Nov. 27, 1928. 1,693,007

L. P. TOSCANO

METHOD OF AND APPARATUS FOR LINING CLOSURE ELEMENTS

Filed Nov. 28, 1924 3 Sheets-Sheet 1

Fig. 1

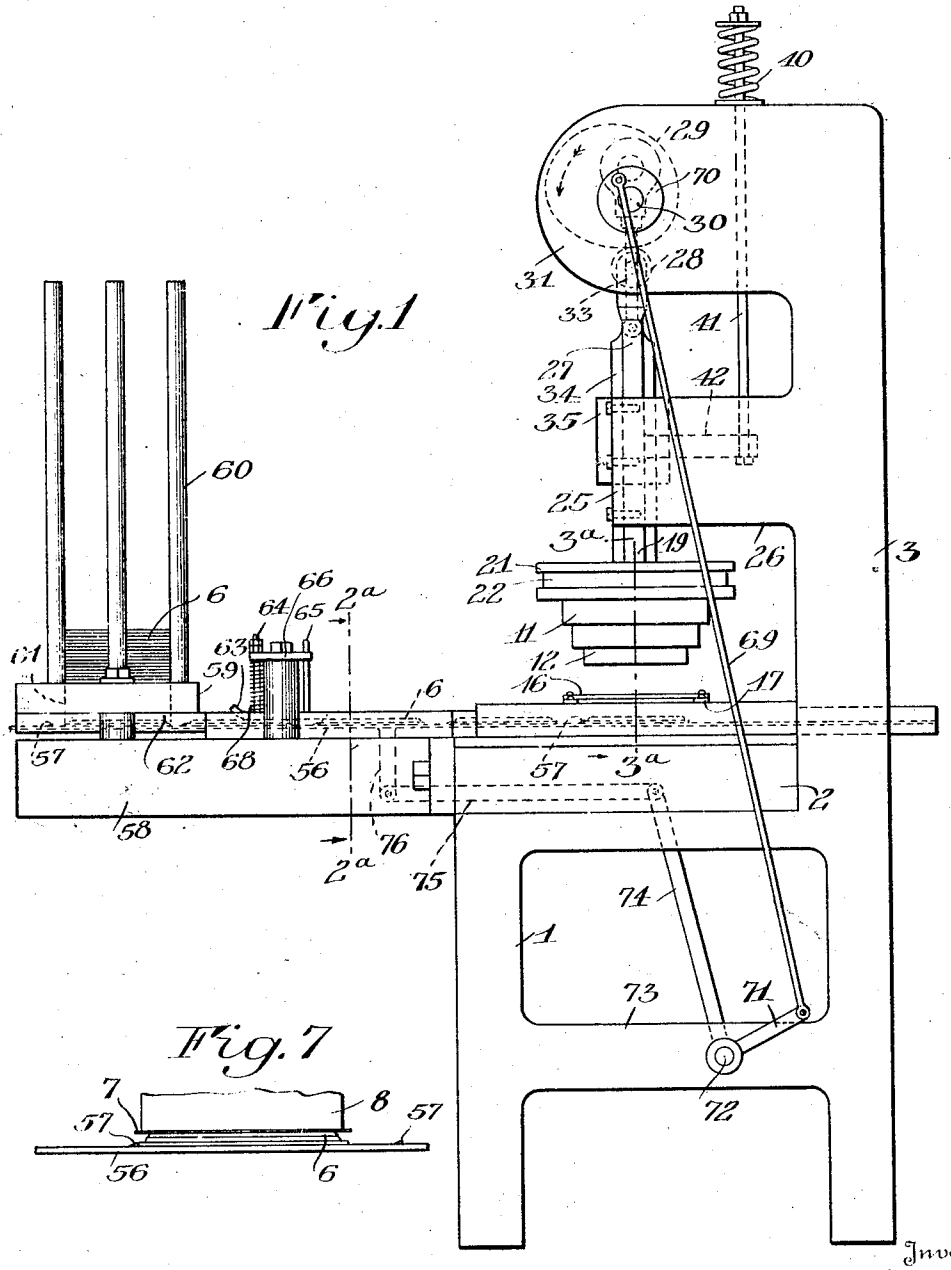


Fig. 7

