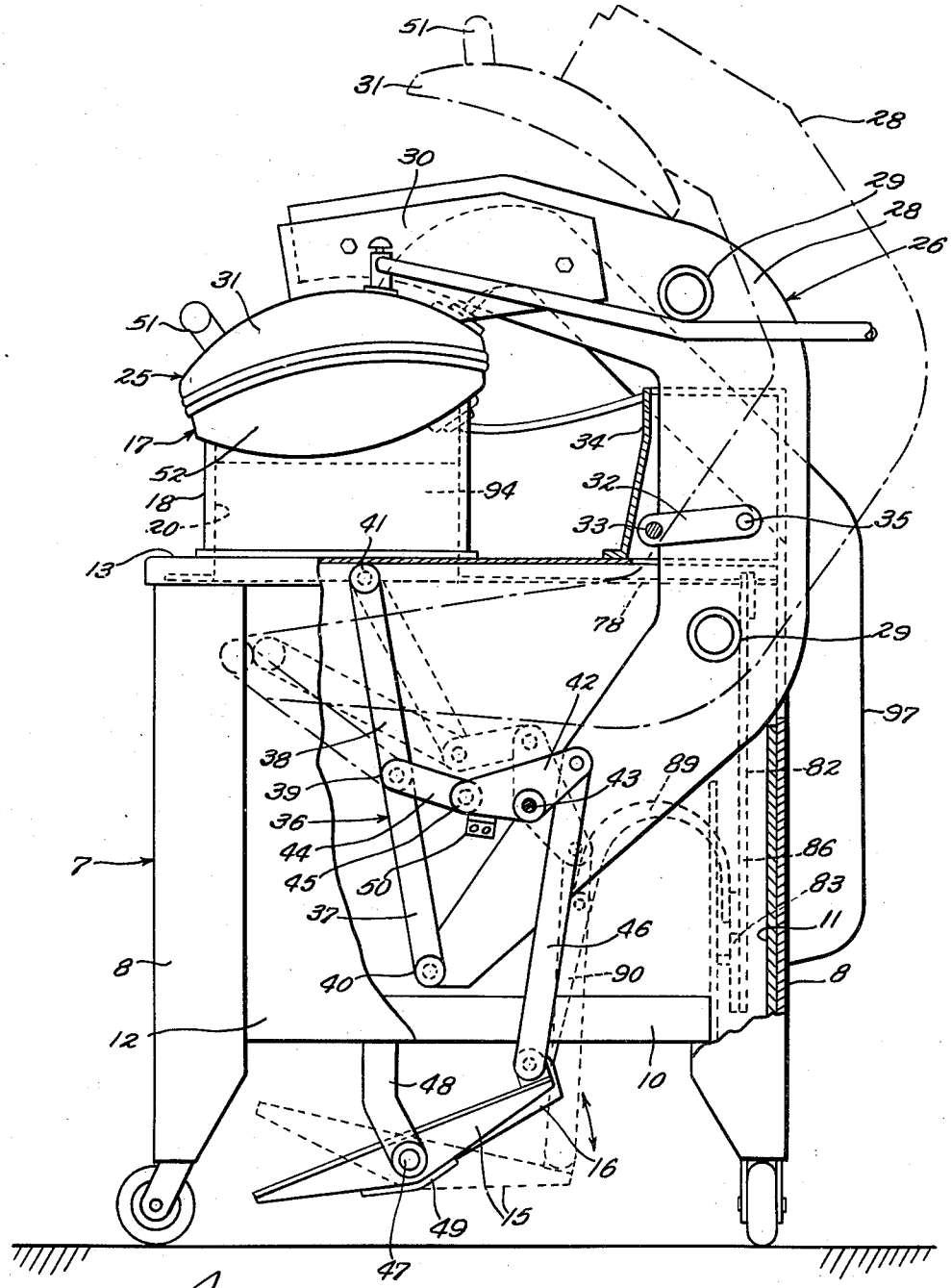


Fig. 1

INVENTORS
Kellen E. Hale
BY Henry D. Fowlie

Murray, Sackhoff & Murray
ATT'YS

July 1, 1958 K. E. HALE ET AL 2,840,938

GARMENT PRESSING MACHINE

Filed Oct. 18, 1954 3 Sheets-Sheet 2

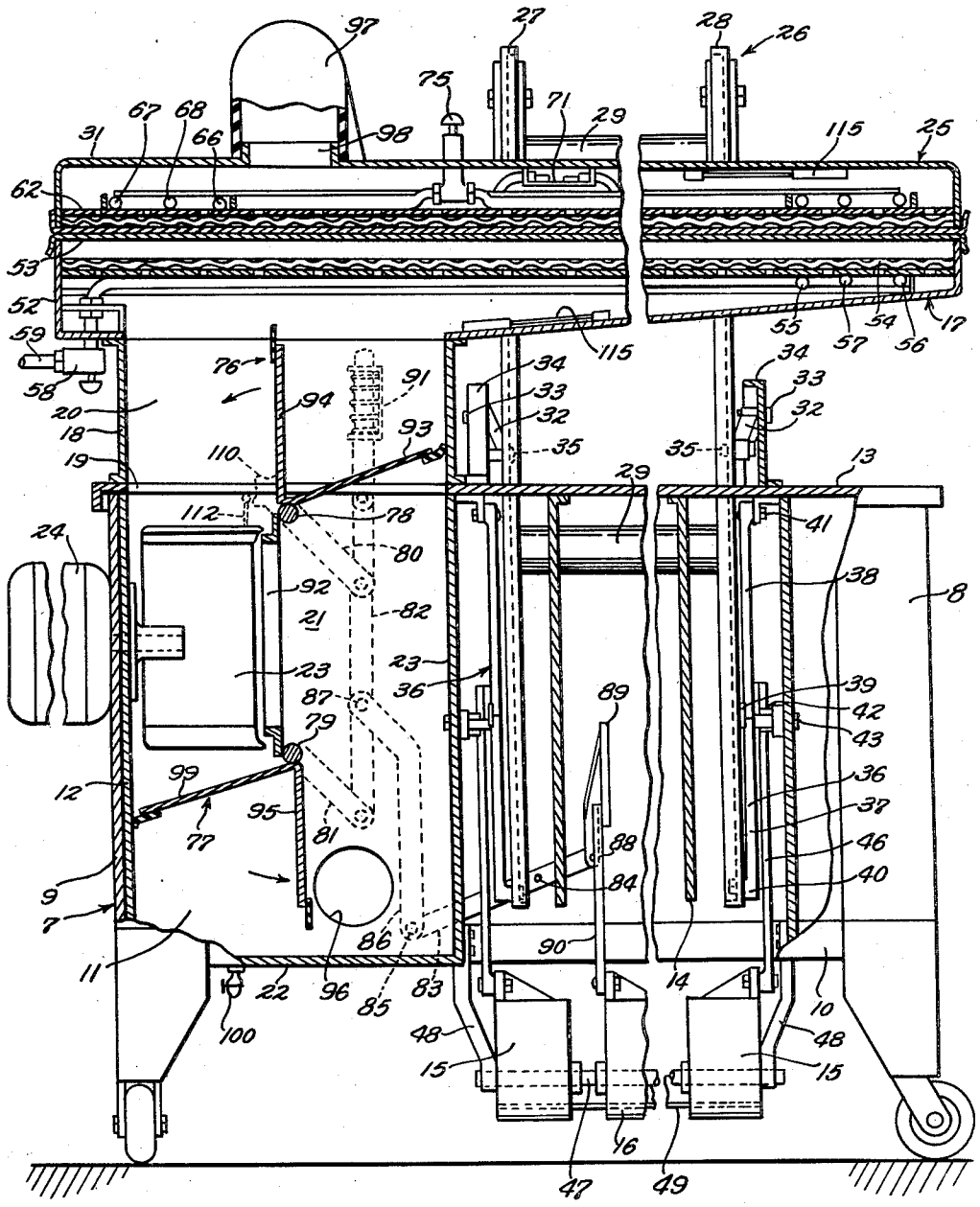


Fig. 2

INVENTORS
Kellen E. Hale
Henry D. Fowlie

BY Murray, Sackhoff & Murray
ATT'YS

July 1, 1958 K. E. HALE ET AL 2,840,938

GARMENT PRESSING MACHINE

Filed Oct. 18, 1954 3 Sheets-Sheet 3

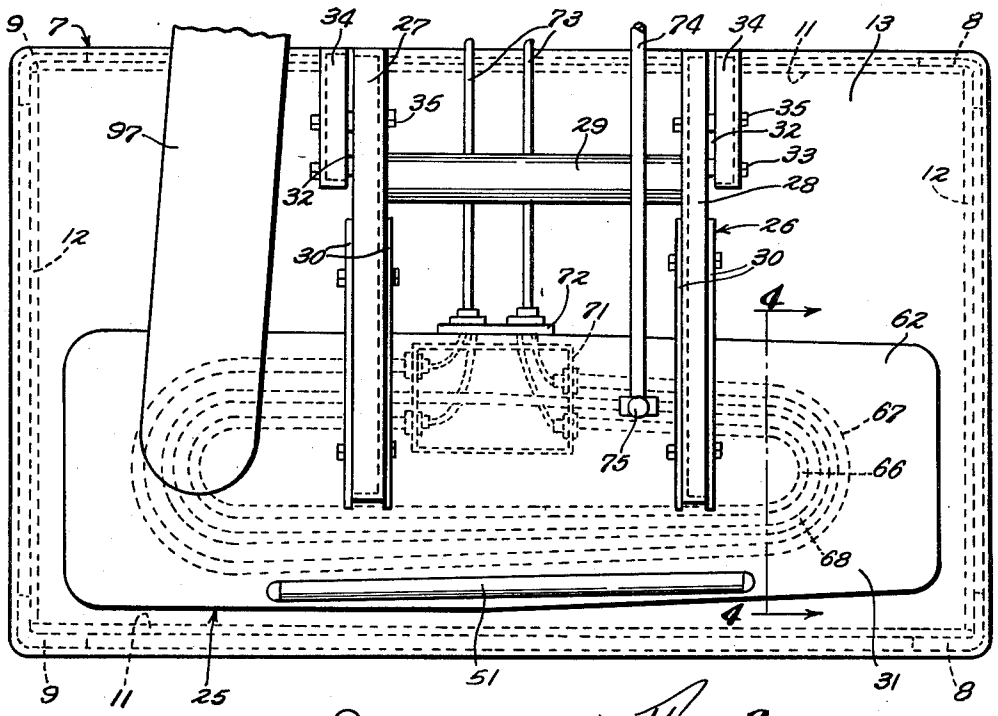


Fig. 3

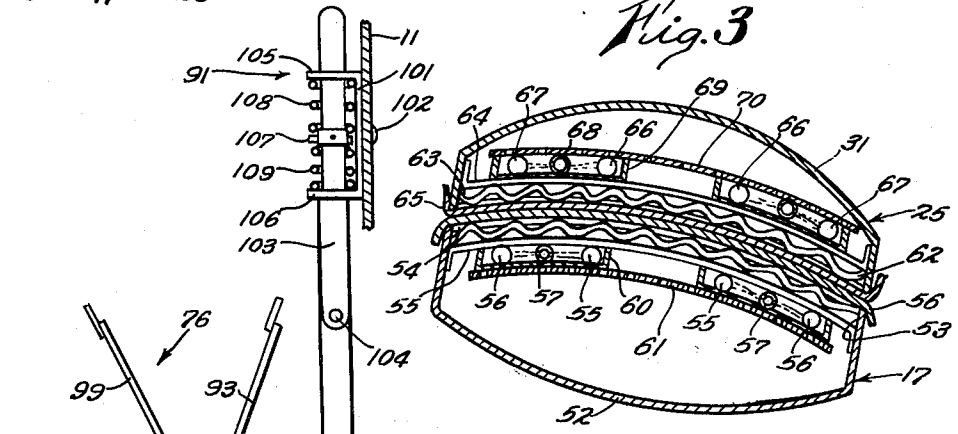


Fig. 4

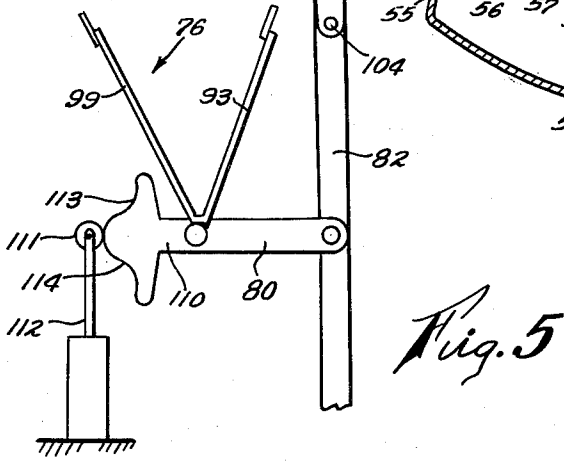


Fig. 5

INVENTORS
Kellen E. Hale
Henry D. Fowlie

BY Murray, Sackhoff & Murray
ATT'YS

United States Patent Office

2,840,938

Patented July 1, 1958

2,840,938

GARMENT PRESSING MACHINE

Kellen E. Hale, Dayton, Ohio, and Henry D. Fowlie, Clawson, Mich.

Application October 18, 1954, Serial No. 462,972

5 Claims. (Cl. 38—36)

The present invention relates to improvements in garment pressing, steam ironing and drying appliances and is particularly directed to a compact machine that is housed in a low cabinet and easily operated by a person whilst seated before it in a comfortable position.

