

July 22, 1941.

J. I. McDONALD

2,249,968

CUFF MAKING METHOD AND APPARATUS

Filed June 13, 1938

5 Sheets-Sheet 1

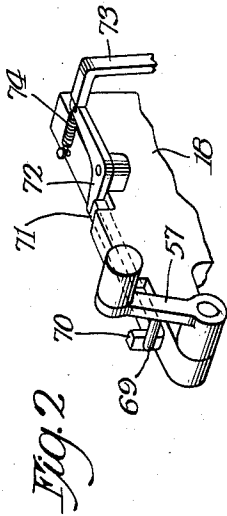
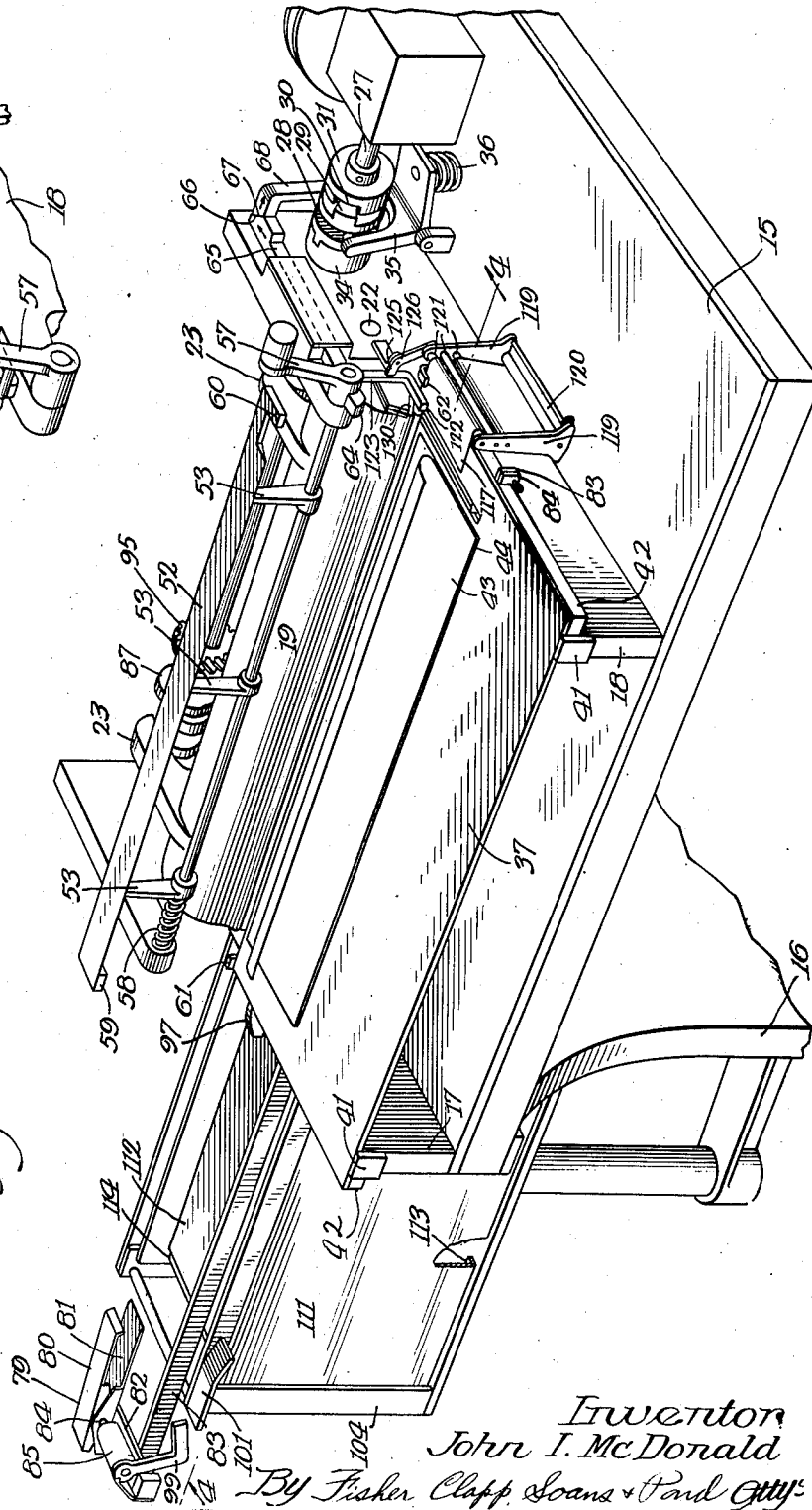


Fig. 1



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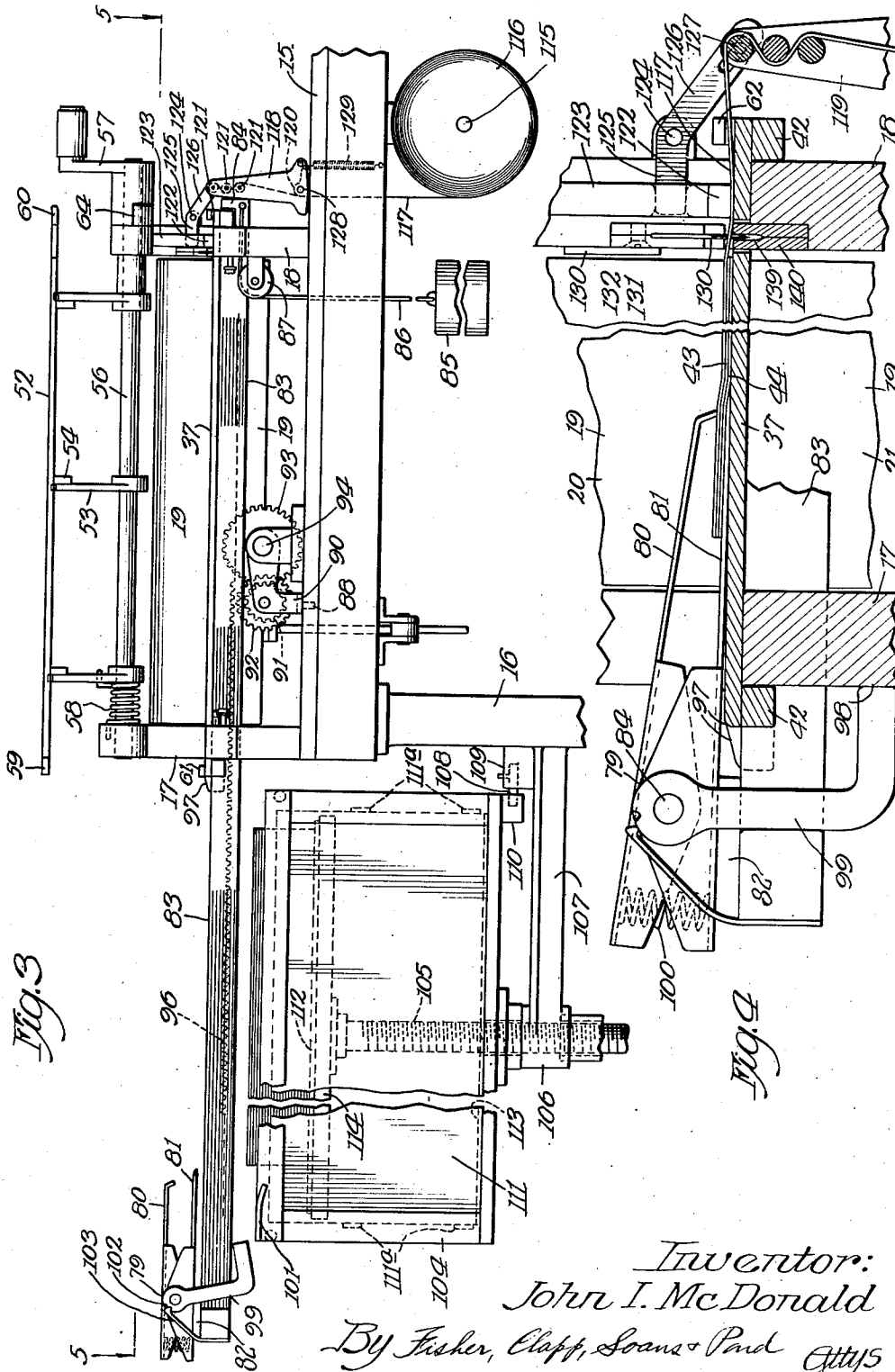
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CUFF MAKING METHOD AND APPARATUS

