April 15, 1952 N. C. JACKSON 2,592,903

CLAMP STRUCTURE FOR GARMENT FINISHING MACHINES OR THE LIKE

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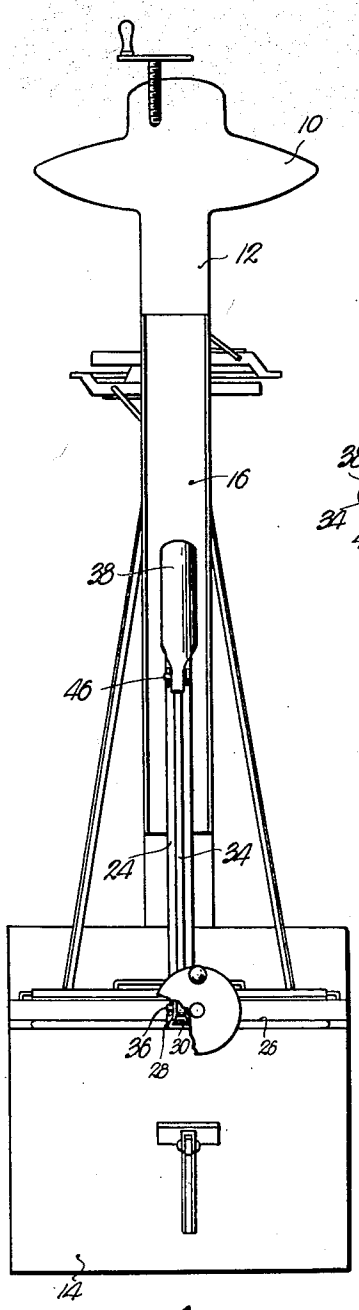


Fig. 1.

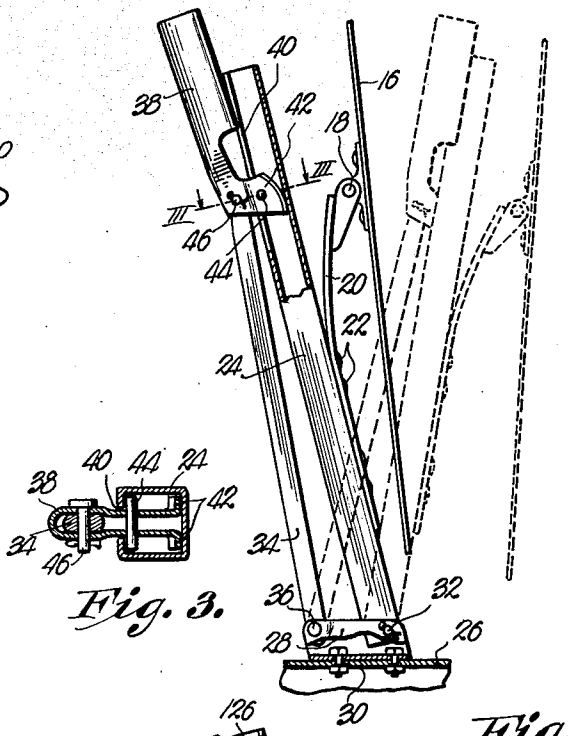


Fig. 2.

Fig. 3.

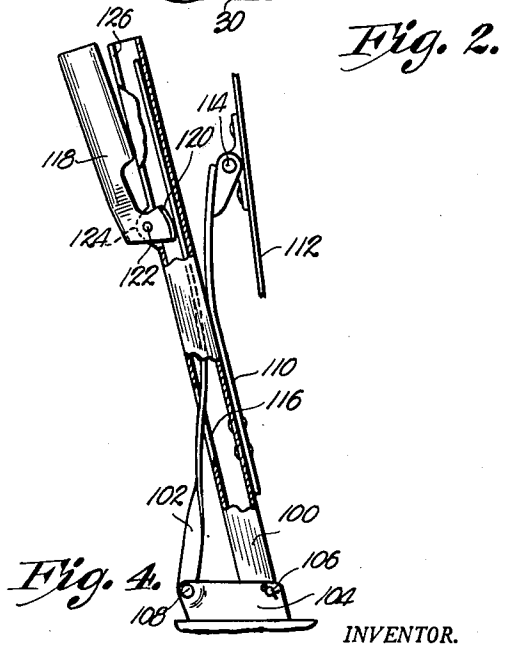


Fig. 4.

