Aug. 4, 1959 C. A. MILES ET AL 2,898,022

ACTUATING MECHANISM FOR STITCH SEVERING DEVICES

Filed July 19, 1956 2 Sheets-Sheet 1

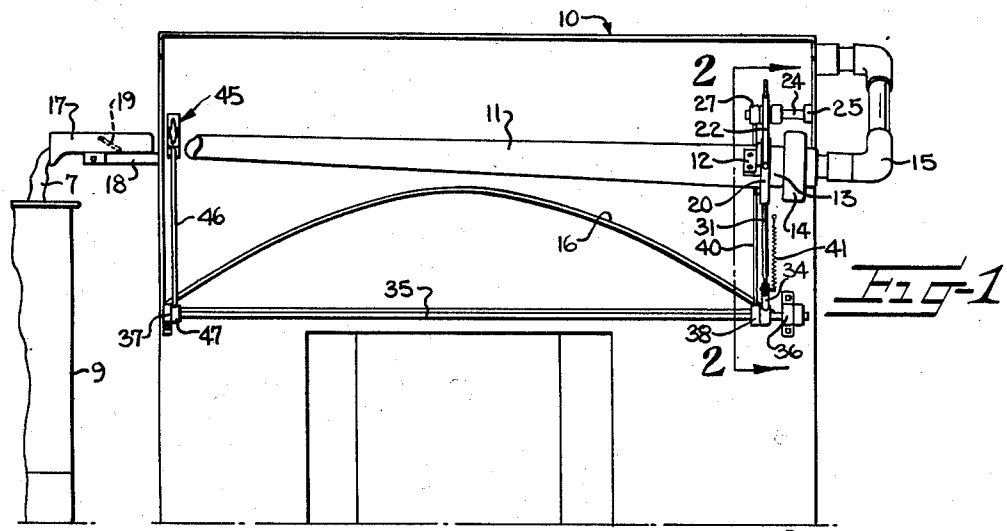


Fig-1

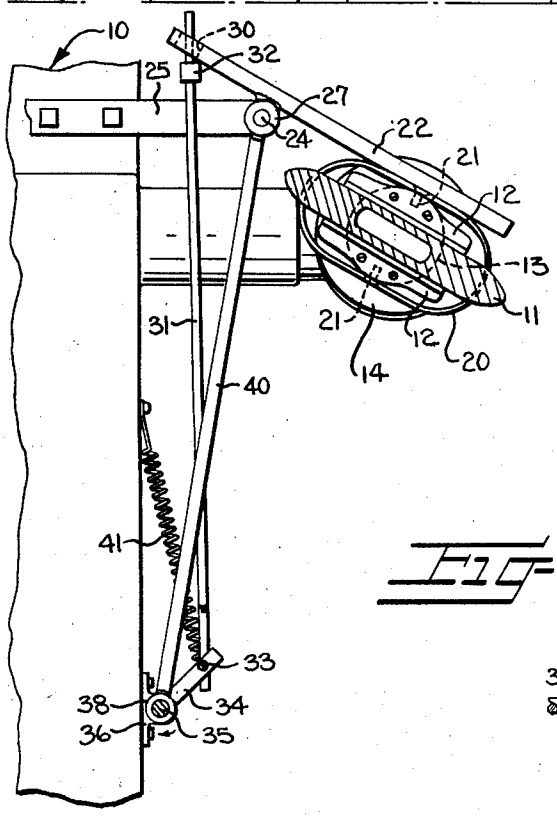


Fig-2

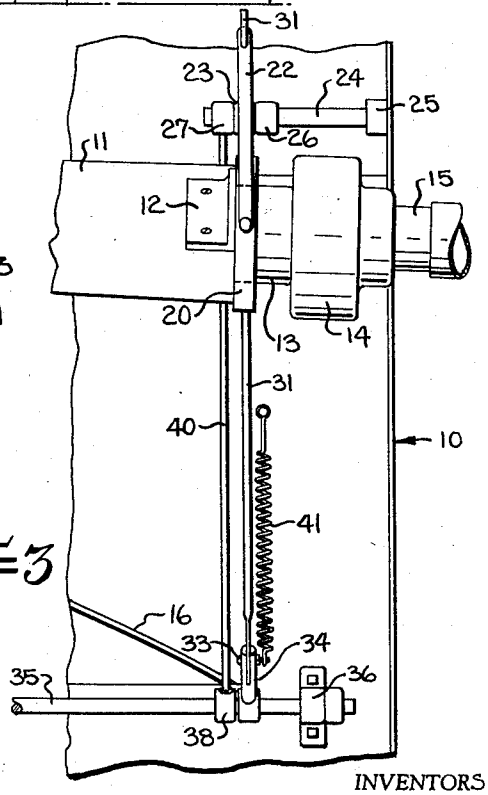


Fig-3

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ACTUATING MECHANISM FOR STITCH SEVERING DEVICES

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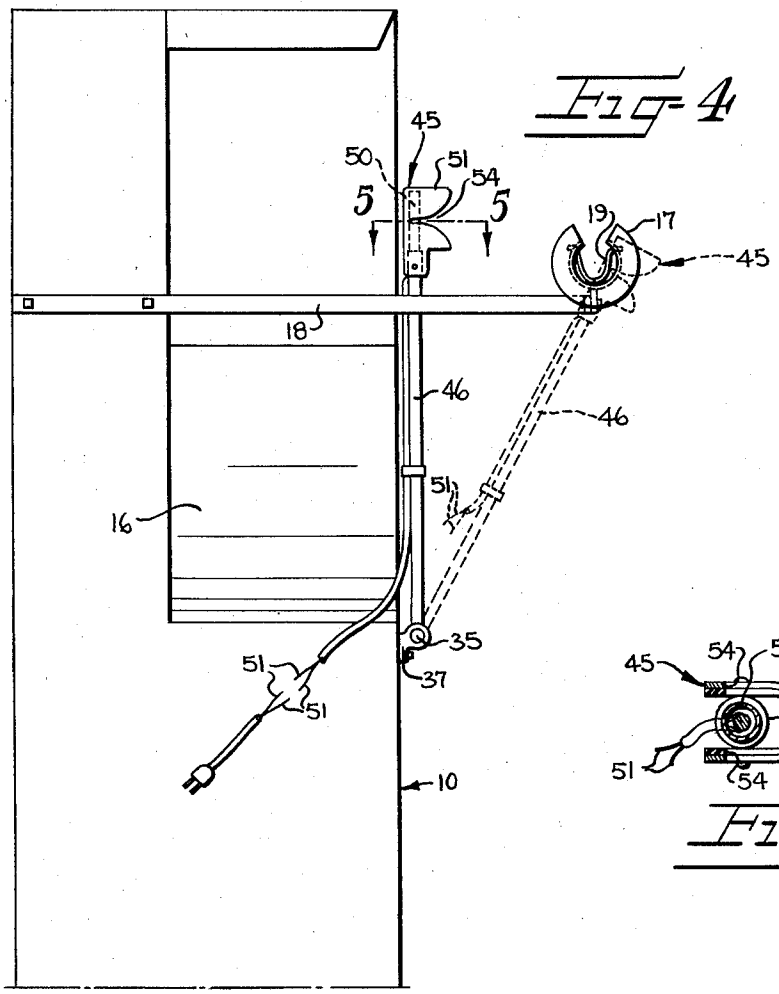


Fig-4

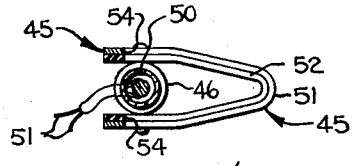


Fig-5

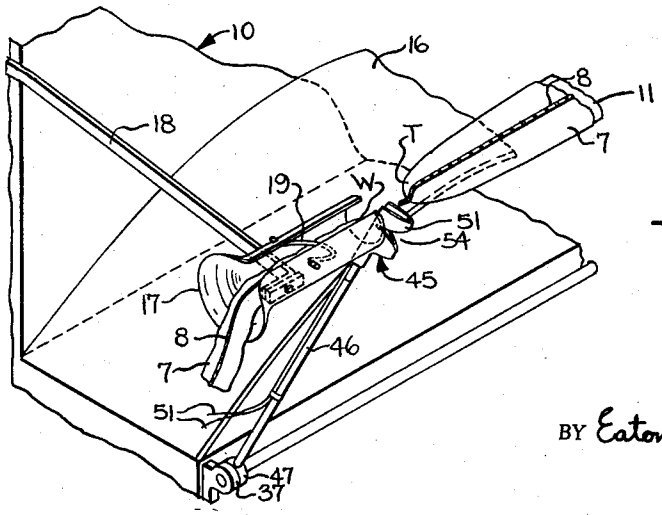


Fig-6

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ACTUATING MECHANISM FOR STITCH SEVERING DEVICES

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Application July 19, 1956, Serial No. 598,798

1 Claim. (Cl. 223—75)

This invention relates generally to the art of handling full-fashioned hosiery during its inspection in the greige, and more particularly to an actuating mechanism for severing devices which automatically severs the chain stitching between adjacent full-fashioned stockings during the inspection thereof on a greige inspecting machine.

The present invention is primarily intended for use in conjunction with the novel method of handling full-fashioned hosiery during its inspection in the greige as fully described in our copending application Serial No. 589,772, filed June 6, 1956, and entitled Method and Apparatus for Handling Hosiery and it is the primary object of this invention to provide improved means which are automatically and mechanically operable upon rotation of the inspection form of a greige inspection machine to actuate the thread severing device which in turn severs the stitching between adjacent stockings.

