May 6, 1941. G. H. RAWLINSON ET AL 2,241,373

GARMENT PRESSING MACHINE

Filed Aug. 5, 1933 4 Sheets-Sheet 1

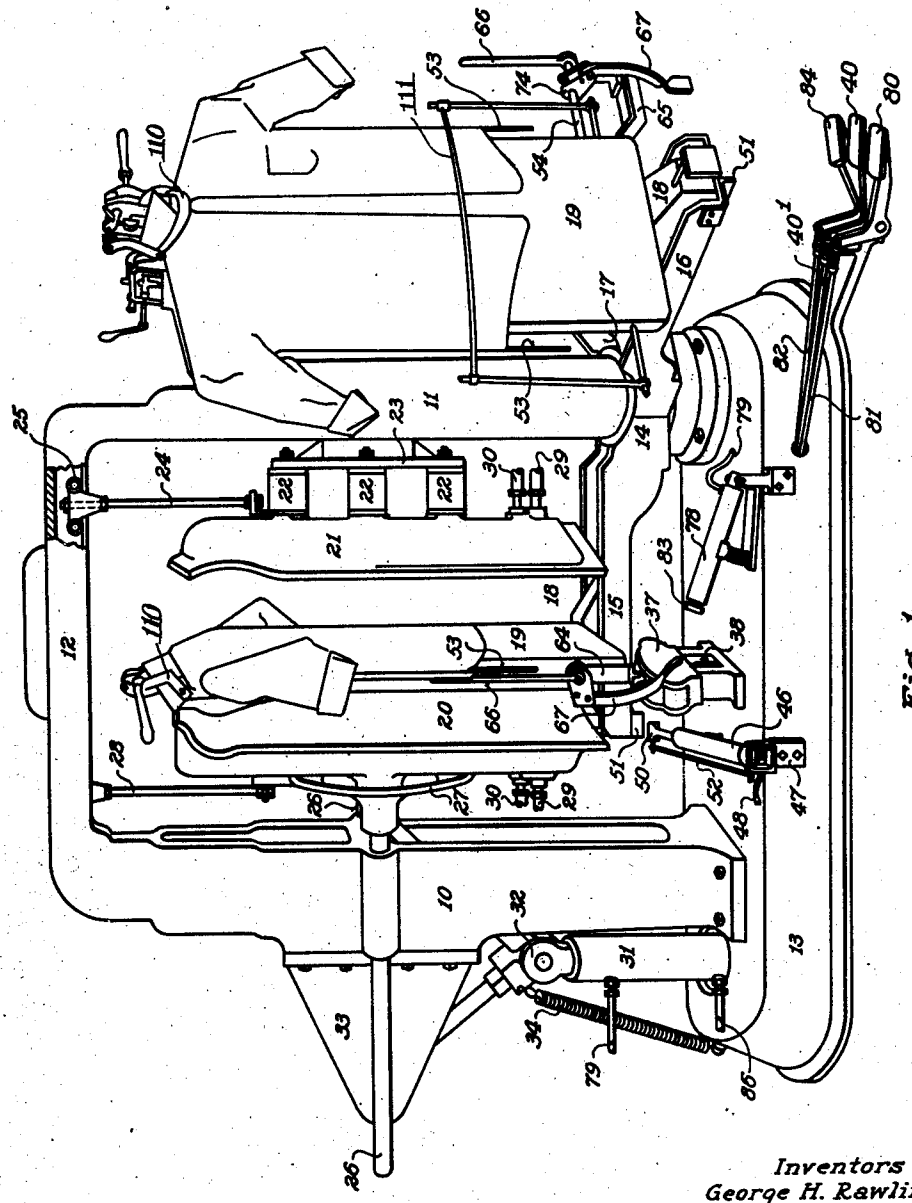


Fig. 1

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GARMENT PRESSING MACHINE

Filed Aug. 5, 1938 4 Sheets-Sheet 2