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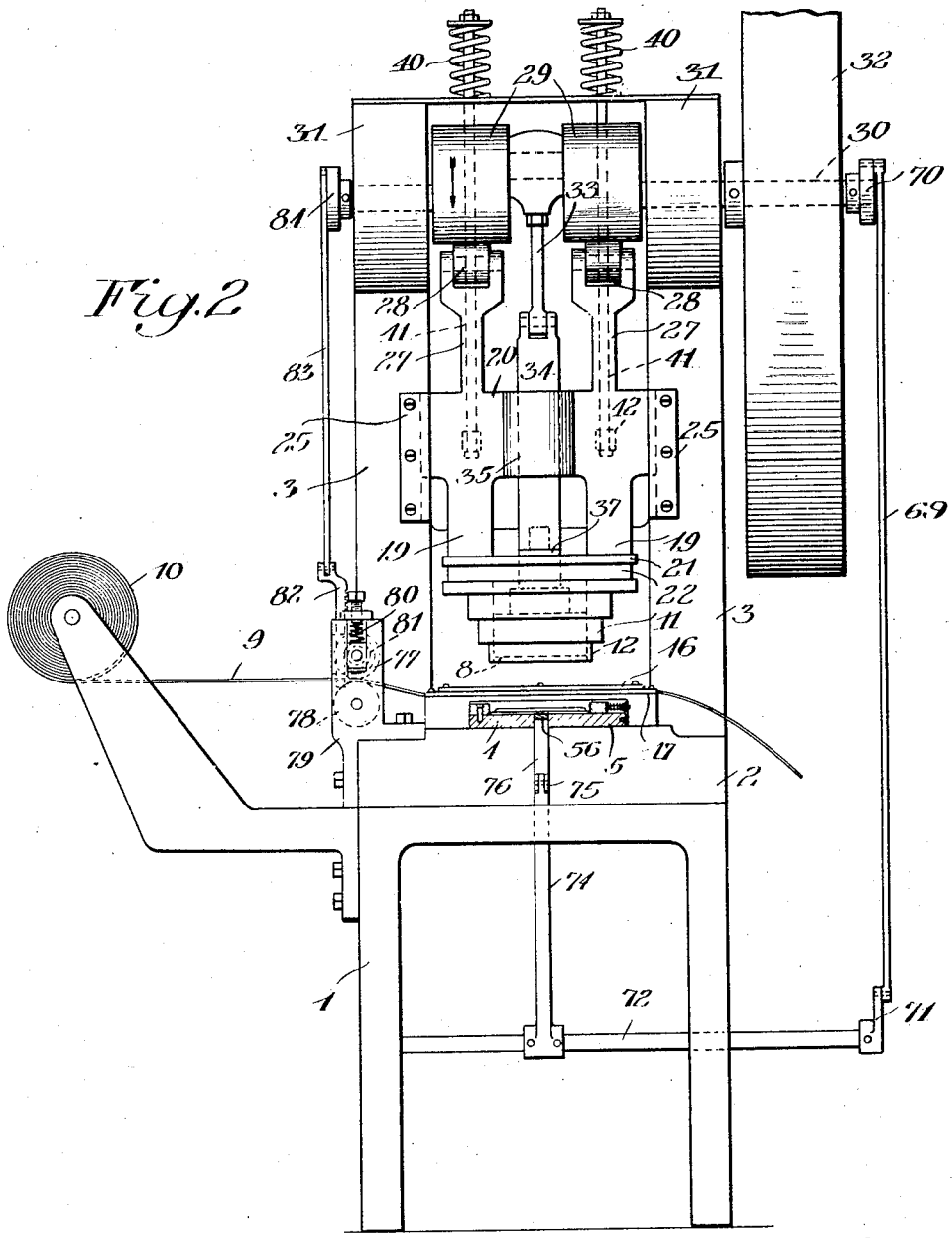
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METHOD OF AND APPARATUS FOR LINING CLOSURE ELEMENTS

