April 7, 1959 N. NASSEF 2,880,916

POCKET, COLLAR AND CUFF ENFOLDING MACHINE

Filed April 16, 1957 2 Sheets-Sheet 1

FIG. 1

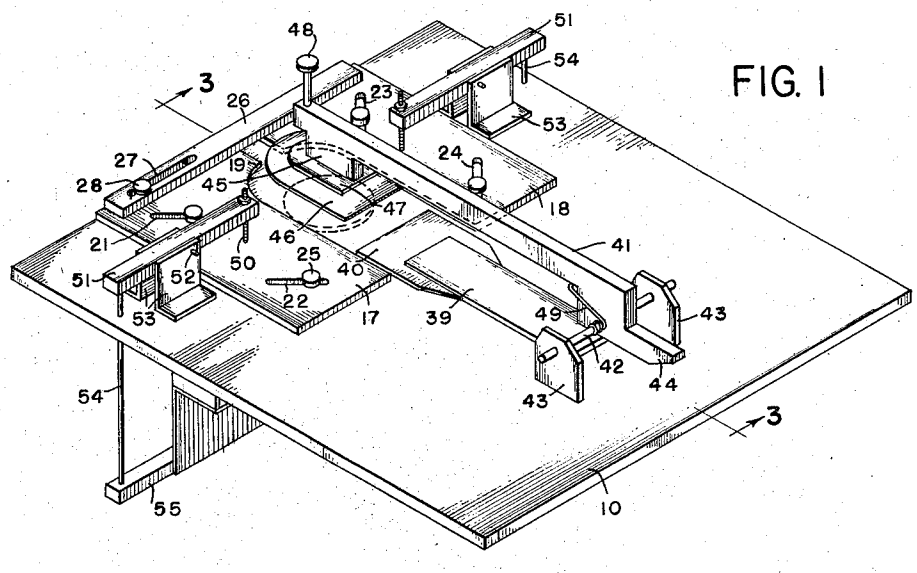
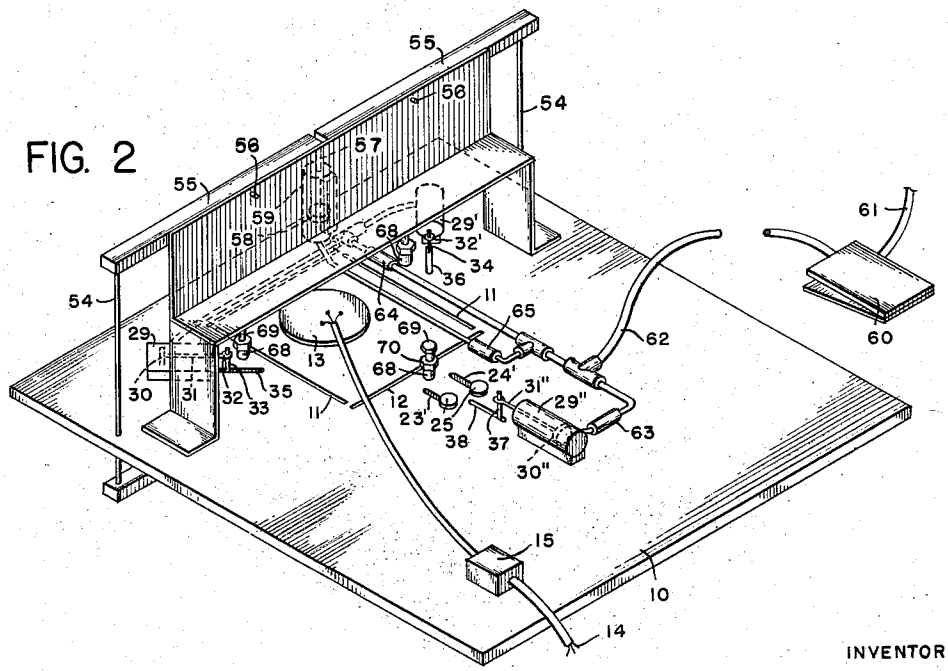


FIG. 2



INVENTOR
N. NASSEF

BY A. Yates Dowell

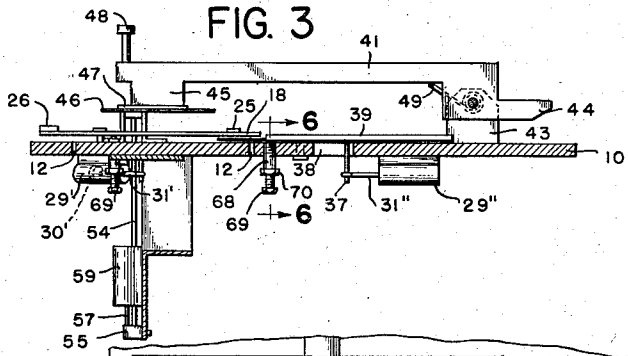
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FIG. 3



