Jan. 12, 1965 L. CASTELLETTI 3,165,080

HAND OPERATED BUTTON SEWER

Filed July 19, 1963 3 Sheets-Sheet 1

Fig. 1

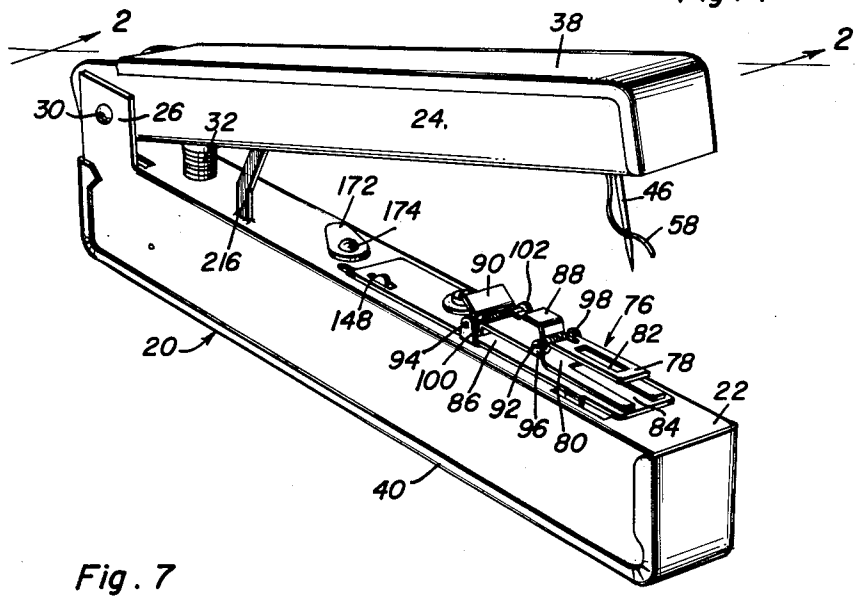


Fig. 7

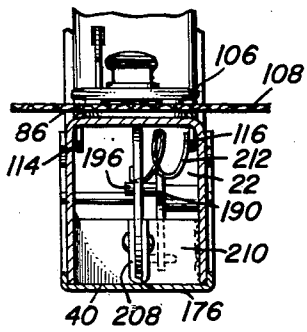


Fig. 8

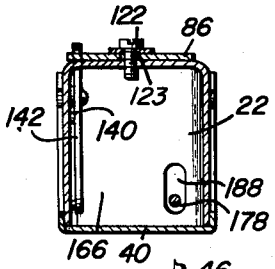


Fig. 9

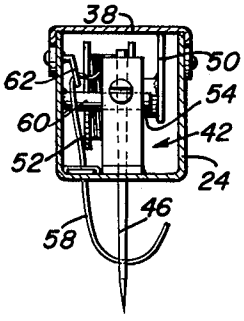
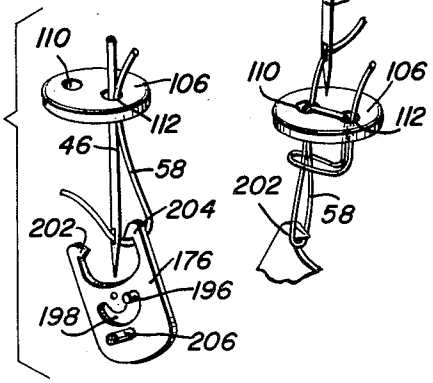