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5 Sheets-Sheet 2



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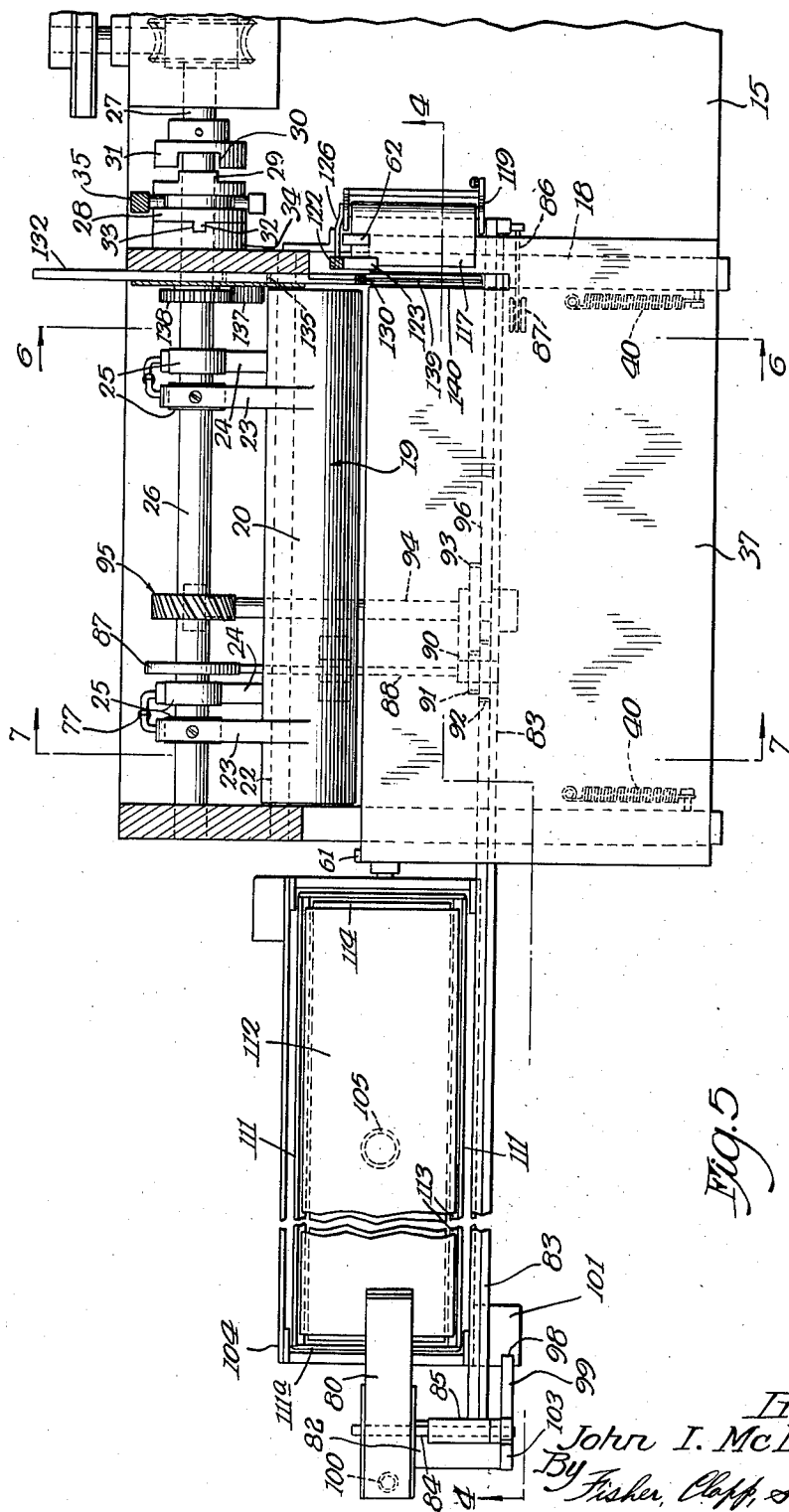
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5 Sheets-Sheet 3



July 22, 1941.

