Feb. 27, 1940. T. C. McNEILL 2,191,535

APPARATUS FOR SEALING FOLDERS, BOOKLETS, OR LIKE ARTICLES

Filed June 9, 1939 2 Sheets-Sheet 1

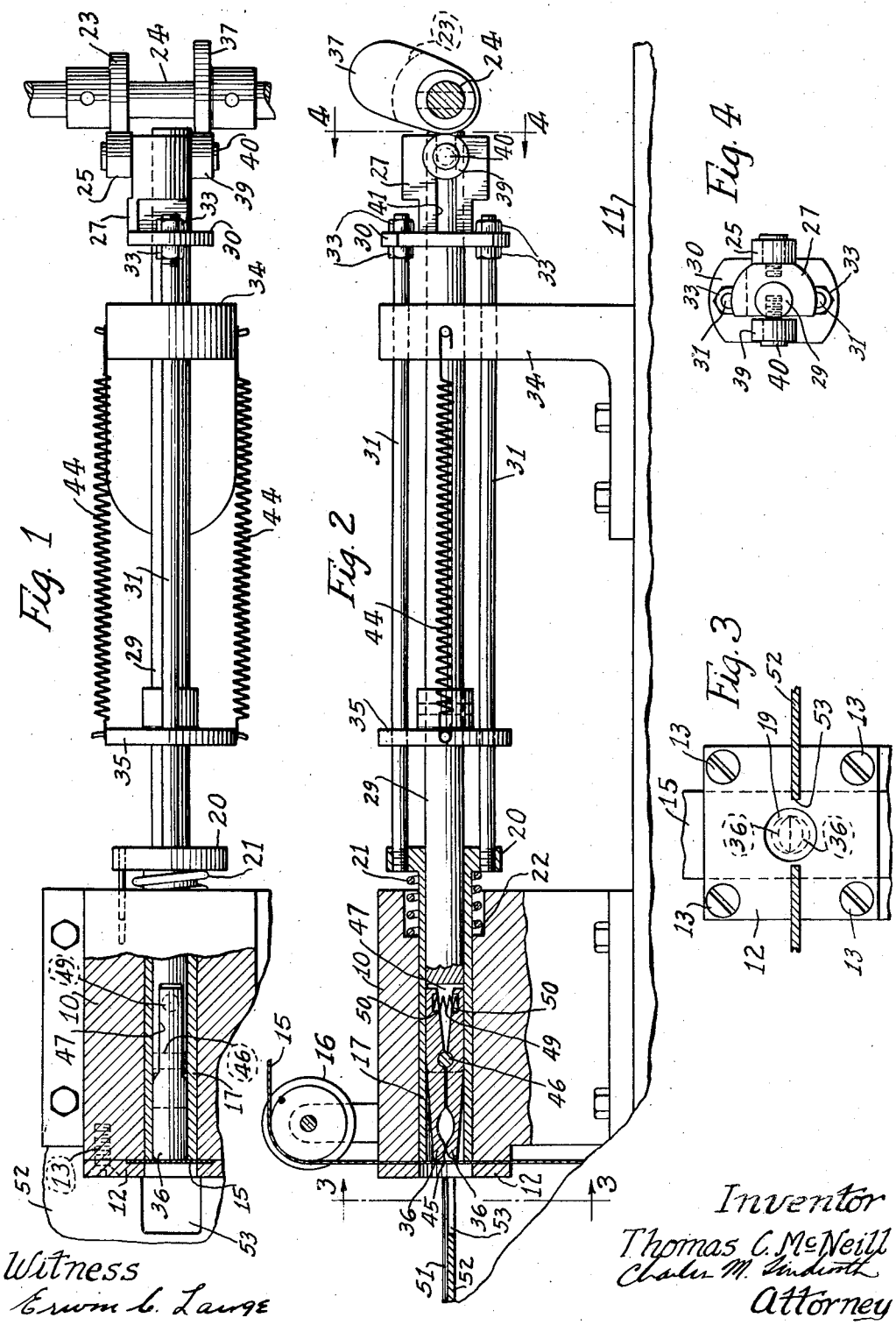


Fig. 1

Fig. 2

Fig. 3

Fig. 4

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