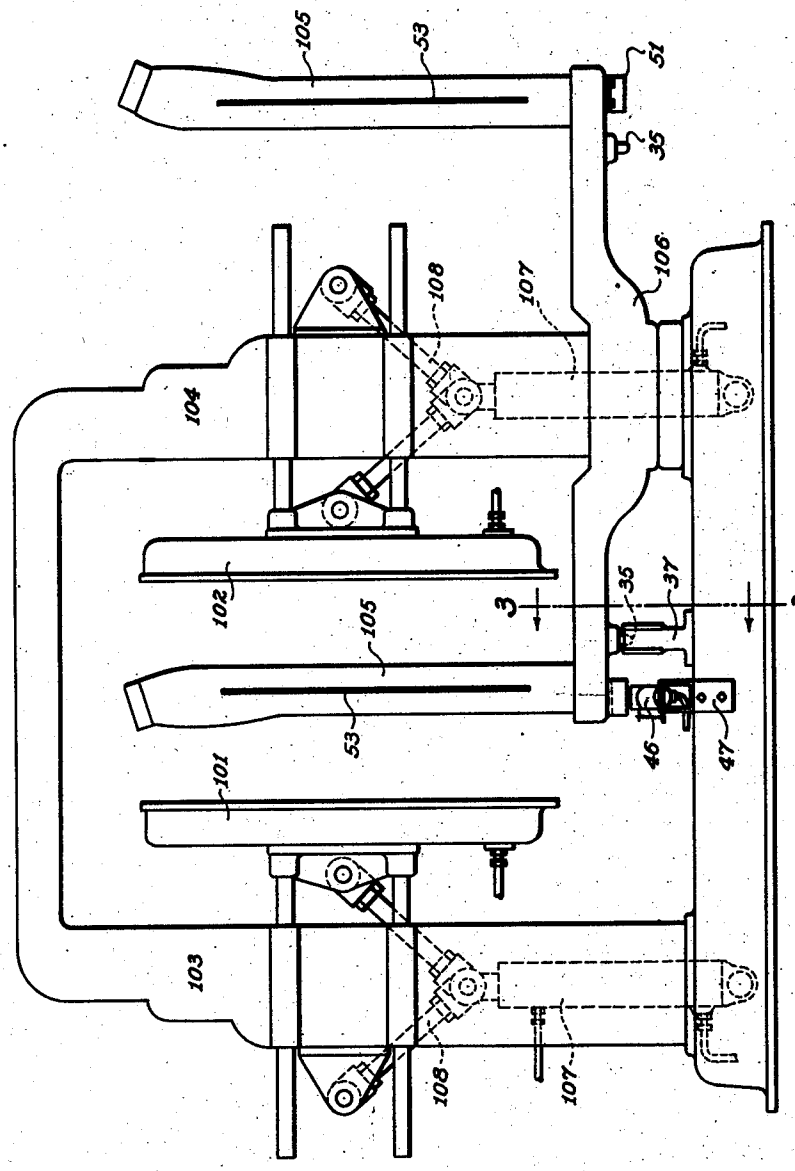


Fig. 2

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Fig. 5

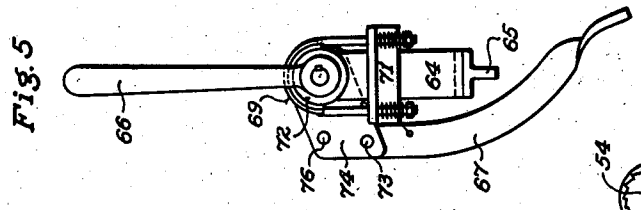


Fig. 6

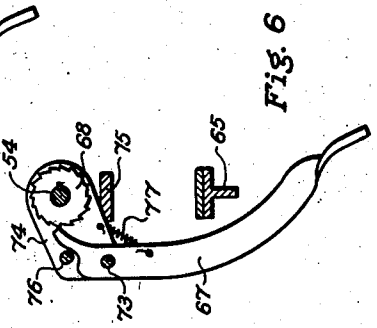


Fig. 4

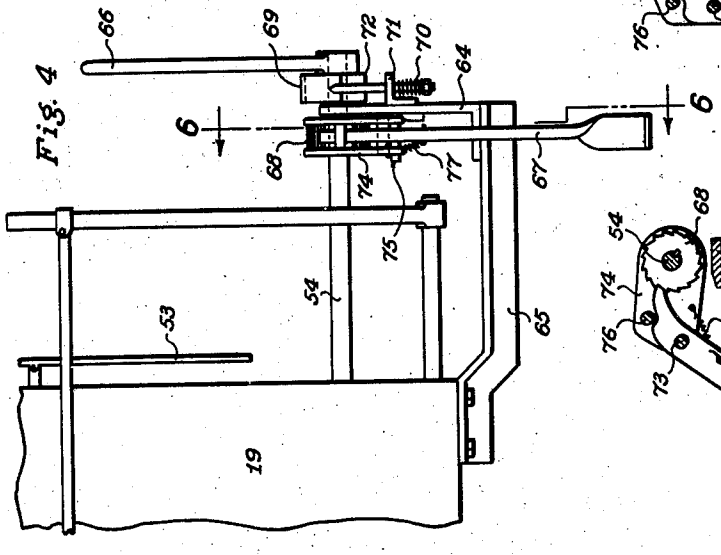


Fig. 7

