

[54] **ADHESIVE APPLICATION MECHANISM
FOR ENVELOPE PROCESSING
MACHINERY**

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abandoned.

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118/258**

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[58] Field of Search **118/256, 257, 258,
118/259, 244, 263; 100/170**

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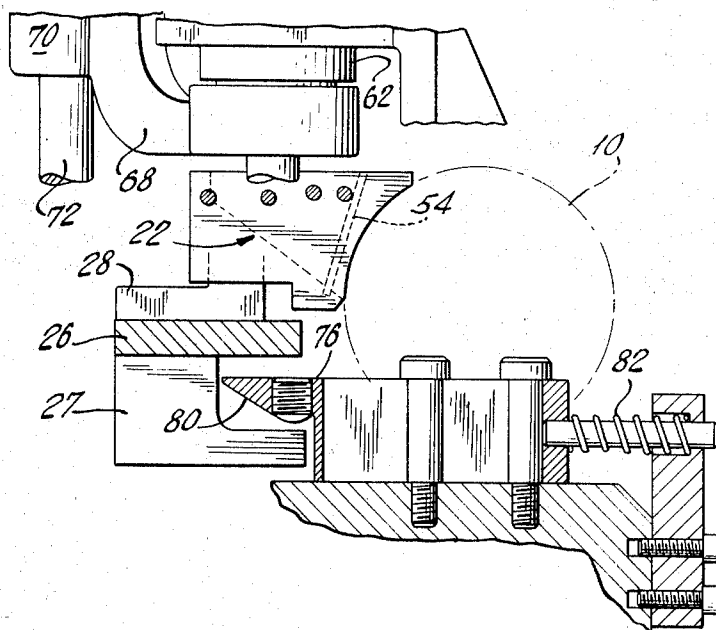
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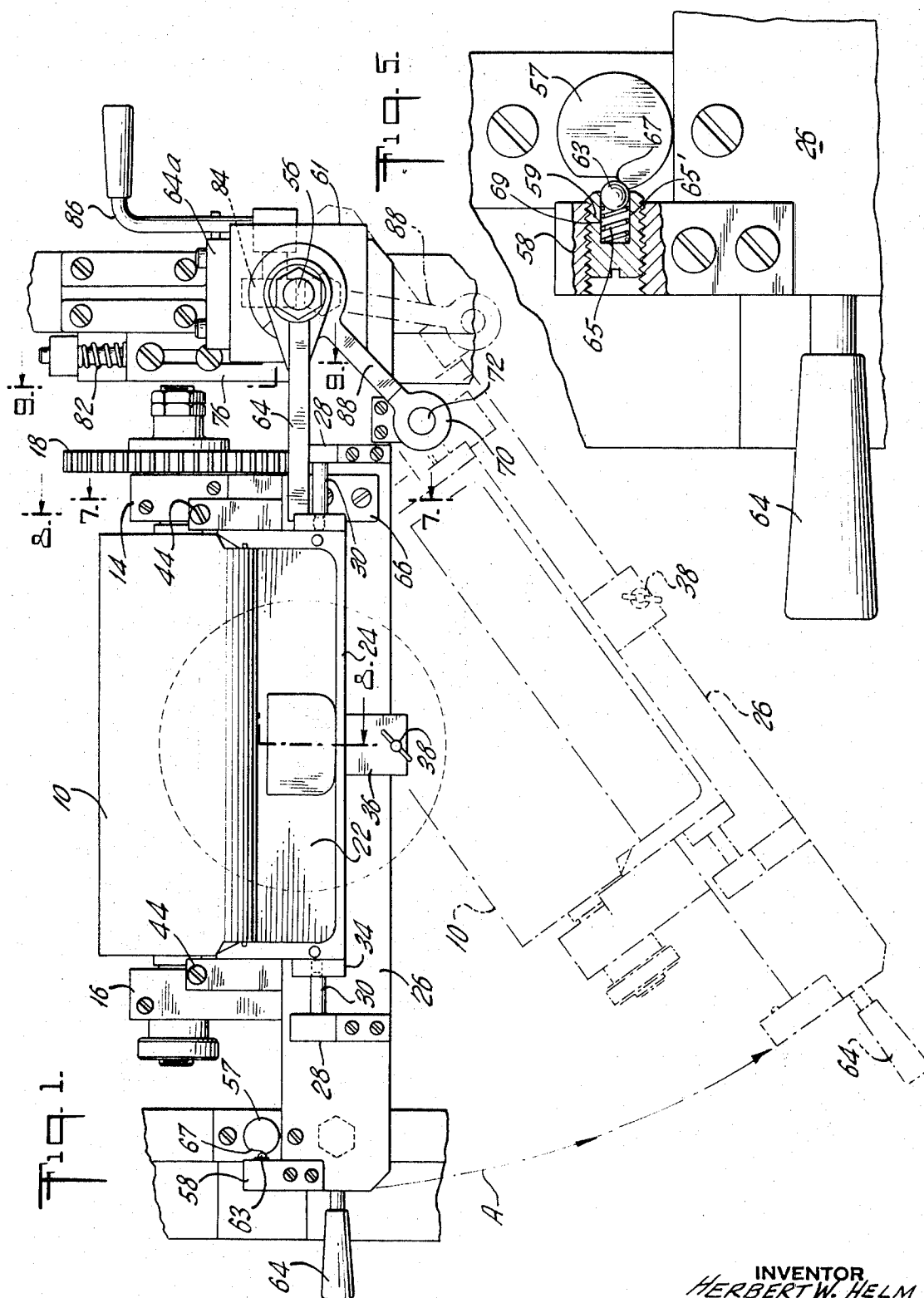
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ABSTRACT