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CLAMP STRUCTURE FOR GARMENT FINISHING MACHINES OR THE LIKE

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4 Claims. (Cl. 24—248)

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This invention relates broadly to the field of garment finishing and equipment used therein, the primary object being to provide an improvement in garment finishing machines in the nature of that disclosed in U. S. Letters Patent 2,412,172 issued December 3, 1946, to Earl L. Pettit.

The garment finisher disclosed in the above-mentioned patent includes a pair of opposed clamps movable to and from a position where the same bear against and hold a garment adjacent vertical strips forming a part of a form for receiving such a garment. The garment-receiving form thereof is designed to receive a hollow, open-bottom bag for receiving steam and air which is, in turn, directed to the garment being finished through the bag.

The opposed clamps are provided with specially formed mounting means permitting movement thereof to and from a position against the garment, and it is the object of this invention to improve upon the structure for manually shifting such clamps to and from the operative position.

The most important object of this invention is to provide structure capable of shifting a clamp or other member to and from a position in engagement with a stationary object and to hold the same in such position until the structure is released.

Another important object of this invention is the provision of a pair of elongated members, each pivotally mounted upon a rigid support for swinging movement toward and from a stationary object, the two members being so disposed relatively and having parts disposed therebetween as to releasably hold the same in a pre-determined position and against movement in one direction when locked.

Another important object of the present invention is to provide structure of the afore-mentioned character, wherein a specially formed cam is provided that is mounted for swinging movement and designed to bear against one of the members and clamp the same against movement, whereby the two members cannot move as a unit in one direction away from the stationary object against which the clamp is brought to bear.

A further object of the present invention is to provide a pair of pivotally mounted, elongated bars, one of which carries the clamp to be positioned against the stationary object and the other being provided with a manually operable grip pivotally secured thereto and having a cam member bearing against the bar having the clamp thereon, all to the end that the two bars cannot be displaced relatively and thereby holding the

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clamp against movement away from a desired position.

A still further object is to provide a pair of swingable members having separate pivotal axes, said members being relatively telescoped throughout a portion of the lengths and one of the members being provided with a swingable grip having a cam thereon that is movable to and from a position clamping the two rods together.

Other objects of the present invention include the way in which the clamp to be controlled and actuated is pivotally mounted upon a spring member, the latter of which joins with one of the swingable rods or bars; the way in which, in one modification of the invention, the grip and cam thereon not only pivot within one of the members but slide longitudinally therealong; and the way in which, in the modified form of the invention, the manually operable grip is pivotally mounted on one of the members but held against longitudinal movement when the same is brought to bear against the other member.

In the drawing, Fig. 1 is a fragmentary, front, elevational view of a garment finisher similar to that shown in U. S. Letters Patent 2,412,172, showing one form of the clamp structure forming the subject matter of the present invention operably mounted thereon.

Fig. 2 is a side elevational view of the clamp structure illustrated in Fig. 1, parts being broken away for clearness and illustrating the same schematically in the operative and in the inoperative positions.

Fig. 3 is a detailed, transverse, cross sectional view taken on line III—III of Fig. 2; and

Fig. 4 is a side elevational view of a modified form of the present invention, parts being broken away for clearness.

While the clamp structure about to be described has been designed for use with garment finishers of the kind forming the subject matter of the above-mentioned patent, it is to be understood that the same may well be applicable for use with other types of such garment finishers and, therefore, the structure shown in Fig. 1 of the drawing is for illustrative purposes only. Additionally, it is manifest that the structure herein illustrated and specified may have many other uses other than with garment finishing machines.

Fig. 1 shows a neck and shoulder form 10 for receiving a garment to be finished that is mounted upon a vertical, substantially centrally disposed, tubular section (not shown). Such tubular section permits movement of form 10 vertically, together with a pair of opposed strips that are

joined to head 10 and depend therefrom. Only one of such strips is illustrated in Fig. 1 of the drawing, and the same is generally designated by the numeral 12.

A dress or other garment to be finished is placed over form 10 and extends downwardly to house the two strips 12, said garment terminating at its lowermost edge above a base herein designated by the numeral 14. In order to hold the garment in a desired position against the strips 12, a pair of opposed clamps are used, there being one clamp for each of the strips 12, respectively. Only one of these clamps is illustrated in Fig. 1 of the drawing, the same being an elongated, relatively flat plate and designated by the numeral 16.

Thus, there being two or more plates or clamps 16, the structure forming the subject matter hereof will be duplicated accordingly. Clamps 16 are pivotally mounted as at 18 upon the normally uppermost free end of a leaf spring 20. Spring 20 is secured adjacent its opposite end by means of rivets or the like 22 directly upon one outermost face of an elongated, tubular member 24.