It is an object of this invention to provide in an appliance of the character described a novel treadle operated lever arrangement for actuating the movable pressing head of the appliance, the arrangement providing a readily releasable, positive acting means for locking the head in either operative or inoperative positions, whilst securing a mechanical advantage whereby a slight foot pressure on the treadle will create a high garment pressing force between the said head and a cooperating stationary buck on the appliance.

Another object of the invention is to provide a head actuating lever arrangement that is movable to either operative or inoperative position by a full operative cycle of a treadle that is rocked successively by the heel and toe of the operator.

A further object of the invention is to provide a highly efficient means for instantaneously supplying steam in the required amounts for each steam pressing operation performed on an appliance of the character described hereinbefore.

A still further object of the invention is to provide in a garment pressing machine having the next preceding objective a closed steam condensing and reversible air circulating means adapted to force steam and drying air through a garment in either direction according to the requirement of the garment being pressed and to contain within the appliance all the steam and air utilized in the said garment pressing and garment drying operations, respectively.

With the foregoing and other objects in view our invention resides in the novel features of construction, arrangement and combination of parts to be presently described and which will be pointed out in the appended claims.

The invention will be best understood by reference to the accompanying drawings, forming a part of this specification and in which:

Fig. 1 is a side elevational view of our appliance, some parts being broken away or shown in section to disclose other operating parts thereof.

Fig. 2 is a fragmental, front elevational view of the appliance shown in Fig. 1, parts being broken away and other parts shown in section.

Fig. 3 is a fragmental, top plan view of our appliance.

Fig. 4 is an enlarged section taken on line 4—4 of Fig. 3, and

Fig. 5 is a detail view of the fan motor control switch for our appliance.

The embodiment of our invention comprises a low cabinet 7 of approximately table height, said cabinet being constructed of vertical corner members 8—8 and 9—9 joined together by a number of longitudinally and transversely extending horizontal members 10; suitable side and end wall panelling 11 and 12, respectively, being secured to the members, where required. The cabinet has a table top 13 and a centrally located knee hole or well 14 so that an operator may reach certain control treadles 15—15 and 16 from a seated position before the cabinet.

A hollow buck 17 is fixedly mounted on the cabinet top 13 by an upstanding tubular standard 18 secured on the top in position to enclose an opening 19 formed through the said top. As best shown in Fig. 2 the standard forms a communicating passageway or conduit 20 between the hollow buck 17 and an air circulating and steam condensing chamber generally indicated by the reference numeral 21. This chamber is preferably formed by the side and end walls 11 and 12 of the cabinet, a bottom wall 22 and an intermediate cross wall 23, and houses a fan blower 23 of the radial delivery type which is driven by an electric motor 24 mounted on the outside of an end wall 12 of the cabinet.

