July 14, 1953 W. G. RAPER 2,645,389

TROUSERS PRESSER

Filed June 27, 1951 2 Sheets-Sheet 1

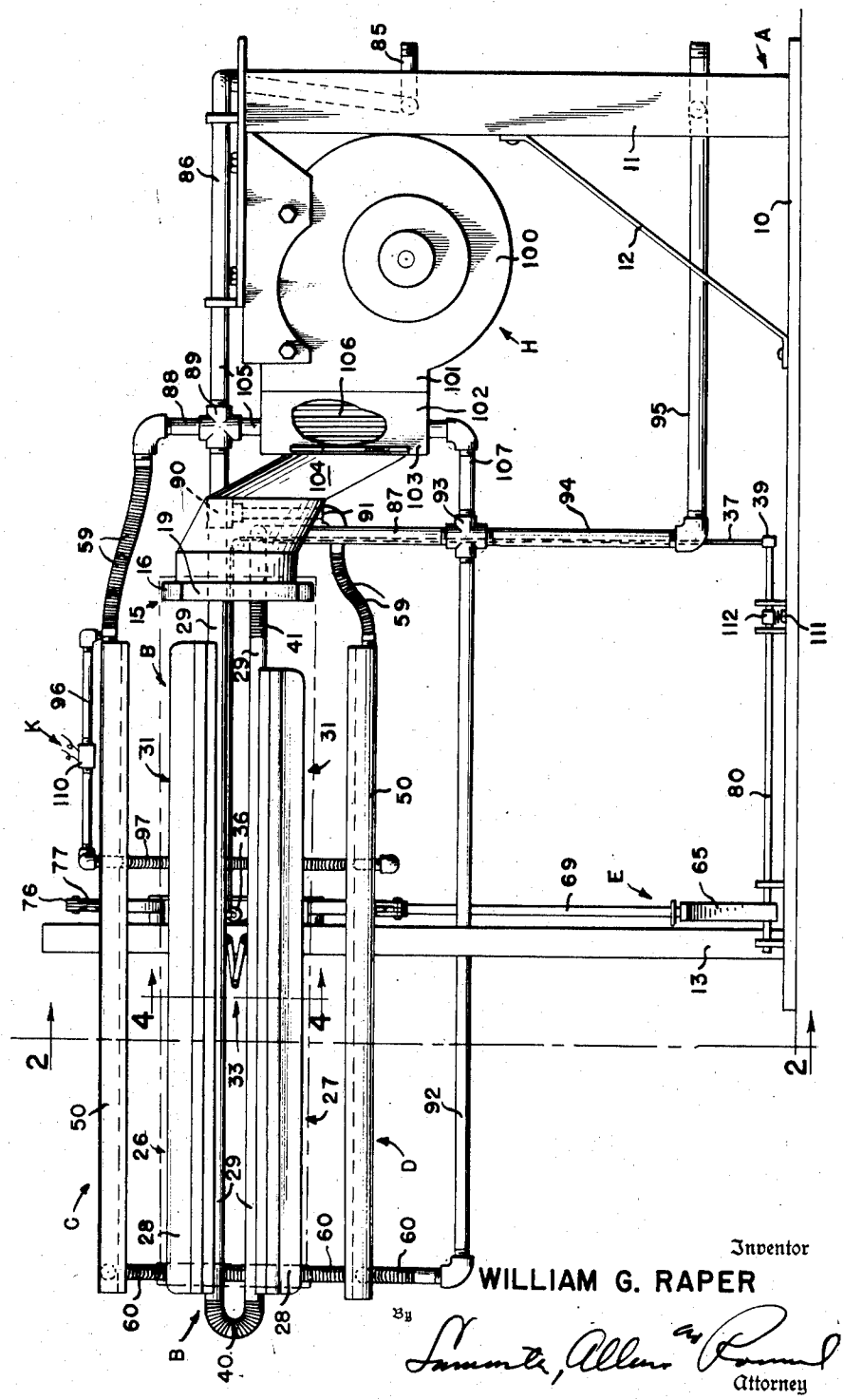


FIG. 1.

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FIG. 2.