It is another object of this invention to provide a novel yet simple severing device actuating mechanism which may be readily installed on a conventional greige inspecting machine with a minimum of modification.

Another important object of the invention is to simplify the construction and installation of the severing device actuating mechanism with a resultant savings in time and expense.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds when taken in connection with the accompanying drawings, in which—

Figure 1 is a schematic front elevation of a conventional greige inspecting machine showing the improved and mechanically operable actuating mechanism for the severing device which automatically severs the chain stitching between the toe and welt of adjacent stockings during the inspecting operation;

Figure 2 is an enlarged fragmentary sectional view, with parts broken away, taken substantially along the line 2—2 in Figure 1 and showing the manner in which the actuating mechanism of the severing device is operatively connected to the greige inspection machine;

Figure 3 is a front elevation looking at the right side of Figure 2 further showing the manner in which the actuating mechanism for the severing device is operatively connected to the greige inspecting machine;

Figure 4 is an enlarged end elevation looking at the left of Figure 1 and showing a portion of the actuating mechanism and the stitch severing device in solid lines in inoperative position, and in dotted lines during the severing operation, parts rearwardly of the severing device being omitted;

Figure 5 is a vertical sectional view, partially in plan, taken substantially along the line 5—5 in Figure 4 showing the stitch severing apparatus in the form of an electrically heated wire, and a portion of its associated guard;

Figure 6 is a fragmentary isometric view showing the stitch severing device in operative position for severing the stitching between a stocking in the supporting guide and a stocking on the inspection form.

In the seaming and inspection of full-fashioned hosiery according to the method set forth in our said copending application, successive stockings 7 (Figure 6) are continuously seamed from toe to welt, without interruption, as indicated by stitching 8 on a conventional seaming machine and chained together by the stitching 8 with the toe T of each seamed stocking being connected by the stitching 8 to the welt W of the adjacent stocking.

After being seamed in this manner the stockings are placed in a container 9 (Figure 1) adjacent a conventional greige inspection machine, broadly indicated by the numeral 10 and comprising an elongated open ended hollow inspection form 11 which is generally oval in cross-section and is supported by brackets 12 fixed on a shaft 13 which is rotatably supported by a bearing housing 14.

In inspecting hosiery on a machine of this character, an unturned seamed stocking is manually drawn onto the inspection form 11 and the near side of the stocking is inspected for defects, after which the form 11 is manually rotated one hundred and eighty degrees to bring the other side of the stocking into view for inspection. After inspection, the stocking is automatically withdrawn and turned by suction from the form 11 through the free open end thereof and through a tube 15 which deposits the stock upon a stacking platform 16 in accordance with standard practice.

Before being drawn onto the inspection form 11 the first stocking is withdrawn from the container 9 and passed through a substantially tubular supporting guide 17 connected to the frame of the inspection machine 10 by a bracket 18 and disposed adjacent the free end of the form 11 in substantial longitudinal alinement therewith. When being threaded through the supporting guide 17, the stocking is preferably fed underneath a U-shaped weight 19 pivoted to opposite walls of the guide 17 and adapted to releasably clamp each successive stocking against the bottom of the guide 17 to prevent the stockings from passing back into the container 9.

After the first stocking in the container 9 has been threaded through the guide 17 and drawn onto the inspection form 11, the second or adjacent stocking is held partially within the supporting guide 17 by the weight member 19 with the connecting chain sitch 8 disposed between the free end of the inspection form 11 and the proximate end of the supporting guide 17. Upon the inspection form being rotated to inspect the far side of the stocking, means are automatically actuated to sever the stitching 8 between the stocking on the form and the stocking disposed within the supporting guide 17.

The severing mechanism comprises a cam plate in the form of an oval ring 20 which is fixed to the shaft 13 as by set screws 21, said cam plate 20 being frictionally engaged by the free end portion of a lever 22. The lever 22 is fixed between its ends to a bearing 23 journaled on a longitudinal stub shaft 24 fixed to the frame of the inspection machine 10 as by an arm or bracket 25. The bearing 23 is confined against axial movement relative to the shaft 24 by collars 26 and 27 fixed to the shaft 24 on opposite sides of the bearing 23.

The end portion of the lever 22 remote from the cam plate 20 is provided with a longitudinal slot 30 loosely penetrated by the upper end portion of a vertically disposed rod 31. The rod 31 has a collar 32 fixed thereto adjacent its upper end, which collar 32 bears against the undersurface of the lever 22, so that downward movement of the upper or slotted end of lever 22 results in corresponding movement of the rod 31. The other end of the rod 31 is pivotally connected as at 33 to a rocker arm 34 fixed on a longitudinally extending rotatable shaft or rod 35 journaled adjacent opposite sides of the inspection machine 10 in suitable bearings 36 and 37.