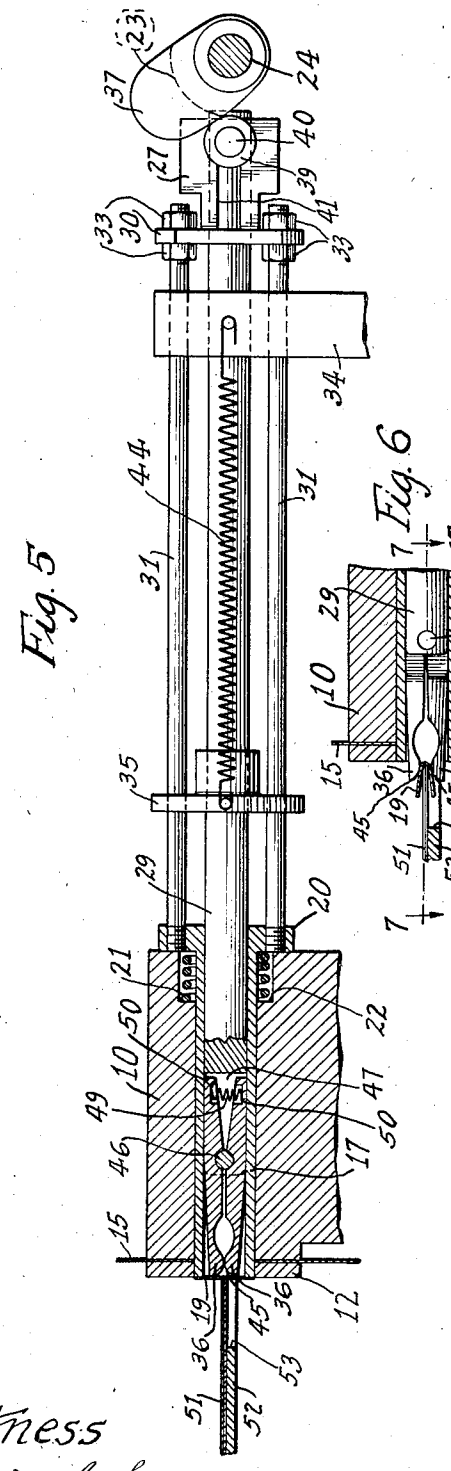


Fig. 5



Fig. 6

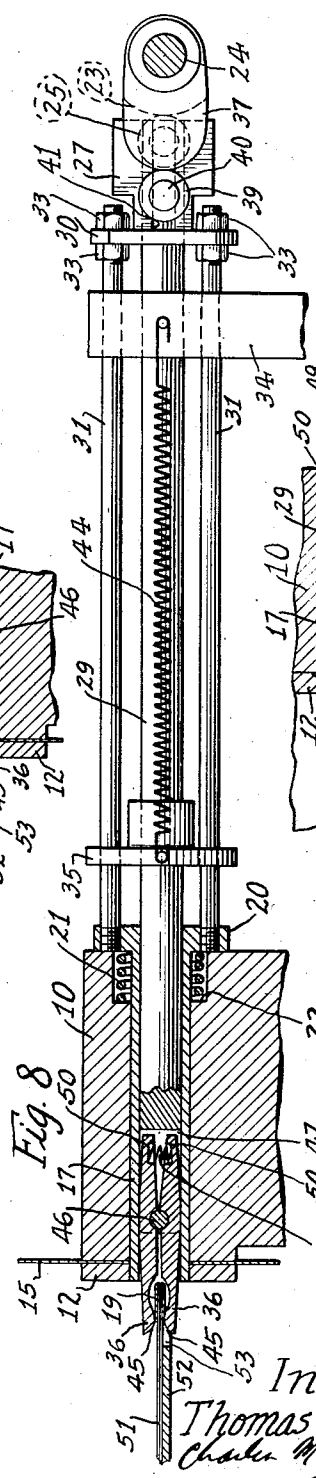


Fig. 8

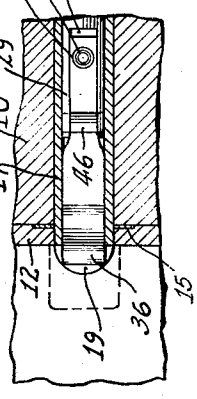


Fig. 7

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# UNITED STATES PATENT OFFICE

