

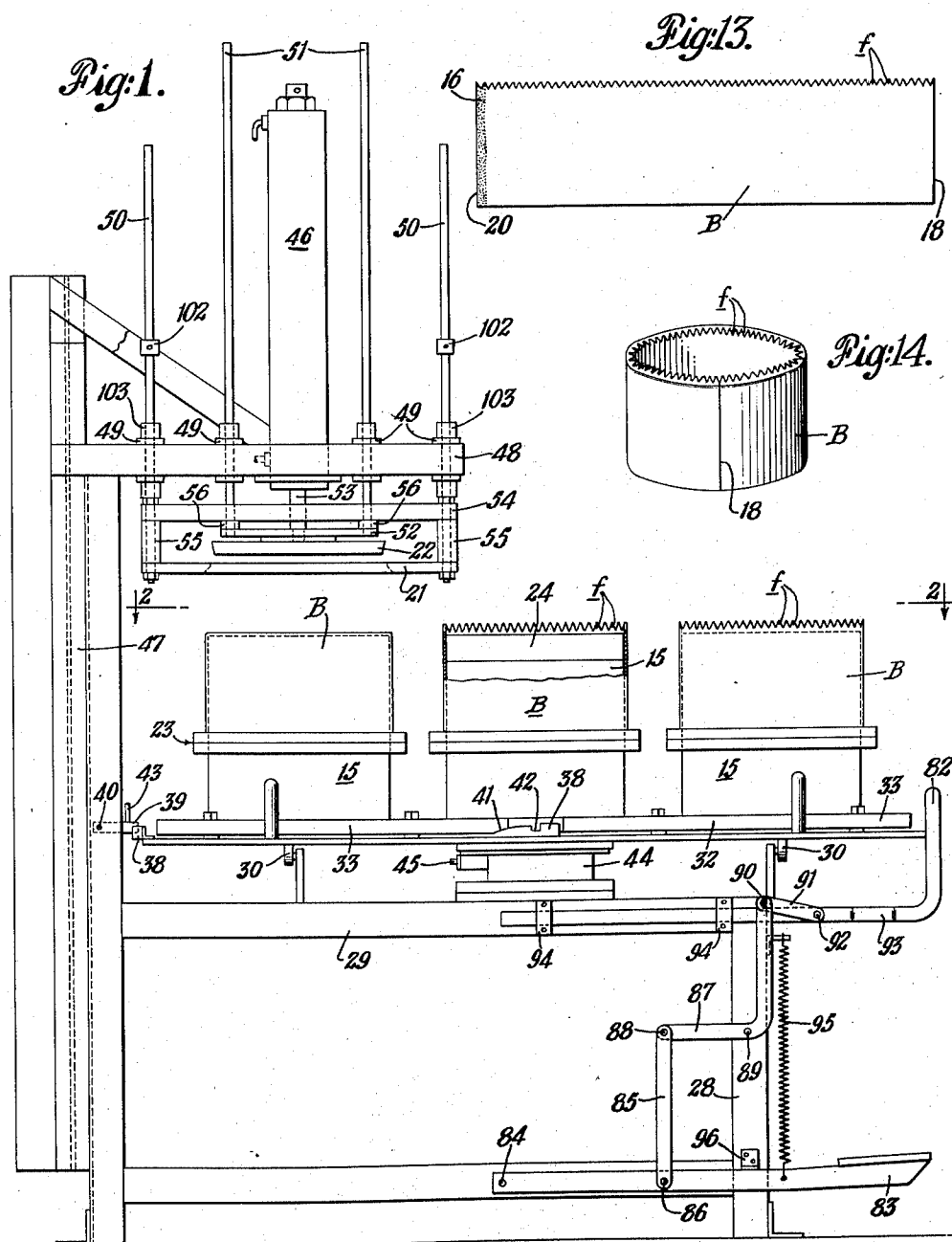
Dec. 23, 1958

W. D. SHERMAN
MANUFACTURE OF PAPERBOARD HAT BOX
BODIES AND COVER FLANGES

2,865,265

Filed June 24, 1955

4 Sheets-Sheet 1



INVENTOR.
WHITNEY D. SHERMAN

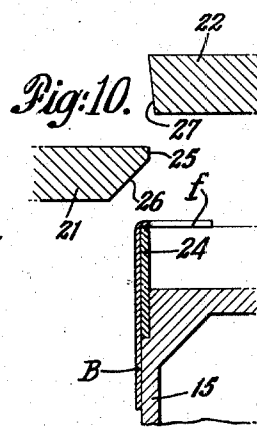
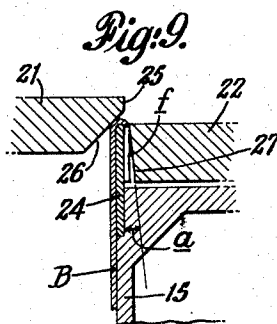
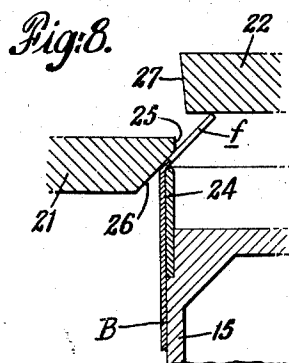
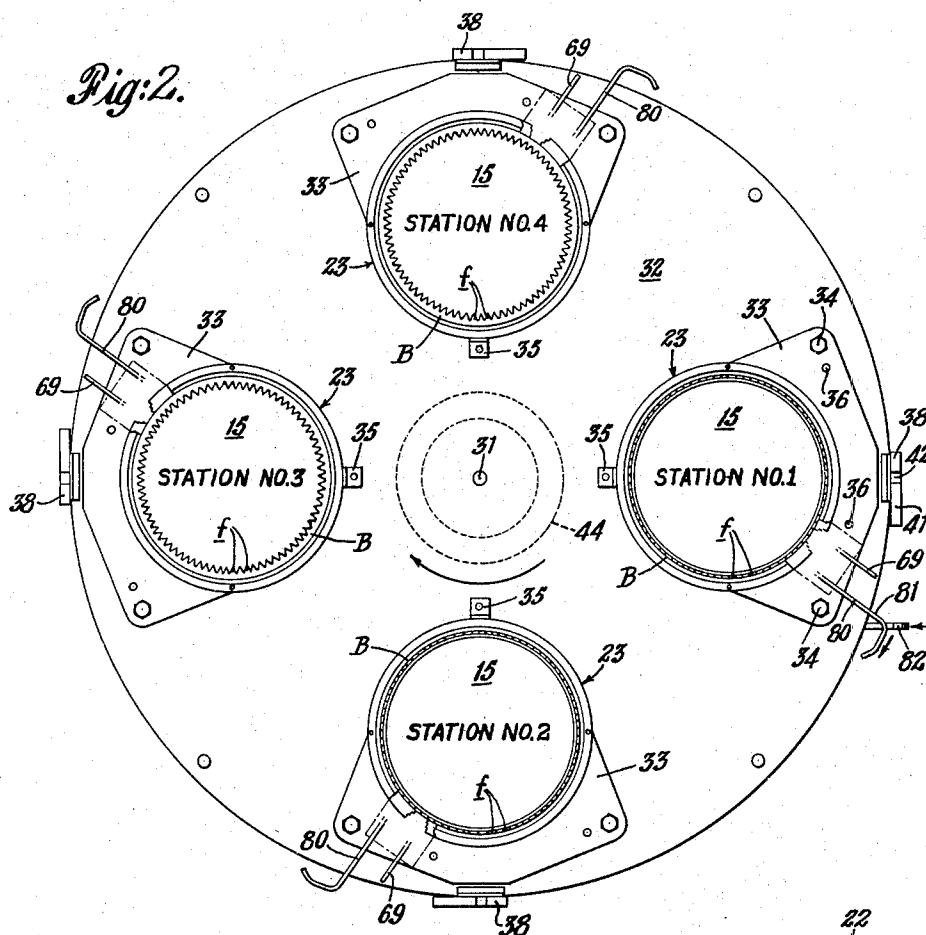
BY

Pollard, Johnston, Smith & Robertson
