METHOD AND APPARATUS FOR STEAMING AND IRONING A CLOTHING HAVING A COLLAR

Werner Stiefel, Kilchberg, Zurich, Switzerland, assignor to Hoffman Maschinen A.-G. Zurich, Zurich, Switzerland

Filed Sept. 18, 1958, Ser. No. 761,771

Claims priority, application Switzerland Sept. 25, 1957
6 Claims. (CI. 223—57)

The present invention relates to a method for steam ing and pressing a garment having a collar and to an apparatus for carrying out this method.

The prime object of the invention is to reduce the expenditure for the commercial steam ing and pressing of a garment and to facilitate the handling of the apparatus so as to make possible a more economical steaming and pressing operation.

The apparatus according to the invention forms a combination of a steam pressing machine and of a steaming bus, i.e. a steam-air finisher. The pressing machine as well as the steaming bus have been used separately for years. The pressing machine serves to press the garment, in the present case the collars thereof. The garments are treated on the bust, first with steam and then with hot air.

The advantage of the present invention lies in the fact that now for the same work only one machine is required where heretofore two separate machines were used.

The method according to the invention differs from the prior methods in that the garment is fixed and in that in the fixed position the collar and at least a portion of the shoulder part is ironed between pressing elements while the remaining portion of the garment adjoining the collar and the shoulder part is smoothed and steamed by means of a permeable bag or sack inflated with steam and afterwards dried by air.

A further object of the invention is an apparatus for carrying out this method. This apparatus according to the invention comprises pressing elements serving to press the collar and at least a portion of the shoulder part and a steam-air finisher (or "bust") with an inflatable bag serving to steam portions of the clothing adjoining the collar and shoulder part thereof.

The accompanying drawing is a simplified representation of an embodiment of the subject of the invention.

Figure 1 of the drawing shows a side projection of a combined pressing and steaming apparatus according to the invention.

Figure 2 is a front elevation of the apparatus taken along the lines 2—2 of Figure 1 and looking in the direction of the arrows.

The apparatus includes a frame 1 having a swingable arm 3 pivoted to the upper portion at the articulated joint 2. The arm 3 carries at its upper end a pressing member, the so-called upper plate 4.

At joint 50, the upper plate 4 is articulated in pendulum suspension to the arm 3 so that it may adapt itself to the garment to be ironed, and the plate comprises a heated matrix 5, into which steam supplied from steam supply 51 may be fed through a flexible conduit 6, the steam traversing the permeable cover 7. The arm 3 is held in the lifted position illustrated in the drawing by a return spring 8 having its other end anchored in the frame at 9. At the same side of the arm there is arranged a compressed air actuating member 10 pivoted at 11 in the frame. This member 10 comprises a cylinder with a piston rod 12 and a piston (not shown) through which the arm 3 and the upper plate 4 may be pivoted downwardly against the force of spring 8. Member 10 is controlled by push button 75 through a conventional compressed air valve.

The table 14 connected with the frame 1 carries a vertical support 15 having a stationary pressing element, the so-called under plate 26, secured to its upper end, for pressing the collar of the garment. A permeable sack 17 of nylon is slipped over the support 15 and has its lower end secured at 18 to the table. On both sides of the support 15 arms 20 are hinged as at 19 and these arms carry supports 21 at their upper free end for engaging the shoulders of the garment to be finished. Perforated, stationary clamping plates 22 and 23 are secured at the front and rear sides of the lower end of the support. These clamping plates are engaged from the outside by movable clamping plates 24 and 25 secured to levers 28 and 29 by means of springs 30 and 31 respectively. The setting levers 28 and 29, respectively, are articulated at 30 and 31, respectively, to the table and may be rocked manually about these articulations. To this end, trip members 32, 33 are provided at the top of the levers 28, 29 which release a suitable locking means for the lever when they are compressed. The height of the front clamping plate 24 may be adjusted by the set screw 34. A perforated feeding pipe 35 for steam, opens into the sack 17.

The two shoulder supports are formed as rocking or tappet levers pivoted at 61. At the ends of such rocking levers, i.e. at 62, there is articulated a push rod 63 actuated by a pedal 41.

The frame further houses a blower 38 driven by an electric motor 37 and adapted to blow air into the sack 17 through a conduit 39. In the conduit 39 there is arranged a heating element 40 adapted to be heated by steam so as to heat up the air. Pedals 41, 42 and 43 are provided for operating the apparatus. Pedal 42 controls the steam feed to the lower plate, while pedal 44 actuates the vacuum apparatus.

In operating the apparatus, the garment (not shown) to be pressed is fitted over the apparatus, i.e. it is slipped over the lower plate 16 and at the lower end it is clamped between the rear plates 23, 25 and between the front plates 22, 24. The front clamping plate 24 may be adjusted vertically by the set screw 34 so as to be adapted to the garment.

Pressure exerted on the pedal 41 causes the arms 20 to move outwardly with the shoulder pieces and adapt themselves to the shoulder part of the garment.

