Sept. 7, 1937. A. M. HARVEY 2,092,278

STRETCHING MACHINE

Filed Sept. 18, 1935 4 Sheets-Sheet 1

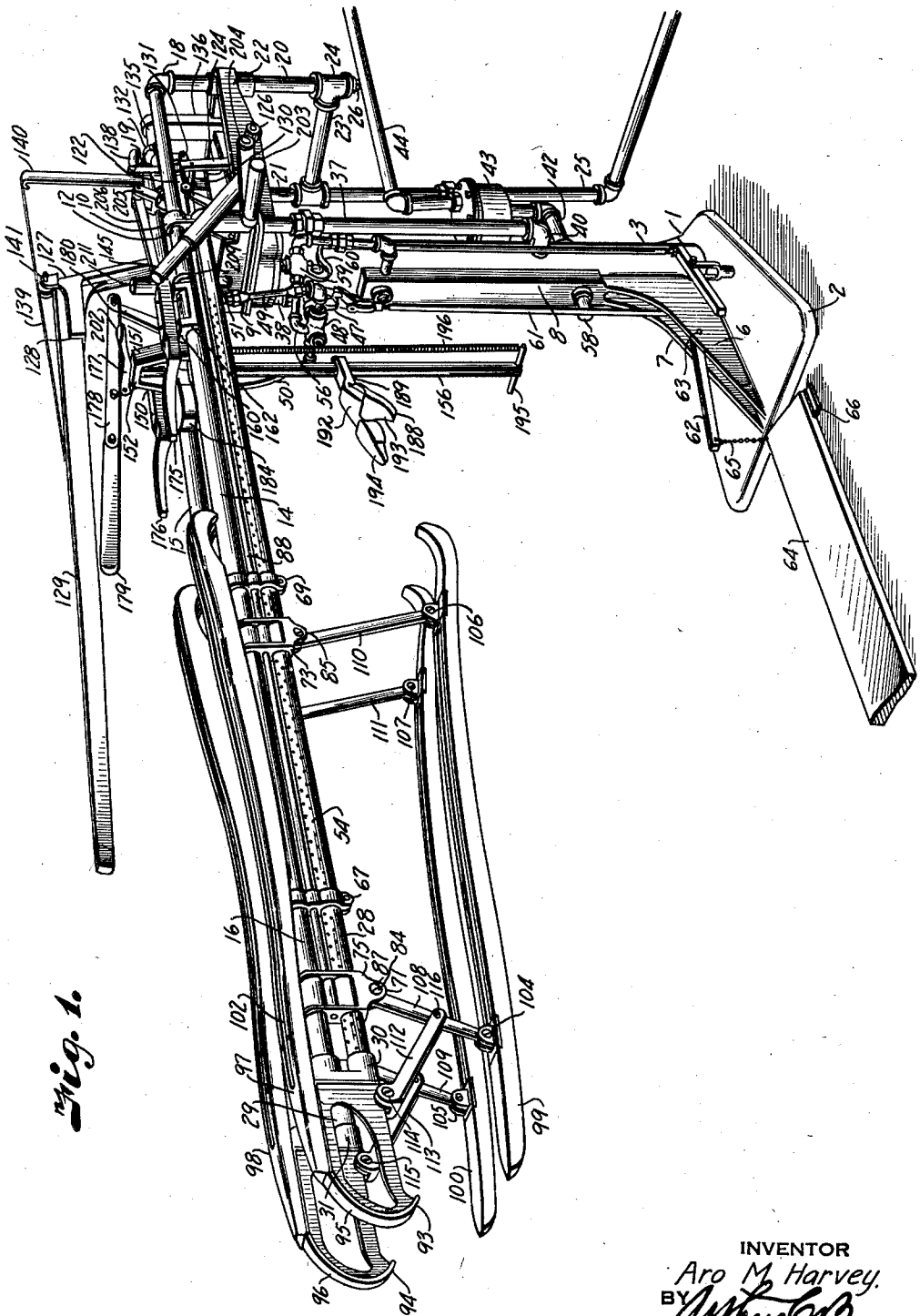


Fig. 1.

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Filed Sept. 18, 1935 4 Sheets-Sheet 2