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5 Sheets-Sheet 4

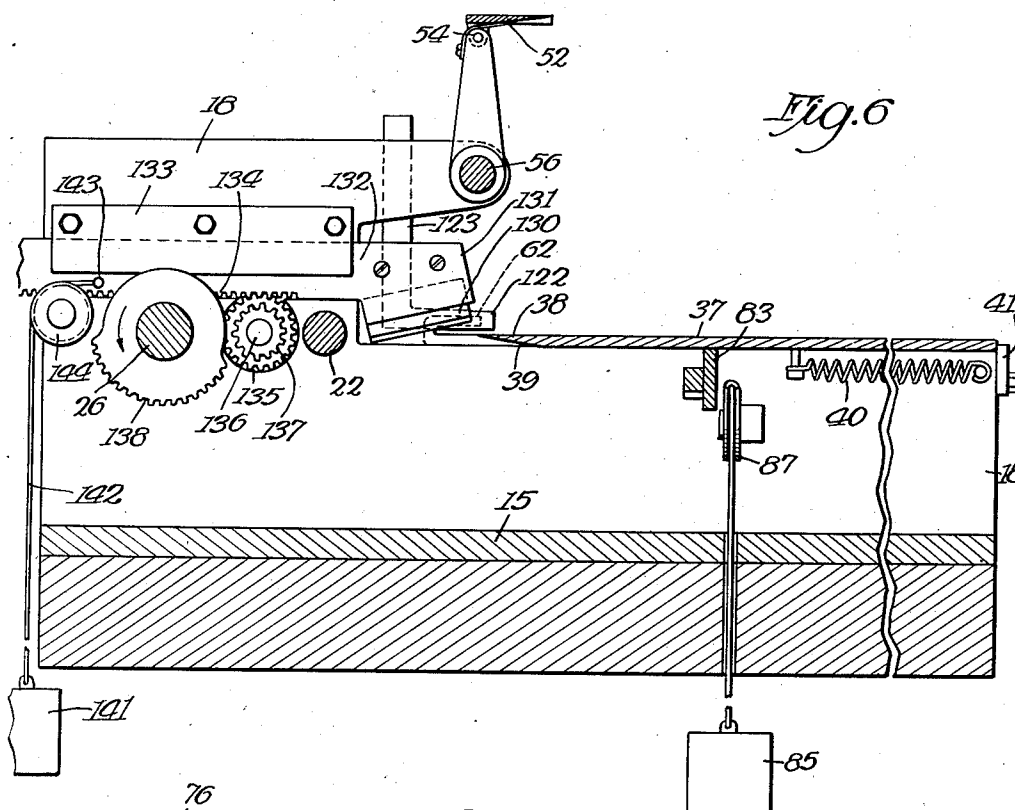


Fig. 6

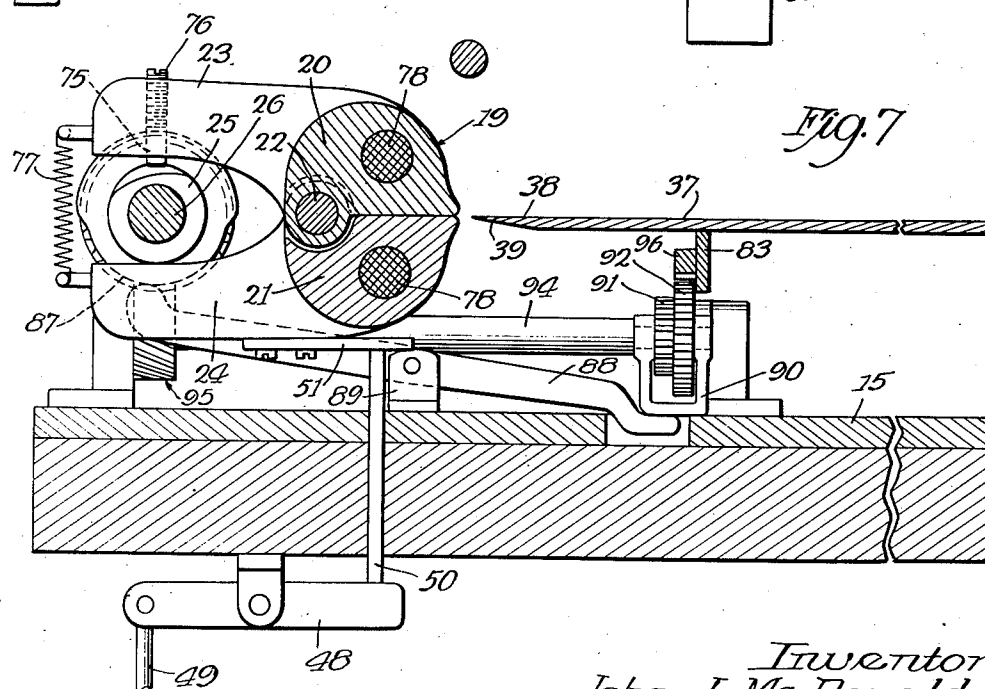


Fig. 7

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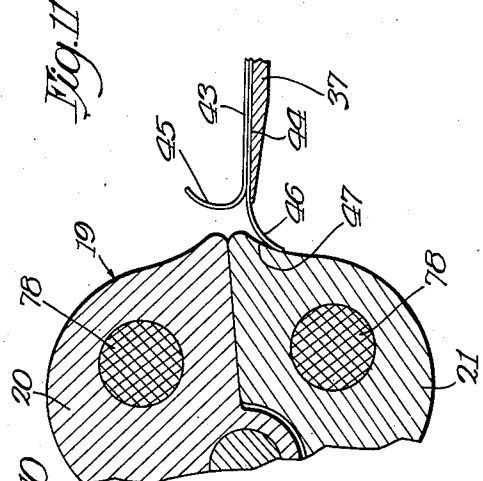
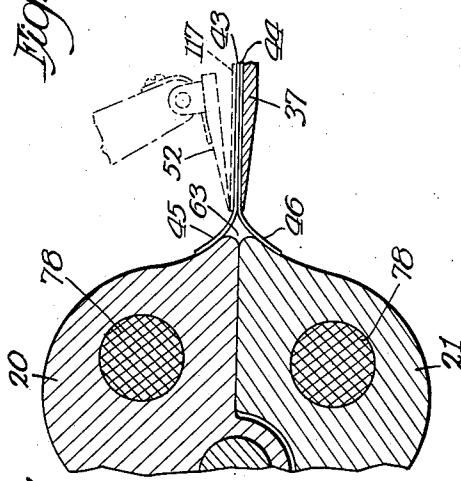
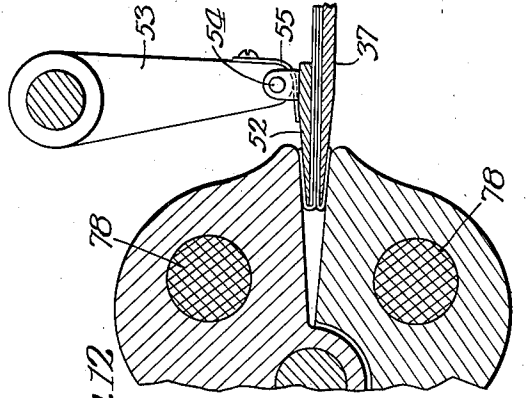
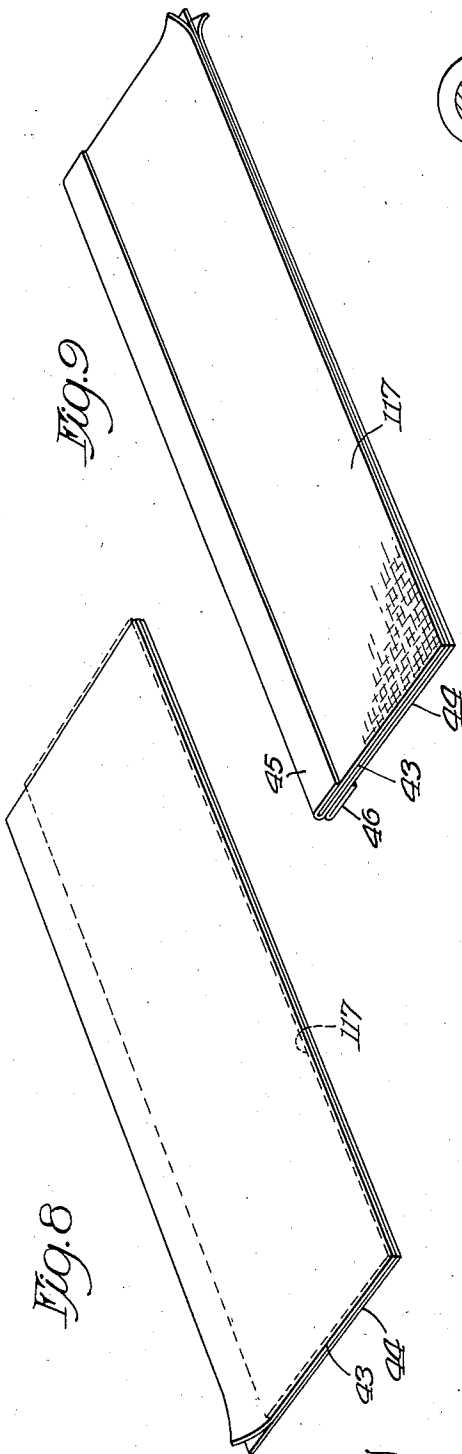
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CUFF MAKING METHOD AND APPARATUS

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5 Sheets-Sheet 5



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UNITED STATES PATENT OFFICE

2,249,968

CUFF MAKING METHOD AND APPARATUS

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Application June 13, 1938, Serial No. 213,374

17 Claims. (Cl. 223-2)

This invention relates to an improvement in the method and apparatus for making cuffs for men's shirts or similar articles or parts of garments such as collars.

The main objects of the invention are to provide an improved method for preparing an assembly of cuff or like elements for subsequent manufacturing operations; to provide a method of preparing cuff elements whereby the parts employed in making a cuff may be assembled and made ready for subsequent operations quickly and with a minimum of hand work; and

Other objects of the invention are to provide apparatus for facilitating the assembly and preparation of the cuff elements for subsequent manufacturing operation; to provide mechanism which will be of relatively simple character but durable and efficient for its purpose; to provide mechanism of the character indicated which will be easy to operate and rapid in operation; and, in general, it is the object of the invention to provide an improved method and apparatus for expediting manufacture of cuffs and like articles.