The movable head for the appliance is generally denoted by the reference numeral 25 and is mounted on the cabinet for swinging movement toward and away from the stationary buck 17 by means of an articulated frame 26 comprising a pair of longitudinally spaced, generally C-shaped arms 27 and 28 rigidly fastened together by a number of cross members 29. The upper ends of the arms are each connected to the head 25 by a pair of opposed gusset plates 30—30 bolted to their respective arms and welded or otherwise fastened to an outer hollow shell 31 for the head 25. Each of the arms are mounted on the cabinet by a shifting or oscillating link 32 pivotally mounted at 33 on a cabinet standard 34 and pivotally secured at 35 to the respective arm. The pivot 35 serves as a shifting fulcrum means which cooperates with a toggle-joint 36 for swingably supporting the head on the cabinet. The lower ends of each of the frame arms 27 and 28 are connected to a toggle 36 each of which comprise two links 37 and 38 secured together by a joint 39, the link 37 being pivotally connected at 40 to the arm, and the link 38 secured to the cabinet by a pivoted connection 41.

A treadle operated toggle-joint arrangement for actuating the head carrying frame comprises a crank 42 rockably mounted on the cabinet by a pivot pin 43, one end of each crank being connected to each toggle 36 at the joint 39 by a short link 44 that is pivoted at 45 to the crank, whilst the opposed end of each crank is secured to a treadle 15—15 by a long link 46. As best shown in Fig. 2 the left and right treadles 15—15 and middle treadle 16 are rockably mounted on a shaft 47 which is supported within the knee hole 14 by opposed depending brackets 48—48 fixed to the cabinet. The treadles 15—15 are secured together for unitary action by a transverse bar 49 so that either or both treadles may be operated to actuate the head.

With respect to Fig. 1 the full lines represent the operative pressing positions of the treadle operated toggle-joint arrangement wherein it will be noted that the crank 42 is held against a stop 50 (Fig. 1) fixed to the cabinet in position with respect to the short link 44 such that the joint 45 is overcenter with respect to the pivots 39

and 43 in the direction of the stop 50. Also the knee joint 39 connecting the links 37 and 38 is slightly overcenter with respect to pivots 40 and 41 in the direction of the crank 42. Thus the buck and head are locked in pressing position by the combined actions of two overcenter toggle-joint arrangements. To release the machine from its pressing position the operator pushes downwardly with his toe on either one or both of the treadles 15—15 tied together by bar 49, the initial movement of such toe pressure rotating the treadles clockwise from the position indicated in Fig. 1 of the drawing to move the pivot 45 overcenter in a direction away from the stop 50 thus permitting collapse of the parts of the double toggle arrangement so that they will be moved by the treadle to the position shown in dotted lines in Fig. 1. By the time the parts have reached their dotted line positions the head is moving upwardly with a momentum that will carry it toward its full opened position. It is at this point that the treadles 15—15 begin to move in a counterclockwise direction which is an indication to the operator that heel pressure is to be applied to the treadles, thus causing the link 37 to jackknife on lever 38 and move to the position shown in long and short broken lines where again the crank 42 and short link 44 assume the positions shown in full lines in Fig. 1 with the crank held against the stop 50 to lock the head in the inoperative position shown by the said long and short broken lines in said figure. To release the head from the inoperative position the treadles 15—15 are again pressed downwardly by the operator's toe which unlocks the toggle and by rocking movement of the treadle the head is brought into pressing relationship with the buck 17 and again locked by the toggle. It is to be noted that toggle links 37—38 and 42—44 both approach their extended positions as the head moves into pressing position with the buck 17 thus creating a great mechanical advantage with the force applied by the operator on the treadles. We have found that with a slight force on the treadles a pressing force of a thousand pounds can be obtained with our double toggle-joint arrangement thus permitting the operator to sit comfortably before the machine during use. A handle 51 is secured to the head to provide a manual means for assisting the toggle mechanism to move the head from operative to inoperative positions and return especially through the intermediate positions of the arrangement where a change of motion is made by the parts and treadles.

