June 14, 1949. F. BERUBE 2,473,132

SNAP FASTENER ATTACHMENT FOR BUTTON SEWING MACHINES

Filed June 28, 1947

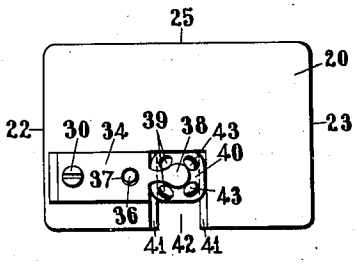

Fig. 1

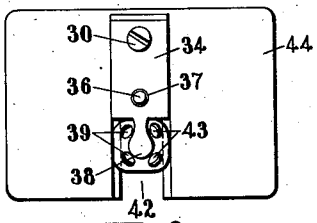

Fig. 3

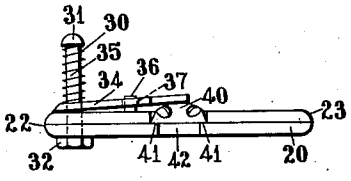

Fig. 2

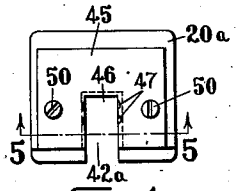

Fig. 4

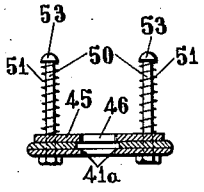

Fig. 5

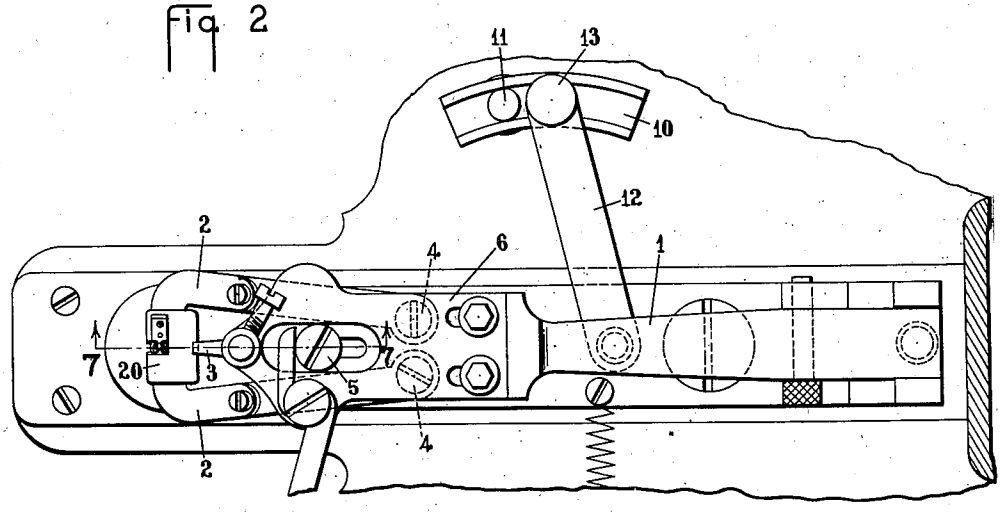

Fig. 6

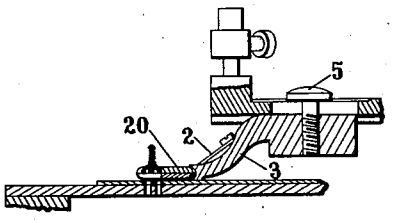

Fig. 7

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Patented June 14, 1949 2,473,132

UNITED STATES PATENT OFFICE

2,473,132

SNAP FASTENER ATTACHMENT FOR BUTTON SEWING MACHINES

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Application June 28, 1947, Serial No. 757,873

5 Claims. (Cl. 112—114)

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This invention relates to mechanism for holding snap fasteners in relation to sewing mechanisms so that such mechanisms may be employed to attach the fasteners to work. Sewing machines suitable for this class of service may be the same as for attaching four-hole buttons, but heretofore to convert a button sewing machine to a snap fastener setting machine, it has been necessary to remove the button holding mechanism and to substitute a special snap holder mechanism therefor.

One object of the present invention is to avoid the necessity of changing the article-holding mechanism when converting between the button sewing and snap fastener sewing is desired. This is accomplished in accordance with this invention by employing a snap fastener holding mechanism of such a type that it can be held in place of a button by the button holding mechanism of a button sewing machine and present the holes in the snap fastener correctly related to the sewing mechanisms so that the snap fastener held by the holding mechanism will be secured in place of a button.

A further object is to so form the snap fastener holding mechanism that it may be firmly gripped by the button holding mechanism of a button sewing machine, so that the snap fastener may be inserted for sewing and removed with the work after sewing without loosening or detaching the snap fastener holding mechanism from the button holding mechanism.

Further objects and advantages will appear from the following description taken in connection with the accompanying drawings in which

Figure 1 is a top plan view of a snap fastener holding mechanism embodying the invention.

Figure 2 is a front elevation of the same.

Figures 3 and 4 are views similar to Figure 1, but showing modifications, the modification of Figure 4 being shown to a smaller scale.

