March 3, 1964 M. L. GEHRINGER 3,123,032

SEWING MACHINE ATTACHMENT

Filed April 23, 1963

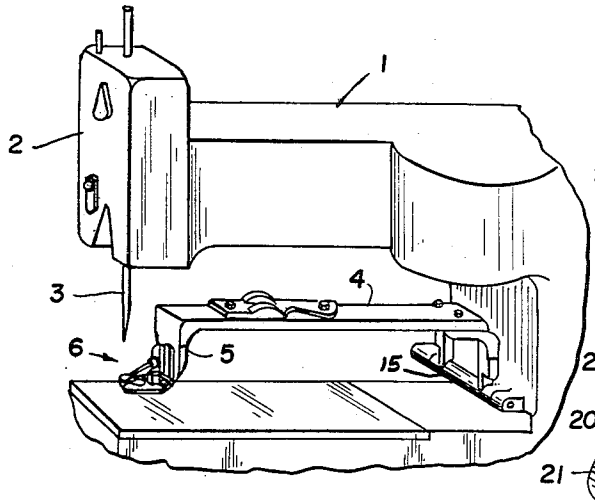


Fig. 1.

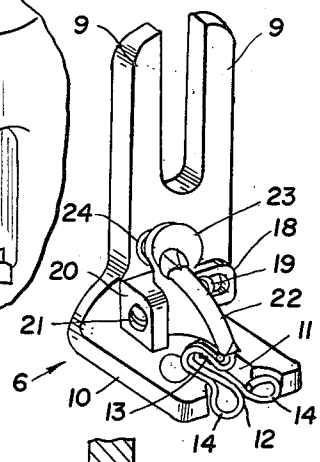


Fig. 6.

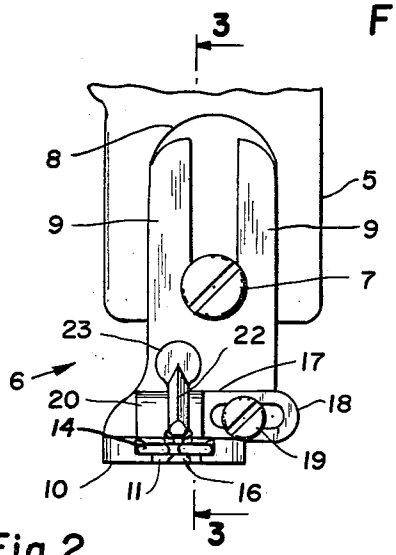


Fig. 2

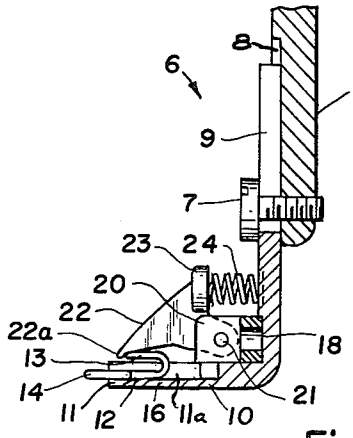


Fig. 3.

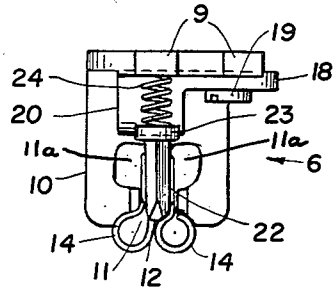


Fig. 4.

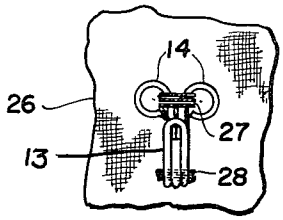


Fig. 5.

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SEWING MACHINE ATTACHMENT

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This invention relates to an attachment for button sewing machines to enable rapid sewing of hooks. This application is a continuation-in-part of my application Ser. No. 157,362, filed Dec. 6, 1961, now U.S. Patent No. 3,109,397.

Hooks and eyes have generally been sewn on garments by hand, which is very tedious and time consuming and which increases cost appreciably.

Another disadvantage of hooks sewn by conventional methods is that hooks, being sewn only through two eyes or immediately adjacent such eyes, pivot upwardly readily and make it extremely difficult to slip the hook through the cooperating eye sewn on a garment. Moreover, hooks, after use, will finally become detached from the garment and lost.