As best shown in Figs. 2 and 4 the stationary buck 17 has a metal dish-shaped shell 52 that is rectangular in plan, said shell being secured on the standard 18 in a tilted position with its open end 53 inclined toward the forward side of the machine. A perforate plate 54 preferably of the expanded metal type is positioned across the mouth of the shell and is reenforced by suitable cross bracing 55 anchored in the shell beneath the plate. A suitable pressing pad and pressing cloth device 56 are supported by the plate, the cloth being secured around the margin of the buck by a suitable clamp or clamps in any well known manner.

The means for providing a continuously heated element within the buck 17 during operation of the machine comprises two spaced, parallel rods 55 and 56 each containing electrically heated elements. The rods extend longitudinally of the buck and are preferably oval shaped in plan and disposed within the buck in the manner indicated in dotted lines in Fig. 3. Intermediate the heated elements 55 and 56 is a perforate water pipe 57 which is connected through a manually operated valve means 58 to a source of water under pressure (not shown) by a pipe 59. The heated elements and the water supply pipe 57 are positioned in a pan 60 which in turn is supported upon the perforate plate 61 mounted within the shell 52. As best shown in Fig. 4 the water pipe 57 has a row of perforations formed therein directed toward each of the heated elements. When steam is required for the operation of buck 17 a predetermined and controlled amount of water under pressure is sprayed onto the heated elements 55 and 56 through the perforations formed in the supply pipe 57 thus causing instantaneous conversion of the water into steam. As the elements 56 and the water pipe 57 are disposed within the pan 60 any excess of water falling from the elements will be collected in the pan and will eventually be converted into steam by contact with the pan since the latter is substantially in heated condition by its contact with the said heated elements. It will also be noted that air and steam vapors can readily pass through and be circulated in all portions of the buck because of its perforate plate structure and the open disposition of the heated elements with respect to the associated water supply pipe.

The movable head 25 contains the same but independently operated means as the buck for instantaneously creating steam therein in measured amounts, said means being best illustrated in Figs. 3 and 4 wherein the numeral 62 indicates a perforate plate extending across the mouth 63 of the shell 31, said plate being reenforced by bracing 64 for supporting the usual pad and pressing cloth device 65. A pair of spaced, parallel electrically heated rod elements 66 and 67 are located within the head and have a perforate water supply pipe 68 positioned therebetween. The elements and pipe are disposed in a pan 69 positioned within the head by a perforate plate 70. As best seen in Fig. 3 the heating elements and pipe have an oval shape and extend longitudinally through the head, the ends of the heating elements being secured to a bracket 71 located centrally and rearwardly of the head. The wires for supplying electricity to the elements extend from their adjacently positioned ends to an outlet 72 mounted on the exterior part of the shell, suitable lines 73 being connected to the outlet 72 and to a source of power (not shown). The water supply pipe 68 is connected to a source of water under pressure by a flexible pipe 74 which has the manually operable valve means 75 interposed therein. As in the case of the buck 17 air is free to circulate through the perforate plates of the head and steam can be instantaneously produced in all portions thereof in the volume and at the time required.

This invention provides a novel reversible means for circulating steam ladened air or drying air through the garments being pressed between the buck 17 and the head 25, said means being best exemplified in Fig. 2 of the drawing wherein a pair of simultaneously actuated V-shaped baffles 76 and 77 are pivotally mounted within the chamber 21 on cross shafts 78 and 79, respectively, that are in turn journaled at their respective ends in side walls 11—11 of said cabinet. Each shaft has an arm 80 and 81, respectively, secured to the rear end thereof, the free ends of said arms being pivotally connected to a control bar 82. The bar is actuated by a crank 83 pivotally mounted at 84 to the cabinet, one end of the crank being pivotally connected at 85 to a link 86 that in turn is connected to the bar at a centrally located pivot 87. The opposite end of the crank is secured at a joint 88 to an inverted yoke 89 in turn connected to the treadle 16 by a link 90. A spring device 91 (Figs. 2 and 5) is secured to the cabinet wall 11 and yieldably maintains the linkage and treadle in neutral positions. With reference to Fig. 2 the pivotal mounting shafts 78 and 79 of the baffles are shown positioned on opposite sides of an air inlet ring 92 for the fan 23; the baffle 76 being shown with one of its plates 93 closing off the inlet side of the fan to the air passageway or conduit 20, whilst its other plate 94 is in a position to direct air under pressure from the periphery of the fan 23 to the said passageway. Baffle 77 is shown with one plate 95 in position to connect the fan inlet with an opening 96 in the cabinet wall 11, which opening is connected to the interior of the movable head 25 by a flexible tubing or conduit 97 which extends upwardly from a connection with the said opening along