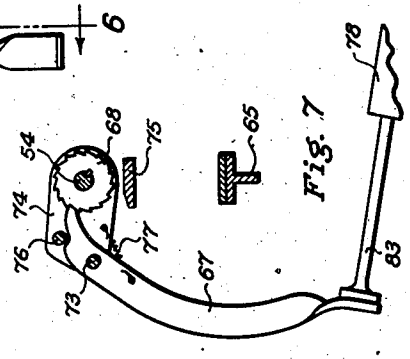
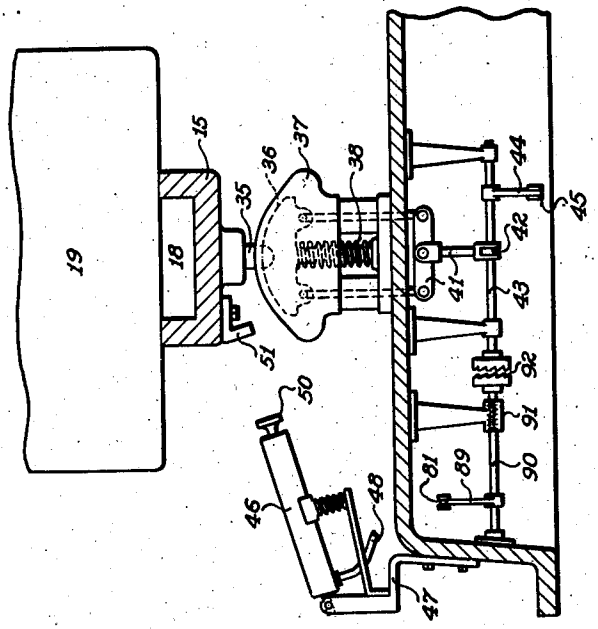


Fig. 3



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GARMENT PRESSING MACHINE

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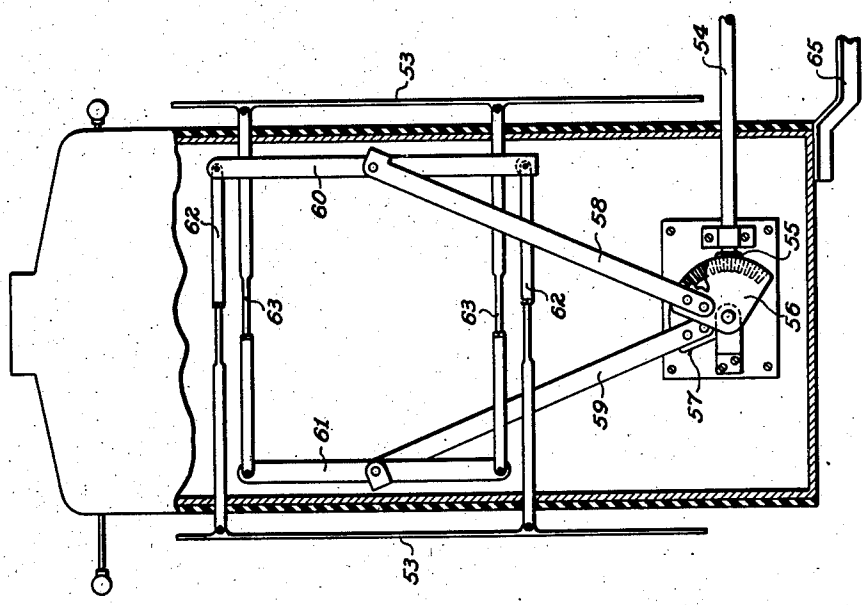