An object of the present invention is to provide a novel attachment for use on a conventional button sewing machine which will automatically sew both eyes and the shank portion of the hook which underlies the hooked end portion so as to overcome the above-mentioned disadvantages, that is, to enable rapid sewing of the hook in a manner so as to firmly hold it against the garment without allowing it to pivot upwardly, therefore greatly facilitating hooking to an eye and preventing detachment from the garment.

A more specific object of the invention is to provide a novel adapter or attachment for a No. 175 Singer sewing machine, which machine is adaptable for use as a 4 hole, button sewing machine, but which, when equipped with my adapter, will sew both eyes of a hook as well as the shank portion underneath the curved end of the hook so as to prevent any tendency to pivot upwardly, and without the necessity of pivotal clamping jaws as described in my above-mentioned earlier filed patent application, therefore greatly simplifying the construction and reducing the cost of the adapter.

Other objects and advantages will become more apparent from a study of the following description taken with the accompanying drawing wherein:

FIG. 1 is a fragmentary, perspective view of a Singer No. 175 sewing machine which is operable to sew two and four hole buttons, which machine is provided with an attachment 6, embodying the present invention, to convert the machine so as to be enabled to sew the eyes of a hook and a shank portion thereof underneath the hooked end, in a single operation;

FIG. 2 is an enlarged, front elevational view of the attachment 6 shown in FIG. 1;

FIG. 3 is a cross-sectional view taken along line 3—3 of FIG. 2;

FIG. 4 is a top or plan view of the attachment 6 shown in FIGS. 2 and 3;

FIG. 5 shows a hook after it has been sewn to a garment 26 by attachment 6; and

FIG. 6 is a perspective view of the attachment 6 shown in FIGS. 1–4.

Referring more particularly to FIG. 1 of the drawing, numeral 1 denotes the arm and numeral 2 the head of a conventional Singer No. 175 sewing machine, which is well known in the trade as being adaptable as a four button sewing machine, and which is described in a manual entitled "Singer 175–61" (Form 19642) (341) Copyright U.S.A. 1940–1941 by the Singer Manufacturing Company. As is well known, the machine is provided with a needle 3 which is pivotally suspended from a horizontal axis extending longitudinally through the arm 1 to enable the machine to sew through two laterally disposed holes of a button.

Such machine is also provided with a shank button clamp 4 (identified as part 175684 in said pamphlet). When the machine is set for four hole flat button operation, needle 3 will pivot about a horizontal axis extending longitudinally through the arm 1 so as to sew through two holes of a button disposed laterally of the longitudinal axis of the machine. Then the shank button clamp 4 is automatically longitudinally moved so that the needle 3 will again pivot about said axis and sew through the two additional, laterally disposed holes of the button relative to the longitudinal axis of the machine and, in this way, effect four hole button sewing to a garment.

In accordance with the present invention, an attachment, generally denoted by numeral 6, is attached to one end of clamp 4 to convert the machine to the new use of sewing hooks in a unique way. More particularly, it enables sewing the eyes and the end of the shank portion underneath the hooked end, both in a single operation. The end result will be the sewing of a hook in the manner shown in FIG. 5, that is, with one set of stitches 27 going through both eyes and another set of stitches 28 sewn around the extreme end of the shank portion adjacent the bend of the hook, so as to prevent the possibility of the hook pivoting upwardly when it is attempted to hook it to a corresponding separate eye on a garment.

The attachment 6, as more clearly shown in FIGS. 2, 3, 4 and 6, is attached by a screw 7 to foot portion 5 of the shank button clamp 4. Since this attachment depends from foot portion 5, it is desirable to lift the opposite end of clamp 4 correspondingly. This is done by adding an extension or adapter 15 of somewhat U-shaped construction to the opposite end of clamp 4. The bottom end of adapter 15 has holes which are attached by pins to corresponding holes in the conventional four hole button bracket of the machine (part 175073). As is well known, longitudinal sliding movement of such four hole button bracket longitudinally moves clamp 4, after two holes of a four hole button are sewn, to enable sewing through the additional two holes.

Turning again to the attachment 6, such attachment has vertical arm portions 9 which are vertically slidable in a groove 8 in the foot portion 5 so as to adjust the position of the attachment vertically and then tighten the screw 7. The attachment is provided with a base 10 having a cut-out portion 11 so shaped as to provide a seat for snugly receiving and holding the eyes or loops 14 of a hook. As shown more clearly in FIG. 2, small ledge portions are formed in the front of the cut-out 11 for snugly receiving and supporting the eyes 14 of the hook. Centrally of cut-out 11 there extends a tongue 16 which is integral with base 10 which underlies and directly supports shank 12 of the hook. Cut-out 11 also includes two enlarged openings 11*a* disposed on opposite sides of the hooked portion of the hook to enable the needle to extend through such openings 11*a* to sew stitches 28 (see FIG. 5) about the end portion of the shank 12 where it begins to curve to form the hooked portion 13.