Other objects and advantages of the invention will be understood by reference to the following specification and accompanying drawings (five sheets) wherein there is disclosed the improved method and a selected embodiment of the improved apparatus for accomplishing the above stated objects of the invention.

In the drawings,

Figure 1 is a perspective.

Figure 2 is a fragmentary perspective of a modified detail.

Figure 3 is a front elevation.

Figure 4 is a vertical section approximately on the lines 4-4 of Figures 1 and 5, certain portions of the apparatus being omitted.

Figure 5 is a plan.

Figures 6 and 7 are sections on the lines 6-6 and 7-7, respectively, of Figure 5.

Figure 8 is a perspective showing an assembly of cuff elements.

Figure 9 is a perspective showing an assembly of cuff elements as prepared according to the present invention for subsequent manufacturing operations; and

Figures 10, 11 and 12 are fragmentary views illustrating successive steps in the method and the operation of a portion of the apparatus for making cuff assemblies.

The apparatus shown in the drawings comprises a bed plate or table 15 which is supported at a suitable height by means of suitable legs or

side frames such as indicated at 16. Rising from the top of the bed plate 15 are a pair of side plates 17 and 18, respectively, the same extending transversely of the bed plate 15 and in this instance extending from the front to the back of the bed plate. The side plates 17 and 18 are securely and rigidly fastened in place and constitute supports for much of the mechanism of the apparatus.

A pair of jaws 19, comprising upper and lower jaws 20 and 21, respectively, are journaled on a shaft 22 which extends between the side plates 17 and 18 and is supported therein. The jaws 20 and 21 are provided with rearwardly extending arms 23 and 24, respectively, which embrace cams such as indicated at 25 carried by a driven shaft 26. The shaft 26 constitutes a cam shaft and is suitably journaled in the side plates 17 and 18.

The cam shaft 26 is adapted to be driven from a power shaft 27, a suitable clutch mechanism being provided for interconnecting the cam shaft and said power shaft. In this instance the clutch mechanism comprises a collar 28 which is suitably keyed to the cam shaft 26 but slidable longitudinally thereon. The collar 28 has a tooth 29 adapted to enter a notch 30 in a clutch part 31, which is fixed to the power shaft 27. The collar 28 also has a tooth 32 which is adapted to enter a notch 33 in a stationary collar 34 which may be secured to the adjacent side plate 18. The clutch collar 28 is adapted to be controlled by means of a fork 35 which is provided with pins extending into a peripheral groove in the collar 28. In a well known manner, the fork 35 being normally urged by means of a spring 36 to cause the tooth 32 to enter the notch 33. In other words, the spring 36 normally tends to disengage the clutch so as to stop the rotation of the driven cam shaft 26. It will be observed that when the clutch collar tooth 32 is positioned in the notch 33, the cam shaft 26 is locked against rotation.

A work table or work support 37 is mounted on the top edges of the front portions of the side plates 17 and 18 so as to be slidable toward and from the jaws 19. The said work table 37 has its front marginal portion 38 tapered to an approximately feather edge, the taper being effected by beveling the lower side of the plate as indicated at 39. The front edge of the work support 37 is normally disposed a short distance (say, from one-eighth to three eighths of an inch) from the adjacent fronts of the jaws 20 and 21 and a spring 40 located beneath the work support 37 and stretched between a pin or other anchorage

carried by the work support, and a similar pin or anchorage carried by an adjacent stationary portion of a side frame serves to normally hold the work plate 37 in its outermost position against suitable stops such as indicated at 41. The work support 37 is also provided on its bottom side with guide members such as indicated at 42 outwardly of the respective side members 17 and 18 for maintaining the work support in its proper position relative to said side frames and relative to the jaws. It will be apparent that the work support 37 may be moved toward the jaws 19 against the tension of the spring or springs 40.

In the operation of the mechanism, fabric elements are positioned on the work support 37 and the work support 37 is moved toward the jaws 19 and in fact caused to enter between the jaws, the latter spreading incident to the effect of the tapered front edge portion 38 of the work support. As shown in Figures 1 and 10, two plies of fabric 43 and 44, respectively, are disposed in face-to-face relation on the work support 37, the operator holding the front marginal portion 45 of the upper ply in an upwardly extending position substantially as indicated in Figures 1 and 10. Provision is made for rocking the jaw pair 19 upwardly as a unit to substantially the position shown in Figure 10, so that incident to the placing of the fabric plies on the work support 37, the front marginal portion 46 of the lower ply may easily be slid into engagement with the front portion 47 of the lower jaw 21.

The means for rocking the jaws 19 upwardly to the position shown in Figure 10 is illustrated in Figure 7 and comprises a rock lever 48 pivoted intermediate its ends in a bracket carried by the bed plate 15 or other accessible stationary portion of the apparatus. The rock lever 48 is connected by means of a link 49 to a treadle (or, if preferred, to a hand-operated lever) whereby the rock lever 48 may be rocked at will. The other end of the rock lever 48 acts through a pin 50 against a bracket extension 51 of the lower jaw 21, so that when the lever 48 is rocked in a counter-clockwise direction as shown in Figure 7, the jaws will be rocked upwardly about the axis of the shaft 22 to the position indicated in Figure 10.

When the fabric elements 43 and 44 have been positioned on the work support 37 as shown in Figure 10, the jaws are permitted to return to their normal position as shown in Figure 7, the weight of the jaws forwardly of the supporting shaft 22 being sufficient to effect such restoration. Springs or other suitable means may, however, be provided for effecting such restoration of the jaws.

When the jaws are restored to their normal position as shown in Figures 7 and 11, the front marginal portions 45 and 46 of the fabric elements assume an approximately symmetrical divergent position as indicated in Figure 11.

The next step in the operation of the mechanism is to insert the front marginal portions of the fabric assembly between the jaws 20 and 21 and incidently to rebend or fold the forward marginal portions 45 and 46 of the fabric elements rearwardly upon the outer surfaces of the respective fabric elements of which they are a part. To accomplish this purpose, the work support 37 is moved forwardly to engage and spread the jaws substantially as indicated in Figure 12. Such movement of the work support 37 is accomplished as an incident to the operation of a tucking device, which, in this instance, is

manually actuated although obviously susceptible of automatic or mechanical operation.

The tucking device referred to comprises an elongated blade 52 which is carried by a series of arms 53, of which there may be as many as found necessary for adequately supporting the blade 52. In this instance three such arms are shown, although a greater number may be found preferable. The tucking blade 52 is hinged to the adjacent ends of the arms 53 as indicated at 54 (Figures 3, 6 and 12) and a suitable spring means such as indicated at 55 is provided for normally urging the tucking blade 52 to a predetermined position. As shown in the drawings, the tucking blade 52 is of tapered cross section, so as to form a counterpart to the tapered front marginal portion 38 of the work support 37.

The arms 52 are secured to a shaft 56 which is suitably journaled in extensions of the side members 17 and 18, respectively, and a crank 57 is secured to one end of the shaft 56 to facilitate manual operation thereof. A spring 58 is also associated with the shaft 56 in such a way that it normally tends to maintain the tucking device 52 in its inoperative or retracted position, as shown in Figures 1, 3 and 6.

To effect the feeding of the cuff assembly into the jaws 19, the operator rotates the shaft 56 through the agency of the crank 57 so as to cause the tucking blade 52 to come into engagement with the top of the cuff assembly substantially in alignment with the front edge of the work support 37 as indicated in Figure 11. It will be understood that the initial engagement of the front edge of the tucking device 52 with the top surface of the cuff assembly occurs at a point disposed outwardly or rearwardly of the front edge of the work support 37, but that the engagement is initially quite light so that the tucking member 52 will readily slide over the surface of the fabric elements without moving the same and without effecting any movement of the work support 37. Also, it will be understood that the operator holds the fabric elements in place with one hand by pressing the same against the work support 37 while actuating the tucking device with the other hand.