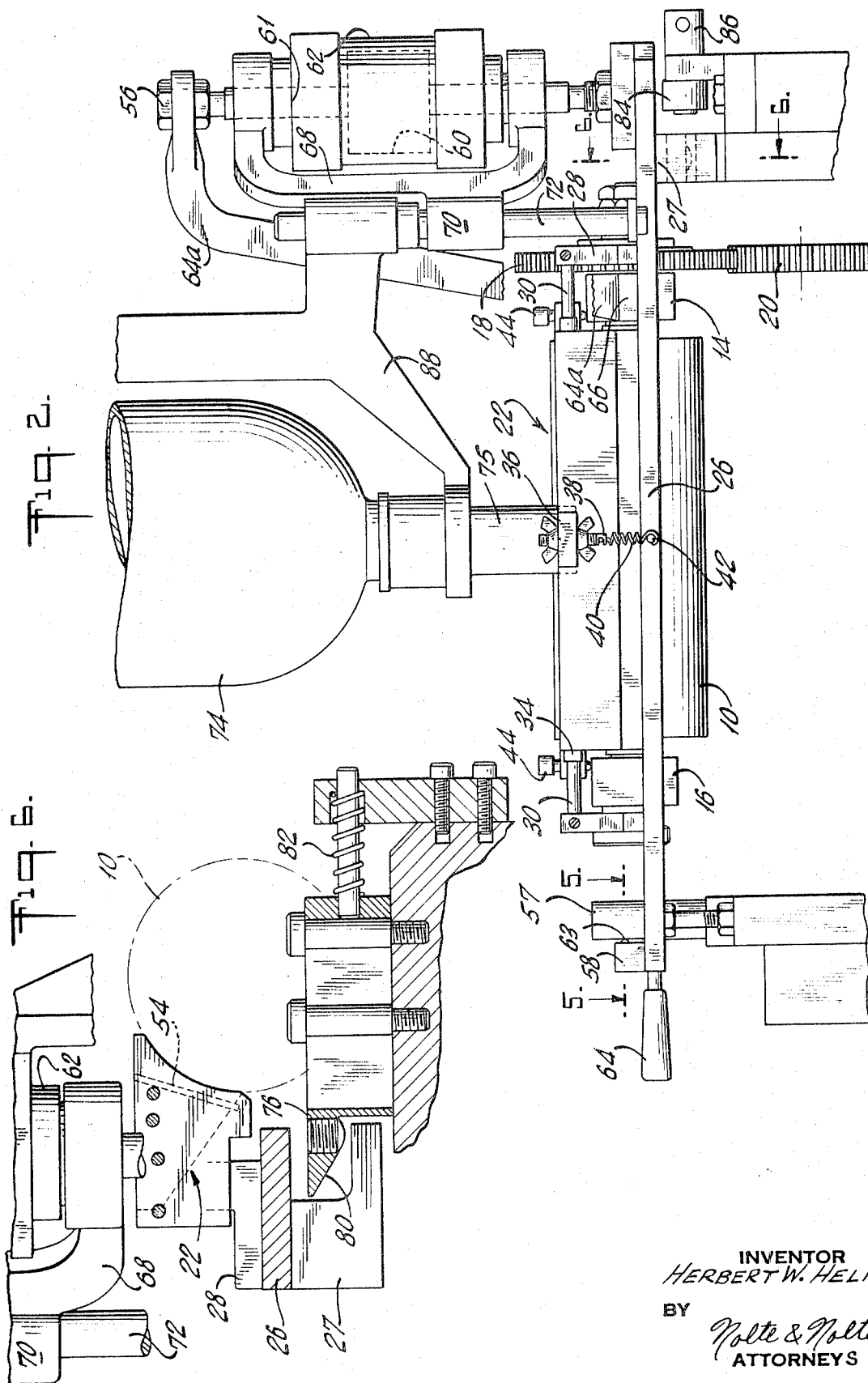
A mechanism for use with envelope processing machinery in which adhesive is applied to the appropriate locations on the envelope blanks. The mechanism is provided with both a remote controlled adhesive box and a structural arrangement in which the adhesive box is automatically opened and closed relative to the adhesive fountain roll. The latter arrangement is spring-loaded and is held in the open position by means of the viscosity of the liquid.