An important feature of the attachment 6 is the provision of a downwardly curved slip-finger 22 which is pivotally mounted on a pin 21 which may be screw threaded or otherwise secured to a bearing 20. At the top portion of slip-finger 22 there is a well portion 23 for receiving one end of a helical spring 24, the other end of the spring bearing against the vertical portion of the attachment. The lower end of slip-finger 22 is provided with a small nose 22*a* projecting downwardly over the end of the hook a distance about the thickness of the hook so as to guide the thread as it is sewing the shank portion of the hook, that is, as the needle alternately ex-

tends through holes 11*a*, so as to go underneath the hooked end 13 and thus sew the shank portion by means of stitches 28, as shown in FIG. 5. Spring 24 yieldingly holds slip-finger 22 firmly against the end of the hook so as to securely hold the hook in place and prevent slipping out of position as might occur from vibration of the machine.

In operation, after the machine is set for four hole flat button operation and the hook is slipped into place underneath slip-finger 22 in the manner shown, the needle will sew stitches 27 through the opening or loops of the eyes, as shown in FIG. 5, and then when the shank button clamp 4 automatically advances longitudinally, the needle will continue pivoting about the horizontal axis extending through arm 1, and sew first into opening 11*a* on one side, and then through opening 11*a* on the opposite side of the shank portion 12 and each time as it transfers over, the thread will slip and be guided angularly downwardly by slip-finger 22 and by nose 22*a* so as to slip underneath the hooked end 13 and thus sew stitches 28 about the extreme end of the shank adjacent the bend of the hook, as shown in FIG. 5.

Adjusting means are provided on the attachment 6 to enable use for different sizes of hooks. Shims can be placed between arms 9 and foot portions 5 to adjust slip-finger 22 so as to be more distant from portion 5. Lateral adjustment is also provided by having a slot in part 18 through which a machine screw 19 extends which may be loosened to allow bearing 20 to slide in the direction of the slot and then tightened in the adjusted position.

Thus it will be seen that I have provided an efficient, relatively simple and inexpensive attachment for enabling a Singer 175 sewing machine, or similar sewing machine adaptable as a four hole button machine, to sew hooks instead, in a single operation in a manner so that the hook is securely sewn to the garment by stitches on the shank portion underneath the hooked end so as to prevent upward pivoting of the hook when hooking onto an eye on another part of the garment; furthermore I have provided a hook sewing attachment which is readily adjustable for different sizes of hooks and which requires use of only one hand of the operator for the entire sewing operation, as distinguished from two hands in formerly used devices.

While I have illustrated and described a single specific

embodiment of my invention, it will be understood that this is by way of illustration only, and that various changes and modifications may be made within the contemplation of my invention and within the scope of the following claims.

I claim:

1. In combination with a four button sewing machine including a shank button clamp which is longitudinally movable to two different positions and including means for sewing in two different positions laterally of said clamp for four hole button sewing operation, an attachment secured to one end of said clamp and having a base portion which is cut-out to form a seat for snugly receiving the eyes of a hook with the hooked end portion innermost and extending upwardly, said base portion having an integral tongue centrally of supporting the longitudinal shank portion of the hook and having needle receiving openings on both sides of said tongue and of the hooked portion of said hook, said attachment having an integral flange extending vertically upwardly from and at right angles to said base portion which is detachably connected to said clamp, a slip-stitch-finger pivotally mounted for vertical movement on said attachment and overlying the hooked end portion of the hook only, a spring having one end engaging said vertically upwardly extending flange and the other end engaging said finger for normally and yieldingly urging a nose shaped end portion of said finger onto the hooked end portion of said hook so as to yieldingly hold the hook in place on said base portion, whereby the needle is adapted to project alternately through said openings and in so doing cause the thread to slip over said finger and nose portion and underneath the hooked portion so as to sew the end part of the shank portion underlying said hooked portion onto the cloth and thereby prevent upward pivoting of the hooked portion from the cloth onto which it is sewn.

2. A combination recited in claim 1 together with means for selectively adjusting the position of said slip-stitch-finger relative to said base portion so as to accommodate different sizes of hooks.

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