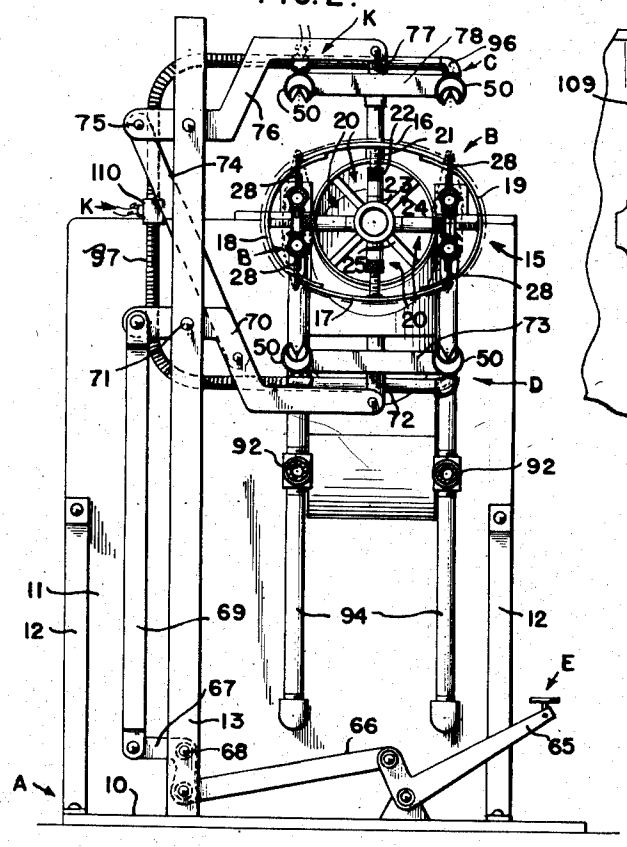


FIG. 5.

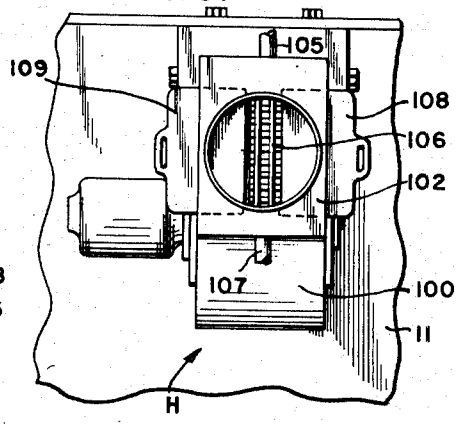


FIG. 4.

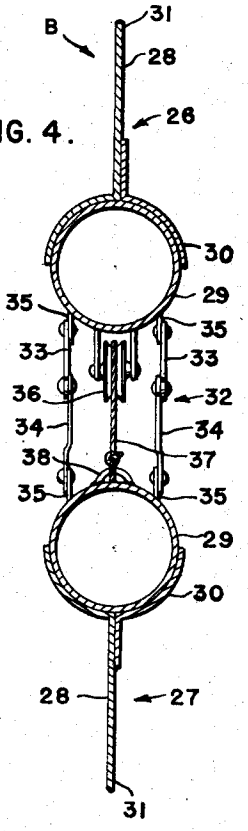
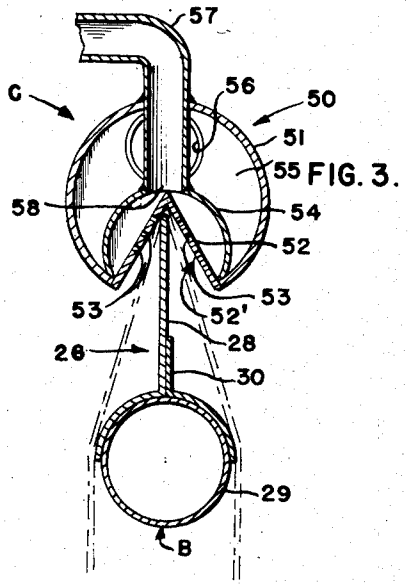


FIG. 3.



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TROUSERS PRESSER

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10 Claims. (Cl. 223—73)

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This invention relates to garment pressing machines and more particularly to machines for creasing and pressing bifurcated garments such as trousers.

In the use of conventional steam pressing machines, an average of ten separate lays is required in order to press a pair of trousers and the number of manipulations necessary in hand pressing is, of course, greater.

An important object of this invention is to provide a machine for pressing trousers in one lay.

Another important object is to provide a pressing machine which will eliminate the possibility of shining the trousers material.

A further important object is to provide a machine which will cause a fully defined crease to be given the trousers.