Obviously, the spring 20 is positioned to dispose clamp 16 between member 24 and the corresponding strip 12 or other stationary object, against which clamp 16 is to be brought to bear. As shown clearly in Fig. 2 of the drawing, leaf spring 20 curves outwardly away from member 20 as its uppermost end is approached. Through use of the pivotal connection 18, the clamp 16 will conform to the strip 12 regardless of the position of the latter with respect to the vertical.

An inturned flange 26 is formed at the periphery of the uppermost edge of base 14 for receiving a bracket 28. This bracket 28 is secured directly to flange 26 by means of bolts or the like 30 and is U-shaped in cross section. The lowermost end of tubular member 24 is telescoped within the bracket 28 and pivotally secured to the legs of the latter by means of pin 32.

An elongated link 34 is, also, mounted for swinging movement upon the bracket 28, said link 34 pivoting upon a pin 36 disposed in spaced relationship to the pivot pin 32. Accordingly, the swinging axes of member 24 and link 34 are substantially parallel and horizontal.

A manually-operable, L-shaped grip 38 is disposed adjacent the uppermost ends of link 34 and the tubular member or bar 24. One face of bar 24 opposite to that face thereof having leaf spring 20 mounted thereon is provided with an elongated slot 40 extending inwardly from the normally uppermost free end of bar 24. One leg of the grip 38 extends into this slot 40 and is reciprocable longitudinally therealong.

A cam face 42 is formed on the free end of said one leg of grip 38, said cam face 42 being entirely disposed within the tubular bar 24. Bar 24 is preferably polygonal in cross section and the width of this cam face 42 is substantially the same as the width of the walls of member 24 having slot 40 and leaf spring 20.

Fig. 3 of the drawing illustrates clearly the precise formation of grip 38, the same being formed from an initially flat piece of material and rebent upon itself to be substantially U-shaped in cross section. The free ends of the legs thereof are turned laterally outwardly to form the cam face 42 which is sectional in the construction shown.

A transverse cross pin 44 extends through that leg of grip 38 disposed within bar 24, the length of this pin 44 being less than the width of member 24, to the end that the same will freely slide longitudinally within bar 24. A pivot pin 46, disposed adjacent the point of merger between the two legs of the L-shaped grip 38, pivotally mounts the normally uppermost end of link 34.

It is thus seen that, as grip 38 is swung to and from a position toward the proximal face of bar 24, the same will pivot upon pin 44, the space between cam face 42 and pivot pin 44 being such as to move cam face 42 toward and away from the proximal interior wall of bar 24. When grip 38 is in the position shown by full lines in Fig. 2 of the drawing, the bar 24 as well as link 34 are free to swing as a unit toward and from the strip 12 of the garment finisher, carrying therewith clamp 16.

During such swinging movement, bar 24 and link 34 pivot on axes 32 and 36, respectively, and grip 38 and link 34 pivot relatively. Also, during the swinging movement, grip 38 travels longitudinally within slot 40 relative to bar 24.

When the clamp 16 is in the position illustrated by dotted lines in Fig. 2 of the drawing, the operator simply swings grip 38 inwardly toward bar 24, moving cam face 42 into tight engagement with the proximal interior face of bar 24. Such tight gripping engagement between cam 42 and bar 24 prevents swinging movement of the entire structure away from the strip 12. The clamp 16 is held tightly against the proximal face of strip 12, because of the provision of spring 20, the latter always tending to swing bar 24 toward the full-line position of Fig. 2.

The locked position of grip 38 will not prevent movement of the unit toward the strip 12 but will positively hold the same against swinging movement therefrom. To release clamp 16, the operator merely grasps the grip 38, swinging cam 42 out of engagement with the bar 24, thereby permitting swinging movement of the entire unit to the inoperative position.

It is to be noted that, as clamp 16 tends to move away from its strip 12, link 34 will operate to hold cam 42 even more tightly against bar 24. In other words, the forces tending to move clamp 16 away from strip 12 will be imparted directly into the longitudinal axis of link 34 and toward the stationary pivot pin 36.

When the grip 38 is swung away from the bar 24 as indicated in full-lines in Fig. 2, the upper end of cam face 42 is spaced away from the inner face of bar 24 whereas the lower end of cam face 42 is in sliding engagement with bar 24. Such sliding engagement does not interfere with free swinging movement of bar 24 and link 34 on pivots 32 and 36 respectively of bracket 28. When the grip 38 is swung on pivot pin 44 toward the bar 24 and into the position shown by dotted-lines in Fig. 2 of the drawing, the upper end of cam face 42 moves into tight engagement with the inner face of bar 24, thereby locking or joining the link 34 rigidly to the bar 24 and thereby holding both bar 24 and link 34 against swinging movement.