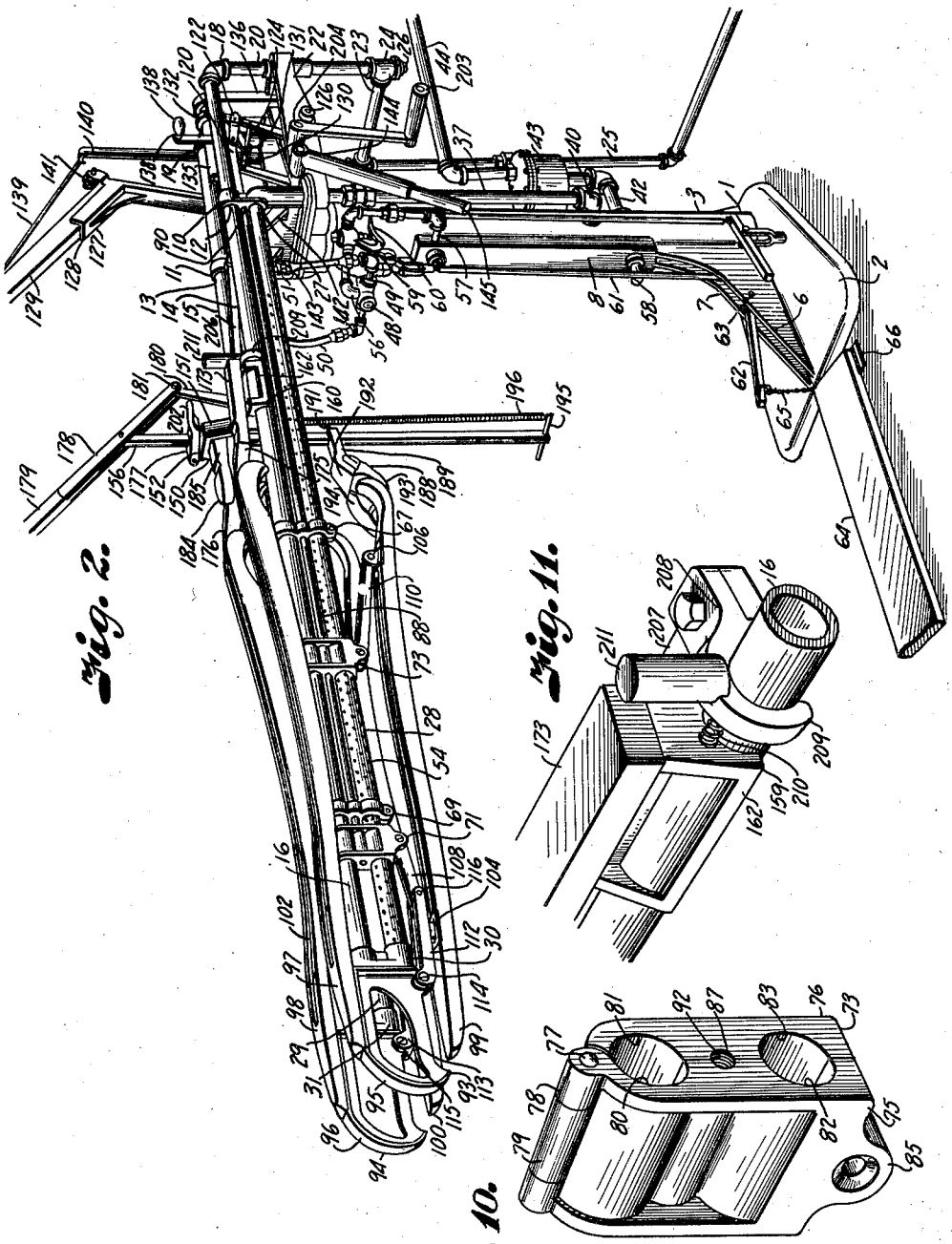


Fig. 2.

Fig. 11.

Fig. 10.

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Sept. 7, 1937. A. M. HARVEY 2,092,278

STRETCHING MACHINE

Filed Sept. 18, 1935 4 Sheets-Sheet 3

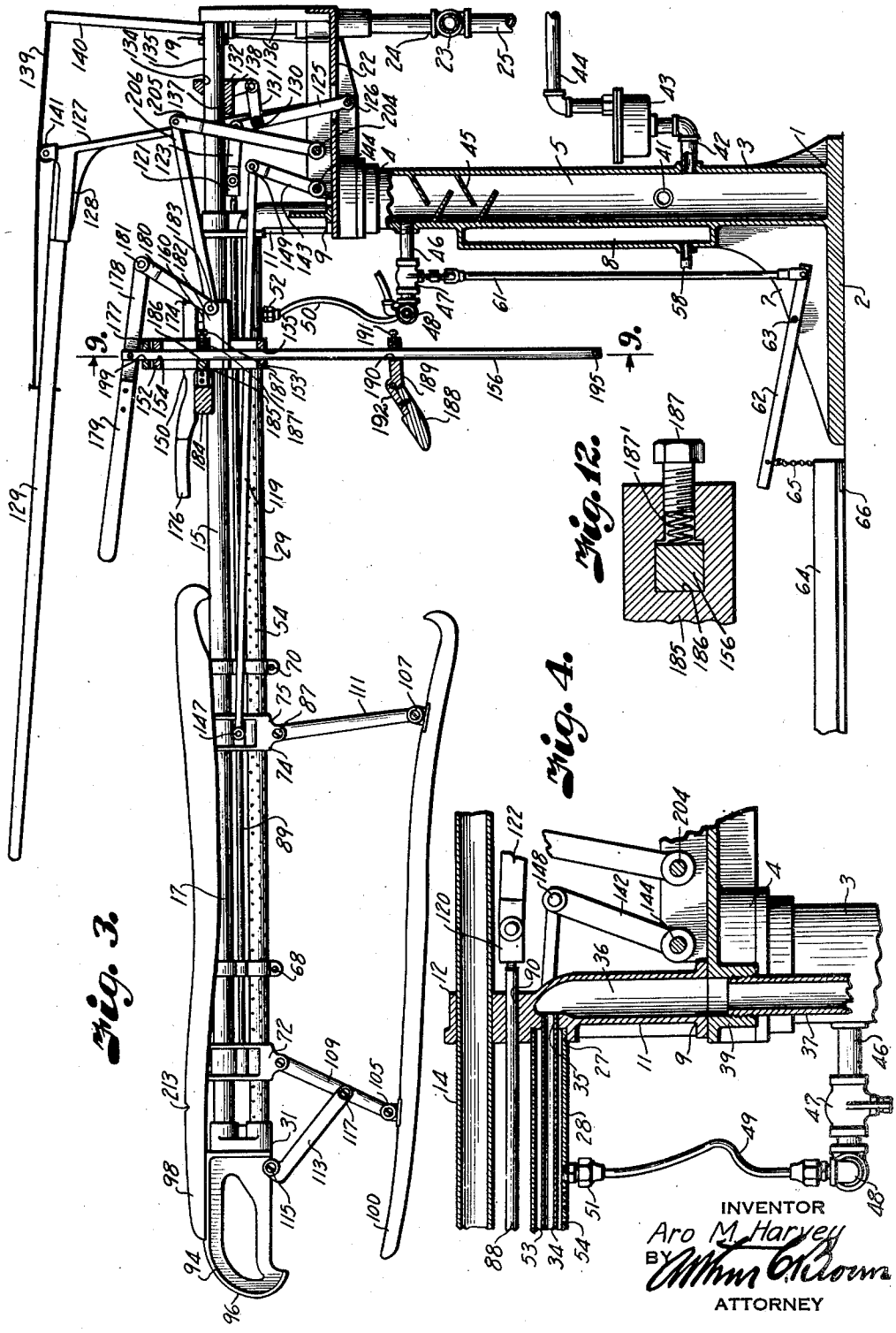


Fig. 3.

Fig. 4.

Fig. 12.