ATTORNEYS

W. D. SHERMAN
MANUFACTURE OF PAPERBOARD HAT BOX
BODIES AND COVER FLANGES

4 Sheets-Sheet 2

Filed June 24, 1955



INVENTOR.
WHITNEY D. SHERMAN

BY

Pollard, Johnston, Smythe & Robertson
ATTORNEYS

Dec. 23, 1958

W. D. SHERMAN
MANUFACTURE OF PAPERBOARD HAT BOX
BODIES AND COVER FLANGES

2,865,265

Filed June 24, 1955

4 Sheets-Sheet 3

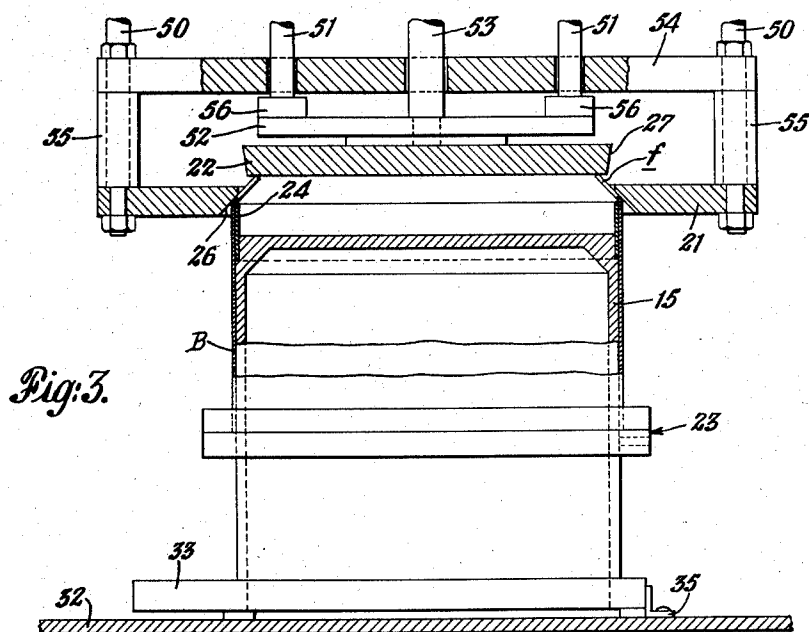


Fig. 3.