Filed Nov. 28, 1924 3 Sheets-Sheet 2

Fig. 2



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Nov. 27, 1928. 1,693,007

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METHOD OF AND APPARATUS FOR LINING CLOSURE ELEMENTS

Filed Nov. 28, 1924 3 Sheets-Sheet 3

Fig. 3

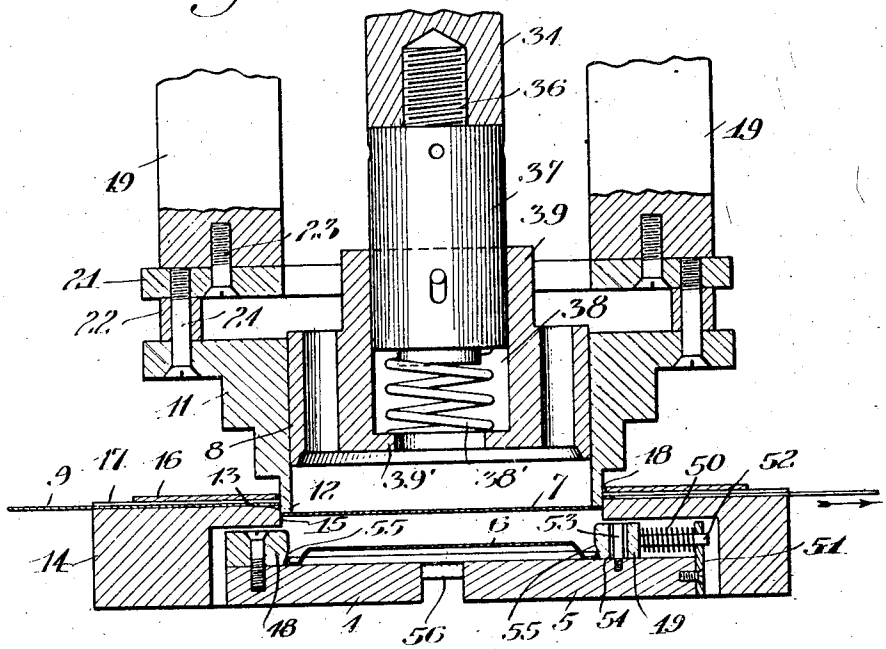


Fig. 1

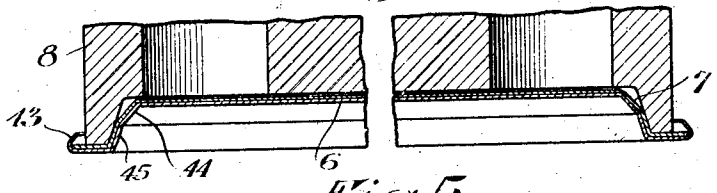


Fig. 5

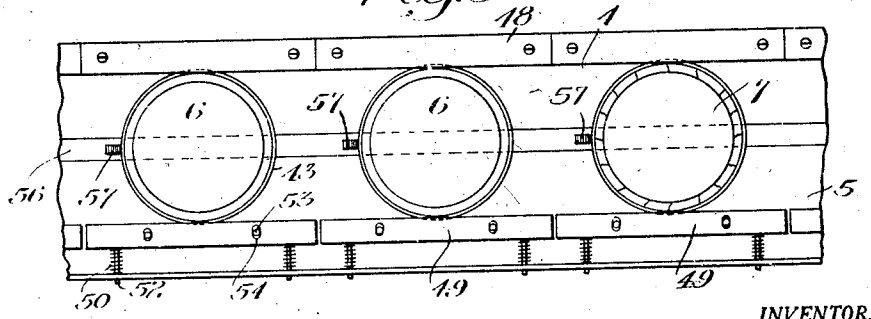
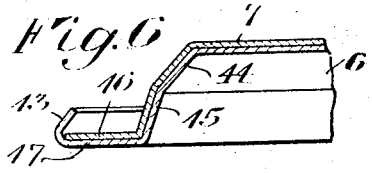


Fig. 6



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Patented Nov. 27, 1928. 1,693,007

UNITED STATES PATENT OFFICE.

LOUIS P. TOSCANO, OF UTICA, NEW YORK, ASSIGNOR TO FONDA CONTAINER CO., INC., OF UTICA, NEW YORK, A CORPORATION OF NEW YORK.

METHOD OF AND APPARATUS FOR LINING CLOSURE ELEMENTS.

Application filed November 28, 1924. Serial No. 752,728.

The present invention relates to a method of and apparatus for lining closure elements for containers.

One object of the invention is to provide an improved method by which the production of large numbers of insulated closures for containers and the like may be rapidly effected in an economical and efficient manner. More particularly, the present method embodies the intermittent feeding of a series of closure elements to a predetermined point of operation, the feeding of suitable lining material in proximity to said point, the severing of blanks of the proper size from said material, and the application of the blanks to the closure elements.

Another object of the invention is to provide an improved machine in which the coordination of the operations necessary to assemble the closure elements and to form and apply the insulating blanks thereto is carried out in an efficient and economical manner.