11 Claims, 9 Drawing Figures

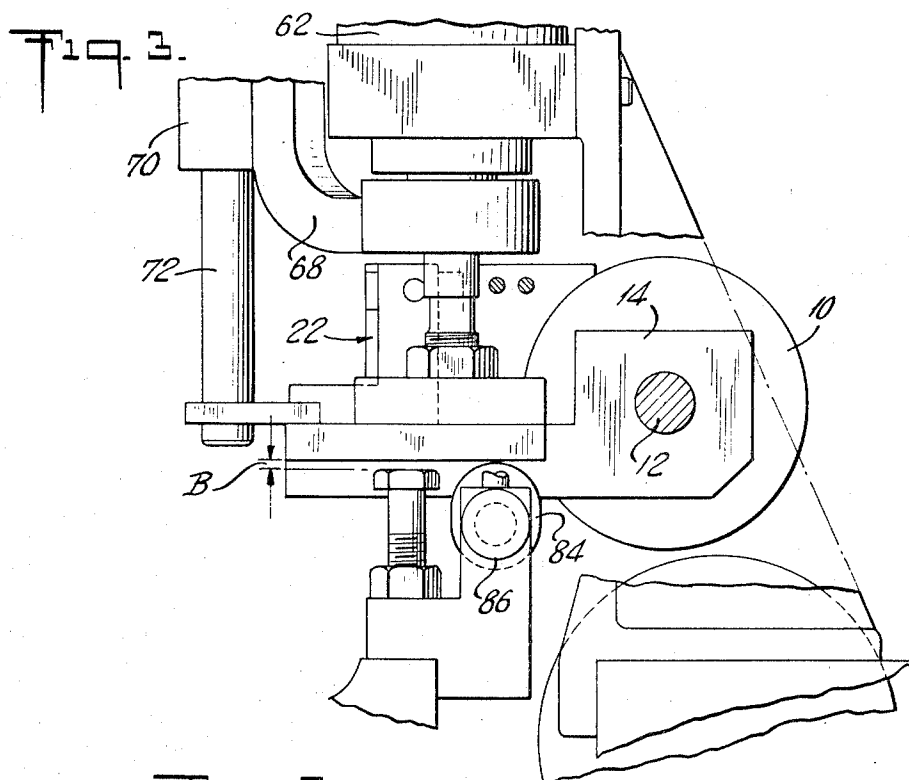
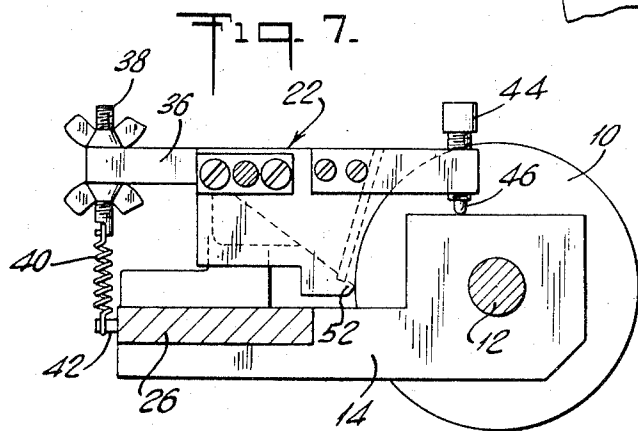
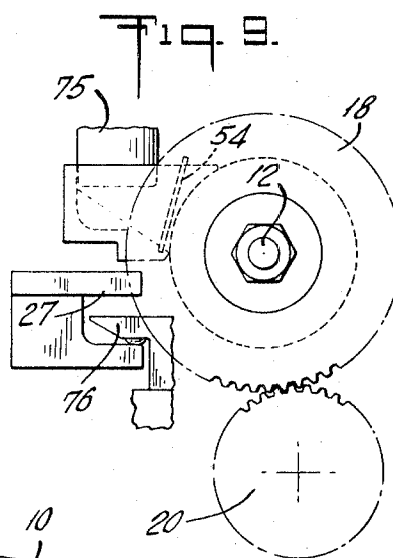
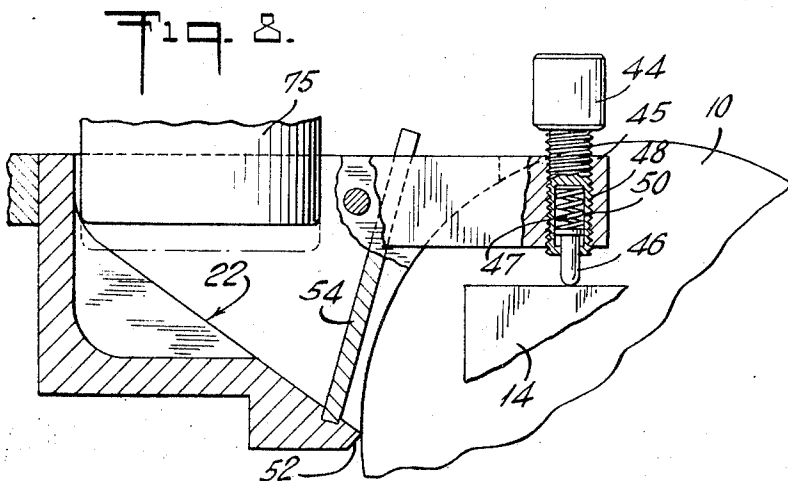