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Sept. 7, 1937. A. M. HARVEY 2,092,278

STRETCHING MACHINE

Filed Sept. 18, 1935 4 Sheets-Sheet 4

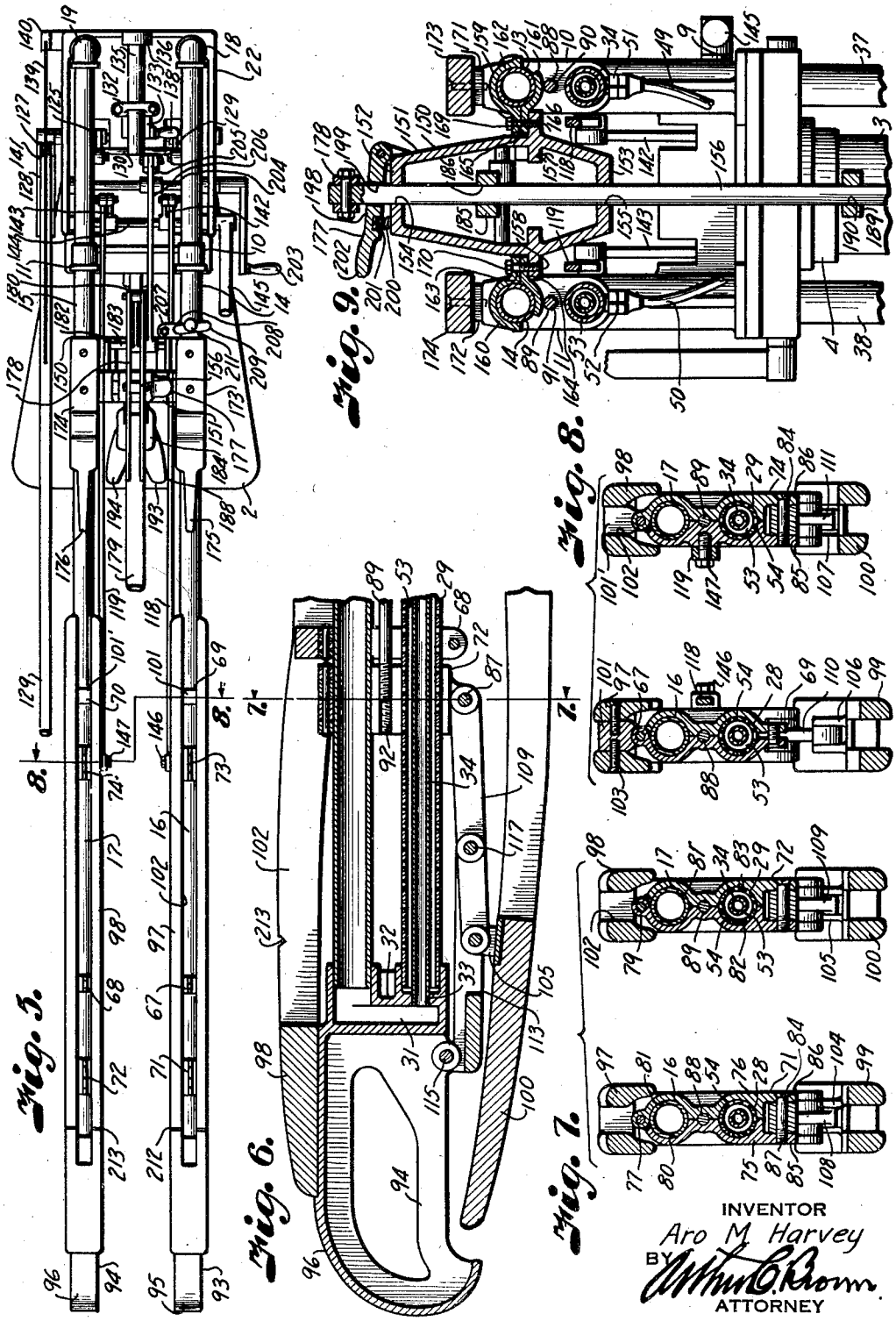


Fig. 5.

Fig. 6.

Fig. 9.

Fig. 8.

Fig. 7.

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2,092,278

STRETCHING MACHINE

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Application September 18, 1935, Serial No. 41,121

29 Claims. (Cl. 223—73)

This invention relates to a method and apparatus for stretching garments, such as trousers and the like, to their original size and shape after they have been shrunk incidental to cleaning or other causes, the principal objects of the invention being to apply stretching pressure so as to not injure the fabric of the garment; to provide for application of steam to the garment; to apply stretching pressure on both the warp and woof threads of the fabric in the longitudinal direction of the threads, and to provide for drying the garment while retained in stretched condition.

It is also an important object of the present invention to provide for selectively stretching portions of a garment independent of the other portions.

In accomplishing these and other objects of the invention, as hereinafter pointed out, I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawings wherein:

Fig. 1 is a perspective view of a stretching and steaming apparatus embodying the features of the present invention, and showing the form members in extended or stretching position.

Fig. 2 is a similar perspective view showing the form members in collapsed position for the application of a garment thereto.

Fig. 3 is a central longitudinal section through the apparatus with the form members shown in stretching position.

Fig. 4 is an enlarged detail section through a portion of the apparatus, particularly illustrating the steam supply ducts and their connection with the steam chamber.

Fig. 5 is a plan view of the apparatus.

Fig. 6 is an enlarged detail section of the outer end of the form members, particularly illustrating the steam supply ducts.

Fig. 7 is a cross section through the form members on the line 7—7 of Fig. 6.

Fig. 8 is a similar section on the line 8—8 of Fig. 5.

Fig. 9 is a detail vertical section on the line 9—9 of Fig. 3.

Fig. 10 is an enlarged detail perspective view of one of the slides.

Fig. 11 is a detail perspective view of a latch mechanism for anchoring the stretching carriage against retractive position.

Fig. 12 is a detail section of the frictional fastening for the waist band jaws.

Referring more in detail to the drawings:

1 designates a base including a flat substantially triangular shaped foot 2 for supporting a hollow post 3, having a closure cap 4 on its upper end to form a steam and condensate separating chamber 5 therein. The post 3 is braced relatively to the foot 2 by spaced webs 6 and 7, between which is mounted a treadle operating lever mechanism, later described.

Extending upwardly alongside of the post, in heat transfer relation with the steam chamber 5, is an air chamber 8 for heating compressed air that is delivered to the lower guide tracks, as later described. Mounted on the head 4 is a bracket 9, having upwardly extending arms 10 and 11 at the sides thereof that are provided at their upper ends with openings 12 and 13, in which are mounted upper tubular guide tracks 14 and 15. The tubular guide tracks 14 and 15 comprise sections of pipe having forwardly extending ends 16 and 17 for mounting the form members, later described. The opposite ends of the pipe sections project from the bracket arms 10 and 11, and are equipped with elbows 18 and 19 which connect with vertical pipes 20 and 21 that are supported in a rearward extension 22 of the head 4, as best shown in Figs. 3 and 5. The pipes 20 and 21 are connected at their lower ends to a header 23, through T fittings 24, either one of which may be connected with a steam supply pipe 25, while the other is closed by a plug 26.

Formed in the bracket arms 10 and 11 in downwardly spaced relation with openings 12 and 13, are sockets 27, Fig. 4, in which are mounted the ends of lower tubular guide tracks 28 and 29 that are connected at their opposite ends by return bends 30 and 31.