Still another object of the invention is to provide a simple, efficient and dependable machine which will intermittently feed a series of closure elements to a predetermined point upon a support and which will automatically and intermittently feed a strip of sheet material into registry with the closure elements at said point and sever blanks from the strip and apply the same to the closure elements, the several operating mechanisms being coordinated to perform the different operations in proper timed relation.

To these and other ends the invention resides in certain improvements and combinations of parts, all as will be hereinafter nore fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

Figure 1 is a side elevation of a machine illustrating one embodiment of the invention;

Figure 2 is a transverse sectional elevation taken on the line 2^a—2^a of Figure 1;

Figure 3 is an enlarged sectional elevation taken on line 3^a—3^a of Figure 1, and illustrating the means for severing and applying the blanks of insulating material to the closures;

Figure 4 is an enlarged fragmentary sectional elevation through the closure and the crimping die with the latter shown in its lowermost position upon the former;

Figure 5 is a top plan of a portion of the mechanism for feeding the closures to the crimping die;

Figure 6 is a fragmentary sectional elevation illustrating on an enlarged scale the application of the insulating sheet material to the inner face of the closure, and

Figure 7 is a diagrammatic view in elevation showing one of the closures upon the feed bar with the blank in position to be applied to the closure by the crimping die.

Similar reference numerals throughout the several views indicate the same parts.

The present invention embodies an improved machine for effecting automatic advancement of a series of closure elements preferably of the flanged or curled edge type to a predetermined blank applying position and includes means for intermittently feeding lining material to a point in proximity to the blank applying position, together with automatic means for successively severing blanks from said material and means operated in timed relation thereto for applying the severed blanks to the closure elements, either by crimping the blank upon the closure element or by forcing its peripheral edge portion behind or under an inwardly inclined or curled flange thereof, or both as may be desired.

The closures or covers thus produced are adapted preferably to constitute the end walls of a well known type of paper container now in use, but may be employed in connection with any type of container requiring a lined or insulated cover or wall, said closures being suitably applied to the body of the container, as by crimping, or in any manner desired. The containers are preferably both air and liquid tight and are sanitary and extremely light in construction and of a durable nature.

In the drawings I have shown a frame 1 having a table 2 thereon and upright extensions 3 at one side thereof. An anvil or bed plate is superimposed upon the table and preferably comprises the spaced plate members 4 and 5, shown in Figures 2 and 3, and are adapted to support the closures 6 while the blanks of insulating material 7 are being applied thereto by the inserting and crimping die 8 as indicated in Figure 4. The

blanks are cut from a sheet or strip of paper 9, or any other material suitable for insulating the contents of the containers from the metal end closures thereof. The paper strip, which is of a width slightly greater than the diameter of the blank 7, is intermittently fed from a roll 10 into registry with the inserting or crimping die and the closure thereunder by a suitable feed mechanism which will be hereinafter described.

The blank severing means preferably comprises a reciprocably mounted head 11 having a ring shaped cutter 12 adapted to cooperate with the annular cutting edge 13 of a die 14 having an opening 15 in registry with the anvil, the latter being adapted to support the closure centrally beneath the plunger 8 during the crimping or blank applying operation. The paper is fed across the upper face of the cutting die 14 beneath a cover 16 supported by strips 17 which form guides for the paper and which are suitably connected with the die 14, the cover 16 having an opening 18 large enough to accommodate the cutting ring 12 or movable part of the severing die. The cutting ring 12 is shown in its lowermost position in Figure 3, with the severed blanks 7 in position to be moved down and applied to the closures by the blank applying die 8, in the manner shown in Figure 4. The head 11 which carries the cutting ring 12 is suitably connected with the depending portions 19 of a cross head 20 by means of the upper and lower rings 21 and 22 and the screws 23 and 24 as shown in Figure 3. The cross head 20 is guided in ways 25 on the arms 26 projecting from the upright frame members 3, and is provided with extensions 27 carrying rollers 28 which engage cams 29 upon a crank shaft 30, journaled in suitable bearings carried by the forwardly projecting arms 31 at the top of the frame members 3. The crank shaft is provided with a fly wheel 32 which may be driven by a belt not shown, or by any means suitable for operating the shaft. The crank shaft is provided with a connecting rod 33 pivotally connected with a plunger 34 guided in a sleeve-like portion 35 of the cross head 20 as shown in Figure 2. The plunger 34 is threaded at its lower end to receive the extension 36 of a connection 37, slidably disposed in the bore 38 of a hub 39 which is centrally disposed upon the crimping die 8 as shown in Figure 3. A spring 38′ is interposed between the connection 37 and the bottom wall 39′ of the die, whereby to form a yieldable connection between the crank shaft and the die to avoid rupturing of any part of the mechanism.