Fig. 8

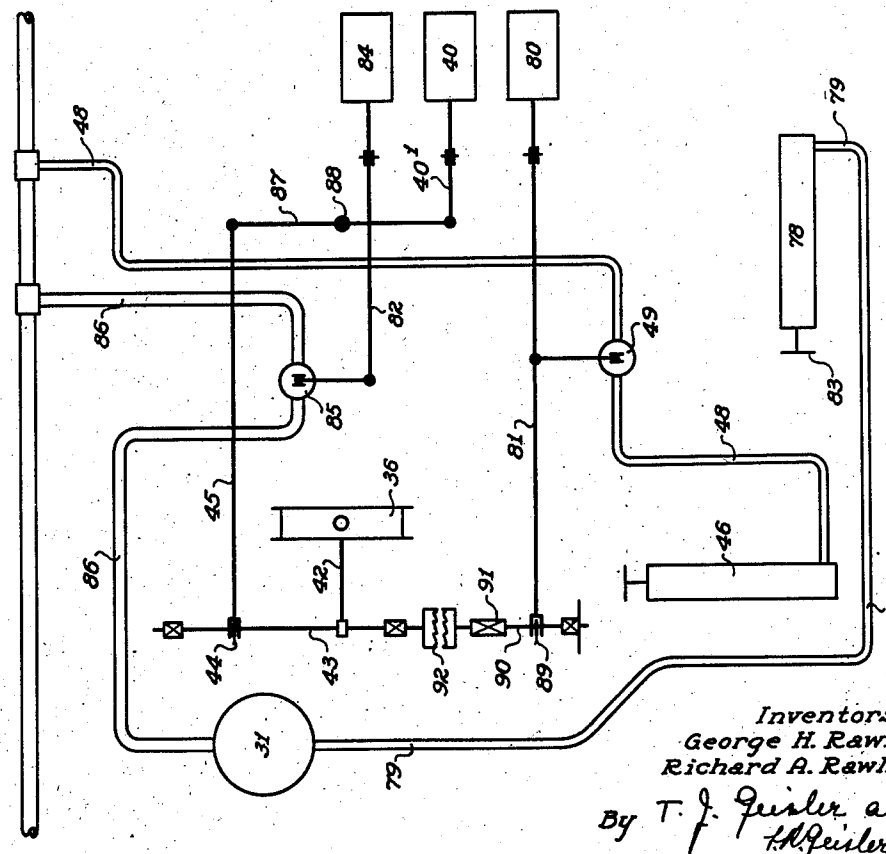


Fig. 9

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UNITED STATES PATENT OFFICE

2,241,373

GARMENT PRESSING MACHINE

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Portland, Oreg.

Application August 5, 1938, Serial No. 223,257

16 Claims. (Cl. 223—57)

This invention relates to pressing machines and, more particularly, to machines in which upright forms or bucks, especially those adapted for use with shirts, coats and the like, will be moved into position between pressing elements, will be held in such position during the pressing operation, and will then be moved out of such position after the pressing operation.

This invention relates more specifically to pressing machines employing a buck such as that described in our pending application, Serial No. 201,352, filed April 11, 1938, and is an improvement over the pressing machine described in United States Letters Patent No. 2,126,577, issued August 9, 1938.

The object of this invention is to provide an improved machine in which a plurality of upright bucks may be employed and each buck in turn brought into proper pressing position.

Another object of this invention is to provide a rotating carriage or turret mounting for the bucks whereby the upright bucks will be brought into and out of operative engagement with the pressing elements or press jaws by rotation of the carriage.

A further object is to provide a pressing machine of the rotating carriage type in which a pair of movable press jaws, or one movable and one relatively fixed press jaw, may be employed.

A more specific object of this invention is to provide a machine employing a plurality of bucks of the type described in our above mentioned co-pending application, Serial No. 201,352, in which each buck has side-stretching elements and in which these side-stretching elements will be caused to stretch the side portions of the garment on the buck simultaneously with the pressing operation thereby insuring the proper pressing and stretching of the portions of the garment beneath the arm holes.

A still further object of this invention is to provide a pressing machine of the type indicated in which suitable controls are included so that movement of the bucks into and out of position between the pressing elements, operation of the pressing elements, and, in particular, the stretching of the side portions of each garment during the pressing operation, can be easily and properly controlled by a single operator.

The manner in which these objects and other advantages are obtained in our invention will be brought out in the following description of preferred embodiments of our pressing machine, and of certain parts thereof, in which reference is made to the accompanying drawings.

In the drawings:

Fig. 1 is a perspective view of one embodiment of our invention;

Fig. 2 is a schematic side elevation of a modified form of our invention, with portions of the mechanism omitted for the sake of clarity;

Fig. 3 is an enlarged fragmentary transverse section corresponding to the line 3—3 of Fig. 2;

Fig. 4 is a front elevation, on an enlarged scale, of part of the garment stretching mechanism of Fig. 1;

Fig. 5 is a corresponding end elevation;

Fig. 6 is a transverse section on the line 6—6 of Fig. 4;

Fig. 7 is a similar section showing certain parts in changed position;

Fig. 8 is a fragmentary vertical medial section of the garment form or buck of Figs. 1 and 2; and

Fig. 9 is a diagrammatic plan illustrating the arrangement of the control means in Fig. 1.