Fig. 12



Lewis Castelletti

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

Jan. 12, 1965 L. CASTELLETTI 3,165,080

HAND OPERATED BUTTON SEWER

Filed July 19, 1963 3 Sheets-Sheet 2

Fig. 2

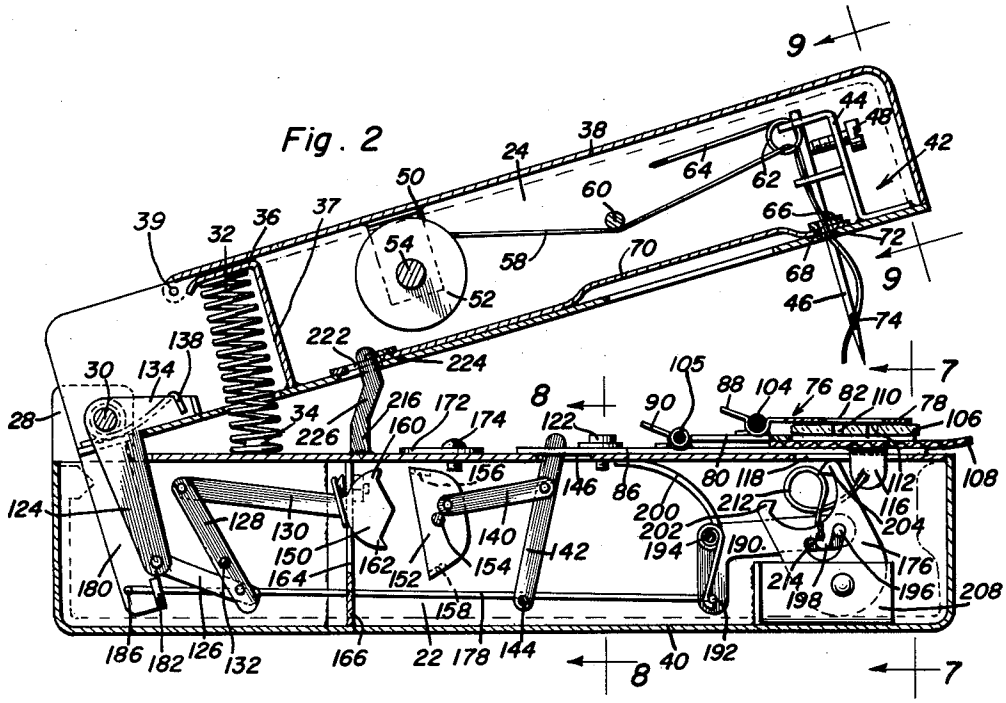
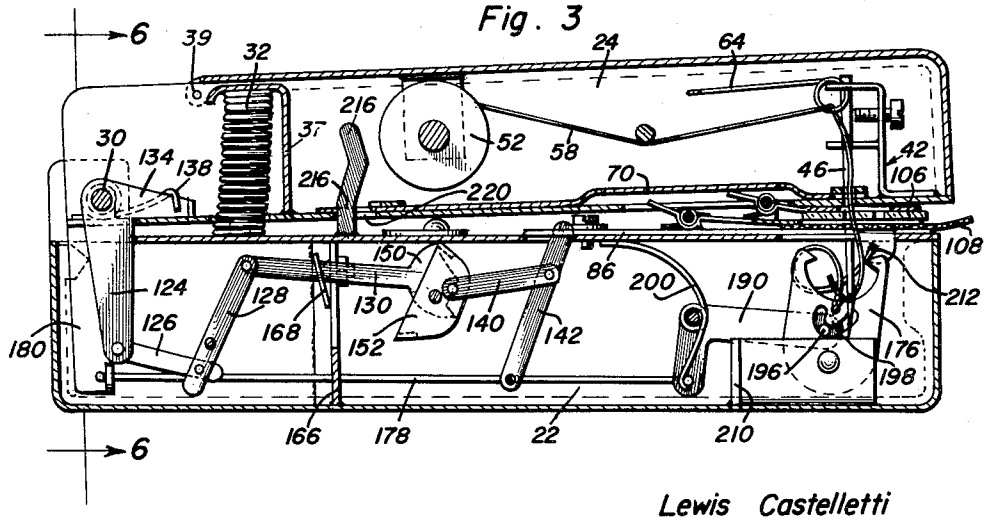