The shaft 35 is also journaled in a bearing 38, pref-

erably disposed adjacent the juncture of the rocker arm **34** with the shaft **35**, and connected by a stabilizing rod or brace **40** to the collar **27** on the free end of the stub shaft **24**. The brace **40** serves as a support for the free end of the shaft **24** and also helps stabilize the shaft **35** against lateral movement upon rotation being imparted thereto through the lever **33**, rod **31** and rocker arm **34**.

The rocker arm **34** and rod **31** are normally urged upwardly to elevate the slotted end portion of the pivoted lever **22** by a spring **41** fixed at one end to the housing **10** and at its other end to the rocker arm **34** adjacent the pivot point **33**. Thus, the free end of the lever **22** adjacent the cam **20** is normally urged downwardly about the pivot bearing **23** on the stationary shaft **24**. As most clearly seen in Figure 2, the free end of the lever **22** normally engages a flat surface of the cam plate or oval ring **20**, but upon the hosiery inspection form **11** being rotated ninety degrees in either direction the lever **22** will engage one of the rounded end surfaces of the cam plate or oval ring **20** thereby elevating the free end of lever **22** and depressing the rod **31** and rocker shaft **34** to impart rotation to the rod **35** in a clockwise direction in Figure 2.

The stitch severing device, broadly indicated at **45**, is disposed between the support guide **17** and the free end of the hosiery inspection form **11** and is rigidly connected to the end portion of the shaft **35** adjacent the bearing **37** by a rod or link **46** extending between the severing device **45** and a collar **47** fixed on the rod **35**.

The stitch severing apparatus **45** may comprise any suitable thread cutting device, such as a sharpened blade or clippers, but it has been found preferable to utilize an electrically heated element or heater **50** for severing the chain stitch between adjacent stockings. The advantage of utilizing a heater for effecting the severance of the stitch is that the heat seals the thermoplastic nylon thread thereby preventing the thread from raveling. The heater **50** is mounted on the free end of the link **46** and is connected by electrical conductors **51** to a suitable source of electrical energy, not shown.

The heater **50** is preferably partially surrounded by a guard **51** provided with an insulated lining **52**, the guard **51** and insulation **52** being cut away to define notches **54** on opposite sides of the element **50** through which the stitches are guided to engage the heater **50** upon the stitch severing apparatus **45** being moved into operative position.

In operation, the heater **50** is constantly heated to a temperature sufficient to instantly sever the stitching **8** on contact and upon the inspection form **11** being rotated ninety degrees to impart rotation to the shaft **35** in the manner heretofore described, the link **46** with the severing device **45** connected thereto is pivoted outwardly away from the frame of the machine **10** to the dotted line position shown in Figure 4 to engage and sever the stitching between adjacent stockings.

Upon the hosiery inspection form **11** being rotated the remaining ninety degrees to bring the other side of the stocking into position for inspection, the lever **22** will again engage a flattened surface of the cam plate **20**, at which time the spring **41** will draw the rocker arm **34** upwardly to rotate the rod **35** in a counterclockwise direction and return the stitch severing apparatus **45** to the solid line position in Figure 4.

It will be noted in Figure 2 that the lever **22** is of sufficient length to extend a slight distance beyond the cam plate **20** so that the result will be the same whether the inspection form **11** be rotated in a clockwise or in a counterclockwise direction in Figure 2.

It is thus seen that there is provided a simple but effective mechanically operable actuating mechanism for automatically imparting movement to the stitch severing device of a greige inspection machine, which mechanism may be readily installed with a minimum of effort and without modification of the existing inspection machine.

In the drawings and specification there has been set forth a preferred embodiment of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being defined in the claim.

We claim:

Apparatus for inspecting successive hose stitched together toe to welt in a chain and for severing the stitching between successive hose, said apparatus comprising a frame, a first rotatable shaft, an inspection form fixed to said shaft and having a free end over which successive hose in said chain of hose are drawn for inspection, means for extending the stitching connecting the hose on the inspection form to the next successive hose in a predetermined direction from the free end of the inspection form, an eccentric surface fixed on said first shaft, a lever having a free end extending over and in engagement with the eccentric surface, means pivotally connecting the lever intermediate its ends to the frame, a connecting rod oscillatably connected adjacent one of its ends to the end portion of the lever remote from the eccentric surface, a crank arm pivotally connected to the other end of the connecting rod, a second rotatable shaft journaled on the frame and fixed to the crank arm, a rigid operating rod fixed to the second shaft and extending therefrom to a point adjacent the free end of the inspection form, stitch severing means connected to the end portion of the operating rod remote from the second shaft, said operating rod being pivotal about the second shaft upon rotation of the inspection form to sever the stitching between the hose on the inspection form and the next adjacent hose, and resilient means normally urging the stitch severing means out of stitch severing position.

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