Referring first to Fig. 1, an arched frame, consisting principally of spaced standards 10 and 11 and a header 12, is rigidly mounted on a suitable base 13, the frame and base being preferably hollow metal castings. A rotatable carriage 14 is journaled for free rotation on the cylindrical lower end of the standard 11, the carriage having equally-spaced radial arms 15, 16, and 17. These arms are channel-shaped in cross section and each arm serves as a supporting guide-way for a sliding block 18. A garment form or buck 19 is vertically mounted on each block 18. The blocks 18 and their superimposed bucks 19 are normally held at the outer ends of the carriage arms 15, 16, and 17 by compression springs (not shown) disposed in the said arms. The manner in which the blocks 18 are mounted in the arms is the same as that described in the United States Letters Patent No. 2,126,577, above mentioned, to which reference is made. The bucks 19 are thus slidable inwardly towards the vertical axis of the carriage 14.

The press element or press jaw 21 is resiliently connected, by means of interposed rubber blocks or springs 22, to a supporting bracket 23 which is rigidly mounted on the standard 11, and this press jaw 21 is prevented from sagging on these resilient connections by a hanger 24 which depends from a carriage 25 adapted to roll on suitable ways provided in the header 12. The other press element or jaw 20 is reciprocably mounted on the standard 10 by means of a pair of parallel shafts 26 slidably disposed in the standard 10 and secured to a pressure plate 27 firmly at-

tached to the press jaw 20. A hanger 28 serves as a rolling support for this press jaw in the same manner as hanger 24. The press jaws 20 and 21 are chambered metal castings having their pressing surfaces shaped to fit the bucks 19, and have inlet and outlet connections 29 and 30, connected by flexible tubing to a suitable source of steam supply (not shown).

Any suitable means may be employed for moving the press jaw 20 against the buck and pushing the buck against the other press jaw 21 in the pressing operation. We have found it satisfactory to use a conventional compressed air thrustor 31 and toggle mechanism 32, one arm of which has its upper end pivotally mounted in a stationary bracket 33 secured to the standard 10, and the other arm of which is pivotally attached to the pressure plate 27 secured to the press jaw 20. A tension spring 34 connected to the toggle mechanism 32 and to the base 13 causes the press jaw 20 to return to the retracted position shown in Fig. 1 when the air pressure is relieved in the compressed air cylinder of the thrustor 31.

Each of the arms 15, 16, and 17 of the carriage carrying the bucks 19 is in turn held, when the buck is in proper position between the press jaws 20 and 21 and during the pressing operation, by a pin 35 (shown in Figs. 2 and 3), secured on the bottom of the arm, which cooperates with a suitable latching device. This latching device may be of the type illustrated in detail in Fig. 3 and comprises a cam latch 36 vertically slidable in a housing 37 mounted on the machine base, the latch being provided with a hole to receive the pin 35. A compression spring 38 normally holds the latch 36 in its upper position in the housing 37. The latch may be manually disengaged from the pin 35 so as to permit rotation of the carriage 14, by means of suitable connection with a pedal 40 (Figs. 1 and 9), located at the operator's station, these connections in this case consisting of a linkage 41 (Fig. 3) coupled to the latch 36 and to an arm 42 carried on a rock shaft 43 which has a depending arm 44 pivotally connected by a rod 45 to one end of a lever 87 fulcrumed at 88 and pivotally attached at its opposite end to the pedal rod 40'. The latch 36 is, of course, automatically retracted when the pin 35 contacts the arcuate surface thereof during partial rotation of the carriage 14 but when a buck has been brought into proper pressing position between the press jaws the latch immediately locks the carriage against further rotation. Various other forms of latch mechanism could of course be substituted in place of that illustrated and it is not our intention to limit this latching means to any particular construction.