the back of the cabinet (Fig. 1) and across the top thereof to a suitable connection with an opening **98** in the casing **31** for the head. The other plate **99** of the baffle **77** is shown in Fig. 2 as closing off the fan pressure side with the opening **96** in the casing wall. Thus it will be seen that when the baffles are in the position shown in Fig. 2 and the fan is being driven by motor **24** that a forced draft of air is moved in a closed circuit through the machine, such circulation following a path starting with the pressure side of the fan **23**, to passageway **20**, to the buck **17**, through the garment, to the head **25**, the flexible tubing **97**, the opening **96** and back to the inlet side of the fan **23**. In the event the circulated air is laden with steam or moisture, much of the moisture is condensed on the relatively cool surfaces of the baffles, chamber side walls and the fan and this condensate is then collected in the bottom of the chamber **21** and drained when desired through cock **100** in the bottom wall **22** of the chamber.

The alternate operative position of the baffles is attained when the plate **94** of baffle **76** closes the pressure side of the fan to the passageway **20** and plate **93** is opened to connect the fan inlet side with said passageway. When baffle **76** is in the position thus described the plate **95** has closed the opening **96** to the fan inlet and plate **99** has opened the communication of the fan pressure side with the opening **96** thus providing a counter-circulation of air from the fan pressure side through opening **96**, tubing **97**, through the head **25**, the garment, the buck **17**, passageway **20** back to the inlet side of the fan **23**.

The means for resiliently maintaining the air directing baffles **76** and **77** in a neutral position is shown in detail in its neutral position in Fig. 5 wherein **101** is a U-shaped bracket pivotally mounted intermediate its ends to the wall **11** by a loose rivet **102**. A link **103**, joined to the upper end of the bar **82** by a pivot **104**, slidably passes through aligned holes formed in the legs **105** and **106** of the bracket **101**; a fixed ring **107** being secured to the link **103** intermediate the legs and engaged by opposed expansible springs **108** and **109**, surrounding the link and bearing respectively at the outer ends against the legs **105** and **106**. It is further contemplated that the fan motor be inoperative when the baffles are in neutral position and operative in either of the alternative operative positions of the baffles. To this end the arm **80** is provided with a control lever having an extension **110** thereon which engages a follower **111** on an arm **112** for a microswitch wired in the motor circuit to maintain a fan motor controlling switch in "off" position. When the arm **80** is either raised or lowered the follower **111** will drop into either a depression **113** or **114** on the extension to "close" the switch and actuate the motor. The treadle **16** is positioned in a substantially horizontal position when the linkage, switch and baffles are in neutral positions so that on the application of either heel or toe pressure thereto air will be circulated in one or the other direction through the head and buck and the garment therebetween, as desired. Suitable humidistats and thermostats indicated by reference characters **115** in Fig. 2 may be located within the head and the buck to control both the amount of humidity and temperature of the electric elements during continuous operation of the machine.