As indicated in Figures 1 and 3, the tucking blade 52 is provided at its ends with abutments 59 and 60, the same being respectively adapted to engage stops or shoulders 61 and 62 carried by the front edge of the movable work support 37. The abutments 59 and 60, and the stops 61 and 62, are respectively aligned with the feather edges of the tucking blade 52 and the work support 37, so that when the feather edges of the tucking blade and work support are in alignment or registry, the continued movement of the tucking member 52 will incidently effect simultaneous movement of the work support 37. Hence the tucking member 52 and work support 37 are moved forwardly in unison to cause their thin but non-cutting front edges to enter the flaring entrance indicated at 63 of the jaws to spread the same substantially as indicated in Figure 12. As an incident to such entrance of the tucking member and work support between the jaws, the diverging marginal portions 45 and 46 of the fabric members are folded rearwardly in opposite directions or in other words, oppositely rebent into engagement with the top and bottom surfaces, respectively, of the tucking member 52 and work support 37.

When the fabric elements have thus been inserted, the tucking member and work support are

to be withdrawn so as to leave the fabric elements between the jaws. Such withdrawal is effected by the action of the springs 40 on the work support 37 and the spring 58 on the tucking member 52. The work of said springs may be assisted slightly if desired by the operator, although such assistance is not necessary since the substantial taper of the tucking member and work support makes it quite easy to withdraw said parts from between the jaws. The fabric engaging surfaces of the tucking member and work support 37 are furthermore finished or suitably polished to eliminate any objectionable friction between the respective parts and the fabric members of the cuff assembly. In some instances the inside surface of the jaws may be roughened slightly to increase their frictional grip on the fabric, although such roughness has been found unnecessary. It will further be remembered that it is only the weight of the jaws which tends to close them so that there is no excessive gripping force applied to the fabric. The spring 55 for acting on the tucking blade 52 is relatively light and serves primarily to permit the tucking member 52 to assume the angular position indicated in Figure 11 without excessive friction on the fabric.

When the tucking member and work support are withdrawn from between the jaws and restored to their initial positions, the clutch is actuated to connect the cam shaft 26 to the power shaft 27. The clutch may be operated as an incident to the turning of the hand lever 57 downwardly or, if preferred, the clutch may be operated by an extra rearward movement of the hand lever upon restoration of the same to its normal position after the insertion of a cuff assembly between the jaws. As indicated in Figure 1, the hub of the crank 57 is provided with a cam 64 designed to engage the adjacent end of a rod 65 slidably mounted on the side plate 18. The other end of the slidable rod 65 is provided with a bevelled surface 66 which is adapted to engage a similar bevelled surface 67 formed on a laterally extending end portion of one arm 68 of the clutch controlling fork, 35. It will be apparent that when the cam 64 moves the rod 65 the clutch controlling fork 35 will be actuated to effect engagement of the clutch. Any suitable spring means (not shown) may be provided for restoring the rod 65 to its normal position or the same may remain in its advanced position until the clutch is disengaged by the force of the spring 36, whereupon the return movement of the clutch controlling fork will be transmitted to the rod 65 to effect return movement thereof.

A modified arrangement of the clutch controlling mechanism is shown in Figure 2. In the arrangement there shown, the crank arm 57 is equipped with a pin 69 which is adapted to engage an end portion 70 of a rod 71 slidably mounted on the side member 18. The opposite end of the slidable rod 71 is adapted to engage one arm of a bell crank 72, the other arm of which is adapted to engage an extended end 73 of one arm of the clutch controlling fork 35. As shown in Figure 2, the crank arm 57 is in its normal position of rest. To effect engagement of the clutch and operation of the mechanism, the crank arm is rocked so as to cause its pin 69 to move the rod 71 toward the bell crank 72, thereby to throw the clutch controlling fork in the proper direction for effecting engagement of the clutch. As indicated in Figure 2, a spring 74 may be stretched between one arm of the bell crank and

a portion of the side member 18 to effect restoration of the operating parts to their normal position as soon as the operator releases the crank arm 57. The clutch, however, will not be immediately disengaged since it is held in engaging position by the tooth 32 of the clutch collar 28 which rides on the outer face of the fixed collar 34 until a full revolution of the shaft has been made, whereupon said tooth re-enters the notch 33.

As shown in Figure 7, the cam 25 is so shaped that in the normal or rest position of the mechanism, the arm 23 of the upper jaw is free of engagement with the cam. Such freedom permits the above described initial rocking and spreading of the jaws. When the shaft 26 is rotated, the cam 25 will come into operative engagement with a pin 75 which is adjustably carried by the arm 23. The pin 75 is of hardened metal so as to resist wear and it is movable transversely or radially of the cam in a suitable hole drilled in the arm 23. A screw 76 is threaded into a portion of said hole and serves to hold the hardened pin portion 75 in its adjusted position. The hardened pin 75 may be secured to the end of the screw 76 so as to be thereby retained in place, or it may be made separate and suitable provision made for preventing the pin from leaving its seat in the arm 23. A light spring 77 is stretched between the ends of the arms 23 and 24 and serves to assist the spreading of the jaws 20 and 21 by the tucking member 52 and work support 37.

The cam 25 acts against the hardened plug 75 and against the arm 24 of the lower jaw so as to close said jaws to press the fabric material positioned therebetween. The pressure under which said jaws are closed may be adjusted by suitably adjusting the plug 75. The pressure employed is not critical even through a wide variety of fabrics but by adjusting the pin 75 the pressure may be adjusted to suit the weight of the cloth.

To improve the pressing effect, the jaws 20 and 21 are equipped with electrical heating elements 78 extending lengthwise of the jaws in suitable openings formed therein. Inasmuch as heating elements for the purpose indicated are well known in the art no detail thereof is shown and it will be understood, of course, that suitable electrical connections are provided in any conventional manner.

Before the jaws are released, a device is actuated to grip the cuff assembly preparatory to removing it from the jaws and stacking it in a receptacle provided for that purpose. The fabric withdrawing device comprises a clamp 79 consisting of upper and lower jaws 80 and 81, respectively. The lower jaw 81 is fixedly mounted on a bracket 82 carried by an arm or bar 83. The upper jaw 80 is mounted on a shaft 84 which is rotatably mounted in a suitable bearing 85 also carried by said bracket 82.

The arm or bar 83 extends lengthwise of the apparatus and is slidably mounted in suitable notches cut in the side members 17 and 18. The bar 83 is held in place in said notches by the overlying work support 37 and endwise removal of the bar is prevented at one end by a stop member 84 secured to said end of the bar for preventing movement thereof through the slot in the adjacent frame element 18.

A weight 85 is connected by means of a cord 86 to the free end of the bar 83 and said cord is guided around a guide pulley 87 which is suitably rotatably mounted on the adjacent side

member 18. The weight 85 normally holds the bar 83 and its clamp structure 79 in the retracted position illustrated in Figures 1 and 3.

Before the cam 25 releases the jaws 19, another cam 87 acts on the adjacent end of a rock lever 88 to effect forward or inward movement of the said clamp structure. The rock lever 88 is pivoted intermediate its ends as shown in Figure 7 in a bracket 89 carried by the bed plate 15, and the other end of the lever underlies a U-shaped bracket structure 90 which rotatably supports a pair of gears 91 and 92. The gear 91 normally meshes with another gear 93 which is carried by a shaft 94 which is driven from the cam shaft 26 by a suitable gear connection therewith as indicated at 95 (Figure 5). The bracket 90 which carries the gears 91 and 92 is mounted on the shaft 94 so that the bracket and the said gears may be rocked upwardly about the axis of the shaft 94, whereby the operating relationship of the gears 91 and 93 is maintained.