Fig. 3



Lewis Castelletti

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

Jan. 12, 1965 L. CASTELLETTI 3,165,080

HAND OPERATED BUTTON SEWER

Filed July 19, 1963 3 Sheets-Sheet 3

Fig. 4

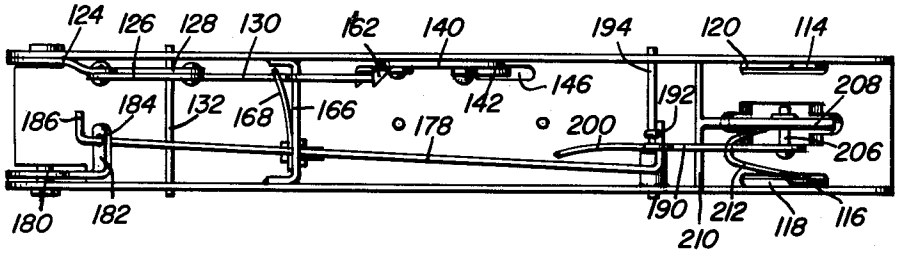


Fig. 5

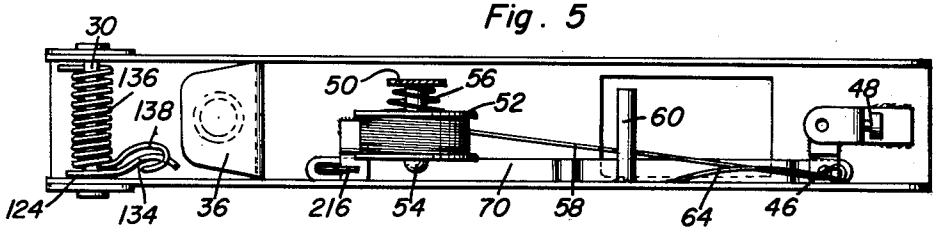


Fig. 10

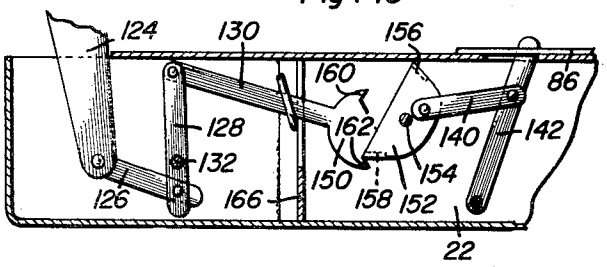


Fig. 11

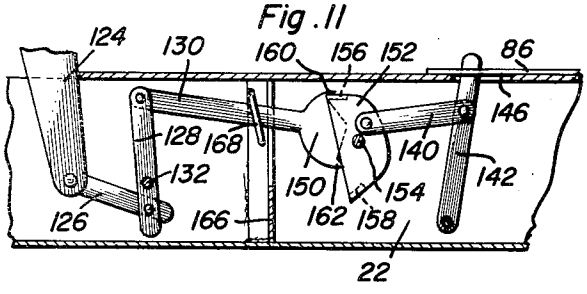
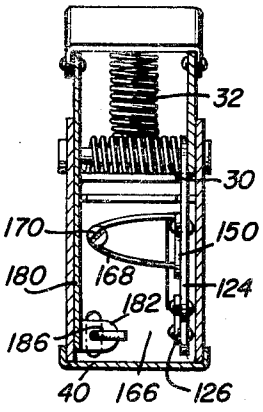


Fig. 6



Lewis Castelletti

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

United States Patent Office 3,165,080 Patented Jan. 12, 1965

3,165,080

HAND OPERATED BUTTON SEWER

Lewis Castelletti, Buckeystown, Md.
(Rte. 1, Mount Airy, Md.)

Filed July 19, 1963, Ser. No. 296,232
12 Claims. (Cl. 112—112)

This invention primarily relates to a portable hand-operated sewing machine which is specifically adapted for sewing buttons.

It is the primary object of this invention to provide a hand-operated button sewing device which is comparatively small and compact, which fits in the pocket of the user, and is so constructed that it can be used by unskilled persons.

It is a further object of this invention to provide a hand-operated button sewing device including a manual operating means pivotally mounted for vertical swinging reciprocal movement and carrying a needle. A button and fabric holddown means is provided for use in conjunction with said needle operating means which is reciprocably shiftable during the vertical downward movement of said needle and operating means whereby a button held in said holddown means and having a pair of spaced apertures may be alternately positioned for the reception of said needle through said button apertures whereby said button may be quickly and efficiently sewn to a fabric.

Yet another object of this invention specifically resides in the novel mechanism used to interconnect the movement of the manual operating means and the button and fabric holddown means for shifting said holddown means upon each downward swinging stroke of said operating means.

Another specific object of this invention resides in the provision of a novel thread looping and tying means positioned beneath the holddown means and operable in conjunction therewith for attaching and looping the thread used to sew the button to a suitable fabric after the needle has positioned it. More particularly, said thread looping and tying means includes a pivotable member having a pair of oppositely facing hooks, said hooks alternatively looping said thread upon each successive upward movement of the operating and needle means and dropping said loop upon the downward movement of said needle whereby said needle may be received therethrough to tie said thread about the button and fabric.

Another object of this invention resides in the provision of a second novel mechanism for rendering said thread looping and tying means operative in the foregoing manner in response to movement of said operating and needle means.

A still further object of this invention is to provide a portable hand-operated button sewer of the character indicated which will be highly efficient in operation, and relatively inexpensive to manufacture and produce.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of the sewing device comprising the subject matter of the instant invention.

FIGURE 2 is a vertical, longitudinal sectional view taken substantially along the plane indicated by the line 2—2 of FIGURE 1 and illustrating the device in one position of operation.

FIGURE 3 is a view similar to FIGURE 2 but illustrating the position of the parts during a subsequent step in the operation of the device.

FIGURE 4 is a bottom plan view of the device with its outer cover removed.

FIGURE 5 is a top plan view of the device with its outer cover removed.

FIGURE 6 is a vertical, transverse cross sectional view taken substantially along the plane indicated by the line 6—6 of FIGURE 3.

FIGURE 7 is a fragmentary vertical, transverse sectional view taken substantially along the plane indicated by the line 7—7 of FIGURE 2.

FIGURE 8 is a fragmentary vertical, transverse sectional view taken substantially along the plane indicated by the line 8—8 of FIGURE 2.

FIGURE 9 is a vertical, transverse sectional view taken substantially along the plane indicated by the line 9—9 of FIGURE 2.

FIGURE 10 is a fragmentary vertical sectional view taken longitudinally through the base portion of the device and illustrates the mechanism for shifting the button held in the button and fabric holddown means in one position of operation.

