April 26, 1932. E. A. EMERY ET AL 1,855,544

METHOD OF STRETCHING TUBULAR GARMENTS

Filed Oct. 28, 1929 2 Sheets-Sheet 1

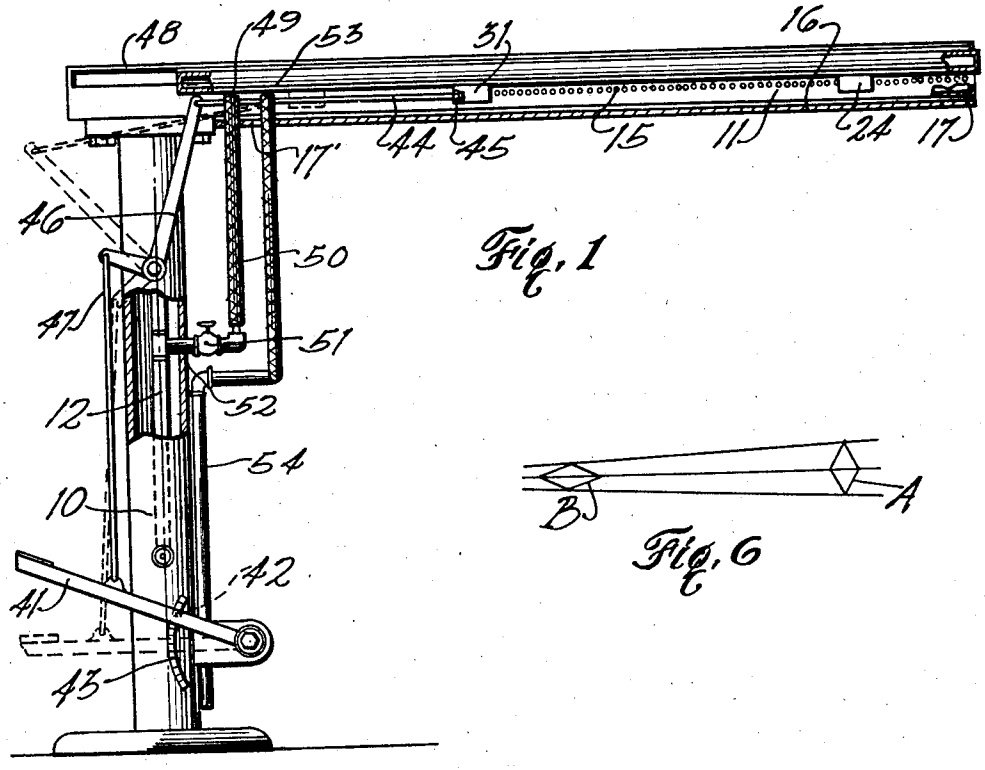


Fig. 1

Fig. 6

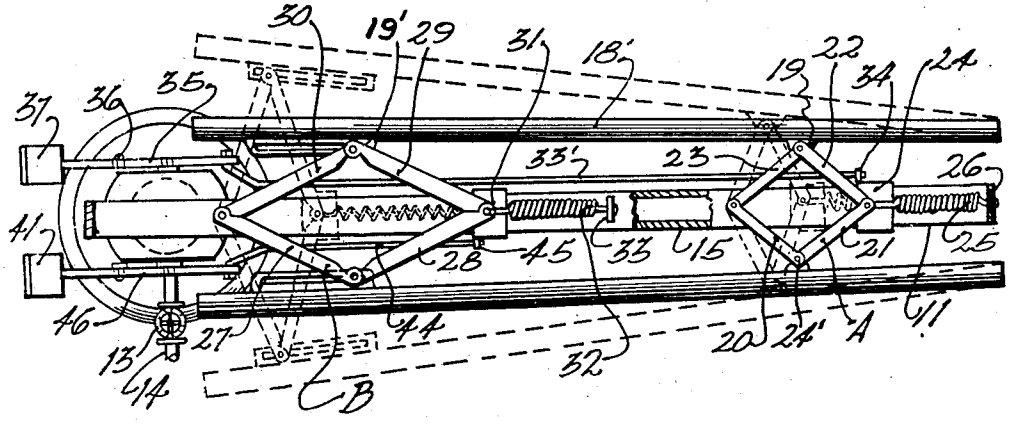


Fig. 2

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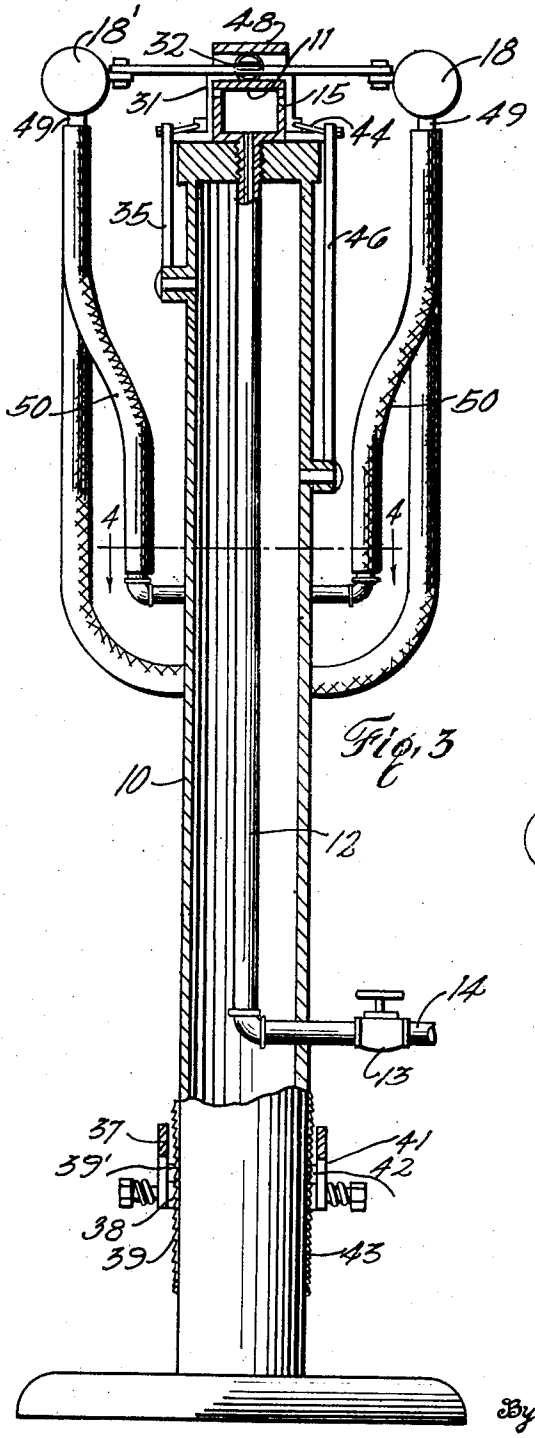


Fig. 3

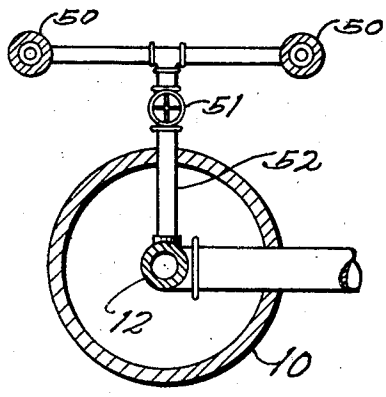


Fig. 4

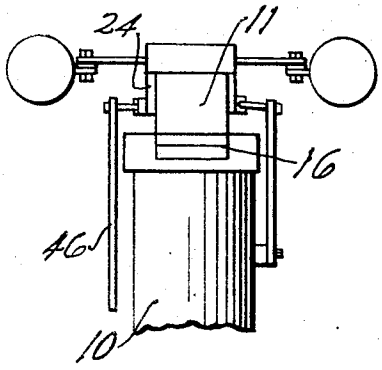


Fig. 5

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UNITED STATES PATENT OFFICE

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METHOD OF STRETCHING TUBULAR GARMENTS

Application filed October 28, 1929. Serial No. 403,029.

This invention relates to new and useful improvements in methods of stretching tubular garments.

One of the worst problems confronting the cleaners today is a means of accurately stretching wet washed trousers. It is necessary to either use a press or a steam board for this purpose which should be used for pressing and nothing else. Our invention has many advantages and while its manufacturing cost is small its purpose and use saves a considerable amount of time and labor.

One object of the invention is to provide a means whereby trousers, when wet washed or otherwise cleaned, can be stretched to their natural width and length.

Another object of the invention is to provide a means whereby trousers can be stretched without necessitating the tying up of valuable machinery and expensive help.

A particular object of the invention is to provide means whereby in carrying out the method the tubular garment is suitably supported and while so supported live steam is liberated throughout the length thereof to penetrate the fabric, thus preparing the same for both transverse or lateral and longitudinal stretching to bring the garment to the desired size.