When the bracket 90 is rocked upwardly, the gear 92 is caused to mesh with a rack bar 96 which is carried by the bar 83. Thus it will be seen that the cam 87 and parts actuated thereby are operative to set in motion the gear 92 and thereby the bar 83. The direction of rotation of the gear 92 is such that the bar 83 will be moved inwardly to bring the cuff assembly clamp 79 into overlying relation to a portion of the work support 37 and into a position substantially as illustrated in Figure 4 wherein the clamp is operative to grip the adjacent end portion of the cuff assembly. When the cuff assembly is thus gripped it is still being held by the folding or pressing jaws 19, but the said jaws are released very shortly after the clamp is caused to grip said cuff assembly.

The lower jaw 81 of the clamp 79 is substantially flat and its front end slides along the surface of the work support 37 and under the cuff assembly as shown in Figure 4. The adjacent side edge of the work support is preferably rounded or tapered off as indicated at 97, to facilitate the movement of the lower jaw 81 to the said position. The upper jaw 80 is caused to pinch the cuff assembly against the lower jaw by reason of the engagement of the free end 98 of an arm 99 with the adjacent side frame 17 of the apparatus. Said arm 99 is secured to the shaft 84 which carries the upper jaw 80 so that rocking movement of the arm 99 is transmitted to said upper jaw. A spring 100 interposed between the outer ends of the jaws 80 and 81 maintains the jaws in their clamping position when the jaw structure is moved away from the frame member 17 so as to withdraw the cuff assembly from the jaws.

When the gripping of the cuff assembly has been effected by the jaws 80 and 81 as above described, the jaws 19 are released by the cam 25 so as to permit the cuff assembly to be withdrawn therefrom. Withdrawal movement of the cuff assembly is effected, in this instance, by means of the weight 85 which acts to return the bar 83 and hence the cuff gripping jaws 80 and 81 to their initial position as shown in Figure 3. In order to permit the weight 85 to effect such return movement, the cam 87 which controls the gear carrying member 90 permits the rock lever 88 to rock in a clockwise direction as shown in Figure 7 to lower the gear 92 out of engagement with the rack bar 96. If desired, a suitable spring may be associated with the rock lever 88 or the gear carrying member 90

to insure disengagement of the gear 92 from the rack bar 96, but such a spring is not necessary since the force of the weight 85 acting through the rack bar will thrust the gear 92 and associated structure out of engagement with the rack bar.

When the cuff carrying structure 79 arrives at its initial or outermost position, the arm 98 will engage a cam plate 101 which acts to rock the arm 98 counterclockwise to effect upward movement of the jaw 80 to release the cuff assembly. The opening of the jaws 79 is so timed that the cuff assembly carried thereby will be dropped in predetermined position in a receiving tray. For maintaining the jaw 80 in its opened position, the hub of the arm 98 is provided with a notch 102 for receiving a detent carried by a spring 103, the latter being carried by the sliding bar 83.

The structure for receiving and stacking the cuff assemblies comprises a cage-like unit 104 which is rotatably mounted on a vertically disposed post or screw 105. The screw 105 is threaded through a boss 106 formed on the outer end of a bracket arm 107 which is secured at its other end to, or made integral with, the supporting frame 16 of the apparatus. The cage-like structure 104 is freely rotatable on the screw post 105 and it may be held in fixed position by means of a bolt 108 slidably mounted in a block 109 carried by the bracket 107. The cage structure 104 is provided with a depending element 110 having a recess for receiving an end portion of the bolt 108.

The cage structure 104 removably supports within it a receptacle comprising smooth side walls 111 connected by end straps 111a and a loose bottom 112. The loose bottom 112 is adapted to come to rest on bottom flanges 113 of the receptacle.

At the beginning of the operation of the machine, the loose bottom 112 of the receptacle is supported in an elevated position by the screw 105 which is accordingly adjusted to engage and support said loose bottom at the desired elevation. As the use of the machine progresses and cuffs are accumulated in the receptacle on the elevated loose bottom 112, there will be a tendency for the stack of articles to become higher on one side than on the other, due to the presence of the folded thicknesses of the fabric. In order to overcome and compensate for such tendency, the slidable bolt 108 is disengaged from the cage element 104 and the cage structure rotated through one-half a revolution so as to locate the folded fabric thicknesses on the other side of the receiving structure. Hence, the succeeding cuff assemblies will be positioned with their folded portions overlying the unfolded marginal portions of the first received assemblies. The pitch of the screw 105 is preferably so selected that one-half a turn of the cage structure 104 will cause a sufficient lowering of the screw 105 and the receptacle bottom 112 to provide space for receiving a selected number of cuff assemblies without producing an objectionable unevenness in the stack. It will, of course, be apparent that the cage structure 104 may, if preferred, be turned through more than one-half a turn in order to secure further lowering of the receptacle bottom. It will also be understood that the structure is such that the screw post 105 is turned incident to the turning of the cage structure 104, for example, by having its

end plate 114 rigidly secured to the post and extended to fit between the end posts of the cage structure. When the receptacle 111 is filled to the desired extent, it may be bodily removed with its content from the cage structure and another similar receptacle substituted.

In the making of most cuffs, an inner lining element is incorporated. One convenient way for providing for the incorporation of such a lining element is to provide a support 115 for a supply roll 116 of the lining fabric, said support 115 being suspended beneath the bed plate 15. The lining strip 117 is pulled upwardly from the supply roll 116 through a suitable opening in the bed plate 115 and through a smoothing and tension device 118. The tension device 118 comprises a pair of upstanding arms 119 rigidly connected by a bottom bar 120 which may be cast integrally with the arms. The upper ends of the arms are connected by a series of three bars or rollers 121. The lining fabric 117 is guided upwardly over the bar 120 and alternately around the three rollers 121. The lining strip 117 is carried from over the uppermost roller 121 laterally across the length of the work support 37, the strip being carried under an arm or presser foot 122 which projects from a post 123 vertically slidably mounted in the side frame 18 (see Figures 1, 3 and 6).

The presser foot 122 is controlled by a bell crank pivoted as indicated at 124 on the side plate 18, one arm 125 of said bell crank extending into a suitable slot or opening in the post 123. The other arm 126 of the bell crank is slotted as shown in Figure 4 for receiving a pin 127 which projects from the adjacent arm 119 of the tensioning device. The tensioning device is pivoted near its lower end as indicated at 128 on the bed plate 15 and a spring 129 stretched between a stationary portion of the bed plate or supporting frame structure and a portion of the tensioning device tends to rock the tensioning device in a clockwise direction as seen in Figures 3 and 4. It will be apparent that such movement of the tensioning device is transmitted through the bell crank arms 125 and 126 to the presser foot post 123 to effect downward movement thereof. Hence, the presser foot 122 tends to press the inner lining fabric against the work supporting table 37 and to hold the material firmly at that point.

When providing cuff assemblies with an inner lining member, the operator progresses in the manner hereinabove described to the point of disposing the cuff fabric elements 43 and 44 as shown in Figure 11. Then the operator grasps the leading end of the inner lining material adjacent the presser foot 122 and pulls the lining strip across the work support 37 until the lining strip covers the length of the cuff assembly. After the lining material is so positioned, the operator actuates the tucking mechanism as already described and the jaws are thereafter actuated to press the material as already explained, except that when the lining material is incorporated, the marginal portion 45 of the upper ply of the cuff assembly will be folded rearwardly over the adjacent marginal portion of the lining strip 117.