In addition, an important object is to provide a machine which will materially decrease the time necessary in pressing and creasing trousers.

Other objects and advantages will be apparent during the course of the following detailed description of the invention, taken in connection with the accompanying drawings, forming parts of this disclosure, and in which drawings,

Fig. 1 is a top plan of the new machine.

Fig. 2 is a vertical section, substantially on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged fragmentary vertical section of a presser head and a former, forming parts of the new machine, with a portion of a trouser leg shown in dots and dashes.

Fig. 4 is a fragmentary vertical section, substantially on the line 4—4 of Fig. 1.

Fig. 5 is an elevation of a blower and heater associated with the new machine.

In the drawings wherein for the purpose of illustration is shown a preferred embodiment of the invention and wherein similar reference characters designate corresponding parts throughout the several views, the new pressing machine comprises a machine support structure A; trousers support and crease defining means B; upper heads structure C; lower heads structure D; actuating means E for the means B and structures C and D; fluid-conveying means F for the means B and structures C and D; blower and heater means H; and means K to regulate the flow of steam through certain of the portions of the head structures C and D.

The machine support structure A preferably comprises an elongated base member 10 and, from adjacent one end portion thereof, a stout wall 11 extends upwardly and may be braced, as

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at 12. Adjacent the other end portion of the base member 10, a suitable upright or bracket 13 is rigidly connected to the former and supports portions of the actuating means E.

Now, with reference to the trousers support and crease-defining means B, the same includes a trouser's waistband support 15 which may comprise a plurality of suitably curved springy-metal bands, such as the bands 16, 17, 18 and 19, with their end portions in good frictional overlapping contact as in Fig. 2. Each band may be provided with means 20 to adjustably move it inwardly or outwardly and retain it in any selected adjusted position. Each of such means may be a screw-threaded projection 21 welded or otherwise secured to the inner face of a selected band 16, 17, 18 or 19, extending into the screw-threaded bore of a rotatable member 22, swivelled to a fixed support 23 carried by (as being welded to) a centrally-disposed conduit 24 (which carries all four of the supports 23) supported by arms 25 rigidly carried by the outlet mouth structure of the blower means H to be subsequently described. Rotation of the member 22 will cause the associated projection 21 to move axially toward or away from the conduit 24, thus permitting adjustment of any one or more of the bands 16, 17, 18 and 19 to accommodate trousers' waistbands of various sizes which may be drawn over the support 15 and detachably secured thereto as by a conventional buckle strap (not shown).

Additionally, the trousers support and crease-defining means B includes four crease definers or formers of which two definers, each designated as 26, are upper definers, and two definers, each designated as 27, are lower definers, best shown in section in Fig. 4. Each definer 26 or 27 comprises an elongated preferably thin but rigid fin or blade 28 rigidly carried radially by a suitable conduit-support 29 (as being welded thereto) and may be strengthened by the member 30. The definers are grouped substantially as in Fig. 2 so that the outer narrow edges 31 of the two upper definers 26 will define the location of one crease in each trouser leg at the like sides of the trousers and the outer narrow edges 31 of the two lower definers 27 will define the location of one crease in each trouser leg at the opposite like sides of the trousers since the definer fins are substantially 180° apart. The edges 31 are, preferably, curved and may be said to provide substantially line contact with the trousers leg.

A further portion of the means B, comprises means 32 to move the lower definers 27 toward and away from the upper definers 26 so that

the narrow outer edges 31 of the blades or fins 28 will contact the trousers' legs from the inside of the latter (when the legs are pulled over the definers 26 and 27) and stretch the legs taut as may be appreciated in Fig. 3 where a portion of a trousers leg in transverse section is shown in dots and dashes. This means 32 includes two sets of links 33 and 34 for each associated upper and lower definers pivotally connected to ears 35 carried by each conduit-support 29. There is also provided, in the example shown, a pulley 36 pivotally carried by each conduit-support 29 of the upper definers 26 over which is trained a suitable flexible member 37, as rope, cord, wire or the like, secured at one end to an eye 38 carried by the associated conduit-support 29 of the lower definers 27. The other end of the member 37 extends to an oscillating member 39, as an arm, carried by the actuating means E to be subsequently described. As the member 39 oscillates, the two associated definers 26 and 27 will move selectively toward and away from each other.