FIGURE 11 is a view similar to FIGURE 10 but illustrates the mechanism in another position of operation precedent to shifting the button in a direction opposite to that shown in FIGURE 10.

FIGURE 12 is a perspective schematic view of the needle and thread used in the instant device entering a pair of apertures in a button and said thread being looped and tied by the novel loop and tying means used in the present invention.

Referring to the drawings in detail, the hand-operated button sewer is generally designated by the numeral **20**. The button sewer **20** comprises a base **22** and a manual operating means **24** hinged to a pair of upstanding ears **26** and **28** by means of a hinge pin **30** at the rear of the base **22**. As shown in the drawings, the operating means **24** and the base **22** are hollow to receive a plurality of components of the device. Further, a coil spring **32** received between an upstanding lug or projection **34** on the base **22** and a laterally projecting arm **36** of a partition member **37** within the operating means **24** normally biases the operating means **24** away from the base **22** and allows for vertical swinging and oscillatory movement of the operating means **24** with respect to the base **22**. The operating means **24** has a pivotable top cover **38** hinged to the side walls thereof as by pivots **39**. Similarly, the base **22** has a bottom cover **40** which is adapted to be slid upwardly along the side walls of the base and may be readily removed. By the uncovering of said two cover portions, access to the interior of the operating means and the base may be gained.

A needle holding assembly, see FIGURES 2, 3 and 9, generally designated by the numeral **42** is positioned at the forward end of the manual operating means **24**. Said assembly comprises a substantially U-shaped bracket portion **44** the arms of which include aligned apertures for the reception of a needle **46**. The needle **46** extends through an aperture in the bottom portion of the manual operating means. A clamping screw **48** completes the assembly and clamps the needle to the bracket **44**. Depending from the cover portion **38** of the manual operating means **24** is a lug **50** which carries a thread supply **52** on a spindle **54**. The spindle also carries a coil spring **56** between the lug **50** and the thread supply **52** for normally biasing the thread supply up against the opposite side wall of the manual operating means **24**. The thread **58** from the thread supply means **52** passes beneath a tensioning pin **60** and through a loop **62** of a wire spring **64** and then through a stationary plate **66** having an aperture **68** and a shiftable slack take-up lever **70** having an aperture **72** for the passage of the thread and finally through the eye **74** of the needle **46**. Pin **60** and loop **62** of the spring **64** maintain suitable tension on the thread **58** when it is pulled through the eye **74** of the needle **46**. The

slack take-up lever 70 and its operation will be described below.

Disposed on the base 22 for reciprocably shiftable, axial movement along the base is a button and fabric holddown means generally designated by the numeral 76. Said means comprises a pair of superimposed clamping portions 78 and 80. The top clamping portion has a rectangular aperture 82 formed therein for the reception of the needle 46 therethrough while the bottom clamping portion 80 has a U-shaped aperture 84 formed therein for the same purpose. A base portion 86 completes the button and fabric holddown means. Said base portion 86 also has a rectangular aperture therein for the passage of the needle 46. As shown at FIGURES 2 and 3, each of the clamping portions 78, 80 has a tab 88 and 90 formed at the rear thereof by bending each of said portions. Disposed within each of said bent portions is a hinge pin 92 and 94 which are respectively connected to a pair of ears 96, 98 and 100, 102 bent up from the portions 80 and 86 respectively. Coil springs 104 and 105 surrounding the hinge pins 92 and 94 bias each of the clamping portions 78, 80 to a closed position overlying the preceding plate. As shown at FIGURES 2 and 3, a button such as 106 is adapted to be positioned and held between the portions 78 and 80 and a fabric 108 is held between the portion 80 and base cradle member 86, by the force of the coil springs 104, 105 biasing said portions toward said button and fabric. The buttons and fabric are positioned beneath the respective clamping portions by merely depressing the tabs 88 and 90, positioning the button and fabric and allowing the coil springs 104, 105 to bias said clamping portions by releasing the tabs.

The base plate 86 is adapted to axially slide with reciprocal linear motion upon the base 22 for alternately positioning one of the apertures 110, 112 in the button 106 beneath the needle 46. In order to effect and guide the foregoing movement, a pair of tabs 114, 116 depend from the forward portion of the member 86 and are slidably positioned within a pair of slots 118, 120 formed in the base 22. The base member 86 is normally retained in position upon the base 22 by means of a threaded fastener such as 122 threadedly received within the base 22. An elongated slot 123 in the member 86 allows for the requisite movement of the base member 86 relative to the base 22 and fastener 122.