For severing the leading end portion of the lining strip which overlies the cuff assembly from the supply of lining material, there is provided a cutting device which is best shown in Figures 4 and 6. Said cutting device comprises in this instance a cutting blade 130 similar to a thin razor

blade, the said blade being clamped in the head portion 131 of a bar 132. The bar 132 is slidable in a guide member 133 which is secured to the side plate 18 and the lower edge of the bar 132 is provided with a rack 134 which meshes with a gear 135. The gear 135 is rotatably mounted on the side plate 18 through the agency of a supporting pin 136 and it has rigidly secured to it a pinion gear 137. The pinion gear 137 is adapted to be engaged by a segmental gear 138 which is carried by the cam shaft 26 so that once for each rotation of the shaft 26, the gear 135 will be rotated to the extent provided for by the length of the gear segment 138. The extent of movement of the bar 132 and the cutting blade 130 is predetermined to be sufficient to cause the cutting blade 130 to traverse the entire width of the lining strip. The cutting blade 130 is further guided in a slot 139 formed in a bar 140. When the cutting device operates, the cuff assembly is gripped by the jaws 19 and the lining strip is also gripped by the presser foot 122, so that the material to be severed is effectively held at the margin from which the cutting progresses. Hence, the cutting operation may be easily and efficiently performed.

For returning the cutting element to its initial position as shown in Figure 6, there is provided a weight 141 which is connected by a suitable chain or cord 142 to a suitable point as indicated at 143 on the rack bar 132. The connecting cord 142 is guided around a pulley 144 so that it will be apparent that when the rack bar 132 is released from the propelling power of the segmental gear 138, the weight 141 will be enabled to effect rearward or return movement of the cutting device.

When the lining strip is severed, a narrow end portion extends beyond the adjacent end of the underlying two plies of the fabric material of the cuff assembly. In operations on the cuff assembly subsequent to the work of the machine here disclosed, the unfolded marginal portions of the assembly are subjected to certain trimming operations which remove any excessive material, including the extending end portion of the lining element. Hence, the extended end portion incident to the described manner of cutting the lining material is not objectionable.

The main operations of the apparatus may be briefly described with reference to Figures 8 to 12, inclusive. These operations consist in first assembling two plies 43 and 44 of fabric of pre-cut size and shape, the two elements being registered as nearly as conveniently practicable and positioned on the work support 37.

The pressing jaws 19 are rocked upwardly so that the fabric elements 43 and 44 may be slid forwardly on the support 37 to cause the front marginal portion 46 of the lower fabric to engage the front 47 of the lower jaw so as to be thereby turned downwardly. The jaws are then restored to their normal position as shown in Figure 11 and the front marginal portion 45 of the upper fabric 43 released by the operator to assume a position against the front of the upper jaw as shown in Figure 11.

If lining material is to be incorporated, a lining element 117 is then pulled across the length of the assembled fabrics 43 and 44.

The cuff assembly is then ready to be fed into the jaws 19 and this is accomplished by manually actuating the tucking device 52 which becomes operatively connected to the work support 37 so as to advance the latter in unison with the tuck-

ing device into the jaws 19 thereby to effect folding of the fabric as shown in Figure 12.

The tucking device and work support 37 thereupon withdraw, leaving the fabric elements in place between the jaws which are then closed under pressure to press the folded fabric.

The lining strip is automatically severed from the supply thereof and upon completion of the pressing operation the cuff assembly is automatically withdrawn from the jaws and disposed in smoothly stacked condition in a receiving receptacle and the machine is then in condition for a new operation.

The cuff assembly as prepared by the machine is represented in Figure 9, a lining strip being incorporated in this instance. Subsequent operations include the trimming and stitching of the three unfolded edges of the cuff assembly together closely adjacent the periphery of the assembly and thereafter the turning of the assembly and attachment thereof to a shirt sleeve.

The structure as described, although involving a number of hand operations, is a commercially practicable and commercially satisfactory device. Obviously, some of the operations may be made automatically. For example, the operation of the tucking device 52 and the operations following the same may be actuated by power derived from the cam shaft 26 after engagement of the clutch 28. Such a change in the structure would involve relatively simple cam mechanism and the proper timing of the cams for operating the jaws and other parts of the machine.

However, for practical purposes, such complete automatic operation is not required and hence the same has not been herein shown.

Changes may be made in the described method and apparatus without departing from the spirit of the invention, the scope of which should be determined by reference to the following claims, the same being construed as broadly as possible consistent with the state of the art.

I claim:

1. The steps in the manufacture of cuffs or the like which comprise assembling two plies of material face-to-face with their peripheries approximately registered with each other and a ply of lining material with one edge spaced from an edge of the two-ply assembly, whereby a marginal portion of said two-ply assembly extends beyond said edge of the lining strip, then while maintaining the assembled relation of said two plies and lining strip, simultaneously effecting folding of said marginal portion of one ply around said edge of the lining strip and rearwardly thereover and folding of the other ply outwardly and rearwardly about a line of fold substantially coincident with the line of fold of said first mentioned ply, and then pressing said folds to maintain said marginal portions in folded condition.

2. The steps in the manufacture of cuffs or the like which comprise assembling two relatively independent cut-to-size plies of material in face-to-face relation with their peripheries approximately registered with each other, then drawing a continuous length of lining material in endwise direction into overlying relation to said two-ply assembly and positioning one edge of said lining strip in spaced relation from an edge of said two-ply assembly, simultaneously effecting folding of a marginal portion of one of said plies approximately around the edge of said lining strip into rearwardly extending face-to-face contact with the lining strip and folding of the corresponding

marginal portion of the other ply of material rearwardly about a fold line substantially coincident with that of the first folded ply into face-to-face contact with said other ply, then pressing said folds to maintain said marginal portions in said folded condition, and while effecting said pressing, severing the lining strip portion overlying said two-ply assembly from said supply strip.

3. In a machine for making cuff or like assemblies, the combination of a pair of jaws, a work table for supporting cuff material for insertion between said jaws, said jaws being disposed with their bight normally centered on said work table, means for rocking said jaws to an offset position relative to said work table so as to facilitate the feeding of a cuff element against the front of one of the jaws while guiding said cuff element on said work table preliminary to insertion of the cuff element between the jaws, means for restoring the jaws to said normal position, means for feeding said cuff element between said jaws and incidentally folding the jaw-front engaging portion rearwardly, means for closing said jaws under pressure to press said folded cuff element between the jaws to thereby maintain said cuff element in said folded condition, and means for releasing said jaws so as to permit withdrawal of said folded cuff element.

4. In a machine for making cuff or like assemblies, the combination of a pair of jaws pivoted on a common axis for movement toward and from each other and for unitary rocking movement about said axis, a work table for facilitating the feeding of cuff material to said jaws, means for rocking said jaws as a unit so as to facilitate the feeding of one ply of a two-ply cuff assembly into engagement with a front portion of said jaw and whereby when said jaws are restored to normal position relative to said work table, a marginal portion of the other ply may conveniently be positioned against the front of the other of said jaws, a tucking device, means for actuating said tucking device to feed said two-ply assembly between said jaws, said tucking device being removable from between said jaws so as to leave said cuff elements with marginal portions folded between said jaws, means for closing said jaws under pressure to press the folds in said cuff elements so as to maintain the same folded, and means for releasing said jaws so as to permit withdrawal of said cuff elements from between said jaws.

5. Apparatus according to claim 4 wherein said work table is movable simultaneous with said tucking device to facilitate insertion of said cuff elements between the jaws.