The return bends 30 and 31 do not communicate directly with the lower guide tracks, but are provided with partitions 32 for closing the open ends of the lower guide tracks, and which have openings 33 therein for mounting the ends of conduits 34 that are housed within the lower tracks and have their opposite ends supported in openings 35, formed concentrically with the sockets 27, previously described, and which communicate with channels 36 extending downwardly within the bracket arms 10 and 11 to connect with pipes 37 and 38 having their upper ends screwed into bosses 39 depending from the under side of the head 4, and having their lower ends provided with elbow fittings 40 and 41, which in turn are screwed into opposite diametrical sides of the post 3 at a point spaced above the bottom of the steam chamber 5, as best shown in Fig. 3.

Connected with the post 3, below the inlet connection of the street L's 40 and 41, is an out-

let pipe 42 that connects with a trap 43 for discharging condensate collecting in the bottom of the steam chamber through pipe 44.

With the construction thus far described, steam is admitted through the supply pipe 25, header 23, and pipes 20 and 21 to the interior of the upper tubular guide tracks 14 and 15 for flow along the length thereof to the return bends 30 and 31 where the steam is directed through the conduits 34 for flow to the channels 36 and through the pipes 37 and 38 into the steam chamber 5. The steam passes upwardly within the chamber 5 and around baffles 45, which cause any entrained moisture carried therewith to gravitate to the bottom of the chamber.

The steam free of water vapor passes out of the chamber 5 through an outlet pipe 46, having a shut-off valve 47 therein to control the flow of steam from the chamber 5. The outlet of the valve is connected through a header 48 with branch pipes 49 and 50 that respectively connect, as at 51 and 52, with the under side of the lower tubular guide tracks 28 and 29, to admit steam to the annular spaces 53 surrounding the conduits 34, the lower guide tracks being provided with a plurality of apertures 54, wherethrough the steam flows into contact with the garments, as presently described.

Also connected with the header 48, on the outlet side of the valve 47, is a pipe 56 that connects with an outlet 57 of the air chamber 8, air being supplied to the chamber through an inlet pipe 58 that is connected with a suitable source of compressed air supply, not shown. The pipe 56 is provided with a valve 59 having an actuating lever 60, whereby the air passage through the valve may be controlled to effect selective admission of heated air to the lower guide tracks.

The steam valve 47 has its operating stem connected by a pull rod 61 with one end of a rock lever 62 that is pivotally mounted between the webs 6 and 7 on a pin 63. The outer end of the lever is connected with a treadle 64 by a flexible connection 65, the treadle 64 being pivotally mounted along one edge thereof by suitable hinges 66, as best shown in Figs. 1, 2, and 3.

Mounted on the outer ends of the guide tracks, between intermediate pairs of spacers 67—68 and 69—70, are pairs of slides 71—72 and 73—74. The slides are best illustrated in Fig. 10, and include mated sections 75 and 76 hinged together at their upper ends by a pin 77 extending through interfitting hinged lugs 78 and 79 on the respective sections. Formed in the inner faces of the sections are aligning semi-circular grooves 80—81 and 82—83 to fit over the upper and lower guide tracks, as shown in Figs. 7 and 8. The lower ends of the sections are secured together, when the slides are mounted on the guide tracks, by a screw 84 extending through spaced ears 85 and 86 depending from the respective sections.

Formed intermediate the semi-circular grooves of each slot is an intermediate opening 87 for mounting push rods 88 and 89 extending longitudinally between the upper and lower pairs of tracks, and having their rear ends slidably mounted in openings 90 and 91 in the arms 10 and 11. The rods are loosely mounted in the openings of the rear pair of slides but their forward ends are rigidly mounted in the front pair of slides 71—72 by suitable threaded connections 92, as best shown in Fig. 6.

Formed on each of the return bends are nose brackets 93 and 94, having rounded ends 95 and 96 for guarding the ends of upper and lower pairs of rails 97—98 and 99—100 constituting forms for shaping the respective legs of a garment, as later described.

The upper rails 97 and 98 have rounded upper faces shaped at their forward ends to correspond to the bottom portions of the trouser legs, at their rear ends to correspond to the front of the thigh and their intermediate portions to the spring in the knees of a pair of trousers. The lower rails are shaped, at their respective ends, to correspond to the rear of the leg bottoms respectively, while the intermediate portions thereof are shaped to the calves of the legs. The forward ends of the upper rails are rigidly mounted on the nose brackets 93 and 94, while their opposite ends are connected for rigid support on the rear pair of spacers 69 and 70 by blocks 101 and 101' that are fixed to the spacers, and extend upwardly into longitudinal slots 102 that are formed in the rails and through which steam or heated air is allowed to flow into contact with the portions of the trousers engaging the rails. The rails are secured to the lugs by suitable fastening devices 103 that extend through openings in the sides of the rails and into threaded sockets in the respective blocks. If desired, the rails may also be connected to the intermediate spacers 67 and 68.

The lower rails 97 and 99 are provided at their respective ends with ears 104—105 and 106—107, which are pivotally connected by pairs of suspending links 108—109 and 110—111 that have their upper ends pivotally connected with the screws 87 that connect the lower ends of the respective pairs of slide sections, as best shown in Figs. 1 and 3.

The forward pair of links 108 and 109 are pivotally connected with the lower side of the nose brackets 93 and 94 by trammel links 112 and 113, the links being connected with the nose brackets by pivot pins 114 and 115, and their lower ends are pivotally connected with the links 108 and 109, at a point substantially midway between the ends thereof, by means of pins 116 and 117.

It is thus apparent that when the push rods are moved forwardly between the respective pairs of guide tracks, the front slides move in the direction of the return bends, and since the links 108 and 109 are connected to the nose brackets by means of the trammel links 112 and 113, the forward ends of the lower rails will be moved downwardly away from the upper arms and since the positioning of the fulcrum points 116 and 117 is definitely related to the pivotal points of the suspending links 108 and 109, the forward ends of the lower rails will move directly in a downward direction with little or no longitudinal movement, thus the forward ends of the respective lower rails remain in substantially the same vertical plane and align with the upper rails.

When the rear pair of slides are moved in a rearward direction along the pairs of guide tracks, the rear ends of the lower rails will be moved downwardly, as shown in Fig. 1, to stretch the knee and thigh portions of a garment that may be carried by the forms.