A suitable and conventional switch 70 starts the steaming, the timing of which is controlled by a suitable time switch 71. The time switch controls the operation, according to the following sequence:

For a predetermined period, e.g. ten seconds, steam is fed through the tube 35 into the sack 17. After this period of time the steam feed to the tube 35 is interrupted and steam is passed through the heating element 40, whereby the motor 37 is switched on so that the blower 38 blows warm air into the sack instead of steam. The clothing is thereby dried. After a certain time (20 seconds) the steam feed to the heating element is also interrupted so that the blower blows cool air into the sack and cools the clothing until finally the motor 37 is switched off.

The pressing is not controlled automatically, but is adapted to the requirements of the clothing by the person operating the apparatus.

First by actuating the push button 75, the pneumatically operated member 10 rocks the arm 3 to move the upper plate into engagement with the collar portion of the clothing. Now by a pressure on the pedal 42 steam may be fed into the lower plate 16 and, according to
the garment and to the collar portion thereof, steam also may be fed into the upper plate and from there through the permeable cover 7 as controlled by suitable valves. Of course, steam may be fed through the lower plate only or through the upper plate only. This is left to the discretion of the person attending the apparatus. The person attending the apparatus also decides the duration of these steps.

After this pressuring with simultaneous feed of steam the upper plate 4 is lifted by releasing the compressed air from the cylinder 10 and the ironed collar portion is cooled by drawing off air from the lower plate 16. This drawing off of air is also performed by the person attending the apparatus by actuation of another pedal 44, opening valve 45 connected to a vacuum source. Hereafter the ironing and steaming is terminated and the clothing may be removed from the apparatus where-by the different clamping parts are released in reversed sequence.

Air flaps 36 prevent steam released from pipe 35 from entering conduit 39 during the blowing of steam. The air flaps 36 automatically close during the steaming period due to their proper weight and under the action of the pressure of steam. On the other hand, the air flaps open only when the blower 38 produces a slight overpressure with respect to the pressure in the sack 17. The feed of steam to the apparatus is effected over a steam dryer which may be mounted into the apparatus. Obviously it is possible to make the timer adjustable so that it may be used for different lengths of the working program.

The steaming and the pressing need not, as described, be effected one after the other, but these two operations may overlap partially or be effected simultaneously.

1. A method of simultaneous shaping and pressing a garment having a collar while mounted on a single form comprising the steps of shaping the garment by supplying a gas under pressure to a gas permeable inflatable sack at the interior thereof to expand the garment, pressing the collar and at least a portion of the shoulders of the garment while mounted on the form, at least one of said shaping and pressing steps including the application of steam to at least a portion of the garment by passing steam therethrough whereby to heat and dampen the fabric of the garment to remove wrinkles therefrom.

2. A method in accordance with claim 1 in which the collar and shoulder portion of the garment are steamered by passing steam therethrough during the pressing operation.

3. A method in accordance with claim 1 in which steam is first supplied to the gas permeable inflatable sack at the interior of the garment to expand and steam the garment after which warm air is supplied to the sack to dry the garment in its smooth expanded condition.

4. An apparatus for shaping and pressing a garment having a collar and adjacent shoulder portions comprising a frame having a support for the garment, a flexible, inflatable, gas-permeable sack mounted on said support and over which the garment is mounted, means for supplying a gas under pressure to the interior of the sack to expand the garment, an arm movable toward and away from the support, mating press plates on the support and arm and having a shape to press the collar and shoulder portions of the garment therebetween, means for heating the press plates, and the mating press plates restraining the sack at the collar and shoulder portions of the garment while permitting the sack to expand throughout the remainder of the garment.

5. An apparatus in accordance with claim 4 in which the means for supplying gas under pressure is a source of steam which flows through the gas-permeable sack and garment to steam the garment, a blower for supplying air under pressure to the interior of the sack and a heater for heating the air to dry the steamed garment.

6. An apparatus in accordance with claim 4 in which the press plates are in the form of steam chambers, the means for heating the press plates comprising conduits for supplying steam to said chambers, and at least one of the press plates being perforate to permit steam to flow therethrough to steam the garment.

References Cited in the file of this patent

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Patent Number</th>
<th>Inventor</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,118,031</td>
<td>DeMarco</td>
<td>May 24, 1938</td>
</tr>
<tr>
<td>2,736,472</td>
<td>Jackson</td>
<td>Feb. 28, 1956</td>
</tr>
<tr>
<td>2,805,009</td>
<td>Jackson</td>
<td>Sept. 3, 1957</td>
</tr>
<tr>
<td>2,875,929</td>
<td>Langen et al.</td>
<td>Mar. 3, 1959</td>
</tr>
</tbody>
</table>

FOREIGN PATENTS

<table>
<thead>
<tr>
<th>Patent Number</th>
<th>Country</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>221,291</td>
<td>Switzerland</td>
<td>May 31, 1942</td>
</tr>
</tbody>
</table>