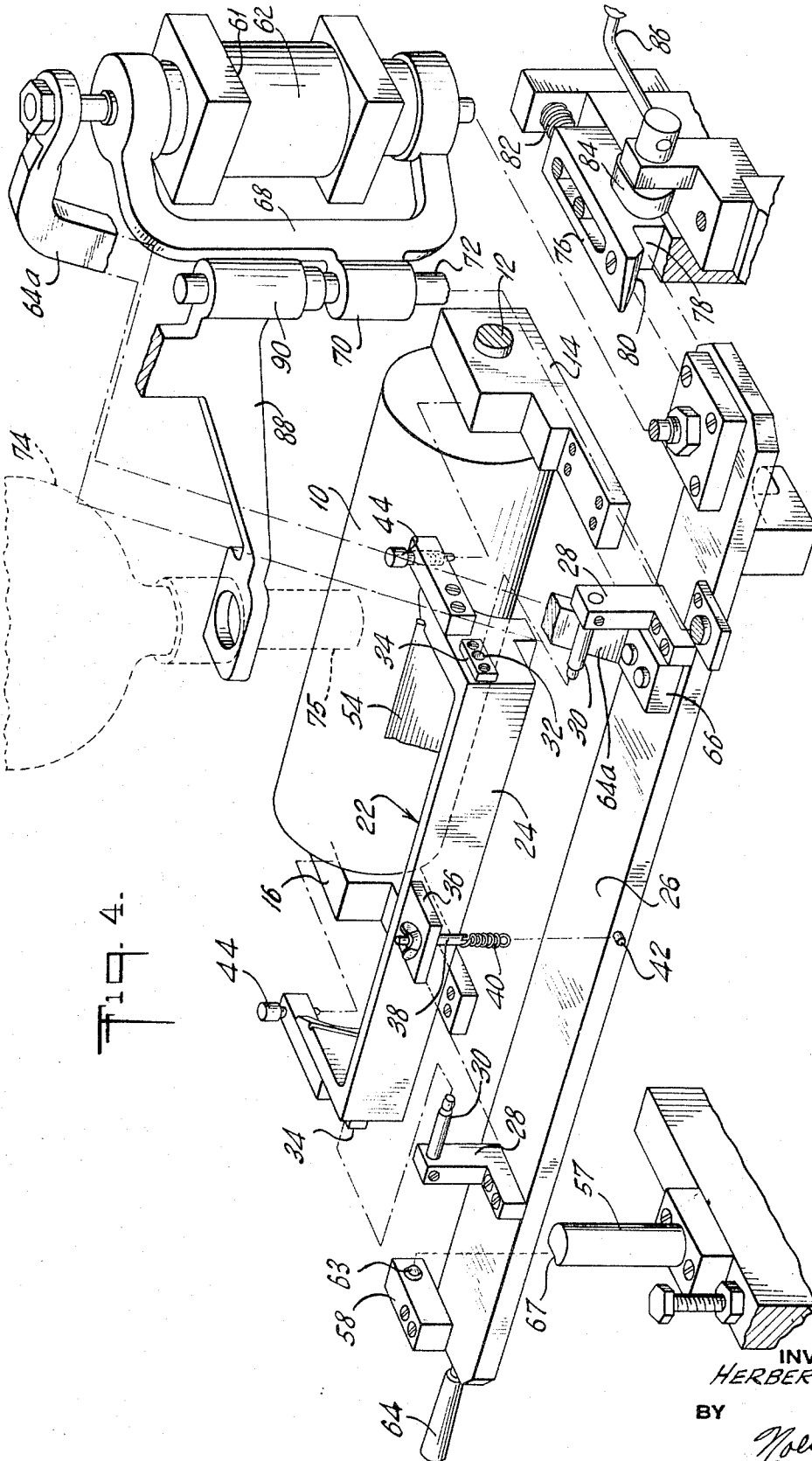
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ADHESIVE APPLICATION MECHANISM FOR ENVELOPE PROCESSING MACHINERY