The crimping or blank applying die is mounted to slide within the head 11 carrying the cutting ring 12 and is reciprocated therein by the crank shaft, while the cutting ring is reciprocated by the action of the cams 29 and the springs 40 which constantly exert an upward pull on the rods 41, the latter being connected with the rearwardly projecting arms 42 of the crosshead. The springs therefore serve to lift the cross head and the cutter ring to their highest position when the cams are in the position shown in Figure 1. In this position of the cams the offset portion of the crank shaft is at its highest point and consequently the crimping or blank inserting die is elevated the maximum amount, to the position indicated by the dotted lines in Figure 2. Rotation of the crank shaft from the position indicated in Figure 2 in the direction indicated by the arrow will result in a downward movement of the cross head which will carry the cutting ring through the paper to sever the blanks as shown in Figure 3. Following closely after the blank severing operation the crank shaft will move the die 8 downwardly to carry the blank into engagement with the closure and will both crimp it thereon and force its peripheral edge portion behind the inclined flange 43 of the closure, it being understood that the blank is cut large enough to allow for the amount of material required to cover the beveled portions 44 and 45 of the closure, as indicated in Figure 6. The blank applying portion of the die is so shaped as to effectively draw the paper downwardly upon the inclined portions 44 and 45 to crimp it thereon and at the same time is adapted to force the peripheral edge portion 46 of the blank behind the inturned flange 43 and into engagement with an annular portion 47 of the closure, as shown on an enlarged scale in Figure 6. The crimping action gives a permanent set to the blank, corresponding to the shape of the closure so that the blank will remain in proper position upon the latter after it has been secured to the bottom of the container or to the movable end cap therefor, as the case may be. The external appearance of the blank when crimped upon the closure is substantially as indicated by the finished closure shown at the right of Figure 5, which is at a point upon the anvil corresponding to that shown in Figure 3, or in other words, in position to register with the crimping die.

Although I have shown a dished form of closure, it will be understood that my improved method contemplates the application of the lining blanks to closures, either of the dished or substantially flat type or of the flanged or nonflanged type, and embodies the forcing of the peripheral edges of the blanks behind the flanges of the closures, regardless of whether or not the shape of the closure is such as to require a crimping action of the blank in applying it to the closure. The closure when completed, as shown in Figure 6, are applied to the con-

tainers, not shown, and may be secured thereon by a crimping or seaming operation or in any well known manner.

The closures are advanced upon the bed plates or anvil bars 4 and 5 between suitable guide bars 48 and 49, the former being fixed upon the bed plate 4 and the latter yieldably mounted upon the bed plate 5, by means of springs 50, having their inner ends seated upon the guide bars 49 and their outer ends upon a plate 51, the springs being carried by the stems 52 guided by the plate 51. Studs 53 project into slots 54 of the bars 49 and limit the movement of the latter with respect to the closures. Both guide bars 48 and 49 are beveled as indicated at 55 to receive the inturned flanges 43 of the closures, whereby to hold the closures properly seated upon the anvil bars during their advancement to blank applying position.

The feeding mechanism for the covers or closure elements 6 preferably comprises a reciprocably mounted bar 56 movable between the bed plates or anvil bars 4 and 5. The feed bar is provided with a series of fingers or projections 57 adapted to engage the closures as shown in Figure 5 to advance them step by step into registry with the crimping die where they remain long enough to have the lining applied thereto, the fingers being disposed in recesses formed in the bar and yieldably pressed upwardly by springs, not shown.