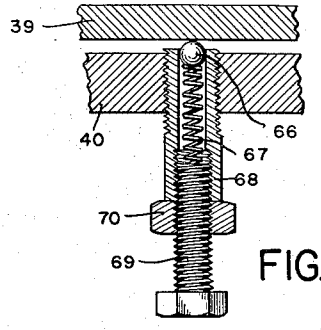


FIG. 6

FIG. 4

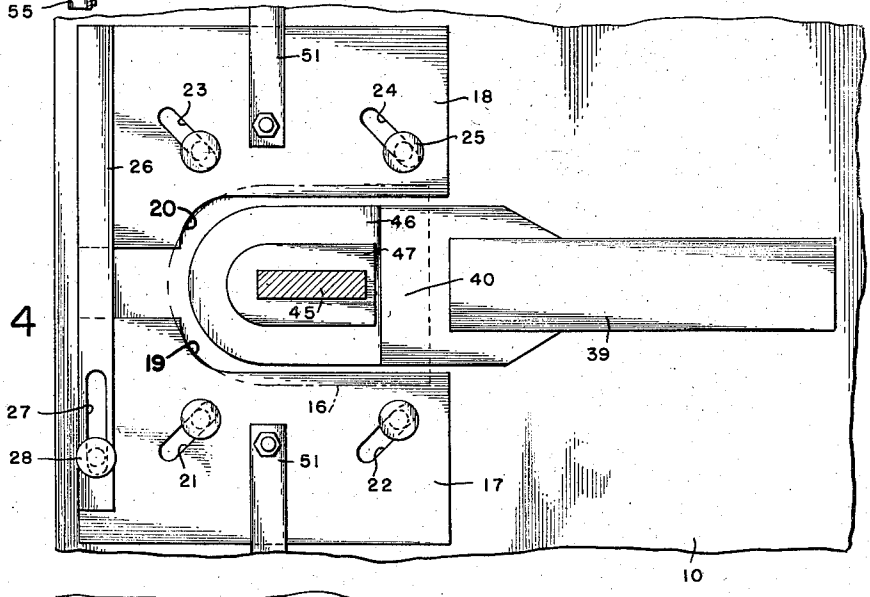
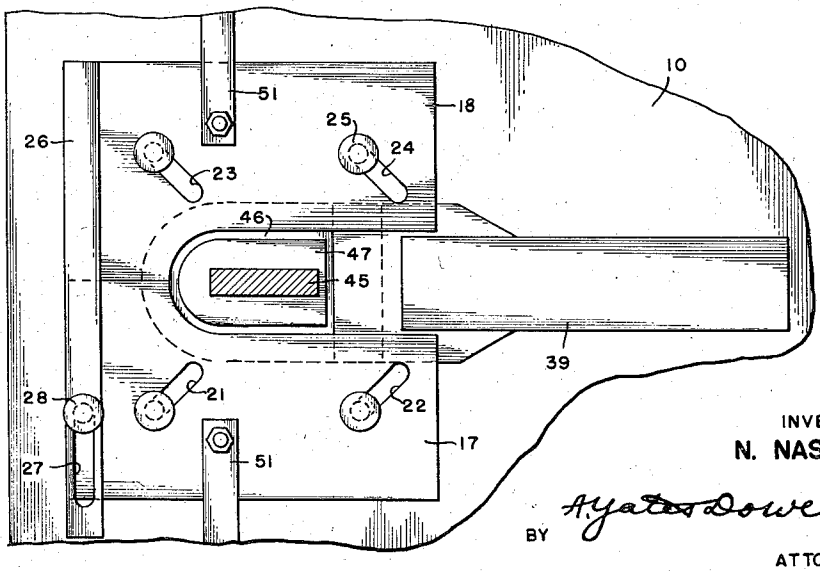


FIG. 5



INVENTOR
N. NASSEF

BY A. Yates Dowell

ATTORNEYS

United States Patent Office

Patented A

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POCKET, COLLAR AND CUFF ENFOLDING MACHINE

Namon Nassef, Kinston, N.C.

Application April 16, 1957, Serial No. 653,216

5 Claims. (Cl. 223—38)

This invention relates to the production of commodities in which parts are united and particularly in which parts of sheet material in the nature of fabric or the like are united in various ways to form a more complete article, as well as to produce articles having both utilitarian and ornamental characteristics.