While it would be possible for the operator to rotate the carriage 14 by hand, when stepping on the release pedal 40, we have found it preferable to provide simple mechanical coordinated means for releasing the latch and imparting rotation independently of the operation of the pedal 40, the pedal 40 therefore being used only when it is desired to rotate the carriage by hand. A compressed air operated thrustor or jack 46 (Figs. 1 and 9) is mounted on a suitable bracket 47 secured to the base 13 and is connected to a source of compressed air by a hose or pipe 48. A valve 49 (Fig. 9) is interposed in the air line 48 and is connected to the rod 81 of a pedal 80. The pedal rod 81 (as shown in Figs. 3 and 9) is pivotally attached to an arm 89 fixed to a shaft 90 which is threaded through a bearing 91 in alinement with the shaft 43, the adjacent ends of shafts 43 and 90 terminating in a jaw clutch 92. The arrangement is such that arcuate movement of the arm 89, caused by depressing the pedal 80, advances the shaft 90 in the threaded bearing 91 and brings the two elements of the clutch 92 into engagement thus coupling the shaft 90 to the shaft 43 so that further movement of the pedal rod 81 releases the latch 36 and opens the valve 49 permitting compressed air to enter the jack 46. When the compressed air is introduced into the jack 46 the ram 50 thereof engages an angular bracket or lug 51 fixed to each of the carriage arms 15, 16, and 17, and thus starts rotation of the carriage 14 so that the next buck will be swung into position. The ram 50 is retracted by a tension spring 52 when the air pressure is relieved by release of the pedal 80.

The bucks 19 used in this machine are preferably of the type shown in the co-pending application, Serial No. 201,352, and are provided with suitable collar clamping means 110 (Fig. 1), suitable sleeve supports (not shown), means 111 for holding the bottom of the shirt in place, and flexible movable stays 53 (Figs. 1, 4, and 8) vertically disposed at each side of the buck, the stays being caused to move toward or away from the sides of the buck by the rotation of the shaft 54 through the medium of suitable mechanism within the buck, shown in Fig. 8 and also described in the co-pending application, Serial No. 201,352. The end of the shaft 54 extending into the buck 19 carries a pinion 55 which coacts with sector gears 56 and 57 having attached arms 58 and 59 connected to equalizers 60 and 61, the ends of these equalizers being pivotally coupled by rods 62 and 63 to the flexible stays 53 substantially as shown in Fig. 8. The outer end of the shaft 54 is journaled in a bracket 64 (see Figs. 4 and 5) which is secured to a bracket 65 fastened to the bottom of the buck. Rotation may be imparted to the shaft 54 either manually by means of a hand lever 66, keyed to the extremity of said shaft, or by means of a pawl lever 67 adapted to engage a ratchet wheel 68 secured to shaft 54 adjacent the bracket 64. A semicircular brake band 69 tensioned by springs 70 held against a fixed shelf angle 71 exerts sufficient friction on a pulley 72 keyed to the shaft 54 to retain the flexible stays 53 in any position set by manipulation of the hand lever 66 or pawl lever 67. The pawl lever 67 is pivotally carried on a pin 73 fixed in a yoke 74 mounted for free rotation on the shaft 54 and consisting of two parallel plates disposed on each side of the ratchet wheel 68, the yoke 74 normally resting on a stop 75 (see Figs. 4, 6, and 7) rigid on the bracket 64, and the pawl lever 67 is normally held disengaged from the ratchet wheel 68 and in abutment with a stop pin 76 by a tension spring 77 connected to the pawl lever 67 and the yoke 74. Thus we provide two means for rotating the shaft 54 and thereby actuating the garment stretching stays 53. This is an important feature in our invention. It permits initial tension to be applied to the garment sides by manipulation of the hand lever 66 and provides for further tension to be applied during the actual pressing operation by pressure on the pawl lever 67. For applying such pressure on the pawl lever 67 we provide a compressed air thrustor or jack 78 (see Fig. 1), similar to the carriage-rotating jack 46. The jack 78 is carried on a suitable bracket se-

cured to the base 13 and is connected by a hose or pipe 79 to the compressed air cylinder of the thrustor 31. The operation of this jack 78 is automatically controlled by the thrustor 31 which in turn is actuated by the pedal 84. Referring to Fig. 9, a rod 82 connects the pedal 84 with a valve 85 interposed in the air line 86, leading from a source of compressed air to the thrustor 31. When compressed air is introduced into the thrustor 31 the ram thereof (not shown) is thrust upwardly, and, by virtue of the toggle mechanism 32, closes the press jaws, and, at the upper limit of its stroke, permits compressed air to pass into pipe 79 leading to the jack 78. The ram 83 (Fig. 1) is thus thrust outwardly into contact with the lower end of the pawl lever 67. This causes the upper end of lever 67 to engage one of the teeth of the ratchet wheel 68. Further outward travel of the ram 83 moves the pawl lever 67 and yoke 74 in an upward arc (see Fig. 7) and thus rotates the ratchet wheel 68 and shaft 54. This additional partial rotation of shaft 54 causes the flexible stays 53 to be extended still further away from the sides of the buck 19 and thus provides further stretching of the sides of the garment. The additional stretching of the sides insures the proper pressing of the side portions of the garment below the arm holes in the manner described in the co-pending application, Serial No. 201,352. It is important, however, that this additional stretching of the side portions of the garment should take place after the press jaws are in pressing engagement with the buck, and it is most desirable that this particular part of the pressing operation be controlled automatically so that it will not occur in the pressing machine until the press jaws are in pressing position.