It will be noted, in Fig. 1, that the outer end portions of each of the associated conduit-supports 29 are joined by a hollow U-section 40 of flexible material, not affected by steam, and the inner end of each conduit-support 29 associated with the crease definers 27 carries a hollow flexible material section 41, preferably of the same material as the sections 40.

Since the upper heads structure C and lower heads structure D are alike in parts, similar reference characters will be employed for like parts. Fig. 3 illustrates an elongated hollow member or head 50 preferably substantially as long as a fin 28 and comprising a tube or conduit 51 cut away longitudinally from end to end to form a segmental opening, closed by a V-closure 52 provided with a plurality of small discharge openings or spray holes 53, with their axes substantially normal to the portion of the V-closure containing them. The closure 52 provides a V shaped recess 52' and the closure forms, in transverse section, an acute angle so that spray exiting from the spray holes 53 is directed upon a relatively small area of the trousers' legs and, because of the acute angular formation and the companion acute angle formed by the trousers leg there is no large space traversed by the spray, and the spray does not escape readily and thus does not become wasted. Surrounding the inner faces of the closure 52 but spaced therefrom is an elongated conduit 54 smaller in diameter than the tube 51 and also cut away longitudinally as is the tube 51. Both the tube 51 and conduit 54, with the closure 52, may be welded together at their joining portions. The outer and inner ends of the several associated tube 51, closure 52 and conduit 54 are closed with a common suitable closure as a plate 55. Each plate 55, at one end of the tubes and conduits, is provided with an intake port 56 opening into the tube 51 and there is a suitable exhaust port adjacent the opposite closure or plate 55. In addition, the end portion of a conduit 57 extends radially through each tube 51 and opens at a discharge port 58, into each conduit 54. It will be noted, in Fig. 3, that the apex of the inverted V closure 52 extends to this port 58, thus tending to divide the flow of fluid from the port into the substantially equal-volume streams. Because the structures C and D reciprocate transversely, it will be noted that flexible tubing 59 is disposed outwardly of the intake ports 56 (and open thereinto) and the exhaust ports mentioned, adjacent the opposite closures or plates 55 open into flexible tubing 60.

The actuating means E for the means B and structures C and D may comprise the foot pedal 65, pivoted to the base member 10 and also pivotally connected with a link 66 which is pivotally connected to one end of a rocker arm 67, pivoted to the upright 13 as at 68 and pivoted, at its other end, to a vertically-extending liner 69. The latter, at its upper end is pivotally connected to a somewhat Z-shaped lever 70, pivotally connected, intermediate its ends to the upright 13 at 71, and at its inner end, pivotally connected to the depending central arm 72 of a T-shaped member 73 with the horizontal portion or cross member of the member 73 rigidly secured to the two lower heads 50. By means of a link 74, pivotally connected at its lower end to the lever 70, intermediate its ends and pivotally connected, as at 75 to a somewhat Z-shaped lever 76 (inverted with respect to the lever 70 and substantially like the lever 70). At its inner end, the lever 76 is pivotally connected to the upwardly-extending central arm 77 of an inverted T-shaped member 78 with the horizontal portion of the member 78 rigidly secured to the two upper heads 50. Pressing down upon the free end portion of the foot pedal 65 will cause the lower heads 50 to ascend and the upper heads 50 to descend. In both cases they will ascend or descend so that the outer ends of the paralleling fins 28 will enter the spaces between the closures 52 substantially as one fin 28 is shown in Fig. 3. This will bring the trousers legs in the areas where creases are to be made within this space mentioned.

A rod 80 extends horizontally from the pivotal connection of the foot pedal 65 and base member 10 to the member 37 so that the latter is oscillated as the foot pedal 65 descends and is again raised.

The fluid-conveying means F for the means B and structures C and D includes a live steam or intake conduit 85 supported by the wall 11 and divided into two like branches 86 as by a conventional branched coupling with each branch extending to a conduit-support 29 of the upper crease definers 26. As has been stated, the other ends of these specific conduit-supports 29 are connected with the conduit-supports 29 of the lhe lower crease definers 27, as by the hollow flexible U-sections 40, whereby there will be a circulation of live steam through each conduit-support 29. The opposite ends of the conduit-supports 29 of the lower crease definers 27 carry the hollow flexible sections 41 and these connect with exhaust conduits 87. From each live steam conduit branch 86 extends a live-steam lateral 88 (by means of a suitable coupling 89) to the flexible tubing 59 of the tubes or conduits 51 of the upper heads 50, while suitable couplings 90 connect the conduit branches 86, by way of laterals 91, with the flexible tubing 59 of the tubes or conduits 51 of the lower heads 50. The flexible tubing 60 conducts the exhaust from the four tubes or conduits 51 to a pair of exhaust conduits 92 to suitable connections 91 (which connections also connect with the exhaust conduits 87 by means of suitable couplings 93) and from these couplings 93 exhaust conduit sections 94 and 95 carry off the exhaust to be reconverted into steam.