This is a continuation of application Ser. No. 829,326 filed on June 2, 1969 and now abandoned.

BACKGROUND OF THE INVENTION

Adhesive applying mechanisms for envelope processing machinery are known, however these mechanisms have many disadvantages. One of the disadvantages is that heretofore it has been necessary, at times, to raise the adhesive box to prevent transfer of the adhesive to the applicator dies. On prior art devices, this lifting was accomplished by mechanical means at the box, or in close vicinity thereto. Previously, there was no way of remotely controlling lifting and lowering of the adhesive box. Furthermore, an adhesive applying mechanism is known comprising a rotating roll and an adhesive box fitted close to the circumference of the roll with just enough gap to allow for the desired adhesive film on the roll. However, one of the main disadvantages of this type of mechanism is the constant leakage of the adhesive through the gap when the machine is inoperative for long periods of time. Moreover, a further disadvantage of the foregoing adhesive applying mechanisms was that foreign particles, such as metal chips, paper chips, etc., could wedge between the roll and the adhesive box and cause scratching and damage to the fountain roll.

SUMMARY OF THE INVENTION

It is an object of the present invention to accomplish the lifting and lowering of an adhesive box relative to the applicator dies in an adhesive applying mechanisms by means of an air cylinder. The air cylinder is also connected to a structure supporting the adhesive box. Thus, the air cylinder and adhesive box can be jointly lifted and swung out from the mechanism. Moreover, the adhesive bottle does not move up and down with the air piston so that when the box is lifted, the adhesive bottle effectively shuts off the adhesive supply to the box.

It is a further object of the present invention to provide a latched stop which prevents the adhesive box from being lifted out of gear mesh during remote control. However, when the adhesive box mounting structure clears the latched stop, the box may be elevated a predetermined distance whereby the gears are taken out of mesh and the box together with the air cylinder may be pivoted laterally.

Another object of the present invention, is to provide an additional manual control for the adhesive box which may be alternately used instead of the remote control system.

Another object of the present invention is the provision of an adhesive box having a lip which is spring-loaded against the fountain roll to thereby effectively seal the same when the roll is stationary and non-rotating. However, as soon as the roll begins to rotate, sufficient friction is generated between the roll and the abutting adhesive box lip to make an opening therebetween defined by the pre-set gap. Thus, it is another object of the invention to provide an adjustable gap with adjusting screws on each end of the mounting for the adhesive box for adjusting the same to the required adhesive film thickness. The foregoing adjusting screws provide an adjusting means so that in case of foreign matter or particles passing through the system, the

same must be removed by the action of the spring-loaded pin which permits limited movement of the box thereby allowing the foreign particles to pass through the system.

A further object of the present invention is to provide a construction which permits removal and assembly of the adhesive box relative to the other parts of the apparatus without the use of tools.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top plan view of the adhesive application mechanism for envelope processing machinery constructed in accordance with the teachings of the present invention and illustrating the mechanism in two positions.