An extension frame 58 is carried by the main frame 1 to support a holder for a series of flanged or curled closure elements as shown in Figure 1. The holder may be constructed in any desired manner, but preferably comprises a plate 59 having upstanding guides 60 for the closures and is provided with an opening 61 slidably larger than the diameter of the closure elements to permit them to descend by gravity upon a pair of spaced plates 62, only one of which is shown, and between which the feed bar operates to successively engage and advance the lowermost closure of the stack through engagement of the outermost finger 57 of the bar with said closure when the bar begins to advance toward the crimping die from its extreme outer position, as shown in Figure 1. The feed bar may be provided with any desired number of the fingers 57, preferably 5, each of which advances a closure one step for every forward stroke of the bar. On the return stroke of the bar the yieldably mounted fingers ride under the closures and then move back to normal position ready to advance the closure elements when the bar is again moved forwardly. Upon advancement of the bar from the position shown in Figure 1, the front closure, upon which a blank has been applied, will be pushed forward and the second closure brought into registry with the crimping die, while at the same time each succeeding closure overlying the bar will be advanced one step. The closures to which the blanks have been applied will be pushed forward by the advancement of the succeeding closures and carried to the desired point of discharge, preferably to a chute, not shown. However, if desired, additional fingers may be disposed upon the front end of the feed bar to successively engage and advance the completed closures to the desired point of discharge from the machine.

In order to insure the proper feeding of the closures between the rear ends of the guides 48 and 49 when the closures are passing thereto from the guide plates 62, I have provided between the guide bars a pair of shoes 63 connected with upwardly extending rods 64 and 65 which project through and are guided by a plate 66 supported by posts 67 on the frame 58, the receiving ends of the shoes being inclined upwardly so that the closures will more readily pass beneath the shoes, which are yieldably held in engagement with the closures by suitable springs 68 as shown in Figure 1.

Reciprocation of the feed bar in proper timed relation to the movements of the cutting ring and the die for applying the blanks to the closures may be effected by any suitable means, but preferably by means actuated by the crank shaft. This is done in the present instance by a pitman 69 having its upper end connected with a crank disk 70 on the fly wheel end of the crank shaft and its lower end connected with an arm 71 on a rock shaft 72 journaled in the side members 73 of the frame 1. The rock shaft carries an upstanding arm or lever 74 which is pivotally connected with the front end of a link 75, the rear end of which is connected with an arm 76 depending from the feed bar as indicated in Figure 1. It will be readily seen that upon each revolution of the crank shaft the feed bar will be advanced from and returned to the position shown in Figure 1, or in other words, a complete operation of the same will be effected.

The paper feed mechanism, as before stated, may be of any well known type, but preferably comprises a pair of feed rolls 77 and 78 mounted one above the other upon suitable brackets 79 as shown in Figure 2. The upper roll is yieldably held in engagement with the paper by springs 80 and is provided at one end with a driving gear 81 having an overrunning clutch, not shown, the gear being preferably operated by a rack 82 actuated by a pitman 83 driven by a crank disc 84 on the crank shaft 30 as shown in Figure 2. By this mechanism the paper will be advanced step by step in timed relation to the movements of the cutting ring, the advance being made following each pe-

riod of withdrawal of the crimping die from blank applying position.

It will be understood that the present drawings are of a more or less conventional nature, but are sufficient to clearly illustrate the principles of the invention and the method employed in the practice of the same, as well as to illustrate one type of machine suitable for a rapid production of the closure elements.

Various modifications in the details of construction and operation may be made within the scope of the invention, the present construction being one of the possible embodiments which has been found to be efficient and economical in operation.

I claim as my invention:

1. The method of lining closure elements which comprises placing a cover element having a beveled or inclined portion upon an anvil, positioning a lining strip upon a holder in registry with the anvil, moving a cutter in registry with the anvil to sever a blank from said strip and moving the blank along the axis of the cutter into engagement with the cover by means of a crimping die moving relative to the cutter and shaping the blank upon said inclined portion by continued movement of the crimping die.

2. The method of lining closure elements, which comprises placing a closure element having an inturned flange upon a suitable support, positioning a lining strip upon a holder at one side of the element, moving a cutter in registry with the closure element to sever a blank from said strip, moving the blank along the axis of the cutter into engagement with the element independently of the movement of the cutter, and forcing its peripheral edge behind the inturned flange of the closure element.

3. The combination of a frame having an anvil thereon and means for feeding closure elements to and from the anvil reciprocally mounted, blank cutting means disposed at one side of the anvil, means for feeding a lining strip between the cutting means and the anvil, means for operating the cutting means to sever blanks from the strip, means coincident with the cutting means and movable relative thereto adapted for moving and applying the blanks to the closure elements and operating mechanism for said last mentioned means.