The rear ends of the push rods 88 and 89 carry yokes 120 and 121 that are respectively connected by links 122 and 123 with a pair of rocker arms 124 and 125, having their lower ends fixed to a rock shaft 126 rotatably mounted in depending ribs on the rearwardly extending bracket 22, previously described. Fixed to one of the outer ends of the shaft 126 is a lever arm 127, having a forwardly extending socket 128 at its upper end in

which is mounted a forwardly extending actuating lever 129. It is thus obvious that when the lever 129 is moved downwardly, the rocker arms on the shaft 126 will cause forward movement of the push rods to actuate the forward pair of slides.

In order to latch the forward slides against retraction, the rocker arms 124 and 125 are connected adjacent their upper ends by a rod 130, which connects by a link 131 with a latch 132. The latch 132 includes a block 133, having a central opening 134 for loosely mounting the slide upon a latch guide 135 extending forwardly between the upper pairs of guide tracks, and mounted on a bracket 136 preferably formed as a part of the rearwardly extending bracket 22. The latch guide is so shaped that it will slide freely along its support when the push rod is moved in a forward direction, but when the push rod tends to move in the opposite direction, an integral weight 137, on its forward end, will effect tilting of the latch into gripping engagement with the latch guide to lock the push rods against retractive movement, thereby holding the forward ends of the respective pairs of rails in extended position.

The latch, however, may be selectively released by means of a handle lever 138, whereby the latch may be tilted to align the opening therein with its guide so that the latch may be moved freely thereon under the propelling influence of a spring 139 having one end connected to the lever 129 and its opposite end to an arm 140 extending upwardly from the bracket 22, as best shown in Figs. 2 and 3. The spring 139 may be guided over the rear end of the lever arm by a pulley 141 mounted thereon, and adapted to engage with the spring when the forward end of the lever arm is in its lowermost position.

In order to actuate the rear pair of slides, they are connected by actuating rods 118 and 119 with lever arms 142 and 143 that are fixed on a rock shaft 144, journaled in suitable bearings in the cylinder head bracket, previously described, the shaft 144 being operated by a handle lever 145, extending forwardly in convenient position for the operator.

The forward ends of the rods 118 and 119 are pivotally connected with the rear pair of slides by means of screws 146 and 147, extending through openings in the ends of the rods and into threaded sockets in the slides, while the rear ends of the rods are pivotally connected with the lever arms 142 and 143 by pins 148 and 149, extending through aligning openings therein, as best shown in Fig. 5.

Also slidably mounted on the respective pairs of guide tracks, is a stretching carriage 150, comprising a frame including side bars 151 connected at their upper and lower ends by cross bars 152 and 153, having aligning openings 154 and 155 therein to slidably mount a vertical bar 156, later described.

Projecting laterally from the side bars 151 of the carriage are lugs 157 and 158, to which are connected shoes 159 and 160 engaging over the upper pair of guide tracks, as best shown in Fig. 9. The shoes 159 and 160 include a lower section 161, curved to conform to the lower portion of the tracks, and an upper section 162 for engaging over the upper portion of the tracks, both sections having inwardly extending arms 163 and 164, provided with openings 165 aligning with openings 166 in lugs 157 and 158, wherethrough screws 169 and 170 are passed to secure the guides to the carriage frame.

Fixed to the upper guide sections are pairs of upwardly extending lugs 171 and 172, for mounting the rear ends 173 and 174 of forwardly extending fingers 175 and 176 that are adapted to engage the inner face of a waist band at points in line with the upper guide rails, the arms being shaped to conform to the engaged portions of the garment in the same manner as the rail members of the leg forms previously described.

The slide bar 156 has its upper end projecting through the cross bar 152, and through a pivoted latch 177 to connect with the yoke-shaped end 178 of an actuating lever 179, the lever 179 being fulcrumed on the carriage by a link 180 that is attached to the lever by a pin 181 and to an ear 182 projecting from the carriage frame by a pin 183.

Adjustably mounted on the slide bar 156 is a jaw 184, having a rearwardly extending arm 185 provided with a squared opening 186 therein to slidably pass the slide bar 156, the arm being adjustably fixed to the slide bar by a set screw 187 bearing against a spring 187' having its opposite end frictionally engaging the slide bar, as shown in Fig. 12.

The jaw 184 is of substantially the same width as the fly portion of a pair of trousers, and is of sufficient length to engage over the waist band thereof when the fly is in buttoned condition. Cooperating with the jaw 184 is a lower jaw 188 also slidably adjusted on the bar 156 by an arm 189, having an opening 190 therein to accommodate the bar, and is frictionally retained in adjusted position by a set screw 191 and spring similarly to the jaw 184 previously described. The jaw 188 includes a body 192 for engagement with the waist band and downwardly diverging arms 193 and 194 shaped to conform to the seat of the trousers to stretch that portion of the garment, as later described.

In order to raise the bar 156 on the carriage, the lower end thereof has a pin 195, to which is connected a coil spring 196 having its upper end connected to a fixed point on the carriage frame. The bar, however, is normally latched against upward movement by the spring 196 by means of a latch 177 that is pivotally mounted on the top cross bar 152 of the carriage frame, as best shown in Fig. 9. The latch includes a plate portion 198, having an opening 199 therein of slightly larger dimensions than the cross section of the bar, so that when the latch is moved in an upward direction, the upper and lower edges of opposite sides of the opening engage against the bar to retain it in adjusted position. The latch is normally urged into latching position by means of a coil spring 200, having one end seated on the carriage frame, and its opposite end engaging in a socket 201 of the latch. The latch is actuated against tension of the spring 200 by a lever 202 forming part of the latch, as best shown in Figs. 2 and 9.

The carriage is moved along the guide tracks by means of a crank 203 that is fixed to a rock shaft 204 journaled in the bracket 22 of the head 4, previously described, and having an upwardly extending arm 205 that is connected with the pin 183 by a link 206. It is thus obvious that when the crank is rotated in a clockwise direction, Fig. 2, the arm 205 causes the carriage to move away from the stretching forms, and when rocked in the opposite direction the carriage is moved

toward the stretching forms to release tension on a garment carried thereby.

In order to latch the carriage in adjusted position upon the guide tracks, the shoe **159** carries a rearwardly extending arm **207** that pivotally mounts a latch **208** having a ring-shaped end **209** frictionally engaging over the guide track **16**, as best shown in Fig. 11. The end **209** of the latch is caused to frictionally engage the track by means of a coil spring **210**, having one end bearing against the shoe, and its opposite end against the latch, the latch being moved to released position against tension of the spring **210** by a handle **211**.

In using a machine constructed and assembled as described, the lower rails are moved into the position shown in Fig. 2 and the slide bar carrying the jaws **184** and **188** is raised to its highest position. The trousers are held by the waist band in such a position that the leg portions thereof are drawn over the outer ends of the respective rails after which the fly thereof is buttoned at the waist band.