FIG. 2 is a front elevational view of the mechanism shown in FIG. 1, with parts thereof broken away for purposes of clarity.

FIG. 3 is a side elevational view of the mechanism shown in FIG. 1, with parts thereof broken away for purposes of clarity.

FIG. 4 is an exploded view showing the general layout of the mechanism.

FIG. 5 is an enlarged partial sectional and partial elevational view taken along the lines 5—5 of FIG. 2.

FIG. 6 is an enlarged partial sectional and partial elevational view taken along the lines 6—6 of FIG. 2.

FIG. 7 is a view taken along the lines 7—7 of FIG. 1.

FIG. 8 is a view taken along the lines 8—8 of FIG. 1 and

FIG. 9 is a view taken along the lines 9—9 of FIG. 1.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring to the drawings and especially FIGS. 1, 2 thereof, an adhesive application mechanism for envelope processing machinery is shown comprising an adhesive roll 10 which is rotatably mounted on shaft 12 and journaled through blocks 14 and 16. As seen in FIGS. 2 and 9, a gear 18 is mounted on shaft 12 and is meshed with gear 20, the latter gear being operatively connected to a driving means (not shown) whereby the adhesive roll 10 is caused to rotate. An adhesive box referred to generally by the numeral 22 constitutes a receptacle 24 mounted on a base 26 by means of upright posts 28 having pivot pins 30 inserted in openings 32 of the elements 34 on the sides of receptacle 24. An apertured plate 36 projects outwardly from the frame 24 and is provided with an adjustable bolt 38 having a coil spring 40 attached thereto on one end. The other end of the coil spring 40 is attached to a stud 42 projecting from the base 26 of the adhesive box.

Adjusting screws 44 are shown mounted in blocks 45 also located opposite sides of the receptacle 24 of the adhesive box 22. One of the adjusting screws 44 is shown in detail in FIG. 8, in which a pin 46 and a compression spring 48 are shown in the hollow portion 50 of the screw 44. It will be apparent that the pin 46 has an enlarged head 47 captured in the hollow portion 50 but permitting limited linear movement of the pin 46 against the pressure of spring 48. The screws 44 are selectively turned in the threaded opening 45 in order to pre-set the gap limit between the rigid scraper bar lip 52 and the adhesive roll 10 when the box 22 is pivoted to a position adjacent to the roll.

The adhesive box 22 is shown in FIGS. 7 and 8 as having a lip in the form of a rigid scraper bar 52 which, when the adjacent adhesive roll 10 is not operative, the

biasing action of the spring 40 together with the adjustable setting of the adjusting screws 44 causes the lip to engage and abut the roll 10.

As soon as the adhesive roll 10 rotates enough friction is generated between the roll 10, adhesive and adhesive box rigid scraper bar lip 52 to open the box to its pre-set gap, and as stated above, the gap is adjustable by means of adjusting screws 44 at opposite ends of the adhesive box to a selected adhesive film thickness.

The adjusting screws 44 perform another important function in that foreign particles, such as metal chips, paper chips, etc. will not wedge between the roll 10 and the box 22 causing damage to the roll or box, or both. In the present construction, the spring-loaded pins 46 of the adjusting screws 44 permits the box 22 to move a sufficient distance away from the roll 10 thereby allowing the passage of the foreign matter without damaging the mechanism.

A gate 54 is disclosed at the forward part of the adhesive box 22 adjacent to the roll 10 which functions to avoid spilling of the adhesive during removal of the adhesive, or during adhesive changes.

As seen in FIG. 1, the entire mechanism including the adhesive roll 10 and the adhesive box 22 is pivoted at point 56 from the full line position to the dotted line position. However, a ball catch 58 is shown in FIGS. 1, 4 and 5 which engages in the detent 67 of the circular post 57. As seen in FIG. 5, the ball catch 58 is constituted of an adjustable screw 59 having an opening 69 in which a ball 63 is normally urged by spring 65 into the detent 67. A handle 64 can be grasped and pulled in the direction of the arrow A in FIG. 1, to thereby pivot the mechanism about pivot point 56. Thus, the mechanism, and especially the adhesive box 22, can be speedily removed from the apparatus without the use of tools.