2,191,535

## APPARATUS FOR SEALING FOLDERS, BOOKLETS, OR LIKE ARTICLES

Thomas C. McNeill, Chicago, Ill.

Application June 9, 1939, Serial No. 278,313

15 Claims. (Cl. 216—22)

This invention relates to improvements in apparatus for sealing folders, booklets or like articles, and more particularly relates to an apparatus for sealing such an article by applying a tab to the open end thereof.

Heretofore, folders or like articles have been sealed, to hold the open ends thereof together, by tabs applied either by hand or machine. The hand operation is necessarily slow, and the present machines for doing this automatically are relatively complicated and of a high initial cost, and must be adjusted for different thicknesses of folders going through the machine. This makes the cost of sealing high and is inconvenient and troublesome, especially with unskilled help, since oftentimes it is desired to seal folders of varying thicknesses without stopping the machine, as in cases where some folders of a class will have material inserted therein while others of the same class will have this material omitted.

Among the objects of my invention are to remedy these difficulties by providing a simple and inexpensive device of a novel construction, which will efficiently seal folders or like articles of varying thicknesses, without requiring adjustment of the sealing device for each different thickness of article.

In carrying out my invention, I provide a sealer for folders or booklets, which consists in a stationary die block having an apertured forward end through which a strip of gummed sealing material may pass, with a die movable within this block for cutting a sealing tab from a strip of gummed sealing material, and having a clamping means movable within the die for engaging the sealing tab and folding it over the article to be sealed.

Other objects of my invention will appear from time to time as the following specification proceeds and with reference to the accompanying drawings wherein:

Figure 1 is a plan view of a sealing device constructed in accordance with my invention, with certain parts of the die block and cutting die shown in horizontal section;

Figure 2 is a view in side elevation of the device shown in Figure 1, with the cutting and sealing mechanism shown in longitudinal section;

Figure 3 is an enlarged sectional view taken substantially along line 3—3 of Figure 2;

Figure 4 is an enlarged sectional view taken substantially along line 4—4 of Figure 2;

Figure 5 is a fragmentary longitudinal sectional view somewhat similar to Figure 2, but with the clamping jaws and cutting die shown in a different operative position than Figure 2;

Figure 6 is a fragmentary detail view in longitudinal section, showing the clamping jaws initially gripping a piece of material;

Figure 7 is a sectional view taken substantially along line 7—7 of Figure 6, showing the clamping jaws in plan; and

Figure 8 is a fragmentary longitudinal sectional view showing the jaws in a fully extended position and clamping the sealing tab on a folder.

Like reference characters refer to like parts throughout the various figures.

In the drawings, the embodiment of my invention illustrated includes a die block 10 which may be mounted upon a table, a portion only of which is herein shown, and which is generally indicated by reference character 11 (see Figure 2). A forward end portion 12 is secured to the forward face of said die block by means of machine screws 13, 13. Said end portion has a vertically extending guide formed in the rearward face thereof, which with the forward face of said die block forms a slot through which a strip of sealing material 15, such as gummed paper or cloth, may be trained.

The gummed sealing material 15 may be trained over a roller 16 and fed through the slot formed between the forward face of said die and the guide in the rearward face of the forward portion 12, by any suitable mechanism. Said mechanism is not herein shown or described in detail, since it is no part of my present invention. The gummed surface of said sealing material is adapted to face the forward end of said forward end portion and may be moistened by a sponge or any other suitable moistening arrangement, which is likewise no portion of my present invention so is not herein shown or described in detail.