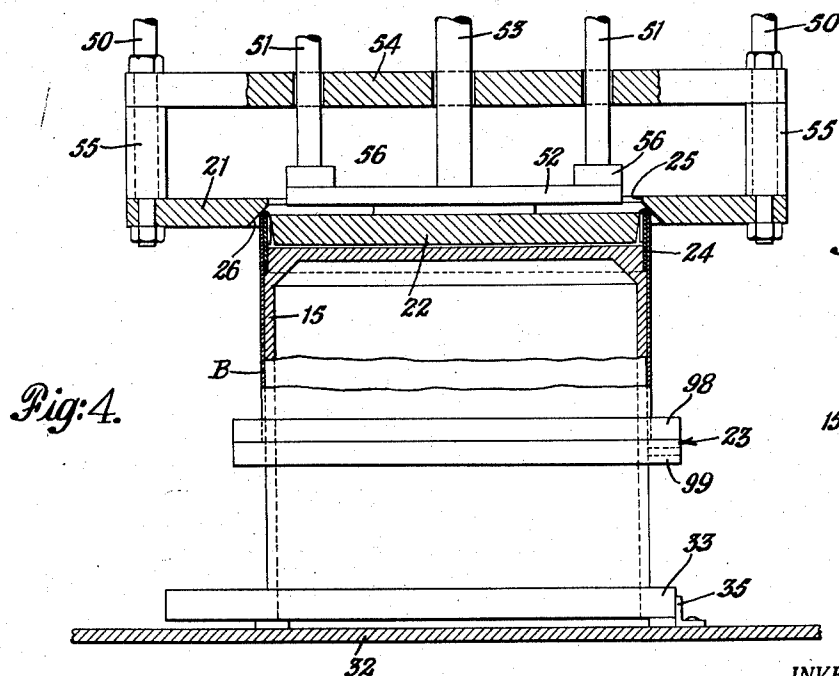


Fig. 4.

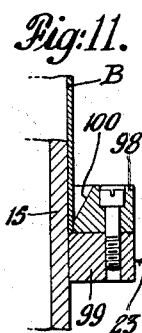


Fig. 11.

INVENTOR.
WHITNEY D. SHERMAN

BY

Rolland, Johnston, Smythe & Robertson
ATTORNEYS

Dec. 23, 1958

W. D. SHERMAN
MANUFACTURE OF PAPERBOARD HAT BOX
BODIES AND COVER FLANGES

2,865,265

Filed June 24, 1955

4 Sheets-Sheet 4

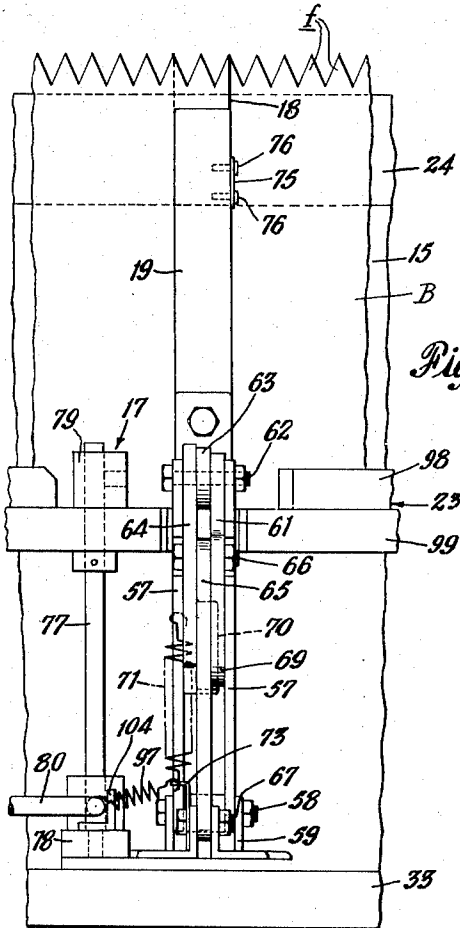


Fig. 5.

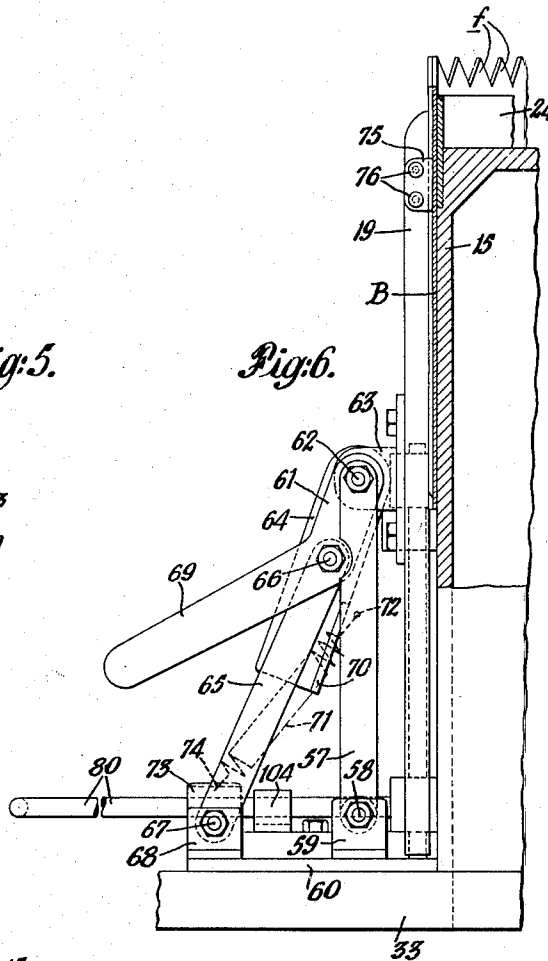


Fig. 6.