Furthermore, the fluid-conveying means F includes a pair of conduits 96 for conveying live steam from the flexible tubing 59 to the two conduits 57 of the two upper heads 50, there being laterals 97 from the conduits 96 to the two con-

duits 57 of the two lower heads 50. Of course, there is no need for means to conduct any exhaust from these heads.

The blower and heater means H may comprise a conventional blower 100 having its exhaust mouth at 101 and exhausting air, under pressure, into a conventional air heater 102 having a heated air discharge end portion 103 including a mouth or port opening into a heated air conduit 104 discharging into the space between the assembled curved bands 16, 17, 18 and 19, and, when a trousers waistband is carried by the bands, blowing through the waist portion and legs of the trousers in order to dry them after they have been steam-pressed. Of course, the heater 102 may be heated in any approved way, such as by a volume of the steam coming from the intake 85, since a pipe 105 may connect at the connection 105, enter the heating compartment and the heat circulated along suitable laterals 106 and the cooled fluid exhaust through pipe assembly 107 to the connection 93 for discharge through the exhaust conduit sections 94 and 95. Suitable shutters or closures 108 and 109 may be provided and interposed between the heater 102 and conduit 104. The means K may be supported by the wall 11.

Means K to regulate the flow of steam through the conduits extending to the conduits 54 in the heads 50 may be conventional electrically-operated valves 110, interposed in the tubing 96 and 97 and electrically connected with a conventional electric switch 111 carried by the base member 10 and conventionally synchronized for activation upon rotation of the rod 80 as by a suitable conventional cam 112 carried by the rod 80 to rock with rotations of the rod to alternately open and close the switch.

From the foregoing it can be seen that after the trousers are positioned on the new presser, with the waistband secured about the band 15 and the lower crease definers 27 lowered to render the legs taut, the operator then moves the foot pedal 65, causing the four heads 50 to move toward the crease definers 26 and 27 respectively to position them in the relative positions as shown in Fig. 3, whereupon the cam 112 will contact the activator of the electric switch 111 to close the latter and this will cause the flow of current to cause operation of the valves 110 whereby they are opened and steam will flow through the valves and, consequently, out of the plurality of small openings or hole 53 causing the trousers to be steamed and the desired creases set. The blower 100 is thereupon started to operate simultaneously with closing of the valves 110, as the operator begins to release the pedal 65, and the heated air under pressure draws the steam from and dries the trousers. Further lowering of the pedal 65 causes the heads 50 to move away from the crease definers 26 and 27 and the lower crease definers 27 raised thus releasing the legs. The waistband is then released from the band 15 and the trousers slid off the presser.

It will be noted that, at no time are the heads 50 in contact in any way with the trousers legs and there is substantially only line contact of the trousers and the blades 28 of the crease definers. Thus there will be no possibility of shine on the trousers due to the pressing machine operations. In other words, the heads 50 of the creasing means are out of contact with the trousers legs at all times including contact with the legs at the creases defined by the blades 28.

Various changes may be made to the form of the invention herein shown and described without departing from the spirit of the invention or scope of the claims.

What is claimed is:

1. A machine for simultaneously creasing the legs of a pair of trousers, including a support structure; means carried by said support structure for supporting the trousers with the legs thereof spaced apart, each leg being held taut transversely, and with the locations of the creases defined, including two pairs of spaced-apart elongated tubular supports and an elongated fin rigidly mounted upon each support, each fin having an elongated trousers leg-receiving narrow edge; each pair of supports comprising one support directly above the other, with the fin carried by said one support extending upwardly away from the fin carried by and extending downwardly from the other support and each of the fins of a pair being in the same vertical plane; means for simultaneously moving one support of each pair transversely toward and away from the other support of each pair; creasing means for creasing said legs at said locations, including an elongated, hollow head associated with each fin, said heads being disposed in pairs with the two heads associated with the two upper fins constituting one pair of heads and the two heads associated with the two lower fins constituting another pair of heads, each head having an elongated recess facing and opening to its associated fin and spaced therefrom at all times, the walls of each recess being provided with a plurality of steam-discharge openings; means for simultaneously moving all of said heads toward their associated fins, until said narrow edges are within said recesses and spaced from the walls thereof and said steam-discharge openings face toward those portions of the fins adjacent said edges, and for simultaneously moving all of said heads away from their associated fins; means for conveying steam to said hollow supports and to said heads; and means to cause steam to discharge through said plurality of steam-discharge openings when said narrow edges are within said recesses.