Referring now specifically to FIGURES 2, 3, 10 and 11, it will be seen that in order to effect the shifting movement of the button and fabric holddown means 76, a first linkage means comprising links 124 and 126, 128 and 130 are provided which are pivoted together in the manner shown. The link 124 is also pivoted and carried by the hinge 30, as well as the link 128 being pivoted about a stationary pin 132 received through the side walls of the base 22. The link 124 has a laterally extending arm 134 adapted to lie flat against the bottom wall of the manual operating means 24. A coil spring 136 wound about the hinge 30 has one end draped over the arm 134 as shown at 138. When the operating means 24 is moved toward the base 22, the end of the spring 138 will keep the arm 134 clamped to the bottom wall of the operating means 24 and cause it to pivot about the hinge 30. This will in turn move the link 124 rearwardly which will pull the link 126 and cause the link 128 to pivot about the pin 132, thereby pushing the link 130 forwardly.

A second linkage means comprising a link 140 and a link 142 is adapted to move the member 86. The link 140 is pivoted to the link 142 and the link 142 in turn is pivoted about a pin 144 carried by a side wall of the base 22. The link 142 extends through a slot 146 in the base 22 as well as a slot 148 in the plate or member 86. Upon movement of the link 142 about the pivot pin 144, the link will contact the ends of the slot 148 and depending upon its direction of movement will move the plate 86 accordingly.

Cam shifting means are provided for forming a connection between said first and second linkage means for reciprocably driving said second linkage means from said first linkage means upon successive downward strokes of said operating means. The cam shifting means accordingly comprises a double toothed cam 150 placed at the end of the link 130. A cam follower 152 pivoted about a pin 154 attached to the side wall of the base 22 is pivotally connected to the link 140 of the second linkage means. The cam follower 152 comprises a pair of laterally extending projections 156 and 158 which are adapted to be contacted by the teeth 160 and 162 on the cam 150. The cam 150 is adapted to slide through elongated slot 164 formed in a partition member 166 spanning the height of the base 22. AU-shaped spring 168 connected to the partition 166 by means of a threaded fastener 170 is adapted to resiliently support the link 130 and cam 150. Referring specifically to FIGURES 2 and 11, it will be seen that upon downward movement of the operating means 24, the tooth 160 of the cam 150 will contact a lateral projection 156 on the cam follower 152 upon the link 130 being pushed forwardly due to the action of the link 124. This will cause the cam 150 to push the cam follower 152 to the position as shown in FIGURE 3 and to move the link 142 forwardly thereby pushing the plate or base member 86 forwardly to shift the button and allow the needle 46 to enter the aperture 110 in the button simultaneously. Upon the upward vertical stroke of the operating means 24, the link 130 is retracted once again to the position shown in FIGURE 2. However, the cam follower 152 and the link 142 will remain in the position shown in FIGURE 3. Upon the next downwardly reciprocal stroke of the operating means 24, the link 130 will again be pushed forwardly thereby pushing the cam 150 forwardly also. With specific reference to FIGURE 10, it will be seen that due to the position of the cam follower 152, the tooth 162 on the cam 150 will first make contact with the projection 158 on said follower. This once again will cause pivotal movement of the cam follower, but in this instance it will be in a counterclockwise direction as viewed in FIGURE 10 thereby pulling the link 142 to the left as viewed in said figure. This accordingly will shift the plate or base member 86 to the left thereby bringing the aperture 112 of the button beneath the needle 46 for its reception. In this manner, upon reciprocal strokes of the operating means 24, a button 106 is adapted to be shifted axially for the reception of the needle 46 in alternate succession through the holes 110, 112 therein.

A rotatable cam 172 is mounted by means of a suitable fastener, such as 174, in back of the base member or plate 86. When properly positioned, the cam 172 is adapted to limit the backward movement of the button and fabric holddown means 76. In this manner, buttons of different sizes comprising different spaces between their apertures 110, 112, can be sewn by the device. That is, upon downward swinging movement of the operating means 24, the base plate 86 will begin its backward travel, assuming that it was in forward position, until it abuts the edge of the cam 172. This may occur prior to the full downward movement of the operating means 24, but the coil spring 136 is adapted to absorb the excess movement of the operating means. If the cam is rotated to a position 180° relative to that shown in FIGURES 2 and 3, the base plate 86 will be unable to move rearwardly. In this position, a button comprising only one aperture may be sewn to the fabric 108.

A thread looping and tying member 176 is adapted to loop the thread 58 after it passes through one of the apertures 110, 112 and holds said loop until the subsequent downward stroke of the needle 46. During said subsequent stroke, a member 176 will position the loop in such a manner as to receive needle 46 therethrough and upon the upward stroke of the needle 46, the thread will once again be looped by the member 176 and held for the next reciprocal stroke of the needle. The preceding loops which are dropped, are adapted to be drawn taut up

against the other side of the fabric 108, to hold the button sewn thereto. This is accomplished in accordance with the shifting of the button to present its apertures alternately to the needle 46 so that the thread is substantially sewn around the button.