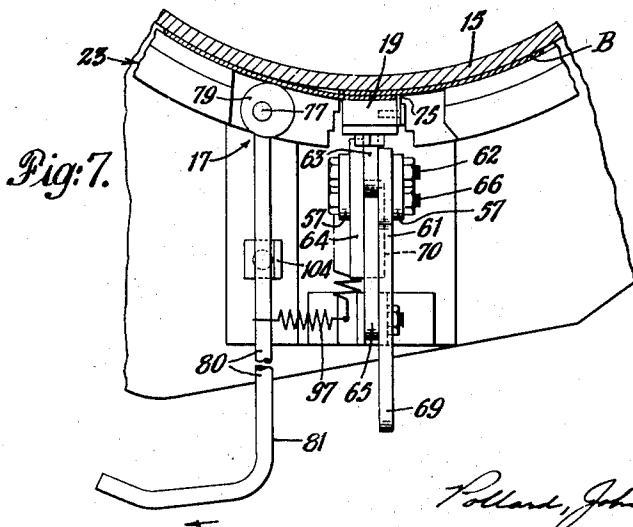


Fig. 7.

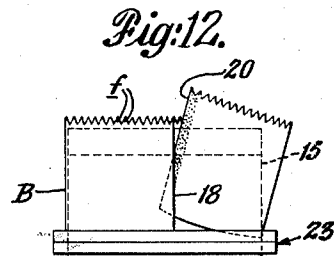


Fig. 12.

INVENTOR.
WHITNEY D. SHERMAN

BY

Pollard, Johnston, Smyth & Robertson
ATTORNEYS

1

2,865,265

MANUFACTURE OF PAPERBOARD HAT BOX BODIES AND COVER FLANGES

Whitney D. Sherman, West Nyack, N. Y., assignor to Continental Can Company, Inc., a corporation of New York

Application June 24, 1955, Serial No. 517,815

4 Claims. (Cl. 93—77)

The invention relates to the manufacture of hat boxes and the like, and more particularly to the forming of paperboard bodies and cover flanges for such boxes, and preparing such bodies and cover flanges for attachment to end and cover pieces.

My invention has special application to preparing blanks that are ready to be further processed in a machine of the type disclosed in the patent issued jointly to Heinz Ahlmeyer and me, No. 2,697,969, dated December 28, 1954, which is a machine for setting up and finishing hat boxes and covers of round, oval or octagonal form. In such boxes, a series of flaps project from one side of a continuous paperboard band comprising either the body or the cover flange of the box, these flaps being bent inwardly and glued to end and cover pieces of the round, oval or other form desired. However, the present invention is applicable to preparing such continuous paperboard bands regardless of whether intended for further processing in machines according to said issued patent, or for further processing by hand or in other kinds of machines.

Summary

In accordance with my invention, such continuous paperboard bands are prepared in set-up form, i. e. not folded flat, thus eliminating the folds or creases in bodies as previously manufactured in box makers' plants and knocked down flat for shipment to customers. The problem has been how to manufacture the continuous bands in set-up form with pre-broken attaching flaps, and also to do this with the simplest form of machinery capable of being installed at the customers' plants and operated by persons having little or no experience or training in box making.

Starting with a flat paperboard blank of substantially rectangular form having a series of flaps projecting from one side thereof, adhesive is applied to one end of the blank in any suitable manner and extending over an area which is to serve as a glue lap. The blank is then wrapped around a cylindrical or similar curvilinear mandrel with its ends overlapped at the glue lap area and the overlapped ends are held tightly together. Thereafter, while the overlapped ends are so held and the adhesive is still in process of setting, the flaps are folded inwardly to pre-break them adjacent their base portions and cause them to assume positions extending inwardly toward the center of the glued blank. The folding means are arranged for operation while the holding means at the glue lap are still effective and during setting of the adhesive, thus shortening the time of operation and enabling the use of a much more compact form of apparatus than would otherwise be possible.

The folding means comprises a female die arranged to strike the flaps into inwardly inclined positions and a male die arranged to enter the female die and strike the flaps into downwardly extending positions. The two dies are operated first successively and then conjointly so that the female die first strikes the flaps into their

2

inwardly inclined positions and then holds them so while the male die enters the female die and strikes the flaps from their inclined positions to their downwardly extending positions.

The holding means comprises a member movable into a position to press a first end of the paperboard blank against the mandrel to hold such end in fixed relation to the mandrel, and a second member movable into a position to press the overlapped ends of the blank against the mandrel and so to clamp the overlapped ends tightly together. The first member is spaced from the second so as to leave the overlapping portion of the first end of the blank free from the mandrel to permit the second end to be inserted between the first end and the mandrel. An adjustable gauge ring surrounding the mandrel is movable to selected positions along the mandrel to predetermine the position of the paperboard blank and bring the flaps into a location extending beyond the end of the mandrel to be engaged by the folding dies. The end of the mandrel is provided with a peripheral flange, and the folding dies strike the flaps over the edge of this flange and then outwardly against its inner surface.

Other features and advantages of my invention will appear as the description proceeds.

Description

In the drawings I have illustrated a machine to show the best mode contemplated by me of carrying out my invention as applied to the manufacture of bodies and cover flanges of a hat box of generally round or oval form.