The stretching carriage is then moved in the direction of the rails to permit positioning of the waist band over the fingers **175** and **176**, care being taken that the fly of the trousers is positioned midway therebetween. The upper jaw is moved downwardly on the slide bar **156** into engagement with the fly at the waist band for taking up sufficient slack therein so that the fingers **175** and **176** engage the portions of the waist that align with the front center of the trouser legs, after which the lower jaw **188** is moved on the slide bar **156** to engage the inner face of the waist band so that it is held in slight tension over the fingers **175** and **176**.

The next operation is to step on the treadle **64** to effect momentary opening of the steam valve **47**, which allows steam to pass from the steam chamber **5** through the branch pipes **50** and **51**, into the lower guide rails for escape through the apertures therein. The steam, upon contacting the garment, moistens and softens the material to aid in shaping the garment.

The waist band and upper portions of the hips are then stretched to size by rocking the lever **179** in a downward direction, moving the slide bar and causing both jaws to exert stretching tension upon the band. Upon release of the lever the latch **177** holds the bar in set position maintaining the stretching tension upon the band. The bottoms of the legs are then adjusted on the rails so that the cuff or end portions thereof align with notches **212** and **213** at the ends of the rails.

The operator then grasps the lever **129** and draws it downward against tension of the spring **139**. This movement of the lever actuates the rock shaft **126** to swing the arms **124** and **125** in a forward direction to slide the push rods **88** and **89**. Forward movement of the push rods causes the forward slides **72** to slide along the guide tracks. This movement of the slides causes the outer ends of the lower rails **99** and **100** to move downwardly and away from the upper rails, effecting a stretch in the bottom portion of the trouser legs.

As previously mentioned, the trammel links **112** and **113** cause the forward ends of the lower rails to move directly in a perpendicular direction, while their rear ends are pivoting on the rear slides, therefore the bottom portion of the trouser legs are stretched without placing any lateral tension on the garment. The pressure acting on the bottoms of the legs is, therefore, exerted at right angles to the axis of the track during the entire stretching operation.

The garment is again momentarily subjected to the steam, after which the carriage is moved rearwardly upon the guide rails to stretch the garment for length. This is accomplished by actuating the crank **203** to cause retractive swinging movement of the arms **205**, and retractive movement of the carriage through the link **206**. During this movement of the carriage, the latch **208** slides freely along the guide track **15**, but immediately upon release of the crank, the engaging portion **209** of the latch moves into gripping engagement with the track by action of the spring **210**.

The latch now retains the carriage in adjusted position and maintains a longitudinal tension upon the garment to stretch the threads of the fabric that are positioned longitudinally thereof. The leg and seat portions of the garment have now been stretched to the proper length measurements. The next operation is to stretch the thigh, seat and remainder of the leg portions of the garment by moving the rear ends of the lower rails downwardly away from the upper rails. This is accomplished by actuating the lever **145** to rock the shaft **144** in a clockwise direction. This movement of the shaft draws the rear slides along the tracks in the direction of the stretching carriage due to their connection with the arms **142** and **143** by the pull rods **118** and **119**. This movement of the slides causes downward movement of the rear ends of the lower rails by swinging action of the links **110** and **111** during which the opposite ends of the rails are pivoting upon the pins **104** and **105**.

As previously described, the intermediate portion of the upper rails is shaped to conform to the spring in the knees of the garment, and the intermediate portion of the lower rails is shaped to conform to the calves, consequently this movement of the lower rails stretches the knee portions of the garment to their proper shape. Likewise, the thigh and hip portions of the garment are stretched incidental to the shaping of the rear ends of the respective rails. During this later stretching operation the garment is being subjected to steam. If desired both levers **145** and **203** may be operated in unison so that the stretch takes place simultaneously in both longitudinal and transverse directions.

After the garment has been initially stretched, any one of the respective levers may be readjusted to stretch any portion of the garment that has not been brought to its proper size and shape. The correct amount of stretch to be taken in the respective parts of the garment can be ascertained by the resistance offered to movement of the respective levers, therefore it is difficult to stretch any one portion of the garment beyond its original size or limit.

After the garment has been brought to size and shape, the steam is shut off and the air valve **59** opened to allow the hot air to escape through the perforations in the lower guide rail for drying out the garment and effecting set thereof in the shape imparted to it. After turning off the air, the handle **145** is released to collapse the rear ends of the respective rails. The latch **208** is then released and the carriage moved forwardly to relax longitudinal tension on the trousers. The latch **197** is now released to permit the spring **176** to raise the slide bar **156** thereby relieving tension on the waist band. The next step is to

release the lever 129 by moving the latch 133, whereupon the spring 139 releases the lever 129 to effect retractive movement of the push rods and collapse the forward ends of the rails. This completely frees the garment so that it may be withdrawn from the machine. The machine is again ready for the application of the next pair of trousers.

From the foregoing, it is obvious that I have provided a machine of simple construction, wherein stretching pressure may be applied both longitudinally and transversely of the fabric to restore the garments to their original size and shape, which can be set by drying the garment directly on the stretching forms. By applying the pressure selectively to the different portions of the garment, each part may be stretched independently of the other parts, so that it is impossible to tear or injure the fabric. Attention is also directed to the fact that pressure is applied longitudinally of both the warp and woof threads of the fabric, rather than on a bias. It is also to be noted that travel of the steam through the tracks thoroughly retains the parts of the various stretching elements in heated condition to prevent condensation and to aid in drying out of the garment.

What I claim and desire to secure by Letters Patent is:

1. In a machine of the character described a support, a pair of collapsible forms on the support, a stretching carriage movable on the support to and from the forms, means on the carriage for gripping a garment applied to the forms, means for expanding the forms to stretch the garment in one direction, means for moving the carriage to stretch the garment in a transverse direction, and means for moving said gripping means on the carriage to cooperate with the forms in stretching the garment in the first named direction.

2. In an apparatus of the character described including a support, a guide track on the support, a form member carried by the guide track including fixed and movable rails, means for passing steam through the guide track, means for admitting the steam to a garment carried by the form member, means for actuating the movable rail to stretch the garment, a garment gripping member carried on the guide track, and means for moving one of said members on the guide track relatively to the other to stretch the garment in a longitudinal direction on the rails.