A construction designed to carry out the invention will be hereinafter described, together with other features of the invention.

Fig. 1 is a side elevation, partly in section, of a device constructed in accordance with the invention,

Fig. 2 is a plan view, partly in section, showing independent expanding means for the stretching members,

Fig. 3 is a rear elevation of the device, partly in section,

Fig. 4 is a section taken on the line 4—4 of Fig. 3,

Fig. 5 is a partial front elevation, and

Fig. 6 is a diagrammatical view illustrating the position of the stretching members when the length of the trouser leg is to be pulled.

In the drawings the numeral 10 designates an upright support having a tubular head 11 extending from the same. The support is hollowed so as to receive a suitable steam pipe 12, the steam therein being controlled by a valve 13 in connection with a pipe 14 from a suitable steam supply source. The head 11 is suitably flanged or threaded so that the steam pipe 12 can be fastened into the same. Ports 15 are spaced in the head so as to furnish dry steam when desired. A drain 16 is fastened to the bottom of the steam head 11 having a port 17 therein, whereby any water that may be in the head, due to the condensation of steam, will be suitably drained from the head. This water, due to the slope of the drain, will, by gravity, flow through the port 17′ in the drain. This port can be suitably connected with a pipe so that the water may be disposed of by any suitable means.

Tubular stretching members 18 and 18′ are expandably fastened to the head 11 by means of a set of linkages A and B. A bearing 19 on one end of each of said stretching members suitably supports and pivots said members to the set of linkages A, as is best shown in Fig. 2. On the opposite end of the tubular stretching members 18 and 18′ a slotted bearing 19′ is suitably placed to slidably pivot the linkages B and support the stretching members.

The linkages A, as best illustrated in Fig. 2, are made up of parts 20, 21, 22 and 23. These parts are pivoted together by suitable studs or bolts 24′ and the action of the linkage is as follows. One end of the links 20 and 23 are securely pivoted to the steam head 11 in any suitable place, while the other ends of said links are pivotally secured to the bearings 19 on the stretching members 18 and 18′. One end of the links 21 and 22 are also pivoted to the bearings 19 on the stretching members 18 and 18′, working in connection with the links 20 and 23. The opposite ends of the links 21 and 22 are pivotally fastened in any suitable manner, to a slide 24, which upon the opening and closing action of the linkages slides in a horizontal plane in order that the linkages will be expanded evenly. The coil spring 25, which is fastened at one end to the slide 24 and at the other end to a fixed part 26 on the steam head 11, tends to

keep the linkages at all times in a closed position.

The linkages B, best illustrated in Fig. 2, are composed of members 27, 28, 29 and 30. One end of the links 27 and 30 is securely pivoted to the steam head 11 in any suitable place, while the opposite ends of said links are slidably pivoted to the slotted bearings 19′. One end of the links 28 and 29, working in connection with the links 27 and 30, are also slidably pivoted to the slotted bearings 19′, in any suitable manner.

The opposite end of the links 28 and 29 are suitably pivoted to a slide 31. The slide 31, working on top of the steam head 11, retains the linkages in a fixed plane in order that their expansion will be the same on either side of the steam head. A coiled spring 32 fastened at one end to the slide 31 and at the other end to a lug 33 on the steam head 11 tends, at all times, to keep the linkages B in a closed position. These linkages are actuated by practically the same method as the linkages A. A rod 44 is fastened at one end thereof to a lug 45 on the slide 31, the other end of the rod being suitably pivoted to a bell crank 46. This bell crank is pivoted to the member 10 in any suitable position thereon and is actuated by a rod 47 that has one end thereof pivotally fastened to a part of said bell crank, the other end of this rod being pivotally fastened to the foot pedal 41.

From the foregoing description of the linkages A and B, it is evident that these linkages may be expanded independently of each other due to the slotted arrangement, as illustrated in Fig. 2. However, if it is desired, the slotted bearings can be used to the same advantage on the front linkages A, as well as the linkages B.

One end of a suitable rod 33′, which may either be of a rigid or pliable material, is fastened to the lug 34 on the slide 24, while the other end of the rod is pivotally fastened to an arm of the bell crank 35. The bell crank 35, being securely pivoted to the upright support 10 in any suitable place, is actuated by a rod 36 which is fastened to a foot pedal 37. The foot pedal 37 pivots on a bearing 38, by any suitable means, and its position is controlled by a toothed member 39, which is engaged by a tooth 39′ made integral with the foot pedal 37. Thus it is evident that when the foot pedal 37 is pressed downward the linkages A will be expanded and when so expanded will tightly press the tubular stretching members against the cuff of a trouser leg. While this position of the linkages is held, due to the engagement of the tooth on the foot lever 37 with the toothed member 39, which may be either made integral with or fastened to the support 10, the rear linkages B may be expanded or adjusted by the foot pedal 41, which also has a tooth 42 made integral with the pedal and that can be engaged with the toothed member 43 on the support 10.