The adhesive box 22 may be operated remotely, or manually when necessary, in order to raise the adhesive box to prevent the transfer of adhesive to the applicator dies. The structure for remote operation includes a double-ended piston 60 reciprocable in a cylinder 62. A source of compressed air (not shown) is directed to the cylinder 62, the latter being mounted on a bracket 64A. The bracket 64A is fixed to the base 26 at 66 in order to minimize deflection of the base. A U-shaped support frame 68 is provided with a sleeve 70 and rod 72 fixed to it. The piston 62, besides rotating with the brace 64A when the adhesive box 22 is pivoted about point 56, also is adapted to be elevated and lowered an amount B as shown in FIG. 3, and the adhesive reservoir 74 and its nozzle 75 may be moved laterally on rod 72, but not vertically. Thus, the air piston 60 can be pivoted and lifted in order to move the operatively connected adhesive box 22 from the vicinity of the applicator dies (not shown).

A latch 76 is shown having an abutment surface 78 and a bevel surface 80. A spring 82 normally urges the latch 76 to its extended position. The latch functions to prevent the gears 18 and 20 from coming out of meshing engagement when air pressure is applied to the cylinder 62.

In the event that the adhesive box 22 is rotated in the direction of the arrow A about the pivot point 56, as seen in FIG. 1, and upon clearance of the bevel surface 80 of the latch 76, the adhesive box 22 is free to be elevated thereby breaking the meshing engagement of the

gears 18 and 20. The latch 76 is furthermore retracted and the spring 82 compressed when the adhesive box 22 and base 26 are rotated back into a working position abutting the latch while being raised. However, when the adhesive box and base 26 are lowered the latch 76 will move forward under the force of spring 82 and the bevel surface 80 will then ride over a part of the base 26 thereby permitting positive latching of the adhesive box.

The adhesive box 22 may also be operated manually by means of cam 84 connected to a handle 86. The cam 84 engages the undersurface of an end of base 26 to thereby raise the adhesive box. The adhesive box is elevated a distance B as shown in FIG. 3. The latched stop prevents the gears 18 and 20 of the adhesive box 22 from being lifted out of meshing engagement during remote control of the air cylinder 62. However, when the adhesive box is rotated it bypasses the latched stop and the air piston 60 is free to reach the upper stop 61. The spring 82 provides automatic resetting of the latch 76 when the adhesive box 22 is lowered to its working position. FIG. 6 illustrates the latch 76 with the adhesive box in lowered position while FIG. 9 shows this latch with adhesive box in elevated position. Even in the elevated position of the adhesive box 22 and roll 10 the gears 18 and 20 remain in mesh.

The adhesive bottle 74 has a support arm 88 provided with a sleeve portion 90 mounted on the rod 72. Thus, when the adhesive box 22 is rotated or swung out laterally, the support arm 88 moves with it. It should be noted that the adhesive bottle 74 does not move up and down with the air piston 60. Therefore, the relative position of the nozzle 75 with respect to the adhesive box 22 is reduced when the box is lifted in a manner hereinbefore described, thereby shutting off the adhesive supply to the box.

What is claimed is:

1. An apparatus for applying adhesive to the sealing flaps of envelopes in a line of operation comprising an adhesive box, an adhesive fountain roll rotatably mounted adjacent to said adhesive box, fluid-operated means located remotely from said adhesive box but operatively connected thereto for selectively raising and lowering said box, additional manual control means for alternately selectively raising and lowering said adhesive box, means interconnecting said adhesive box and said fluid-operated means, pivoting means for jointly pivoting said fluid-operated means and said adhesive box, and interconnected gears for rotating said roll, a latch member which prevents disengagement of said interconnected gears when said apparatus is operative but permits disengagement of said gears when said apparatus is inoperative thereby permitting said roll and said adhesive box to be pivoted laterally.

2. An apparatus for applying adhesive to the sealing flaps of envelopes in a line of operation comprising an adhesive box, an adhesive fountain roll rotatably mounted adjacent to said adhesive box, fluid-operated means located remotely from said adhesive box but operatively connected thereto for selectively raising and lowering said box, means interconnecting said adhesive box and said fluid-operated means, pivoting means for jointly pivoting said fluid-operated means and said adhesive box, and a fixed detent, a catch on the adhesive box structure which engages said detent when said apparatus is in an operative position, and may be manu-

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ally released from said detent when said fluid-operated means and said adhesive box are jointly pivoted.