3. In an apparatus for stretching trousers, means for engagingly supporting the waist band of a pair of trousers at spaced points on opposite sides of the fly portion of the trousers, means movable to and from said supporting means for engaging the back of the waist band opposite the fly, means for drawing said fly portion of the trousers in the direction of the movable means to carry the fly inwardly between said supporting means to cooperate with the movable means for tensioning the waist band, means for applying diametrical tension to the bottoms of the leg portions of the trousers, and means for stretching the trousers to length.

4. In a machine of the character described, a support, a pair of forms on the support, a stretching carriage movable on the support to and from the forms, spaced supporting means on the carriage and aligning with the forms for engaging the waist band of a garment applied to the forms, a gripping member movably supported on the carriage for engaging the back of the waist band at a point intermediate the waist band supporting means, fly engaging means on the carriage and movable between said waist band supporting means to tension the waist band of the garment, and means for moving the carriage away from the forms to stretch the garment for length.

5. In a machine of the character described, a support, a pair of collapsible forms on the support, a stretching carriage movable on the support to and from the forms, spaced supporting means on the carriage and aligning with the collapsible forms for engaging the waist band of a garment applied to the forms, a gripping member movably supported on the carriage for engaging the back of the waist band at a point intermediate the waist band supporting means, fly engaging means on the carriage and movable between said waist band supporting means to tension the waist band of the garment, means for moving the carriage away from the collapsible forms to stretch the garment for length, and means for expanding the collapsible forms.

6. In a machine of the character described, a support, spaced guide tracks on the support, collapsible forms carried by the guide tracks, a stretching carriage slidably supported on the guide tracks, a pair of supporting fingers fixed on the carriage in alignment with the collapsible forms, a rod slidably mounted in the carriage between said supporting fingers, stretching members adjustably supported on the rod, means for moving the rod on the carriage to position said stretching members in stretching relation relatively to the supporting fingers, and means for moving the carriage on the guide tracks to and from the collapsible forms.

7. In a machine of the character described, a support, spaced guide tracks on the support, collapsible forms carried by the guide tracks, a stretching carriage slidably supported on the guide tracks, a pair of supporting fingers fixed to the carriage in alignment with the collapsible forms, a rod slidably mounted in the carriage between said supporting fingers, a latch on the carriage having frictional engagement with the rod to retain said rod in a selected position, stretching members adjustably supported on the rod, means for moving the rod on the carriage to position said stretching members in stretching relation relatively to the supporting fingers, and means for moving the carriage on the guide tracks to and from the collapsible forms.

8. In a machine of the character described, a support, spaced guide tracks on the support, collapsible forms carried by the guide tracks, a stretching carriage slidably supported on the guide tracks, a pair of supporting fingers fixed on the carriage in alignment with the collapsible forms, a rod slidably mounted in the carriage between said supporting fingers, a latch on the carriage and engaging the rod to retain the rod in a selected position, stretching members adjustably supported on the rod, means for moving the rod on the carriage to position said stretching members in stretching relation relatively to the supporting fingers, and means for moving the carriage on the guide tracks to and from the collapsible forms.

9. In a machine of the character described, a support, a pair of collapsible forms on the support, a stretching carriage movable on the support to and from the forms, spaced supporting means on the carriage and aligning with the

collapsible forms for engaging the waist band of a garment applied to the forms, a gripping member movably supported on the carriage for engaging the back of the waist band at a point intermediate the waist band supporting means, fly engaging means on the carriage and movable between said waist band supporting means to tension the waist band of the garment, means for moving the carriage away from the collapsible forms to stretch the garment for length, means for expanding the collapsible forms, and means for supplying steam to said garment while retained on the forms.

10. In a machine of the character described, a support, a pair of tracks projecting from the support, a pair of collapsible forms each including upper and lower rails, means fixing one of the rails of each pair relatively to the tracks, means slidable on the tracks for pivotally supporting the other rails to move said rails to and from the fixed rails, a stretching carriage movable on the support to and from the forms, spaced supporting means on the carriage and aligning with the collapsible forms for engaging the waist band of a garment applied to the forms, a gripping member movably supported on the carriage for engaging the back of the waist band at a point intermediate the waist band supporting means, fly engaging means on the carriage and movable between said waist band supporting means to tension the waist band of the garment, means for moving the carriage away from the collapsible forms to stretch the garment for length, and means for sliding said supporting means on the tracks to actuate the pivoted rails.

11. In an apparatus for stretching trousers including means for engagingly supporting the waist band of the trousers at spaced points on opposite sides of the fly, means movable to and from said supporting means for engaging an intermediate point at the back of the waist band, means for drawing the fly in the direction of said intermediate point to tension the waist band over said supporting means, means for applying diametrical tension to the bottoms of the leg portions of the trousers, and means for stretching the trousers for length.

12. The method of stretching trousers including securing the fly of the trousers at the waist band, gripping the waist band of the trousers at spaced points on opposite sides of the fly and at an intermediate point at the back of the waist band, drawing the fly in the direction of said intermediate point to tension the waist band over the spaced points, applying diametrical tension to the bottoms of the leg portions of the trousers, and stretching the trousers for length.

13. The method of stretching trousers including securing the fly of the trousers at the waist band, gripping the waist band of the trousers at spaced points on opposite sides of the fly and at an intermediate point at the back of the waist band, drawing the fly in the direction of said intermediate point to tension the waist band over the spaced points, applying diametrical tension to the bottoms of the leg portions of the trousers, stretching the trousers for length, and simultaneously shaping the seat and hip portions of the trousers.

14. The method of stretching trousers including securing the fly of the trousers at the waist band, gripping the waist band of the trousers at spaced points on opposite sides of the fly and in substantial alignment with the front of the leg portions of the garment and at an intermediate point at the back of the waist band, drawing the fly in the direction of said intermediate point to tension the waist band over the spaced points, applying diametrical tension to the bottoms of the leg portions of the trousers, stretching the trousers for length, and shaping the leg portions of the trousers while maintaining the trousers in stretched condition.

15. The method of stretching trousers including securing the fly of the trousers at the waist band, gripping the waist band of the trousers at spaced points on opposite sides of the fly and at an intermediate point at the back of the waist band, drawing the fly in the direction of said intermediate point to tension the waist band over the spaced points, applying diametrical tension to the bottoms of the leg portions of the trousers, stretching the trousers for length, simultaneously shaping the seat and hip portions of the trousers, and shaping the leg portions while maintaining the trousers in stretched condition.

16. The method of stretching trousers including securing the fly of the trousers at the waist band, gripping the waist band of the trousers at spaced points on opposite sides of the fly and at an intermediate point at the back of the waist band, drawing the fly in the direction of said intermediate point to tension the waist band over the spaced points, applying diametrical tension to the bottoms of the leg portions of the trousers, stretching the trousers for length, and steaming the trousers while retained in stretched condition.