A cover 48, as shown in Fig. 1, can be used, if desirable, to cover the entire working mechanism of the linkages over the steam column, in order to protect the trousers from any of the moving parts of the device.

The tubular stretching members 18 and 18′ have at one end thereof inlet connections 49 to which are attached suitable swiveled or flexible steam conveyors 50. These steam conveyors are connected with a valve 51 by any suitable means, this valve being used for the purpose of regulating the steam which comes through the pipe 52 from the steam line 12. Outlet connections 53, being suitably located in each of the tubular stretching members 18 and 18′ are connected at the lower end thereof with a suitable discharge pipe 54, which may be directly connected with a suitable drain. The purpose of this connection is for a drain as well as an outlet for what steam may accumulate in the tubular members. The purpose of the steam being applied to the tubular members is to heat them so that steam will not condense thereon. However, our invention is not to be limited to the use of steam as a heating agent. These arms may be heated by electricity or any other suitable means.

From the foregoing description it will be readily seen that the device is operated as follows: The foot pedals are raised, the springs on both the linkages pulling the tubular stretching members close to the side of the steam head. A trouser leg is then pulled on these stretching members until the cuff of the trouser leg is in alinement with the linkages A. These linkages are then expanded by the foot pedal 37, steam of course, being injected into the trouser leg as soon as the leg is placed on the device, by slightly opening the valve 13 in the steam line.

As soon as the steam in the trouser leg has allowed the cuffs of the same to be stretched as far as the cloth will permit without either ripping the seams or tearing the cloth, it is evident that with the tubular stretching members in the position shown in Fig. 6, that by catching hold of the trousers at the waist thereof and pulling same by hand, the cuff being securely held due to the expansion of the linkages A, the length of the trouser leg can be easily stretched, the leg being against the tubular members at its cuff. While this length is easily held by hand, all that is then necessary to get the correct width of the trousers, which may be either straight or tapered, is to press downward on the pedal 41 expanding the rear set of linkages B, causing the tubular stretching members to conform to the shape of the trouser leg and stretching same its proper width.

It is understood, of course, that the temperature of the tubular stretching members

is such, by the use of the steam valve 51, that steam which is injected into the trouser leg will not condensate. All working parts of the device that are in the trouser leg will be either heated to prevent condensation by being in contact with the steam head or by other means, so that wet washed trousers when ready for this device, being perfectly dry, will not be wet again and can be stretched practically in their dry state.

It has been found that when the elastic limit of the fabric has been reached in stretching, the operator instantly becomes aware of this condition and may discontinue the operation before injuring the fabric. This is due probably to the added resistance offered the stretching operation when the limit has been reached. A pair of trousers which are wet washed and shrink up, perhaps two inches in width and several inches in length, will offer such added resistance when stretched to their original size, that the operator will feel the same in the operation of the machine and stop the stretching.

What we claim is:

1. The method of stretching tubular garments, which consists in supporting said garment and at the same time introducing steam into the same throughout its length, holding one end of said garment and pulling the same longitudinally to stretch it to the required length, and then stretching said garment transversely to the desired width.

2. The method of stretching tubular garments, which consists in supporting said garment and at the same time introducing steam into the same throughout its length, stretching one end of said garment transversely whereby it is held and pulling said garment longitudinally to stretch it to the required length, and then stretching the garment transversely to the desired width, steam being discharged within the tubular garment during the entire stretching operation.

3. The method of stretching tubular garments, which consists in dicharging wet steam within the garment and at the same time stretching the same in two directions.

4. The method of stretching tubular garments, which consists in discharging wet steam within the garment and at the same time stretching the same in two directions, until the natural limit of elasticity of the fabric is reached.

5. The method of stretching tubular garments, which consists in supporting one of the tubular members of a washed garment, liberating live steam within said tubular garment member, then stretching said tubular member transversely while supported and while subjected to said steam, and then stretching said tubular member lengthwise while supported and while subjected to said steam.

6. The method of stretching tubular garments as set forth in claim 5 with the additional step of simultaneously stretching the tubular member longitudinally while stretching it transversely.

In testimony whereof we affix our signatures.

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