Fig. 1 is a side elevational view of the machine.

Fig. 2 is a plan view of the turret table of the machine, taken as indicated at 2—2 in Fig. 1.

Figs. 3 and 4 are central vertical cross-sectional views of the flap folding mechanism, Fig. 3 illustrating the first flap folding operation, and

Fig. 4 illustrating the second flap folding operation.

Figs. 5, 6 and 7 are detail views of the mechanism for applying and securing the paperboard blank to the mandrel with its ends overlapped, and for holding them in such relation during performance of the remaining steps of the operation, Fig. 5 being a front elevational view of such holding mechanism,

Fig. 6 being a side elevational view of such holding mechanism, and

Fig. 7 being a top view thereof. (The holding mechanism of Figs. 5, 6 and 7 has been omitted in Fig. 1, but has been generally indicated in Fig. 2.)

Figs. 8, 9 and 10 are enlarged detail cross sectional views of the folding mechanism illustrating successive steps in the operation thereof, Fig. 8 showing the first flap folding operation (as in Fig. 3),

Fig. 9 showing the second flap folding operation (as in Fig. 4), and

Fig. 10 showing the folding dies withdrawn, with the flaps assuming their final inwardly folded positions.

Fig. 11 is an enlarged detail cross sectional view of a portion of the mandrel and the associated gauge ring for positioning the blank on the mandrel.

Fig. 12 is a detail view, in elevation, illustrating an intermediate step in the application of the blank to the mandrel.

Fig. 13 is a face view of the paperboard blank as prepared for processing in the machine. It is taken from that side of the blank which will be to the outside when applied to the mandrel.

Fig. 14 is a perspective view of a finished hat box body.

The apparatus illustrated in the drawings comprises in its general arrangement a cylindrical or similar curvilinear form of mandrel 15 to receive a paperboard blank B of substantially rectangular form, having a series of

3

flaps *f* projecting from one side thereof and having adhesive applied to one end thereof over an area 16 (Fig. 13) adapted to serve as a glue lap, means for holding the blank in a position wrapped around the mandrel with its ends overlapped, such holding means including a member 17 movable into a position to press a first end 18 of the paperboard blank against the mandrel to hold it in substantially fixed relation to the mandrel, and a second member 19 movable into a position to press the overlapped ends of the blank against the mandrel and so to clamp such overlapped ends tightly together (the first member 17 is spaced from the second member 19 so as to leave the overlapping portion of the first end 18 of the blank free from the mandrel to permit the other end 20 of the blank to be inserted between the first end and the mandrel), and means for folding the flaps inwardly to pre-break them adjacent their base portions, whereby they are caused to assume positions extending inwardly toward the center of the glued blank.

The folding means are arranged for operation while the holding means 19 are still effective, and during setting of the adhesive. This means comprises a female die 21 arranged to strike the flaps into inwardly inclined positions (see Figs. 3 and 8) and a male die 22 arranged to enter the female die and strike said flaps into downwardly extending positions (Figs. 4 and 9). These dies are operable first successively and then conjointly whereby the female die first strikes the flaps into their inwardly inclined positions and then holds them so while the male die enters the female die and strikes the flaps from their inclined positions to their downwardly extending positions.

An adjustable gauge ring 23 surrounds the mandrel 15 and means are provided to fix this ring in selected positions longitudinally of the mandrel, i. e. up or down as viewed in Fig. 1, (as by means of screw fastenings) to predetermine the position of the paperboard blank according to the width of the blank, i. e. the vertical dimension as viewed in Figs. 5 and 6, to bring the flaps *f* into a location extending beyond the end of the mandrel to be folded inwardly by the folding means 21, 22 (Figs. 3 and 4). The mandrel is provided at its upper end with a peripheral flange 24 extending substantially in line with the cylindrical surface of the mandrel. The female die 21 is arranged to bend the flaps *f* around the edge of this peripheral flange (Fig. 8), and the male die 22 enters the female die and presses the flaps downwardly and outwardly against the inside of flange 24 (Fig. 9). Die member 21 has a central opening 25 slightly smaller than the periphery of mandrel 15 or of flange 24 forming the upper part thereof, and this die member has a forwardly and outwardly inclined surface 26 ("forwardly" in respect of the direction of movement of the die member 21 as it approaches the mandrel to bend the flaps). Die member 21 is movable into close proximity to the end of the mandrel to strike the flaps into the inwardly inclined positions shown in Figs. 3 and 8, wherein they project inwardly beyond the edge 25 of the central opening.

Male die 22 has an outer surface 27 which is inclined forwardly and inwardly at a slight angle—preferably on the order of 20° to the direction of movement of the dies (see angle *a*, Fig. 9).

The peripheral flange 24 at the end of mandrel 15 serves functionally as a third die member in what may be regarded as a three-part die, one part of which is in the form of a peripheral flange (24) extending substantially in line with the curvilinear surface of the mandrel, another part of which is in the form of a ring (female die 21) having a forwardly and outwardly inclined surface 26 movable into close proximity with the edge of peripheral flange 24, and the third part of which is in the form of die member 22 which is arranged to enter the ring part and has an outer surface 27 movable into close proximity with the inside of the peripheral flange constituting the first part of the die.