In order to accomplish the functions outlined in the preceding paragraph, a second mechanism is employed for actuation of the member 176. This mechanism comprises a lost motion connection between one end of an axially extending rod 178 and a link 180 mounted on the pin 30 and integrally connected to a side wall of the operating means 24 by any suitable means such as welding or the like so that it will move rearwardly upon the downward stroke of the operating means 24. The link 180 includes a laterally extending projection 182 which has an aperture 184 therein slidably receiving the rod 178. The end of the rod 178 is bent laterally as shown at 186 so that it cannot be disengaged from the projection 182.

The rod 178 passes through an elongated aperture 188 in the partition member 166 and is connected at its end remote from the link 180 to an L-shaped lever 190. This is accomplished by bending the rod 178 as shown at 192 and passing it through an aperture in the lever 190. The lever 190 is pivoted upon a pin 194 secured to the opposite side walls of the base 22. At its forward end, the lever 190 carries a laterally extending pin 196 which is adapted to ride within a substantially V-shaped slot 198 centrally located in the thread looping and tying member 176. A return spring 200 having one end abutting the top wall of the base 22 is coiled around the pin 194 and has its other end terminating in abutment with the rear side of the lateral projection 192 at the forward end of the rod 178. This spring normally biases the rod 178 towards the front end of the base 22 and at the same time biases the lever 190 for rotation in a counterclockwise direction as viewed in FIGURES 2 and 3. Due to this bias by the lever 190, the pin 196 is adapted to be positioned in either end of the V-shaped slot 198 in order to bias the member 176 into one of two loop engaging positions. Upon downward movement of the operating means 24, the lug 182 on the link 180 will contact the lateral projection 186 on the end of the rod 178 and pull it rearwardly. This will cause the lever 190 to rotate in a clockwise direction as viewed in FIGURES 2 and 3 and position the pin 196 at the midpoint of the V-shaped slot 198. This defines a neutral position wherein said thread looping and typing member 176 is in non-engaging position with a loop.

The member 176 comprises a pair of oppositely facing hook portions 202 and 204. When the operating means 24 and the needle 46 are moving upwardly, one of said hooks will engage the thread 58 and form it into a loop and hold it until the subsequent downstroke of the needle 46 and operating means 24 occurs. The hook which will engage the thread depends on whether the base plate or member 86 is in its forward or rearward position. As shown in the drawings, the member 176 is pivotally carried by a pin 206 journalled in the upstanding walls of a U-shaped bracket 208 rigidly secured to a partition member 210 spanning the sidewalls of the base 22. A wire spring 212 secured at one end to the member 176 extends through an aperture 214 adjacent the V-shaped notch 198 in the member 176 and is secured at its opposite end to the depending projection 116 on the base plate 86 for determining the bias on the member 176 and into which end of the V-shaped slot 198 the pin 196 carried by the lever 190 is adapted to be positioned. If the base plate 86 is in its forwardmost position after the downstroke of the operating means 24, which means that the needle 46 has entered the rearmost aperture 110 in the button 106, the spring 212 will bias the member 176 toward the forward or front end of the base 22, as shown more clearly in FIGURE 3. Upon the upstroke of the operating means 24, the rod 178 will be released by the lug 182 and the spring 200 will tend to rotate it in a counterclockwise direction. However, immediately preceding this motion, the pin 196 is in its neutral position at the bottom of the V-shaped slot 198. Therefore, with the forward bias on the member 176 and the counterclockwise tendencies of the lever 190, the pin 196 will be moved to the left hand end of the V-shaped notch 198 as viewed in FIGURES 2 and 3. This will cam the hook 202 forwardly which will engage between the needle 46 and thread 58 on the upward stroke of the operating means 24 and needle 46.

During the downward stroke of the operating means 24, an upstanding cam 216 extending from the base 22 and having an offset portion 218 is adapted to extend through an aperture 220 in the bottom wall of the operating means 24 and through an aperture 222 at the rear of the slack take-up lever 70. This offset portion 218 of the upstanding cam 216 normally seats within a notch formed in a seating plate 224 which spans the slack take-up lever 70. Therefore, it will be seen that upon downward movement of the operating means 24, a second offset portion 226 on the cam 216 will contact the end of the slot 222 and cause it to slide rearwardly of the device. When this happens, the thread 58 which is positioned through the aligned apertures in the stationary plate 66 and the movable slack take-up lever 70 will be caught between the relatively sliding parts and no further threads can be taken off the thread supply 52.

Therefore, when the hook 202 enters between the needle 46 and the thread 58, upon the upward stroke of the operating means 24 the hook will pull the thread taut forming the aforementioned loop inasmuch as the slack take-up lever 70 is operative to prevent any further thread from being dispensed from the thread supply 52. When the operating means 24 has reached its uppermost position, the apertures at the forward end of the slack take-up lever 70 and stationary plate 66 are once again aligned whereby more thread may be pulled from the thread supply 52 upon a downward stroke of the operating means 24.