2. A machine for simultaneously creasing the legs of a pair of trousers according to claim 1 characterized in that the heads of one of said pair of heads are provided with a cross member interconnection, and said means for moving all of said heads includes linkage operatively connected with the cross member interconnections.

3. A machine for simultaneously creasing the legs of a pair of trousers according to claim 1 characterized in that each of said heads includes an elongated tube, an elongated conduit of less diameter than the tube and disposed within the tube, and a radially extending conduit opening into the elongated conduit and extending through the wall of the tube and operatively connected with said means for conveying steam to said hollow supports and to said heads, said elongated tube and elongated conduit being cut away longitudinally to accommodate the walls of said recess.

4. A machine for simultaneously creasing the legs of a pair of trousers according to claim 1 characterized in that the walls of said recess form a V in transverse section, with the apex of the V pointing upwardly in the two heads associated with the two upper fins and the apex of the V pointing downwardly in the two heads associated with the two lower fins.

5. A machine for simultaneously creasing the legs of a pair of trousers according to claim 1 characterized in that each of said heads includes an elongated tube, an elongated conduit of less diameter than the tube and disposed within the tube, and a radially extending conduit opening into the elongated conduit and extending through the wall of the tube and operatively connected with said means for conveying steam to said hollow supports and to said heads, said elongated tube and elongated conduit being cut away longitudinally to accommodate the walls of said recess, and the walls of said recess form a V in transverse section, with the apex of the V pointing upwardly in each of the two heads associated with the two upper fins, the apex of the V pointing downwardly in each of the two heads associated with the two lower fins, and all the apices extending across and closely adjacent the mouths of the radially-extending conduit with which the walls of each recess is associated.

6. A trousers legs creasing machine including a support structure; means carried by the support structure for supporting the trousers with the legs thereof held taut and with the locations of the creases defined by substantially line contact of said means with the trousers at said locations, including a pair of elongated rigid fins for each leg extending transversely away from one another and being in substantially the same transverse plane, and each fin having a longitudinally-extending trouser leg crease-defining narrow outer edge; creasing means for creasing said legs at said locations, including a pair of elongated hollow movable members associated with and disposed adjacent each pair of fins, with each member having inwardly extending foraminous walls defining a recess; conduit means opening into the interiors of said members to conduct steam to said members for discharge through said walls; reciprocating means carried by said support structure and operatively connected with said members to alternately move said members toward their associated fins in paths to cause each fin to enter the recess of its associated member and to cause each member to move away from its associated fin.

7. A trousers legs creasing machine according to claim 6 characterized in that said reciprocating means has a limit of movement whereby each of said members will be arrested in its movement toward its associated fin before said walls contact the leg of a pair of trousers disposed upon a pair of said fins when said pair of fins is within its associated recesses.

8. A trousers legs creasing machine according to claim 6 characterized in that said recess is substantially V-shaped transversely.

9. A trousers legs creasing machine according to claim 6 characterized in that said walls are substantially rigid, said recesses are substantially V-shaped transversely and the mouths of said recesses are each appreciably greater in width than the width of any of said fins plus the thickness of the material constituting the leg of a trousers disposed upon any of said fins.

10. A trousers legs creasing machine including a support structure; support means carried by the support structure for supporting the trousers with the legs thereof held taut and with the locations of the creases defined by substantially line contact of said means with the trousers at said locations, including substantially rigid walls having crease-defining narrow edges for disposal within the trousers legs with said edges in longitudinal contact with said legs; creasing means carried by said support structure for creasing said legs at said locations; reciprocating means carried by said support structure for moving said creasing means toward and away from the support means to enclose said edges, with said creasing means out of contact with said locations at all times; and means carried by said support structure for conveying heated fluid to said creasing means to heat said creasing means.

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