The entire operation of the machine now is as follows, referring to Fig. 1. The operator, stationed near the control pedals, 40, 80, and 84, drapes a shirt or similar garment on a buck 19 in the manner described in the co-pending application, Serial No. 201,352, and then actuates the hand lever 66 to place initial tension on the side seams of the garment. Next the operator depresses pedal 80 which releases the latch 36 and actuates the jack 46 so as to rotate the carriage 14 and swing the draped buck into position between the press jaws 20 and 21, the latch 36 then holding the supporting arm and buck in this location. Then the operator depresses pedal 84 which operates the compressed air thrustor 31. This moves the press jaw 20 against the buck and forces the buck against the press jaw 21 and then actuates the jack 78 which causes the pawl lever 67 to move the flexible stays 53 outwardly, thus providing the additional desired stretching during the pressing operation. Meanwhile the operator places another garment on the buck which has been swung to position at the operator's station.

While we have shown and described our pressing machine as controlled by the intermittent operation of the pedals 80 and 84, obviously numerous forms of control devices could be substituted for the pedal controls. It would even be possible to have automatic or electrically actuated controls operating the latch 36, the jack 46, the compressed air thrustor 31, and the jack 78 in properly timed sequence. It is not our intention to limit our invention to the specific mechanical controls illustrated and described.

In Fig. 1 we have shown the press jaw 21 as being resiliently mounted on a standard 11 but not otherwise movable. However, if desired, the machine could be made with both press jaws equally and simultaneously movable. Such a modification is illustrated, more or less schematically, in Fig. 2 in which the press jaws 101 and 102 are each reciprocably carried on the standards 103 and 104 respectively of the machine frames. A pair of compressed air thrustors 107 and toggle mechanisms 108, identical to the compressed air thrustor 31 and toggle mechanism 32, shown in Fig. 1, (except that only one thrustor need have a connecting pipe to the jack 78), in this case are operated in unison to close the press jaws about an interposed buck 105 when the buck is brought into proper position by rotation of the carriage 106. The latch means, carriage rotating means, and garment stretching mechanism, however, are the same as those in the machine illustrated in Fig. 1.

We claim:

1. In a garment pressing machine, a carriage rotatable on a vertical axis, a plurality of upright bucks mounted on said rotatable carriage, a pair of upright pressing jaws supported above said carriage and located, respectively, inside of and outside of the circular path of said bucks, whereby, upon the rotation of said carriage, said bucks will be brought serially into position between said pressing jaws, means for locking said carriage against further rotation when one of said bucks has been brought into said position, and means for bringing said jaws and said positioned buck into pressing relationship.

2. In a garment pressing machine of the character described including, a pair of upright pressing jaws and a plurality of upright bucks movable serially into pressing position between said jaws, means on each of said bucks for stretching the sides of a garment on the buck, manual means for operating said side-stretching means and additional separate automatic means for further operating said stretching means after said jaws have been brought into pressing engagement with the buck.

3. In a garment pressing machine of the character described including a pair of upright pressing jaws and a plurality of upright bucks movable serially into pressing position between said jaws, means for moving one of said jaws, means on each of said bucks for stretching the sides of a garment on the buck, and means controlled by said jaw-moving means for further operating said stretching means after said jaws have been brought into pressing engagement with the buck.

4. In a garment pressing machine, a rotatable carriage, a pair of upright pressing jaws supported above said carriage, one of said jaws being horizontally slidable, a plurality of upright bucks carried by said carriage adapted, when said carriage is rotated, to be positioned serially between said pressing jaws, means for rotating said carriage, means for locking said carriage against further rotation when one of said bucks is positioned between said jaws, means for moving said jaws and a positioned buck into pressing relationship, and means for controlling the actuation of said carriage rotating means, carriage locking means and jaw moving means.