The die block 10, including the forward end portion 12, is apertured throughout its length and has a cutting die 17 slidably mounted therein. Said die is adapted to be moved in said die block past the slot through which the sealing material is trained, for cutting sealing tabs 19 from said sealing material. Said apertured portion of said die block and said die may be of varying forms, to cut various desired shapes of sealing tabs, but for the purpose of illustrating my invention are herein shown as being of a circular form.

The rear end of the cutting die 17 is flanged, as indicated by reference character 20. A spring 21, encircling said die, abuts the forward end of said flanged portion and also abuts a shoulder 22 of the apertured portion of the die block. Said

spring thus tends to move and yieldably hold said cutting die in a retracted inoperative position.

The cutting die 17 may be positively moved forwardly with respect to said die block to cut a tab from the piece of sealing material 15 by a suitable means, which is herein shown as being a cam 23 mounted on a transverse shaft 24. Said shaft may be driven by a suitable motor under control of the operator of the machine, in a manner which is not herein shown or described since it is no part of my present invention.

The cam 23 is adapted to engage a roller 25, mounted on a member 27 which is slidably mounted on a plunger 29 for relative movement with respect thereto. Said plunger is adapted to actuate a pair of clamping jaws 36, 36, mounted within said cutting die, in a manner which will hereinafter more clearly appear as this specification proceeds. A flange 30 is formed integral with the rear end of said member. The rear ends of a pair of parallel spaced rods 31, 31 are secured to said flange by means of nuts 33, 33 abutting opposite sides of said flange. The opposite ends of said rods are threaded in the flanged portion 20 of said cutting die, for rectilinearly moving said die within said die block, in a forward direction, upon rotation of said cam. Said rods also extend through suitable apertured portions of a supporting bracket 34, for the plunger 29, and through suitable apertured portions of a collar 35 secured to said plunger. Said bracket projects upwardly from and is secured to the top of the table 11, and said rods are slidably movable with respect to said bracket and collar.

The clamping jaws 36, 36 are mounted upon the forward end of the plunger 29 within the cutting die 17 for pivotal movement about a transverse axis, disposed adjacent their center, and for rectilinear movement with respect to said cutting die. Said jaws are adapted to move simultaneously with said cutting die, beyond the forward end thereof, when said cutting die is in its extreme forward position of travel, to engage the tab cut from the sealing strip 15 and fold it over the open edges of the article which is to be sealed.

A cam 37 mounted on the shaft 24 is provided to move the plunger 29 and clamping jaws 36, 36 in a forward direction with respect to the die block 10. Said cam is formed to give the plunger 29 and jaws 36, 36 a longer stroke than the cutting die 17, to move the forward ends of said jaws beyond the forward end of said cutting die and the forward end portion 12 of said die block. A roller 39, rotatably mounted on the rear end of said plunger, is engaged by said cam. Said roller is mounted on a member 40, herein shown as being threaded in the side of said plunger and projecting laterally therefrom. Said member is slidable along a slot 41, formed in one side of the member 27.

A pair of tension springs 44, 44 is herein shown as being connected between the collar 35 and the bracket 34, for returning the jaws 36, 36 to an inoperative position, although a cam or any other well known means may be provided to return said jaws.

With reference now in particular to the novel construction and operation of the clamping jaws 36, 36 and their connection to the forward end of the plunger 29, said jaws are formed and operate somewhat in the manner of the well known spring type clothespin and the inside of the die 17 holds said jaws together so they may pivot about a common transverse axis. Said jaws have forward engaging ends 45, 45, which are of a curved formation and are adapted to engage the sealing tab and fold it over and securely engage it with the article which is being sealed. A pivotal pin 46 extends across the forward end of a slot 47, formed in the forward end of the plunger 29. Said pin is mounted at its ends in the bifurcated sides of the slotted portion of said plunger and forms a transverse pivotal connection between said jaws and plunger. The inner side of each of said jaws is transversely recessed adjacent its transverse center, to fit on said pin, and the rear halves of said jaws extend within the slot 47. A spring 49 is provided to yieldably maintain said jaws in a closed position. Said spring engages sockets 50, 50 at its ends, which sockets are formed in the inner sides of said jaws, adjacent the rear ends thereof.