4. The combination of a frame having an anvil thereon, means for periodically feeding flanged closure elements to and from a predetermined point upon the anvil, means for intermittently feeding a strip of lining material in proximity to the anvil reciprocally mounted, means adapted to sever blanks from said strip in registry with said point and in timed relation to the feeding means for the closure elements, and means movable relative to the severing means for positioning and crimping the blanks upon said flanged closure elements while at said predetermined point upon the anvil.

5. The combination of a frame and an anvil thereon, a holder for a series of closure elements, reciprocably mounted means adapted to successively transfer the closure elements from the holder to the anvil, mechanism for feeding sheet material in registry with the anvil, means in registry with the anvil for successively severing liners from said material, and means in registry with the anvil movable relative to the cutter for applying the liners to said closure elements.

6. The combination of a frame and an anvil thereon, a holder for a series of closure elements, means reciprocably mounted beneath the holder and the anvil adapted to advance the closure elements in regular succession from the holder to the anvil, means for guiding the closure elements during advancement to the anvil, including relatively fixed and yieldable members for engaging the opposite edges of the elements, and means for applying lining blanks to said closure elements while held by the anvil.

7. The combination of a frame and an anvil thereon, a holder for supporting a series of closure elements one upon another, a bar reciprocably mounted beneath said holder and said anvil and having a series of projections adapted to cooperate in withdrawing the closure elements from the holder and successively positioning them upon the anvil, guides upon the anvil for said elements, one of which is adapted to yieldably engage the elements, means for operating the bar and means for applying lining blanks to said cover elements while held by the anvil.

8. The combination of a frame and an anvil thereon, means for successively positioning closure elements upon the anvil, means adapted to feed a lining strip in registry with the closure elements upon the anvil, a ring shaped cutter movable toward and from the anvil to sever blanks from said strip, a crimping die operable through said ring shaped cutter to crimp the blanks upon the cover elements and means for operating the cutter and the die in timed relation.

9. The combination of a frame having an anvil thereon, means for intermittently feeding flanged closure elements to said anvil, means for feeding sheet material in registry with the anvil, severing means including relatively movable shearing members adapted to cooperate in severing blanks from said material, and a plunger operable through said members and adapted to force the peripheral edges of the blanks behind the flanges of the closure elements.

10. The combination of a frame having an anvil thereon provided with opposed guides, reciprocally mounted means for intermittently sliding flanged closure elements upon

the anvil and between the guides to a predetermined point, a recessed member overlying the anvil opposite said point, means for feeding sheet material upon said recessed member, a reciprocably mounted ring shaped member adapted to cooperate with said recessed member to sever blanks from the sheet material, a plunger operable through the recessed and ring-shaped members and adapted to force the peripheral edges of the blanks behind the flanges of said closure elements while the latter are held at said point, and operating means for the plunger and the ring-shaped member adapted to move them in proper timed relation to successively sever and apply the blanks to the closure elements upon the anvil.

11. The combination of a frame having an anvil thereon provided with stationary and yieldably mounted guides spaced one from the other, means for intermittently feeding flanged closure elements to a predetermined point upon the anvil between the guides, means for applying blanks of sheet material to the closure elements upon the anvil at said point, and means adapted to force the peripheral edges of the blanks behind the flanges of the closure elements.

12. The combination of a frame having an anvil thereon, provided with yieldable guide means for moving a closure element laterally upon the anvil to center it thereon, means for intermittently feeding flanged closure elements to the anvil between said guides, means for supplying blanks of sheet material to the closure elements upon the anvil and means adapted to force the peripheral edge portions of the blanks behind the flanges of the closure members.

13. The method of lining container covers having offset beveled or inclined portions and surrounding upstanding flanged portions, which comprises successively positioning the covers upon the support, intermittently feeding the strip of lining material into registry with the covers, severing blanks from the strip, moving the blanks to position them upon the covers and shaping the blanks by a crimping action to conform to the shape of that portion of the cover lying within said flanged portion.

14. The method of lining container covers having offset beveled or inclined portions and surrounding upstanding flanged portions, which comprises successively positioning the covers upon a support, intermittently severing blanks from a strip of lining material, moving the blanks co-axially of the covers to position them thereon, and crimping the blanks upon said beveled or inclined portions to conform substantially to the contour thereof.

15. The method of lining container covers provided with peripheral flanges and having laterally offset portions including beveled faces inclined to the axis of the covers, which comprises successively feeding the covers to a predetermined point upon a support, intermittently feeding a lining strip into registry with the covers at said point, successively severing blanks from said strip, moving the blanks into position upon the offset portions of the covers and thereafter crimping them to conform to the contour of the inclined surfaces and forcing their peripheral edge portions behind said flanges.