With specific reference to FIGURE 12, the operation of the thread looping and tying member 176 is illustrated therein schematically. As shown in the left-handmost figure, the needle 46 has made its initial entry into the button 106 through the aperture 112 therein. This occurs when the base plate 86 or member is in its rearmost position and upon the upstroke of the needle 46, the pin 1196 has entered the right-handmost end of the slot 198 to bias the member 196 rearwardly wherein it engages the thread 58 between the needle 46 and thread to begin forming a loop. Referring to the right-handmost schematic showing, the needle is illustrated as just leaving the second aperture 110 in the button 106. As shown, the base plate 86 has been shifted to its forwardmost position wherein the aperture 110 was presented to the needle 46. During the downwardmost position on the operating means 24 as illustrated in FIGURE 3 for example, the loop formed by the hook 204 was dropped since the pin 196 was positioned at the bottom of the V-shaped notch 198 and rocked member 176 forwardly. This was due to the clockwise movement of the lever 190 being pulled by the rod 178. The needle then went through said first loop and upon the upstroke of the needle 46, the hook 202 engaged the thread 58 between the needle 46 and the thread. This occurred since the base plate 86 was in its forwardmost position thereby biasing the member 176 forwardly by means of the spring 212 wherein the pin 196 entered the left-handmost end of the slot 198 to rock the member 176 forwardly thereby to engage the thread. Since the slack take-up lever 70 was operative upon the beginning of the upstroke of the operating means 24 and needle 46, the thread 58 was looped about the hook 202. Also, due to slack take-up, the first loop is positioned in tight engagement with the bottom of the fabric 108. It should also be noted that the thread 58 has crossed over the top of the button due to the shifing thereof and accord-

ingly the button is held to the fabric in tight engagement. The button is then subsequently shifted and the procedure is repeated with the hook 204 coming into play to hold the loop. When finished, it is only necessary to slide the button and fabric from the superimposed clamps wherein the thread 58 will be cut against the forward edge of the slot 82 and the top clamping portion 78.

To briefly summarize the operation of the device, it will be seen that the following movements take place upon the downward stroke of the operating means 24. The link 124 biased by means of the end 138 of the coil spring 30 against the bottom wall of the operating means 24 will be moved rearwardly thereby pivoting the link 128 forwardly about the pin 132 to project the cam 150 forwardly wherein it will strike one of the laterally extending projections 156, 158 on the cam follower 152, dependent upon the position of said follower. Assuming the parts are in position as shown in FIGURES 2 and 3, the tooth 160 will strike the projection 156 and rotate the cam follower 152 in a clockwise direction. This will cause the link 142 to move forwardly and push the base plate 86 forwardly wherein the needle 46 may enter the aperture 110. Simultaneous with this movement, the link 180 is also moved rearwardly wherein the projection 182 on said link will contact the rearwardly bent portion 186 of the rod 178 to move it rearwardly. This in turn causes clockwise rotation on the lever 190 positioning the pin 196 in a neutral position at the mid-section of the V-shaped notch 198. The foregoing position of parts is clearly shown in FIGURE 3. Upon the upstroke of the operating means 24 and needle 46, the link 130 will be moved rearwardly disengaging the tooth 160 from the projection 156 on the cam follower 152. The base plate 86 and accordingly the button and fabric holddown means 76 is left in its forward position. Also, during the downward movement of the operating means 24, the slack take-up lever 70 has shifted rearwardly thereby limiting the amount of thread available. Upon the upstroke of the operating means 24 the spring 200 biases the lever 190 to rotate in a counterclockwise direction as viewed in FIGURES 2 and 3. The spring 212 connected to the lug 116 and the member 176 biases said member forwardly due to the forward position of the base plate 86. Therefore, when the lever 190 rotates in a counterclockwise direction the pin 196 will enter the left-hand portion of the V-shaped notch 198 and rock the member 196 forwardly wherein the hook 202 engages the thread 58 between the needle 46 in the thread to form a loop and take-up slack in the thread. Upon the next successive downward stroke of the operating means 24, the tooth 162 on the cam 150 will strike the projection 158 on the cam follower 152 thereby pivoting the link 142 rearwardly and moving the base plate or member 86 rearwardly to present the aperture 112 in the button to the needle. Once again, the pin 196 has been shifted to its neutral position, and the first formed loop has been dropped by the thread looping and tying member 176. The needle will be passed through the first loop and due to the bias of the spring 212 and the counterclockwise rotation of the lever 190 the pin 196 will enter the right-handmost portion of the V-shaped slot upon the upstroke of the operating means 24 and needle. This will rock the hook 204 into engagement with the thread and form a new loop. The operation is repeated a number of times and the button is sewn to the fabric 108. The cam 172 can limit the reciprocal motion of the base plate or member 86 whereby different size buttons may be sewn.