6. Apparatus according to claim 4 wherein said tucking element is tapered to provide a thin front edge for facilitating entrance thereof between the jaws.

7. Apparatus according to claim 4 wherein the work table is movable simultaneously with the tucking member and wherein said tucking member and work table have tapered marginal portions providing a thin edge for facilitating entrance of said marginal portions of the tucking member and work table between the jaws.

8. In a machine for making cuff or like assemblies, the combination of a work table for supporting cuff assemblies, a pair of jaws adapted to first receive marginal portions of the cuff assemblies against the front surfaces of the jaws and subsequently to have portions of said assemblies inserted between the jaws for pressing,

means for supporting a supply of cuff lining material, means for guiding said material to a position overlying said work table so as to be freely accessible to an operator for withdrawal from said supply and positioning over said cuff assembly, means for effecting insertion of the cuff assembly between said jaws and incidently to fold marginal portions of parts of the assembly rearwardly over the assembly and folding of at least one part of said assembly over a marginal portion of said lining strip, means for closing said jaws under pressure so as to press the folds in said cuff assembly to thereby maintain the same permanently folded, means for severing said lining strip from the supply strip during the pressing operation, and means for releasing said jaws so as to permit withdrawal of the folded and pressed assembly.

9. In a machine for making cuff or like assemblies, the combination of a work table for supporting cuff assemblies, a pair of jaws adapted to first receive marginal portions of the cuff assemblies against the front surfaces of the jaws and subsequently to have portions of said assemblies inserted between the jaws for pressing, means for supporting a supply of cuff lining material, means for guiding said material to a position overlying said work table so as to be freely accessible to an operator for withdrawal from said supply and positioning over said cuff assembly, means for effecting insertion of the cuff assembly between said jaws and incidently to fold marginal portions of parts of the assembly rearwardly over the assembly and folding of at least one part of said assembly over a marginal portion of said lining strip, means for closing said jaws under pressure so as to press the folds in said cuff assembly to thereby maintain the same permanently folded, means for severing said lining strip from the supply strip during the pressing operation, means for releasing said jaws so as to permit withdrawal of the folded and pressed assembly, and means for automatically withdrawing the folded assemblies successively from said jaws.

10. In a machine for making cuff or like assemblies, the combination of a work table for supporting cuff assemblies, a pair of jaws adapted to first receive marginal portions of the cuff assemblies against the front surfaces of the jaws and subsequently to have portions of said assemblies inserted between the jaws for pressing means for supporting a supply of cuff lining material, means for guiding said material to a position overlying said work table so as to be freely accessible to an operator for withdrawal from said supply and positioning over said cuff assembly, means for effecting insertion of the cuff assembly between said jaws and incidently to fold marginal portions of parts of the assembly rearwardly over the assembly and folding of at least one part of said assembly over a marginal portion of said lining strip, means for closing said jaws under pressure so as to press the folds in said cuff assembly to thereby maintain the same permanently folded, means for severing said lining strip from the supply strip during the pressing operation, means for releasing said jaws so as to permit withdrawal of the folded and pressed assembly, means for automatically withdrawing the folded assemblies successively from said jaws, and a receptacle for receiving the assemblies from said withdrawing means so as to stack said assemblies, said receiving means being mounted for rotation so as to permit turning thereof through

an arc of 180° to facilitate disposition of the folded edges of said assemblies on opposite sides of the stack.

11. In a machine for making cuff or like assemblies, the combination of a pair of jaws adapted to be opened and closed for the pressing of cuff or like elements inserted therebetween, a rotatable cam for closing said jaws, power means for rotating said cam, clutch means for controlling the operation of said cam and adapted to automatically disengage said cam from said driving means once each revolution of the cam, a tucking member for effecting insertion of cuff or like elements between said jaws, and means associated with said tucking member for effecting engagement of said clutch to initiate rotation of said cam.

12. In a machine for making cuff or like assemblies, the combination of a pair of jaws adapted to be opened and closed for the pressing of cuff or like elements inserted therebetween, a rotatable cam for closing said jaws, power means for rotating said cam, clutch means for controlling the operation of said cam and adapted to automatically disengage said cam from said driving means once for each revolution of the cam, a tucking member for effecting insertion of cuff elements between said jaws, an arm for facilitating manual operation of said tucking member, and means actuated as an incident to movement of said arm for engaging said clutch to initiate rotation of said cam.

13. In apparatus for making cuffs or the like, the combination of a pair of jaws adapted to receive portions of cuff or like elements therebetween for pressing, a work table for supporting cuff elements or the like for insertion between said jaws, means for supporting a supply strip of lining material, means for guiding said supply strip into overlying relation to said work table so as to be accessible for withdrawal from said supply for positioning on said cuff elements in overlying relation thereto, means for feeding said cuff elements and lining strip between said jaws, means for closing said jaws under pressure to press the inserted portions of said cuff elements and lining strip, means for gripping a marginal portion of said lining strip intermediate the supply of said lining material and the adjacent end of said jaws, means movable transversely of said lining strip intermediate said gripping means and the adjacent end of said jaws for severing said lining strip, said gripping means being arranged to normally grip said lining strip, means for effecting disengagement of said gripping means during the withdrawal of the lining strip from said supply thereof, and means for releasing said jaws after completion of the severing of said lining strip so as to permit removal of the cuff element and lining assembly therefrom.

14. In a machine for making cuff or like assemblies, means for folding marginal portions of a cuff element rearwardly upon the cuff element and pressing the fold to maintain said marginal portion in folded condition, means for receiving the folded cuff elements successively from the folding and pressing means and operative to stack the same, said receiving and stacking means comprising a receptacle having side walls, an open top and a loose bottom adapted to be moved vertically between the side walls thereof, means for holding said receptacle in predetermined position and receiving said cuff elements, adjustable means for supporting the loose bottom of said receptacle in elevated position within the re-

ceptacle and successively adjustable to lower said loose bottom so as to maintain the top of the cuff elements within the receptacle at an approximately constant height, said receptacle being removable with its content of cuff elements from said holding means to facilitate transfer of the cuff elements for subsequent manufacturing operations while maintaining the cuff elements in smoothly stacked condition.

15. The steps in the manufacture of cuffs or the like which comprise assembling two relatively independent, unconnected plies of material face-to-face with their peripheries approximately registered with each other, effecting folding of marginal portions of both of said plies outwardly and rearwardly into face-to-face contact with the respective plies and on fold lines which substantially register with each other, and then pressing the folds to maintain said marginal portions in folded condition, thereby to provide a cuff assembly having substantially aligned, folded or finish edges.

16. The steps in the manufacture of cuffs or the like which comprise assembling two relatively independent and unconnected, cut-to-size plies of material with their normal outer sides in face-to-face relation and with their peripheries approximately registered with each other, moving said assembled plies in a predetermined di-

rection and effecting folding of forward marginal portions of said plies in the opposite direction on substantially registering fold lines into face-to-face contact with the respective plies of which said marginal portions are a part, and then pressing said folds to maintain said marginal portions in said folded condition.

17. In a machine for making cuff or like parts, the combination of a pair of jaws mounted for movement toward each other, a laterally movable work table adapted to carry cuff material into the bite of said jaws, means movable with said work table for clamping cuff material thereto for movement into said jaws, means for effecting relative movement of said jaws and work table so as to cause said work table to initially carry a portion of the cuff material into engagement with the outside of one of said jaws to thereby initiate rebending of such portion, means for effecting re-alignment of said jaws and work table so as to cause subsequent lateral movement of said work table to deliver said cuff material between said jaws and thereby incidentally to complete the rebending of said portion of the cuff material, and means for pressing said jaws toward each other so as to press the folded cuff material disposed between said jaws.

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