Accordingly, any tendency of the plate 16 to move toward the left, viewing Fig. 2, will only serve to tighten the grip between cam face 42 and the inner face of bar 24.

In the modified form of the invention shown in Fig. 4 of the drawing, tubular bar 100 and elongated link 102 are mounted in the same manner as in the form just above described through provision of a U-shaped clamp 104 and spaced-apart pivot pins 106 and 108, respectively. A leaf spring 110 interconnects bar 100 and clamp 112 through

the medium of a hinge pin 114 in the same manner as above described with respect to the modification of Figs. 1 to 3, inclusive.

In this form, however, the bar 100 has an elongated longitudinal slot 116 formed therein and intermediate its ends for receiving the link 102. This slot 116 is disposed in that wall of bar 100 opposite to the leaf spring 110 and relatively close to the lowermost pivot end of bar 100. Link 102 is slightly arcuate longitudinally and extends upwardly through slot 116 into telescoping relationship with respect to bar 100. The uppermost end of link 102 terminates adjacent the uppermost free end of bar 100.

A grip 118 is formed substantially the same as grip 38 shown in Figs. 1 to 3, inclusive, and has a cam face 120 much like cam face 42. One leg of the grip 118, having cam face 120 thereon, extends into the tubular bar 100 and is pivoted thereto as at 122 by means of an out-turned projection 124 on bar 100. A longitudinal slot 126 in bar 100, similar to slot 40, receives this one leg of grip 118.

The cam face 120 of grip 118 differs only slightly in contour from the cam 42 of grip 38. Link 102 extends within bar 100 between the innermost face of the wall of bar 100 having spring 110 mounted thereon and the operating face of cam 120. Thus, as the grip 118 is swung on its pivot 122 toward and away from bar 100, cam 120 will be brought out of and into engagement with the link 102.

In other words, grip 118 operates oppositely to the grip 38 in performing its locking function. In the position illustrated in Fig. 4 of the drawing, grip 118 is in the locked position and any tendency for link 102 to move upwardly with respect to bar 100 will cause the former to progressively lock more tightly. When grip 118 is swung toward bar 100 and from the position shown in Fig. 4, link 102 will be released and the entire structure, including clamp 112, link 102, bar 100, and grip 118 can be swung freely as a unit toward and from the vertical strip 12. When clamp 112 is positioned against strip 12, outward swinging movement of grip 118 will lock the assembly in place.

Obviously, either of the modifications above described will operate to releasably hold the respective clamps in an operative position and the precise form is optional to the operator. Further modifications are possible and, manifestly, such changes as fairly come within the scope of the appended claims are contemplated hereby.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a garment finisher, clamp structure including a bracket; a bar and a link pivotally secured to the bracket for swinging movement on spaced axes; a grip swingably mounted on said bar for movement to and from a position rigidly joining said bar and said link whereby to hold the bar and the link against swinging movement relative to the bracket; a spring on the bar; and an article-engaging plate swingably secured to said spring.

2. In a garment finisher, clamp structure including a bracket; a bar and a link pivotally secured to the bracket for swinging movement on spaced axes; a grip shiftably and swingably secured to the bar and pivotally mounted on the link, said grip having a cam surface engageable with the bar when the grip is swung in one direction relative to the bar for holding the bar and the link against swinging movement relative to the bracket; a spring on the bar; and an article-engaging plate swingably secured to said spring.

3. In a garment finisher, clamp structure including a bracket; a bar and a link pivotally secured to the bracket for swinging movement on spaced axes, said bar being tubular and having a slot therein, a grip having a portion extending into the slot for sliding movement therealong; a transverse pin on the grip within the bar for swingably securing the grip to the bar; means pivotally joining the grip and the link, said grip having a cam surface engageable with the bar when the grip is swung in one direction relative to the bar for holding the bar and the link against swinging movement relative to the bracket; a spring on the bar; and an article-engaging plate swingably secured to said spring.

4. In a garment finisher, clamp structure including a bracket; a tubular bar having a slot therein and a link, both pivotally secured to said bracket, said link extending into the bar through said slot; a grip swingably mounted on said bar for movement to and from a position engaging the link and holding the same against the bar whereby to hold the bar and the link against swinging movement relative to the bracket; a spring on the bar; and an article-engaging plate swingably secured to said spring.

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