17. The method of stretching trousers including securing the fly of the trousers at the waist band, gripping the waist band of the trousers at spaced points on opposite sides of the fly and at an intermediate point at the back of the waist band, drawing the fly in the direction of said intermediate point to tension the waist band over the spaced points, applying diametrical tension to the bottoms of the leg portions of the trousers, stretching the trousers for length, simultaneously shaping the seat and hip portions of the trousers, and steaming the trousers while retained in stretched condition.

18. The method of stretching trousers including securing the fly of the trousers at the waist band, gripping the waist band of the trousers at spaced points on opposite sides of the fly and at an intermediate point at the back of the waist band, drawing the fly in the direction of said intermediate point to tension the waist band over the spaced points, applying diametrical tension to the bottoms of the leg portions of the trousers, stretching the trousers for length, shaping the leg portions of the trousers while maintaining the trousers in stretched condition, and steaming the trousers while retained in stretched condition.

19. The method of stretching trousers including securing the fly of the trousers at the waist band, gripping the waist band of the trousers at spaced points on oposite sides of the fly and at an intermediate point at the back of the waist band, drawing the fly in the direction of said intermediate point to tension the waist band over the spaced points, applying diametrical tension to the bottoms of the leg portions of the trousers, stretching the trousers for length, simultaneously shaping the seat and hip portions of the trousers, shaping the leg portions while maintaining the trousers in stretched condition, and steaming the trousers while retained in stretched condition.

20. The method of stretching trousers including securing the fly of the trousers at the waist band, gripping the waist band of the trousers at spaced points on opposite sides of the fly and at an intermediate point at the back of the waist band, drawing the fly in the direction of said intermediate point to tension the waist band over the spaced points, applying diametrical tension to the bottoms of the leg portions of the trousers, stretching the trousers for length, steaming the trousers while retained in stretched condition, and drying the trousers while retained in stretched condition.

21. In a machine of the character described, a support, spaced means on the support for stretchingly mounting the leg portions of a pair of trousers, cooperative stretching means on the support for stretchingly engaging the upper portion of the trousers including spaced supporting means for engaging the waist band of the trousers, a gripping member for engaging the back of the waist band at a point intermediate the spaced supporting means, means for engaging the fly of the trousers and movable between said spaced suporting means to cooperate therewith and with the gripping member for tensioning the waist band of the trousers, and means for moving one of said stretching means on the support to and from the other to stretch the trousers for length.

22. In a machine of the character described, a support, spaced means on the support for stretchingly mounting the leg portions of a pair of trousers, cooperative stretching means on the support for stretchingly engaging the upper portion of the trousers including spaced supporting means for engaging the waist band of the trousers, a gripping member for engaging the back of the waist band at a point intermediate the spaced supporting means, means on the gripping member for engaging the seat of the trousers, means for engaging the fly of the trousers and movable between said spaced supporting means to cooperate therewith and with the gripping member for tensioning the waist band of the trousers, and means for moving one of said stretching means on the support to and from the other to stretch the trousers for length.

23. In a machine of the character described, a support, spaced means on the support for stretchingly mounting the leg portions of a pair of trousers, cooperative stretching means on the support for stretchingly engaging the upper portion of the trousers including spaced supporting means for engaging the waist band of the trousers, a gripping member for engaging the back of the waist band at a point intermediate the spaced supporting means, means on the gripping member for engaging the seat of the trousers, means for engaging the fly of the trousers and movable between said spaced supporting means to cooperate therewith and with the gripping member for tensioning the waist band of the trousers, means for moving one of said stretching means on the support to and from the other to stretch the trousers for length, and means for moving said gripping member, including said seat engaging means, to stretch the seat portion of the trousers.

24. The method of stretching trousers including, engaging the fly of the trousers at the waist band, gripping the waist band of the trousers at spaced points on opposite sides of the fly and at an intermediate point at the back of the waist band, drawing the fly in the direction of the intermediate point to tension the waist band, applying tension to the bottoms of the leg portions of the trousers, and stretching the trousers for length.

25. The method of stretching trousers including, engaging the fly of the trousers at the waist band, gripping the waist band of the trousers at spaced points on opposite sides of the fly and at an intermediate point at the back of the waist band, drawing the fly in the direction of the intermediate point to tension the waist band, applying tension to the bottoms of the leg portions of the trousers, stretching the trousers for length, and shaping the seat and hip portions of the trousers simultaneously with said stretching and waist band tensioning steps.

26. The method of stretching trousers including, engaging the fly of the trousers at the waist band, gripping the waist band of the trousers at spaced points on opposite sides of the fly and at an intermediate point at the back of the waist band, drawing the fly in the direction of the intermediate point to tension the waist band, applying tension to the bottoms of the leg portions of the trousers, stretching the trousers for length, steaming the trousers to facilitate stretching, and subjecting the trousers to the drying action of air while retained in stretched condition to set the shape imparted to the trousers.

27. The method of stretching trousers including, engaging the fly of the trousers at the waist band, gripping the waist band of the trousers at spaced points on opposite sides of the fly and at an intermediate point at the back of the waist band, drawing the fly in the direction of the intermediate point to tension the waist band, applying tension to the bottoms of the leg portions of the trousers, stretching the trousers for length, shaping the seat and hip portions of the trousers simultaneously with said stretching and waist band tensioning steps, steaming the trousers to facilitate stretching, and subjecting the trousers to the drying action of air while retained in stretched condition to set the shape imparted to the trousers.

28. The method of stretching trousers including, engaging the fly of the trousers at the waist band, gripping the waist band of the trousers at spaced points on opposite sides of the fly and at an intermediate point at the back of the waist band, drawing the fly in the direction of said intermediate point to tension the waist band over the spaced points, shaping the seat portion of the trousers, and applying tension between the leg portions and said waist band to stretch the seat and hip portions of the trousers for length.

29. In a machine of the character described, a support, including a pair of form guides, a pair of collapsible forms on said guides, a stretching carriage movable on the guides to and from the forms, means on the carriage for gripping a garment applied to the forms, means for expanding the forms to stretch the garment in one direction, means for moving the carriage to stretch the garment in another direction relatively to the first named direction, means for moving the gripping means in stretching the garment in the first named direction, means for delivering steam into the garment, and means for circulating steam through the guides to heat said guides, forms and the carriage for preventing condensation of the steam thereon that is discharged from said delivering means.

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