The invention relates more particularly to the creasing, folding and pressing of sheet material prior to the attachment of the same to other material, sheet or otherwise in the manufacture of products, and to a machine or mechanism for accomplishing such operations.

In the folding of segments of a finished article prior to the attachment of the same, considerable effort has been expended to acquire the necessary skill, preciseness of the fold to conserve material, retain the desired connection, and to give the appearance sought. This has presented a substantial problem and efforts have been made unsuccessfully to overcome this problem mechanically and otherwise because it has interfered with production as well as increased the time and expense involved.

It is an object of the invention to overcome the difficulties enumerated and to provide a machine capable of creasing, folding, and pressing the folded portions of sheet material or piece goods so that they will lie flat for easy application and attachment, and to accomplish such creasing, folding, and pressing, with minimum effort and in a minimum of time.

Another object of the invention is to provide a machine for creasing, folding, and pressing a blank used to form a shirt pocket including all of the four corners of such blank and as near as possible in a single operation.

Another object of the invention is to provide a creasing, folding and pressing machine on which a blank cut from sheet material may be placed and have its edges creased, folded over and pressed so that the segment thus produced will retain its shape and can be readily applied to the body of a shirt to form a pocket.

Other objects and advantages of the invention will be apparent from the following description taken in conjunction with the accompanying drawings wherein:

Fig. 1 is a top perspective of the machine illustrating the embodiment of the invention; and

Fig. 2, a bottom perspective thereof.

Fig. 3, a section on the line 3—3 of Fig. 1;

Fig. 4, an enlarged fragmentary plan view with the operating lever broken away to show the folding plate after it has made the initial fold.

Fig. 5, a view similar to Fig. 4 to show the dies or J-plates after they have made the final fold; and

Fig. 6, a section on the line 6—6 of Fig. 3.

Briefly stated, the present invention is a machine for creasing, folding and pressing sheet material or piece goods such as that used to form shirt pockets with the folded portion lying flat for easy application and attachment to the body of the material. The machine comprises a table or base on which a pair of side and an end die are mounted for edgewise sliding movement with pneumatic means for moving such dies into proper position, an overlying forming plate being provided by which a blank slightly larger than the size of the finished pocket may be pressed into contact with a heated portion of the table or base after which the sliding dies are moved to fold the margin of the pocket around the folding member and the dies are pressed tightly over the folded edges of the blank by means of levers actuated pneumatically.

A base plate 10 is provided with slots 11 and slots 12 defining a pressing area within the same. Beneath such pressing area is a circular electrical or other type heating element in the form of a disk or plate 13 connected to a source of power by conductors 14 and interpositioned junction box 15, an adjustable thermostat preferably being provided for controlling the temperature. Pressing is adapted to be accomplished by contact of the sheet of material 16 which may be formed into a pocket, collar, cuff, or other object. In order to apply a blank of the material 16 to the pressing area, movable plates or dies 17 and 18 are provided at each side of the pressing area, such dies having curved end portions 19 and 20 which conform generally to the rounded corners of the template and the blank which is to form the pocket. The dies or presser plates 17 and 18 are mounted by means of slots 21 and 22 in the plate 17 and slots 23 and 24 in the plate 18, in each of which slots is received a guide post 25 attached to the base 10. The rounded end portions 19 and 20 of the plates 17 and 18 are permitted to move but are kept in proper relation by means of a bar 26 fixed to the plate 18 and having a slot 27 in which a post 28 fixed to the plate 17 may slide.

The plates 17 and 18 are moved toward and from each other by means of cylinders 29, 29' having pistons 30, 30' connected to piston rods 31, 31'. Rings 32, 32' formed in the outer ends of piston rods 31, 31' encircle posts 33 and 34 attached to the underside of plates 17 and 18, such posts extending through slots 35 and 36 respectively in the base 10. In like manner a pneumatic cylinder 29'', in which is disposed a piston 30'' attached to piston rod 31'', and having a ring 32'' at its outer end, encircles a pin 37, extending through a slot 38 in the portion of base 10 away from curved portions 19 and 20 of the dies.