Since the jaws 36, 36 are mounted within the cutting die 17, said die serves to hold said jaws in engagement with the pin 46. The outer and inner sides of said jaws are tapered from their transverse center, towards the ends thereof, to provide clearance between the forward and rear portions of said jaws and the inner periphery of the cutting die 17, and to permit pivotal movement of said jaws within said cutting die about the axis of the pin 46. This permits said jaws to open about the pin 46 when they engage a sealing tab with an article to be sealed, upon forward movement of said jaws beyond the forward end of the die 17. Said jaws, engaging a sealing tab on opposite sides of its center, may thus yield and open and fold opposite sides of said tab over the article to be sealed, and since they are free to open varying degrees against the spring 49, said jaws may fold and engage sealing tabs with articles of varying thicknesses, by opening a greater distance for the thicker articles, the chief limitation in the thickness of the article to be sealed being the clearance between the outer sides of said jaws and the inside of said cutting die.

With reference now in particular to the use and operation of the device of my invention, the strip of gummed sealing material 15 is trained across the mouth of the die block, through the opening formed between the forward face of said die block and the forward portion 12, secured to the forward face thereof. A folder 51 may be placed on a working platform 52, with its open edges abutting the forward end portion 12 (see Figure 2). Said working platform 52 is provided with a notched or open portion 53, adjacent the mouth of the die block, to permit movement of the jaws 36, 36 beyond the forward end of the die block, and along opposite sides of the article to be sealed.

When the circular or folder is in position, power is applied through suitable control means (not shown), preferably controlled by the foot, to rotatably drive the shaft 24 and cams 23 and 37. Said cams then move the cutting die 17 and clamping jaws 36, 36 towards the forward end of the die block 10, to simultaneously engage the gummed sealing strip 15, and cut out the sealing tab 19, by movement of said cutting die across the opening through which the gummed sealing material is trained (see Figures 1, 2, 3, and 5). The tab 19 being cut from the sealing strip, said die and jaws continue their forward movement, and move said tab forwardly until its center engages the open edges of the article to be sealed (see Figure 5). The cutting die then stops its forward movement and the clamping jaws continue their forward movement, opening against

the spring 49 and engaging the tab 19 with the article to be sealed, and folding said tab about its center in a forward direction about the upper and lower sides of said article, as is illustrated in Figure 6. Further forward movement of said jaws causes them to firmly engage the tab with the top and bottom sides of the open ends of the article to be sealed, as is illustrated in Figure 8, the moistened gummed face of said tab sticking to said article. After this is done, the spring 21 and the springs 44, 44 may return the die and jaws to their initial starting position.

It should herein be noted that upon the return stroke of the jaws 36, 36, the cutting die 17 will remain in a forward position, until said jaws are completely disengaged from the sealing tab. The folded edge of the tab 19 thus engages the forward end of said cutting die until said jaws are completely disengaged from said tab. This minimizes the tendency of said jaws to pull said tab off of the article being sealed, upon return movement of said jaws (see Figure 7).

It may thus be seen that a new and improved simplified form of sealing device has been provided, which is adapted to seal circulars or booklets of varying thicknesses with a tab, without adjustment of the sealing device.

While I have herein shown and described one form in which my invention may be embodied, it will be understood that the construction thereof and the arrangement of the various parts may be altered without departing from the spirit and scope thereof. Furthermore, I do not wish to be construed as limiting my invention to the specific embodiment illustrated, excepting as it may be limited in the appended claims.