The operating elements of my machine are mounted

4

on a suitable frame 28 having a table support 29 in which are journaled a series of rollers 30 and a spindle 31 carrying a turret table 32. The turret table rotates intermittently around spindle 31 as an axis and is supported in proper alignment by means of the aforesaid rollers 30 bearing against the under surface of the table.

In the preferred construction illustrated, there are four mandrels 15 arranged around the turret table 32 in such a fashion that, as the table revolves, each one in turn is presented in the same relative position to the flap folding dies 21, 22 and associated operating means, and also to operating means for the holding member 17.

Mandrels 15 may conveniently be made as aluminum castings having hollow interiors and flanged bases 33. The flanged bases provide a mounting for the holding members 17 and 19 and associated operating mechanism therefor, and further provide for attachment of the mandrels to table 32 as by means of bolts 34 with the aid of centering guides 35 and aligning pins 36. Collars or washers 37 disposed between the table and the base flanges 33 afford means for leveling the mandrels for correct axial alignment thereof with the flap folding dies.

As may be seen in Fig. 2, my preferred arrangement provides four operating positions of the turret table 32. At station No. 1, the paperboard blank is wrapped around the mandrel and the holding means are actuated to maintain the blank in position with its ends overlapped at the glue lap area and the overlapped ends held tightly together by the holding means 19. At station No. 2, no operator is required, but the provision of this station affords additional time for the setting of the adhesive, and consequently I consider this arrangement to be particularly advantageous as compared with a three station machine. At station No. 3, the flap folding operation is performed by means of the dies 21 and 22 acting in co-operation with the peripheral flange 24 of each mandrel in turn. At station No. 4, the continuous bands in set-up form with pre-broken attaching flaps, are released from the mandrel and removed. In cases where the bands are to be further processed in a machine of the type disclosed in the aforesaid Patent No. 2,697,969, the two machines will be arranged side by side with station No. 4 of my present machine adjacent or within reach of station No. 2 of the machine of said patent, and the operator at station No. 4 will transfer each paperboard band as removed from station No. 4 of my machine directly to station No. 2 of the other machine.

At the edge of the table 32 opposite each of the mandrels 15 are indexing locks 38, each of which is engaged in turn by an indexing latch 39 pivotally mounted at 40 to the frame (Fig. 1). As the table 32 is rotated, latch 39 passes over the inclined shoulder 41 of lock 38 and drops into the notch 42, indexing the adjacent mandrel 15 directly beneath the dies 21 and 22. Suitable means are provided for releasing the indexing latch 39, such as that comprising the rod 43 attached to latch 39. Rod 43 may comprise a part of manually operated releasing mechanism such as that described in the aforesaid Patent No. 2,697,969, locks 38, latches 39 and rod 43 of that patent corresponding to locks 38, latches 39 and rod 43 of the mechanism herein shown. Alternatively, rod 43 may form a part of suitable means for controlling the turret and die operation automatically. In the latter case the machine may include a self-dialing mechanism 44 of any well-known type, comprising auxiliary means 45 for actuating a microswitch to control operation of latch 39 and of a solenoid or other control (not shown) operating a four-way valve for feeding air to the air cylinder 46 which actuates the dies 21 and 22. Associated with such automatic operating devices, there may also be employed suitable means for applying a brake to slow up the table each time it approaches one of its indexing positions. Inasmuch as the machine is capable of operation manually by the same means as described in the aforesaid Patent No. 2,697,969, or auto-

matically with the use of conventional controls forming no part of my present invention, it will be unnecessary to describe such operating controls in greater detail here.

At the rear of frame 28 (to the left as viewed in Fig. 1), is a vertical support 47. Mounted on this support is a beam 48 to which is fixed a series of vertical sleeves 49 through which slide rods 50, 50 and 51, 51. Rods 50, 50 are affixed to die 21 and rods 51, 51 are affixed to a cross piece 52 upon which is mounted die 22. Piston rod 53 of air cylinder 46 is affixed to cross piece 52 or die 22. A lifting bar 54 is affixed to rods 50 in spaced relation to die 21 as determined by spacing sleeves 55, 55, this lifting bar being provided with openings through which pass rods 51, 51, and piston rod 53 (Fig. 3). When the parts of the mechanism are in the positions shown in Fig. 1, lifting bar 54 is engaged by collars 56, 56, carried by cross bar 52 of the inner die assembly. Thus the inner die assembly supports the outer die assembly when the piston rod 53 is retracted. When air is admitted to cylinder 46 through the manual or automatic operation of its associated air valve, piston rod 53 moves downwardly, carrying with it the inner or male die 22 and permitting the outer or female die 21 to be lowered with it through the action of gravity. When the female die 21 has reached the position shown in Figs. 3 and 8, in which it has bent the flaps *f* around the edge of peripheral flange 24 of mandrel 15, the inclined surfaces 26 of this die member bear against the flaps. Then, as piston rod 53 continues to move downwardly, the inner or male die member 22 enters through opening 25 of the female die 21 and presses the flaps downwardly and outwardly against the inside of flange 24 as shown in Figs. 4 and 9. Stops 102 adjustably fixed on rods 50, 50 are arranged to engage collars 103, 103, which may be made of neoprene to cushion the downward movement of die member 21 against the flaps and upper edge of the band 24 of the mandrel.