The pin 37 is attached to the underside of an elongated plate 39 employed for folding sheet material operated upon by the machine. The folding plate or die 39 is mounted by means of guide posts 25 that project through slots 23' and 24' in the base plate 10 and are secured to the underside of the plate 39 which has a relatively wide square operating end 40 adapted to engage the sheet material to be folded and pressed and to fold over such material and to press such material against the hot plate within the pressing area, the plate under the control of the forwarding operating cylinder 29''. An operating lever 41 is mounted on pivot 42 carried in standards 43, attached to the base 10. The standards are located one at each side of the folding plate 39, so that the lever 41 will be disposed over the longitudinal axis of the plate 39, and the pressing area defined by the slots or openings 11 and 12, and over the heating element 13. A rear extension of the lever 41 is provided with a heel 44 which limits the raising of the front end of such lever, such front end being provided with a depending portion 45. On the depending portion 45 of the lever 41 is mounted a material forming template 46 of the shape of the material that is to be folded. If desired a reinforcing plate 47 may be interposed between the depending end 45 of the lever and the template 46. The lever 41 is provided with an operating knob 48 at its forward end for moving the template 46 from a raised to a lowered position. A spring 49 is employed for maintaining the lever raised so that the template 46 normally will be elevated.

The J-shaped dies or plates 17 and 18 are pressed downwardly by adjusting screws 50 which have their lower ends adapted to contact plates 17 or 18. Arms 51 are mounted on pivots 52 carried by angle brackets 53 attached to the base 10. The outer ends of arms 51 are connected by links 54, with pivoted bars 55 one at each side of the base 10 and mounted on pivots 56 and with their inner ends connected to a piston rod 57 which extends into and engages piston 58 within a cylinder 59, such cylinder being attached to the underside of the base plate 10.

In the use of the invention a blank is placed over the heating area of the base beneath the forming template 46 and the pressure is applied upon the knob 48 to force the blank downwardly between the J-shaped dies or plates and in front of the folding plate 39. Thereafter a control for pneumatic pressure in the form of a foot pedal 60 is actuated to allow pneumatic pressure to flow from a source, not shown, through lines 61 and 62 to the underside of the machine. A relatively weak, sequential flow control valve 63 permits cylinder 29'' to move the folding plate 39 forward so that the marginal portion 40 overlies the template 46. Upon completion of the stroke of the piston 30'' pneumatic pressure will be diverted through the pressure control valve 64 which requires an operating pressure greater than that provided by the valve 63 to simultaneously operate cylinders 29 and 29' to move the J-shaped dies so that they overlie the template 46.

The dies 17 and 18 and the folding plate 39 normally are maintained in raised position by means of a series of balls 66 urged upwardly by springs 67 within sleeves 68. Pressure sufficient to raise the folding plate 39 and dies 17 and 18 is applied to the springs 67 by adjusting screws 69 held by lock nuts 70. Thereafter air pressure is supplied to the cylinder 59 through the pressure control valve 65 which requires an operating pressure greater than that provided by the valve 64 and the cylinder 59 is actuated through its piston rod 57 causing the bars 55 to rock and through links 54 impart similar movement to the levers 51 forcing the adjusting screws 50 against the dies 17 and 18 and overcoming the tension of the springs 67 to press the margins of the blank to permanently maintain the edges of the blank enfolded.

It will be obvious to those skilled in the art that various changes may be made in the invention without departing from the spirit and scope thereof and therefore the invention is not limited by that which is illustrated in the drawings and described in the specification, but only as indicated in the accompanying claims.

What is claimed is:

1. A machine for folding and pressing sheet material, said machine comprising a base having a heating area, means for heating said area, a form having a plurality of intersecting sides and of the configuration desired for the finished sheet material, means for projecting and retracting said form into pressing engagement with said heating area, multiple dies having edge portions adapted to be brought into cooperative relation overlapping the said sides of said form, means for positioning said dies in overlapping relation to said edges of the form and for applying vertical pressing pressure to said dies in order to perform the pressing operation.

2. A machine for folding and pressing sheet material comprising a base plate having a heating area, a pair of spaced dies and a cooperating third die mounted for movement toward a common area of said base plate, a form having a plurality of intersecting sides and of a shape corresponding to the desired finished configuration of the sheet material, means mounting said form for movement toward and from said base plate into pressing engagement with said heating area, means for horizontally moving said cooperating third die and said pair of spaced dies sequentially to fold said sheet material over the entire margin of said form and means for producing relative vertical pressing pressure between said dies and said heating area for pressing said sheet material.

3. A machine for folding and pressing sheet material comprising a base having a heating area, means for heating said area, a form having a plurality of intersecting sides of a general configuration corresponding to the desired configuration of the finished sheet material, means for projecting and retracting said form into pressing engagement with said heating area, a pair of dies and a cooperating third die adapted to fold the edges of the sheet material over the periphery of said form, means for horizontally moving said dies into cooperative relation overlapping the sides of said form, and means for moving said dies vertically to apply pressure for pressing said sheet material.

4. The invention according to claim 3 in which the means for applying pressure includes levers, and power means for operating said levers.

5. The invention according to claim 3 in which pneumatic means are provided for moving the dies and subsequently pressing the dies downwardly.

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