I claim as my invention:

1. In a sealing device, a cutting die adapted to cut a sealing tab from a strip of gummed material, and means movable within said die and adapted to move beyond the cutting end thereof to engage a tab cut by said die and fold it over and engage it with the open end and outer sides of an article to be sealed.

2. In a sealing device, a cutting die adapted to cut a sealing tab from a strip of gummed material, and a pair of clamping jaws movable within said die and adapted to move beyond the cutting end thereof to engage a tab cut thereby above and below the center thereof and fold it over and engage it with the open end and outer sides of an article to be sealed.

3. In an apparatus of the class described, a block, a cutting die mounted for movement with respect to said block and adapted to cut a sealing tab from a strip of gummed sealing material, a pair of pivotally movable clamping jaws mounted within said die for rectilinear movement with respect thereto, said jaws being adapted to move beyond the cutting end of said die and engage a tab cut thereby above and below the center thereof and yieldably pivot about an axis disposed transversely of said die and fold said tab over and engage it with the open end and outer sides of an article to be sealed.

4. In a sealing device, a cutting die adapted to cut a sealing tab from a strip of gummed material, a pair of pivoted clamping jaws mounted within said die for movement longitudinally thereof, and yieldable means for yieldably maintaining said jaws in a closed position and permitting said jaws to engage a tab cut by said die and yieldably open to fold said tab over the end and outer sides of articles of varying thickness.

5. In a sealing device, a die adapted to cut a sealing tab from a strip of gummed material, and means movable within said die and adapted to be positively moved beyond the cutting end thereof, to engage a tab cut by said die and fold it over and engage it with the outer sides of an article to be sealed comprising a pair of clamping jaws, a member for positively moving said jaws within said die beyond the cutting end thereof and a pivotal connection between said jaws and member to permit opening movement of said jaws within said die upon engagement of the sealing tab with the article being sealed.

6. In a sealing device, a die adapted to cut a sealing tab from a strip of gummed material, and means movable within said die and adapted to be positively moved beyond the cutting end thereof to engage a tab cut by said die and fold it over and engage it with the outer sides of an article to be sealed comprising a pair of clamping jaws, a member for positively moving said jaws within said die beyond the cutting end thereof, a pivotal connection between said jaws and member to permit opening movement of said jaws within said die upon engagement of the sealing tab with the article being sealed, and a yieldable member engaging said jaws for yieldably maintaining them in a closed position.

7. In a sealing device, a die block having an apertured portion adjacent its forward end through which a strip of gummed material may be trained, a cutting die rectilinearly movable within said die block and adapted to move across said apertured portion and cut a sealing tab from a strip of material trained through said apertured portion, and means mounted within said die and movable with respect thereto beyond the cutting end thereof for engaging a tab cut by said die and folding it over the open end and outer sides of an article disposed forwardly of said die block.

8. In a sealing device, a die block having an apertured portion adjacent its forward end through which a strip of gummed material may be trained, a cutting die rectilinearly movable within said die block and adapted to move across said apertured portion and cut a sealing tab from a strip of material trained through said apertured portion, and means mounted within said die and movable with respect thereto beyond the cutting end thereof for engaging a tab cut by said die and folding it over the open ends and the outer sides of an article disposed forwardly of said die block, including a pair of pivoted clamping jaws adapted to engage the tab on opposite sides of the center thereof and move opposite ends thereof beyond the forward end of said die block.

9. In a sealing device, a die block having an apertured portion adjacent its forward end through which a strip of gummed material may be trained, a cutting die rectilinearly movable within said die block and adapted to move across said apertured portion and cut a sealing tab from a strip of material trained through said apertured portion, and means mounted within said die and movable with respect thereto beyond the forward end of said die block for engaging a tab cut by said die and folding it over the open ends and outer sides of an article disposed forwardly of said die block, including a pair of clamping jaws, means engaging said jaws for positively moving them beyond the forward end of said die and permitting pivotal movement thereof within said die about an axis transverse to the longitudinal axis of said die upon engaging the tab with the article being sealed, and

other means for yieldably maintaining said jaws in a closed position.