Figure 5 is a sectional view on line 5—5 of Figure 4.

Figure 6 is a top plan view of a button clamp and related parts of a button sewing machine in connection with which any of the constructions of Figures 1 to 5 may be employed.

Figure 7 is a detail sectional view on line 7—7 of Figure 6.

Referring to Figures 6 and 7, the usual button sewing machine is provided with a button-holding clamp 1 having at its forward end a pair of laterally spaced side jaws 2 and between them a rear jaw 3. The free ends of these jaws are all arranged in a common plane and are intended to

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receive between them a four-hole button to be sewed to the work. In order to provide for different sizes of buttons, the side jaws 2 are pivoted to a base 6 as on the pivots 4 and the rear jaw 3 is adjustably secured by a screw and slot at 5. Commonly, also, arrangements are made by which when the side jaws 2 are adjusted to accommodate the particular size of the button, the rear jaw 3 is also correspondingly adjusted. The button sewing machine is so arranged that the needle, or sometimes a pair of needles, which place these stitches through the holes in the button, pass through each of a pair of holes alternately and for this purpose it is common practice to move the button clamp between successive needle passes to present one and then the other hole of a pair in the button in line with the needle. Sometimes this jogging of the button clamp is accomplished by lengthwise motion of the button clamp and sometimes by a crosswise motion of this clamp.

When a single needle is employed for stitching through the four holes in the button, in addition to this motion of the button clamp to present each of a pair of holes in the button between successive passes of the needle, there is a further motion at right angles to this, after the stitches have been placed in one pair of holes, to present the other pair of holes in succession into the needle path.

As shown in Figure 6, lateral motion of the needle clamp may be provided by the rocking of a curved arm 10 about the axis of a rock shaft 11, this arm 10 being connected through a link 12 with the button clamp by a connection 13 which is adjustable toward and from the pivot 11 to provide for regulating the lateral throw of the button clamp. This button clamp may also be given a forward and backward motion when this is necessary by suitable mechanism not necessary to show here. The desired motions of the button clamp to present the holes in the button successively into the needle path, or paths when two needles are employed, are thus provided so that stitching is placed through each of the pair of holes in the button.

In accordance with this invention this button clamp is retained on the button sewing machine during the attachment of the snap fastener, means being provided by which the snap fastener is held between the jaws of the button clamp with its four stitching holes in the same relation to the clamp as the holes in a button held thereby.

Three forms of holder for the snap fastener are shown in Figures 1 to 5. In Figures 1 and 2 this mechanism comprises a base plate 20 having opposite side edges 22 and 23 so spaced as to be

gripped between the side jaws 2 of the button clamp as shown in Figure 6 in place of a button. This plate also has a back edge face 25 which is engaged with the rear jaw 3 of the button clamp as shown in Figures 6 and 7. Many of these button clamps have means for limiting the extent of opening of the jaws to positions only slightly larger than the buttons which are being sewed at any particular time and with the button clamp so equipped, this limit of opening may be adjusted so that the jaws firmly clamp the plate 20. This plate 20 is provided with a post 30 upstanding therefrom and having a head 31 at its upper end. It may be threaded into or through the base plate 20 and it may be secured in position as by a lock nut 32 on its lower end. This post 30 passes loosely through a clamp plate 34 and engaged and reacting between the upper face of the clamp plate and the head 31 is a coil spring 35 surrounding the post.

A second post 36 may be secured in the base plate 20 and extend loosely through a guide opening 37 through the clamp plate, the two posts 30 and 36 holding the clamp plate in proper position while permitting a desirable yielding up and down motion of the clamp plate. This clamp plate as shown best in Figure 1, has an extended neck portion 38 which projects over between the stitch-receiving holes 39 of the snap fastener 40 and engages it at its upper face substantially centrally. This clamping plate holds the snap fastener down against a pair of opposed ledges 41 at opposite sides of a central slot 42 cut inwardly from the front edge of the base plate 20 at such a distance that when the snap fastener 40 is moved to its extreme backward motion within the slot 42, and the base plate is positioned between the jaws of the button clamp, the stitch-receiving holes of the snap fastener, which includes the holes 39 and 43, are in the same position as holes equally spaced in a button held in position between the jaws of the button clamp. With the arrangement shown, sets of stitches may be placed by the sewing instrumentalities of the button sewing machine between the holes 39 and 43 on either side of the neck 38, thus securing the snap fastener to the work. After being thus secured, it is an easy matter to pull the fastener out from the clamp by exerting a pull on the work to which it has been secured. This arrangement, as shown in Figures 1 and 2, is adapted for a button machine of a type wherein the relative jogging of the button clamp and needle to present each of the holes of the pairs of holes in the button into the needle path is laterally of the button clamp.

In some machines this direction of jogging motion is longitudinally of the button clamp, and in such a situation a snap fastener holding mechanism such as is shown in Figures 1 and 2 may not be used because the neck 38 of the clamp plate would interfere with proper placing of the stitching. The arrangement shown in Figure 3 is suitable for such machines, the clamp plate 34 then being arranged to extend over and engage the snap fastener from the rear of the supporting plate 44. This permits the holes 39 to be employed for one set of stitches and the holes 43 to be employed for the other set. Otherwise the arrangement of Figure 3 is identical with that shown in Figures 1 and 2, the clamping plate being held in clamping position by a spring 35 such as shown in Figure 2, and employing the two posts 30 and 36.