5. In a garment pressing machine, a rotatable carriage, a pair of upright pressing jaws supported for horizontal movement above said carriage, a plurality of upright bucks carried by said carriage adapted, when said carriage is rotated, to be positioned serially between said pressing jaws, means for rotating said carriage, means for locking said carriage against further rotation when one of said bucks is positioned between said

jaws, means for moving said jaws against a positioned buck, and means for controlling the actuation of said carriage rotating means, carriage locking means, and jaw moving means.

6. In a garment pressing machine, a pair of upright pressing jaws, a rotatable carriage, a plurality of upright bucks radially slidable on said carriage adapted, when said carriage is rotated, to be positioned serially between said pressing jaws, means for holding said carriage against rotat' n when one of said bucks is positioned between said jaws, and means for moving one of said jaws against a positioned buck and for moving said buck against the other jaw.

7. In a garment pressing machine, a base, a pair of spaced vertical beams made rigid with the base, a pair of opposed press jaws mounted on the beams, means for operating the jaws, a turntable axially mounted on one of the beams to turn in a plane beneath the jaws, and a plurality of bucks mounted on the turntable for consecutive registry between the jaws.

8. In a garment pressing machine, a base, a pair of vertical beams made rigid with the base in spaced relationship, a pair of press jaws operatively mounted to work across the space between the beams, in opposed relationship, a turntable substantially coaxially mounted on an intermediate portion of one of the beams that is rotatable in a plane below the press jaws and normal to the axis of its mounting, and a plurality of pressing bucks mounted on the turntable in spaced relationship that are movable into and out of registry with the pressing jaws upon rotation of said turntable.

9. In a garment pressing machine, a base, a pair of spaced vertical beams having their lower ends made rigid with the base, a tension beam that embodies a track member made rigid with the respective tops of the vertical beams, a press jaw mounted on each beam in opposed relationship to the other jaw, means for working the jaws and means for guiding the jaws that includes a carriage movable along the track of the tension beam.

10. In a pressing machine, a base, spaced vertical beams made rigid with the base at their lower ends, and a tension member made rigid with the tops of the beams to define a generally rectangular space above the base, opposed pressing jaws that are respectively mounted on the vertical beams to engage a pressing buck therebetween and react against the beams, a turntable mounted for rotation in a plane beneath the jaws, a plurality of pressing bucks mounted in spaced relationship on the turntable to consecutively register with the jaws and means in part on the turntable and in part made rigid with the base that are effective to define registration of the bucks with the jaws.

11. A turntable for a pressing machine of the character described comprising a hub portion, arms extending in uniform radial spacing from said hub and buck mountings adjacent the ends of said arms, said buck mountings being characterized by a spring sustained carriage that is yieldable under the influence of pressing jaws on a buck mounted on the carriage.

12. A pressing machine of the character described, comprising a base, a pair of vertical beams mounted in spaced relationship on the base and opposed pressing jaws operably mounted on the beams, a turntable mounted on one of the beams and rotatable in a plane beneath the pressing jaws, and a plurality of bucks mounted on the turntable in position for successive registration between the jaws.

13. In a pressing machine, a base, a frame superposed on the base, opposed vertical pressing jaws operatively mounted within the frame, a plurality of garment bucks mounted for movement into and out of registry with the jaws, a turntable upon which the bucks are mounted to rotate therewith, a mounting for said turntable to position it horizontally beneath the jaws, said bucks being yieldingly mounted on said turntable whereby to enable each buck to accommodate itself to said jaws when said jaws enclose the buck during the pressing operation.

14. In a garment pressing machine, a pair of pressing jaws, a buck movable into and out of pressing position between said jaws, extensible members on said buck for stretching a garment on the buck, means for extending said members, manual means for operating said member-extending means and separate automatic means in said machine for further operating said member-extending means when said jaws are in pressing engagement with the buck.

15. In a shirt pressing apparatus, a form comprising a central member and extensible side members, movable with respect to said central member and supported entirely on said central member, a shirt clamping device supported on said central member, means supported entirely on said central member for moving said side members, a pair of press jaws, means for moving the form between the press jaws, and means for effecting pressing engagement of the pressing elements with the form.

16. A garment pressing machine including a support, a pair of pressing jaws on said support, a movable carriage on said support, expandible garment carrying bucks on said carriage, means for mounting said bucks for lateral movement relative to said carriage, means supported entirely on said bucks and separated from said carriage for expanding said bucks, means for actuating the carriage to move said bucks serially into and out of position between said pressing jaws, and means for effecting movement of one of the pressing jaws against a positioned buck and for effecting lateral movement of said positioned buck toward the other pressing jaw.

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