16. The combination of a frame having a stationary anvil thereon, means for intermittently moving closure elements having inturned flanges to a predetermined point upon the anvil, means for feeding sheet material in registry with the closure elements at said point, cutting means for severing blanks from the material at said point, and means operable through the cutting means adapted to force the peripheral edge portions of the blanks behind the inturned flanges of the closure elements while the latter are held at said point.

17. The combination of a frame having a stationary anvil provided with opposed upstanding closure guides, means for intermittently sliding the closure elements upon the anvil to a predetermined point between the guides, blank cutting means in registry with said point, means for feeding a lining strip between the cutting means and the anvil, means for operating the cutting means to sever blanks from the strip at said point, and means in registry with the cutting means and movable relative thereto for applying the blanks to the closure elements while upon the anvil at said point.

18. The combination of a frame having an anvil thereon, means for intermittently sliding flanged closure elements to a predetermined point upon the anvil, reciprocally mounted blank cutting means disposed at one side of the anvil opposite said point, means for feeding a lining strip between said blank cutting means and the anvil, means for operating the cutting means to sever blanks from the strip, and means operable through the cutting means adapted to force the peripheral edges of the blanks behind the flanges of the closure elements while the latter are held at said point.

19. The combination of a frame having an anvil thereon provided with opposed upstanding closure guides, means for intermittently sliding the closure elements upon the anvil to a predetermined point between the guides, blank cutting means disposed at one side of the anvil, means for feeding a lining strip between the cutting means and the anvil, means for operating the cutting means to sever blanks from the strip, and means adapted to operate through the cutting means to apply the blanks to said closure elements while at said point.

20. The combination of a frame and a stationary anvil thereon for supporting closure elements having upstanding and inwardly turned flanges, a holder for receiving the closure elements, means adapted to successively transfer the closure elements from the holder to a predetermined point upon the anvil, means for feeding a strip of lining material in registry with the closure elements upon the anvil, means for successively severing blanks from said strip of a larger diameter than the diameter of the peripheral portion of said flange and mechanism adapted to apply the blanks to the closure elements while at said point and arranged to force the peripheral edge portions over the peripheral edges of the flanges and behind the latter.

21. In a machine for severing and applying lining blanks to closure elements, the combination of a frame, a fixed die upon the frame, a movable cutting die arranged to cooperate with the fixed die to sever the blanks for strip material, means for feeding the strips between said dies, a stationary anvil located at one side of the fixed die and having upstanding guides for the closure elements, said anvil having an opening between its opposite sides, a holder having a plurality of superimposed closure elements, a reciprocally mounted feed bar arranged to operate within the opening of the anvil, said feed bar having a series of upstanding spaced projections for engaging the closure elements to slide the same upon the anvil and to feed them step by step into registry with the cutting die, a reciprocally mounted member for applying the blanks to the closure elements, and means for operating said member, said feed bar and said cutting die in proper timed relation.

22. In a machine for severing and applying lining blanks to closure elements, the combination of a frame, a stationary anvil on the frame having an opening therethrough, a stationary die at one side of the anvil, a cutting die arranged to cooperate with the stationary die to sever blanks from strip material fed therebetween, a reciprocally mounted member arranged to operate through the opening in the anvil to periodically move the closure elements upon the anvil into registry with the cutting die, a member operable through said cutting die adapted to apply the blanks to the closure elements while the latter are in registry with the cutting die and operating means for said members and said cutting die.

23. In a machine for severing and applying lining blanks to closure elements, the combination of a frame, a shaft journalled thereon, a stationary anvil on the frame having an opening therethrough, a stationary die at one side of the anvil, a slide mounted for reciprocation on the frame, a cutting die on the slide arranged to cooperate with the seationary die to sever blanks from strip material fed therebetween, means including said shaft adapted to reciprocate the slide, an oscillatory shaft journalled on the frame, means operated within the opening by the oscillatory shaft for periodically moving the closure elements upon the anvil and into registry with the cutting die, means operatively connecting the oscillatory shaft with the first mentioned shaft, feed means for said strip material operated by said first mentioned shaft, a reciprocally mounted element arranged to operate through the cutting die to apply the severed blanks to the closure elements, and means operatively connecting the first mentioned shaft with said element.

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