The holding or clamping members 19 are associated with each of the mandrels 15. The operating mechanism for each of these clamping members (Figs. 5-7) comprises a pair of links 57, 57 pivotally mounted by a bolt 58 to brackets 59 fixed to a base plate 60, and a toggle linkage comprising links 61 and 64 pivotally attached by a bolt 62 to a bracket 63 affixed to member 19, and a link 65 one end of which is pivotally attached between the links 61 and 64 by bolt 66, and the other end of which is pivotally attached by bolt 67 to a pair of brackets 68, 68. A handle 69 extending from link 61 provides a manual operating lever for the toggle mechanism. Link 64 extends below the pivotal attachment 66 and adjacent its lower end is provided with a lateral flange 70 which engages the side of link 65, serving as a stop when the toggle is released. A spring 71 is fastened at one end to link 57 at 72 and at the other end to an extension plate 73 of one of the brackets 68 at 74. This spring serves to hold the toggle mechanism alternately in its clamping and unclamped positions. A stop 75 may be provided near the upper end of clamping member 19. As illustrated, this stop consists of a small plate which projects inwardly from the clamping member by an amount which is substantially equal to one thickness of the paperboard stock. Stop 75 is suitably affixed to member 19 as by means of screws or bolts 76 passing through openings in the stop. These openings may be elongated as shown so as to permit adjustment of the stop to accommodate paperboard of varying thickness gauges.

Clamping member 17 which holds the first end of the paperboard blank while it is being wrapped around the mandrel, preferably is mounted on the same base plate 60 which carries clamping member 19, and comprises a vertical spindle 77 mounted in a suitable bearing piece 78 affixed to the base plate and having a bearing at its upper end in the gauge ring 23 as provided by extending its upper end through a vertical opening in such ring.

An eccentric cam 79 is adjustably attached to the upper end of spindle 77 in such a fashion that as the spindle is turned one way or the other, the surface of this cam is brought toward or away from the cylindrical surface of mandrel 15. An arm 80 fixed to spindle 77 extends beyond the edge of table 32 and the end of this arm is bent around to provide an inclined camming surface 81 for engagement by member 82 associated with a foot treadle operating mechanism (Fig. 2). This mechanism (Fig. 1) comprises a foot treadle 83 pivotally attached at 84 to the frame, a link 85 pivotally attached at 86 to the treadle, a bell-crank lever 87 pivotally attached at 88 to link 85, at 89 to frame 28, and at 90 to a link 91 which in turn is pivotally attached at 92 to a sliding bar 93 mounted in suitable guides 94 on table support 29. Sliding bar 93 forms a part of member 82 which engages the camming surface 81 previously described. Member 82 normally is held outwardly away from engagement with this camming surface by means of a spring 95 affixed at one end to frame 28 and at the other end to treadle 83 which lifts the treadle upwardly against a stop 96 in which position member 82 is retracted into the position shown in Fig. 1. When the treadle 83 is depressed by the operator's foot, the spindle 77 is turned to move the surface of eccentric cam 79 away from the mandrel to provide clearance for insertion of the first end 18 of the paperboard blank. Conversely, when the treadle is released, the spindle and associated eccentric cam are turned under the action of a spring 97 attached at one end to arm 80 and at the other end to the extension plate 73.

The construction of gauge ring 23 is best illustrated in Figs. 4 and 11. In the embodiment specifically illustrated, it comprises two parts 98 and 99 suitably secured together. The upper part 98 has an upwardly and outwardly inclined surface 100 and a cylindrical surface 101 which is spaced slightly from the surface of the mandrel 15 so as to permit the lower end of the blank B to be inserted between it and the mandrel. The inclined surface 100 is of assistance to the operator in guiding the blank into a position in which it is seated firmly against the base of the gauge ring.

Operation

As a further aid to the understanding of my invention, I shall now describe the preferred sequence of operating steps. First, there is provided a flat paperboard blank B of substantially rectangular form having a series of flaps *f* projecting from one side thereof (Fig. 14). Adhesive is applied to one end of this blank over an area 16 which is to serve as a glue lap. The operator at station No. 1 depresses treadle 83 to release the eccentric cam 79 of holding means 17 and places one end of the blank (that end to which adhesive has not been applied) under the holding means 17 and also under the clamping blade 19 with its vertical edge resting against stop 75 on the blade and the lower edge resting against the bottom of the groove in gauge stop ring 23. Treadle 83 is then released to actuate eccentric clamp 79 which holds the first end of the blank in substantially fixed relation to the mandrel. The other end 20 of the blank is drawn around the mandrel and its lower corner is inserted under the first end of the blank, i. e. between the first end and the mandrel. Thereupon the inserted corner is moved downwardly to complete the lap between the two ends of the blank, and as this is done the operator smooths the blank around the mandrel by wiping the right hand in a clockwise direction and downwardly to seat the lower edge of the blank against the gauge stop ring 23 and to bring the inner surface of the blank firmly against the surface of the mandrel. Next the toggle actuating lever 69 is depressed with the left hand while holding the right hand against the positioned blank. This snaps member 19 toward the mandrel and against the overlapped ends of the blank to hold them

tightly together under the action of the spring 71. Now the paperboard blank at station No. 1 is ready to be moved to the next station through actuation of the manual or automatic means previously referred to, for turning the table into its next indexing position.