It should thus be apparent that a fool-proof hand-operated button sewer has been disclosed. The operation is simple enough so that one unskilled in the sewing art could easily operate the device. Further, the button sewer is so compact and small that it may be easily placed within one's pocket.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A hand-operated portable button sewer of a sufficient size, shape and weight to be grasped, supported and manipulated in one hand of the user, said sewer comprising a pair of elongated hollow members constituting a base and a manual operating means, a pivot means connecting said members at one end of each for oscillatory movement towards and from each other, needle means mounted within said operating means at its other end and projectable into said hollow base, thread supply means mounted within said operating means adapted to feed thread therethrough into said needle means, a button and fabric holddown means, means slidably mounting said holddown means upon said base for longitudinal shifting movement therealong, shifting means connected to said holddown means and to said operating means whereby to effect through successive pivotal movements of said members towards each other a shifting of said holddown means successively in opposite directions and thereby alternately position a pair of apertures in a button held by said holddown means for passage of said needle means therethrough, said shifting means including a linkage assembly housed within said hollow members and connected at one end thereof to said holddown means and including at its other end a pair of relatively movable connected links each carried by one of said members.

2. The combination of claim 1 including an adjusting means mounted upon said base and movably positionable in the path of travel of said holddown means for abuttingly engaging the latter and adjustably limiting its range of movement whereby different sized buttons may be sewn.

3. The combination of claim 2 wherein said holddown means includes a plate reciprocatingly slidable longitudinally of said base, said adjusting means comprising a cam pivotally mounted on said base and disposed at one end of said holddown plate.

4. The combination of claim 1 wherein said holddown means comprises a plate mounted upon the top of said base for guided sliding reciprocating movement longitudinally thereof, a lower clamping element pivotally mounted on said plate for clamping a fabric therebetween, an upper clamping element pivotally mounted upon said lower clamping element for clamping a button therebetween, aligned openings in said plate and each clamping element for passage of said needle means therethrough.

5. The combination of claim 1 wherein said linkage assembly includes first and second linkage means, said first linkage means including said pair of links and said second linkage means being connected to said holddown means, said linkage assembly further including a cam pivotally mounted upon one of said members and connected to one of said linkage means, a cam follower carried by the other linkage means and movable towards and from said cam and engageable with said cam for alternate reverse movements of said cam upon successive reciprocations of said cam follower.

6. The combination of claim 5 wherein said cam has a pair of cam teeth on opposite sides of the cam pivot, said cam being tiltable about its pivot to successively align its teeth singly and in alternation with said cam follower.

7. The combination of claim 1 including a thread looping and tying means mounted and housed within said base, means actuating said looping and tying means in response to and in timed relation to movement of said operating and base means relative to each other.

8. The combination of claim 7 wherein said thread looping and tying means includes a pivotable member having a pair of oppositely facing hooks, said hooks being adapted to alternately loop said thread upon successive upward movements of said needle means.

9. The combination of claim 8 including thread tensioning means mounted in one of said members adapted to engage and hold thread during operation of said looping and tying means.

10. The combination of claim 1 including a thread looping and tying means mounted and housed within said base, means adapted to actuate said looping and tying means in response to and in timed relation to movement of said operating and base means relative to each other, said actuating means including a rod slidably mounted in one of said members, a lost motion connection between one end of said rod and said operating means for pulling said rod in one direction upon successive pivoting movement of said members toward each other, resilient means for yieldingly returning said rod to its initial position upon pivoting movement of said members away from each other, a lever connected to the other end of said rod, said thread looping and tying means consisting of a pivoted member, said lever being connected to said pivoted member.

11. The combination of claim 10 wherein said pivoted member has a pair of oppositely facing loop engaging hooks and a substantially V-shaped slot, said lever having a pin slidable in said slot and constituting a lost motion connection betwene said rod and pivoted member, said pin being operable to rock said pivoted member and move one of said hooks into a first loop engaging position and the other hook into a second loop engaging position when the respective ends of said slot are engaged by said pin.

12. The combination of claim 11 wherein said pin is adapted to be positioned by the downward movement of said operating means through the last-mentioned lost motion connection in a neutral position with neither of said hooks being in a loop engaging position, said neutral position being at the bottom of said V-shaped slot, spring means yieldingly biasing said pivoted member in the direction of movement of said shiftable holddown means after the latter has been shifted by movement of said operating and needle means, said bias determining which end of said V-shaped slot said pin enters upon upward movement of said operating means.

References Cited by the Examiner

UNITED STATES PATENTS

1,467,473	9/23	Bussiere	112—169
1,663,613	6/27	Sibbald	112—112
1,812,327	6/31	Ericsson	112—110
1,929,323	10/33	Maier	112—199
2,158,197	5/39	Pikul	112—111
2,928,363	3/60	Saltz	112—169

FOREIGN PATENTS

459,992	9/13	France.
1,164,030	5/58	France.

JORDAN FRANKLIN, *Primary Examiner.*