10. In a sealing device, a die block having an apertured portion adjacent its forward end through which a strip of gummed material may be trained, a cutting die rectilinearly movable within said die block and adapted to cut a tab from a strip of material trained through said apertured portion of said die block, means mounted within said die and movable with respect thereto for engaging the tab cut by said die and folding it over the ends of an article to be sealed, disposed forwardly of said die block, including a pair of clamping jaws, a pin engaging each of said jaws, for positively moving said jaws beyond the forward end of said die and permitting pivotal movement thereof within said die about an axis transverse to the longitudinal axis of said die, and a yieldable member disposed rearwardly of said pin and engaging opposite of said jaws, for yieldably maintaining them in a closed position.

11. A sealing device including a die block having an apertured portion adjacent its forward end through which a strip of gummed material may be trained, a cutting die mounted within said die block, means for rectilinearly moving said die within said die block across said apertured portion, to cut a tab from a strip of material trained through said apertured portion, a pair of clamping jaws mounted within said die for pivotal movement with respect thereto, and means engaging said jaws and moving said jaws with respect to said die beyond the forward end thereof, to engage said jaws with the tab cut by said die and cause said jaws to fold the tab over the end of an article disposed adjacent the forward end of said die block.

12. A sealing device including a die block having an apertured portion adjacent its forward end through which a strip of gummed material may be trained, a cutting die mounted within said die block, means for rectilinearly moving said die within said die block to cut a tab from a strip of material trained through said apertured portion of said die block, a pair of clamping jaws mounted within said die, means for yieldably maintaining said jaws in a closed position, and a member movable within said die and having pivotal engagement with said jaws for rectilinearly moving said jaws beyond the forward end of said die and die block to engage said jaws with the tab cut by said die and fold said tab over the end of an article disposed forwardly of said die block.

13. A sealing device including a die block having an apertured portion adjacent its forward end through which a strip of gummed material may be trained, a cutting die mounted within said die block, means for rectilinearly moving said die within said die block to cut a tab from a strip of material trained through said apertured portion of said die block, a pair of clamping jaws mounted within said die, means for yieldably maintaining said jaws in a closed position, a member movable within said die and having a bifurcated portion extending along opposite sides of said jaws, and a pivotal connection between said bifurcated portion and jaws for moving said jaws within said die upon movement of said member and permitting pivotal movement of said jaws with respect to said die about a transverse axis, to permit said jaws to fold a sealing tab over the end of articles of varying thickness.

14. A sealing device including a die block having an apertured portion adjacent its forward end through which a strip of gummed sealing material may be trained, a cutting die mounted within said die block, a cam actuated member for rectilinearly moving said die within said die block across said apertured portion, to cut a tab from a strip of material trained through said apertured portion of said die block, a pair of clamping jaws mounted within said die, means for yieldably maintaining said jaws in a closed position, and another cam actuated member extending within said die for movement therewith and having pivotal connection with said jaws adjacent the central portion thereof, for moving said jaws beyond the forward end of said die block and permitting pivotal movement of said jaws with respect to said die, to permit said jaws to fold a sealing tab over the end of articles of varying thickness upon positive movement of said jaws beyond the forward end of said die and die block.

15. In a sealing device, a die block having an apertured portion adjacent its forward end, through which a strip of gummed sealing material may be trained, a cutting die mounted within said die block for rectilinear movement with respect thereto, a cam for rectilinearly moving said die across said apertured portion of said die block to cut a sealing tab from a strip of sealing material trained through said apertured portion, a pair of clamping jaws movably mounted within said die block, said jaws being adapted to open about a transverse axis, means for yieldably maintaining said jaws in a closed position, a cam for moving said jaws with said die and beyond the forward end thereof, to permit said jaws to engage and fold a sealing tab over the end of an article to be sealed, and the forward end of said die being adapted to engage said tab upon return movement of said jaws, until said jaws are completely disengaged from said tab to minimize the tendency for said jaws to pull said tab from the article to be sealed.

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