During the sequence of operations at station No. 1 which precedes such re-indexing of the turret table, another operator at station No. 4 releases and removes a completed band, and may also perform the additional step of placing this completed band into the second station of a further processing machine constructed in accordance with the aforesaid Patent No. 2,697,969. When arm 80 of the clamping mechanism is released after removal of the finished band at station No. 4, spring 97 pulls arm 80 to the right (i. e. "right" as viewed in Fig. 7) when it engages a stop 104 which holds arm 80 in the correct position for alignment with member 32 when the mandrel returns to station No. 1.

Also during this same sequence of operations at stations No. 1 and No. 4, the flap folding dies at station No. 3 are operated, either manually or automatically, by the means previously referred to; this operation, if performed manually, being attended by the operator at station No. 1 by means such as described in the aforesaid patent, actuating the dies 21 and 22, first successively and then conjointly as has been described in detail hereinabove.

Upon re-indexing of the turret table, the clamped band at station No. 1 reaches station No. 2, setting of the adhesive at the glue lap progressing meanwhile; the clamped band at station No. 2, with the adhesive partially set, moves to station No. 3; and the clamped band with the flaps folded inwardly at station No. 3 moves to station No. 4. By the time that a given band passes through stations 2 and 3 and has reached station No. 4 for removal, the adhesive will be substantially fully set.

When my machine is used in conjunction with the hat box finishing machine of the aforesaid patent, my machine can be operated efficiently with the services of one and one-half operators—one and "one-half" in the sense that the second operator, viz. the one at station No. 4, also performs the operations required at one of the stations, viz. station No. 2, of the machine of said prior patent.

The terms and expressions which I have employed are used in a descriptive and not a limiting sense, and I have no intention of excluding such equivalents of the invention described, or of portions thereof, as fall within the purview of the claims.

I claim:

1. Apparatus for forming paperboard bodies and cover flanges for hat boxes and the like and preparing them for attachment to end and cover pieces which comprises a curvilinear mandrel to receive a paperboard blank of substantially rectangular form having a series of flaps projecting from one side thereof and having adhesive applied to one end thereof over an area adapted to serve as a glue lap, means for holding the blank in a position wrapped around said mandrel with its ends overlapped while clamping the overlapped ends tightly together, means for folding said flaps inwardly to pre-break said flaps adjacent their base portions whereby they are caused to assume positions extending inwardly toward the center of the glued blank, said folding means arranged for operation while said holding means is still effective and during setting of the adhesive, an adjustable gauge ring surrounding said mandrel, and means to fix said ring in selected positions longitudinally of the mandrel to predetermine the position of the paperboard blank according to the width of the blank to bring said flaps into a location extending beyond the end of the mandrel to be

folded inwardly by said folding means, said holding means comprising a member movable into a position to press a first end of the paperboard blank against said mandrel to hold said first end in substantially fixed relation to the mandrel, and a second member movable into a position to press the overlapped ends of the blank against the mandrel and so to clamp such overlapped ends tightly together, said first member being spaced from said second member so as to leave the overlapping portion of said first end of the blank free from the mandrel to permit the other end of the blank to be inserted between the first end and the mandrel.

2. Apparatus for forming paperboard bodies and cover flanges for hat boxes and the like and preparing them for attachment to end and cover pieces which comprises a curvilinear mandrel to receive a paperboard blank of substantially rectangular form having a series of flaps projecting from one side thereof and having adhesive applied to one end thereof over an area adapted to serve as a glue lap, means for holding the blank in a position wrapped around said mandrel with its ends overlapped while clamping the overlapped ends tightly together, said holding means comprising a member movable into a position to press a first end of the paperboard blank against said mandrel to hold said first end in substantially fixed relation to the mandrel, and a second member movable into a position to press the overlapped ends of the blank against the mandrel and so to clamp such overlapped ends tightly together, said first member being spaced from said second member so as to leave the overlapping portion of the other end of the blank free from the mandrel to permit said second end of the blank to be inserted between the first end and the mandrel.

3. Apparatus for forming paperboard bodies and cover flanges for hat boxes and the like and preparing them for attachment to end and cover pieces which comprises a curvilinear mandrel to receive a paperboard blank of substantially rectangular form having a series of flaps projecting from one side thereof and having adhesive applied to one end thereof over an area adapted to serve as a glue lap, means for securing the other end of the blank against the mandrel by application of pressure at a point spaced from said other end so that the portion which will constitute the outer overlapping portion of the glue lap is spaced from the surface of the mandrel sufficiently to permit insertion of a corner of the adhesive end of the blank into the space between said other end and the mandrel and sliding of the adhesive end into full overlapping relation with said other end of the blank, said means for securing the other end of the blank against the mandrel by application of pressure at a point spaced from the other end including a stop against which said other end is brought to predetermine the distance between said other end and the point at which pressure is applied, and means to press the overlapped ends of the blank against the mandrel.

4. Apparatus according to claim 3 in which said stop is spaced from the surface of the mandrel sufficiently to permit insertion of the adhesive end of the blank between the stop and the mandrel.

References Cited in the file of this patent

UNITED STATES PATENTS

1,166,636	Russell	Jan. 4, 1916
1,401,132	Bond	Dec. 27, 1921
1,526,554	Lake	Feb. 17, 1925
2,664,036	Triolo	Dec. 29, 1953
2,685,829	Taber	Aug. 10, 1954
2,697,385	O'Neil	Dec. 21, 1954
2,697,969	Ahlmeier et al.	Dec. 28, 1954