In Figures 4 and 5 a further modification is

shown in which the fastener clamping device is suitable for use whether the jogging motion for the sets of stitches is laterally or longitudinally of the button clamp. This employs a base plate 20*a* with its slot 42*a* and its supporting ledges 41*a* for the fastener, but a different form of clamping plate plate is employed. This clamping plate 45 is somewhat smaller in outline than the base plate 50*a* and is provided with a slot 46 extending inwardly from its forward edge, this slot being slightly narrower than the wider portion of the slot in the base plate 20*a* above the ledges 41*a*. If desired, the slot 46 may be further cut away, as at 47, opposite to the holes of the fastener in order to provide additional clearance for the passage of the needle or needles by which the fastener is to be sewed to the work. On each side of the slot 46, and preferably slightly to the rear of the center of the snap fastener inserted between the clamping plate and the base plate, are posts 50, each of which may be identical in construction with the post 30, the two together forming guides for the clamp plate 45, passing loosely through holes in this clamp plate. Springs 51 surround these posts 50, and bear between the under faces of their heads 53 and the clamp plate, pressing the clamp plate toward the base plate in order to clamp a fastener in position therebetween. Since this type of clamp plate has no extension which passes between stitch-receiving holes of the fastener, it can be employed with button clamps where the jogging motion is either longitudinal or lateral with relation to the button clamp.

From the foregoing description it will be seen that in accordance with this invention a special holder for the snap fastener is employed which may be placed between the jaws of the usual button clamp in place of a button and which will present the holes in the snap fastener inserted therein into proper relation to the sewing needle or needles so that during the operation of the machine the snap fastener will be sewed to the work.

It should also be evident that various further changes and modifications might be made without departing from the spirit or scope of this invention.

I claim:

1. A device of the class described, comprising a base plate having opposed side edges adapted to be engaged by the side jaws of the button clamp of a button sewing machine and a rear side edge adapted to be engaged with the rear jaw of said clamp, said plate being notched inwardly from its forward edge and having spaced shoulders to receive thereon marginal portions of a snap fastener inserted into said notch and with its stitch-receiving holes in position corresponding to the holes of a four-hole button held in said button clamp, a clamp plate having a portion engageable with the top face of the snap fastener, a pair of spaced posts extending upwardly from said base plate and loosely through said clamp plate, at least one of said posts being headed at its upper end, and a coil spring surrounding said headed post and reacting between said head and said clamp plate to yieldingly hold said clamp plate pressed toward said base plate.

2. A device of the class described, comprising a base plate having opposed side edges adapted to be engaged by the side jaws of the button clamp of a button sewing machine and a rear side edge adapted to be engaged with the rear jaw of said clamp, said plate being notched inwardly from

its forward edge and having spaced shoulders to receive thereon marginal portions of a snap fastener inserted into said notch and with its stitch-receiving holes in position corresponding to the holes of a four-hole button held in said button clamp, a clamp plate having a notch above said base plate, the edges of said clamp plate at said notch overlying opposite margins of a snap fastener inserted in the notch of said base plate but clear of the stitch-receiving holes thereof, and spring means for yieldingly pressing said clamp plate toward said base plate.

3. A device of the class described, comprising a base plate having opposed side edges adapted to be engaged by the side jaws of the button clamp of a button sewing machine and a rear side edge adapted to be engaged with the rear jaw of said clamp, said plate being notched inwardly from its forward edge and having spaced shoulders to receive thereon marginal portions of a snap fastener inserted into said notch and with its stitch-receiving holes in position corresponding to the holes of a four-hole button held in said button clamp, a clamp plate having a notch above said base plate, the edges of said clamp plate at said notch overlying opposite margins of a snap fastener inserted in the notch of said base plate but clear of the stitch-receiving holes thereof, a headed post extending upwardly from said base plate on each side of its notch and loosely through said clamp plate, and a coil spring surrounding each of said posts and reacting between its head and said clamp plate for yieldingly pressing said clamp plate toward said base plate.

4. A device of the class described, comprising a base plate notched inwardly from one edge and having spaced shoulders to receive thereon marginal portions of a snap fastener inserted into said notch, a notched clamp plate above said base plate and having edge portions at the sides of said notch engageable with the top face of said fastener above said shoulders, and spring means pressing said clamp plate against said fastener to yieldingly retain said snap fastener in position.

5. A device of the class described, comprising a base plate notched inwardly from one edge and having spaced shoulders to receive thereon marginal portions of a snap fastener inserted into said notch, a notched clamp plate having edge portions at the sides of said notch engageable with the top face of said fastener above said shoulders, headed posts extending upwardly from said base plate at opposite sides of said notch, said clamp plate having perforations through which said posts loosely pass, and coil springs reacting between the heads of said posts and said clamp plate to press said clamp plate against the fastener to yieldingly retain said snap fastener in position.

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