In operation, the machine head will be considered as being in open position, the machine being placed in condition for use by energizing the electric heating elements **55—56** in the buck **17** and elements **66—67** in the head **25** until their external surfaces have become heated to the high temperature required to convert water into steam. An operator then is seated before the cabinet **7** with his legs within the knee hole **14** and places a garment to be pressed upon the buck **17**. Either or both treadles **15—15** are pressed downwardly by the toe and then downwardly by the heel thus rocking the treadle and moving the head from the inoperative position shown in Fig. 1 in broken lines to the full line position where the head and buck are locked in operative pressing positions by the double toggle-joint arrangement. Next the center treadle **16** is rocked either by the heel or toe of the operator depending upon the direction of air circulation desired by the operator for the garment to be pressed. Once the circulation of air has been started through the machine either the lower valve **58** or the upper valve **75** as the case may be will be opened manually for a desired time thus allowing water under pressure to be sprayed onto the heated elements in the head or in the buck and creating instantaneous steam in the proper amount which is then carried through the garment by the draft of air circulating through the machine. The garment may be left in the machine a short time after the steam has passed therethrough to completely dry said garment whereafter the treadle **16** is returned to its neutral position to stop the circulation of air by the fan. The treadles **15—15** are then rocked by toe and heel pressure to again open the machine to remove the pressed garment and to insert the next piece of work on the buck.

Having thus described our invention what we claim is:

1. In a garment pressing machine the combination of a cabinet, a buck mounted upon the cabinet, a head, an upstanding C-shaped frame, means for mounting the head on the upper end of the frame for moving the head downwardly toward and upwardly away from the buck, means for swingably supporting the frame on the cabinet comprising an oscillating link pivotally mounted on the cabinet and having a pivotal connection with an intermediate portion of the frame and a first toggle device pivotally mounted at its upper end to the cabinet and having its depending end pivotally connected to the lower terminal end of the frame, a second toggle device associated with the joint of the first toggle device for operating the latter, and means for actuating the second toggle device.

2. In a garment pressing appliance the combination of a cabinet, a standard extending upwardly from the cabinet, a buck positioned upon the standard, an upstanding C-shaped frame disposed on the cabinet with one arm thereof projecting into the cabinet and the opposed arm extending above the buck, a head mounted on the end of the last mentioned arm and movable by the frame to and from the buck, a shiftable link pivotally mounted upon the cabinet and having a pivotal connection with an intermediate portion of the C-shaped frame, a toggle device pivotally mounted at its upper end to the cabinet and having its lower end pivoted to the terminal part of the first mentioned arm, said toggle device being in extended condition when the head is in operative engagement with the buck and being in jack-knifed condition when the head is in inoperative spaced position with respect to the buck, a crank mounted in the cabinet, a short link connecting one end of the crank to the knee joint of the toggle device, a rockable treadle mounted on the cabinet, and a long link connecting the opposite end of the crank with the treadle, whereby with each rocking movement of the treadle the toggle device is moved from its extended position to its jack-knifed position and vice versa.

3. A garment pressing appliance as set forth in claim 2 characterized by the fact that the crank and short link assume the same overcenter positions to lock the head in either its operative or its inoperative position with respect to the buck.

4. In a garment pressing appliance the combination of a cabinet, a buck supported on the cabinet, a head carrying frame having upper and lower forwardly extending portions and a rearward upstanding portion connecting said upper and lower portions, a shifting fulcrum means pivoted to the cabinet and having a pivotal connection with the upstanding portion of the head carrying frame, a toggle device having an upper link pivoted to the cabinet and a lower link pivoted to the free end of the lower frame portion, and a reciprocated operating link pivotally connected to the joint of the toggle device.

5. In a garment pressing machine the combination of a cabinet, a buck supported thereby, a head carrying frame of substantially C-shape in outline, a head secured to the upper portion of the frame and movable thereby into and away from pressing engagement with the buck, oscillating link movably supporting the frame on the cabinet and pivoted at one end to the cabinet and at its opposed end to the central part of the C-shaped frame, a toggle device pivotally connected at its lower end to the terminal end of the lower frame portion and at its upper end to the cabinet, and treadle operated means for actuating the toggle device.

References Cited in the file of this patent

UNITED STATES PATENTS

1,299,036	Rotnagle	Apr. 1, 1919
1,539,786	Suhler	May 26, 1925
1,584,698	Brockett	May 11, 1926
1,667,811	Ledbetter	May 1, 1928
1,715,115	Beede	May 28, 1929
1,867,174	Reeps	July 12, 1932
2,350,153	Davis	May 30, 1944
2,489,960	Gabler	Nov. 29, 1949