3. An apparatus as claimed in claim 2 wherein said catch is adjustably spring-urged into said detent.

4. An apparatus for applying adhesive to the sealing flaps of envelopes in a line of operation comprising an adhesive box, an adhesive fountain roll rotatably mounted adjacent to said adhesive box, fluid operated means located remotely from said adhesive box but operatively connected thereto for selectively raising and lowering said box, and manual control means for alternately selectively raising and lowering said box, means interconnecting said adhesive box and said fluid operated means, pivoting means for jointly pivoting said fluid operated means and said adhesive box, a plurality of interconnected gears for rotating said roll, a latch member preventing disengagement of said interconnected gears when said apparatus is operative but permitting disengagement of said gears when said apparatus is inoperative, thereby allowing said roll and said adhesive box to be pivoted laterally.

5. An apparatus for applying adhesive to sealing flaps of envelopes in a line of operation comprising an adhesive box, an adhesive fountain roll rotatably mounted adjacent to said adhesive box, fluid operated means located remotely from said adhesive box but operatively connected thereto for selectively raising and lowering said box, manual control means for alternately selectively raising and lowering said adhesive box, means interconnecting said adhesive box and said fluid operated means, pivoting means for jointly pivoting said fluid operated means and said adhesive box, a fixed detent, a catch on the adhesive box structure which engages said detent when said apparatus is in an operative position and may be manually released from said detent when said fluid operated means and said adhesive box are jointly pivoted.

6. An apparatus for applying adhesive to the sealing flaps of envelopes in a line of operation comprising an adhesive box, an adhesive fountain roll rotatably mounted adjacent to said adhesive box, fluid-operated means located remotely from said adhesive box but operatively connected thereto for selectively raising and lowering said box, additional manual control means for alternatively selectively raising and lowering said adhesive box, wherein said adhesive box is provided with a lip, means pivoting said adhesive box whereby the lip thereof is at a point in close proximity to said fountain roll, a yieldable member being in engagement with said mounting means for said roll and maintaining said lip in engagement with said roll to a closed position when said roll is inoperative, and when said roll is operative, the viscosity of the adhesive circulating about said roll maintains said lip away from said roll against the pressure of said yieldable member to an open position thereby forming a gap therebetween which is self-closing upon the stopping of the rotation of the roll.

7. An apparatus as claimed in claim 6 wherein said

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yieldable member is provided with means for selectively pre-setting the gap between said lip and the adjacent roll.

8. An apparatus as claimed in claim 6 wherein said adhesive box constituted a base, a pair of spaced upright posts mounted in spaced relationship on said base, pivot means on said posts, a receptacle engaged by said pivot means, and resilient means connecting said receptacle to said base.

9. An apparatus as claimed in claim 8 further comprising a removable gate in said receptacle to contain the adhesive therein.

10. An apparatus for applying adhesive to the sealing flaps of envelopes in a line of operation comprising an adhesive box, an adhesive fountain roll rotatably mounted adjacent to said adhesive box, fluid-operated means located remotely from said adhesive box but operatively connected thereto for selectively raising and lowering said adhesive box, additional manual control means for alternatively selectively raising and lowering said adhesive box, wherein said adhesive box is provided with a single rigid scraper bar lip, means mounting said fountain roll adjacent to said adhesive box, means pivoting said adhesive box whereby said rigid scraper lip thereof is at a point in close proximity to said fountain roll, a spring being in engagement with said mounting means for said roll and maintaining said rigid scraper bar lip in engagement with said roll to a closed position when said roll is inoperative, and when said roll is operative, the viscosity of the adhesive distributed around the entire peripheral surface of said roll maintains said rigid scraper bar lip away from said roll against the pressure of said spring to an open position thereby forming a gap therebetween which is self-closing upon the stopping of rotation of the roll.

11. An apparatus for applying adhesive to the sealing flaps of envelopes comprising an adhesive box provided with a rigid scraper bar lip, an adhesive fountain roll, means mounting said roll adjacent to said adhesive box, means pivoting said adhesive box whereby said rigid scraper bar lip thereof is at a point in close proximity to said fountain roll, a spring being in engagement with said mounting means for said roll and maintaining said rigid scraper bar lip in engagement with said roll to a closed position when said roll is inoperative, and when said roll is operative, the viscosity of the adhesive distributed around the entire peripheral surface of said roll maintains said rigid scraper bar lip away from said roll against the pressure of said spring to an open position thereby forming a gap therebetween which is self-closing upon the stopping of the rotation of the roll, wherein the adhesive is evenly distributed around the entire peripheral surface of said roll, an adjusting member for presetting the gap between said lip and said roll when said adhesive box is pivoted to a position whereby said lip is adjacent to said roll.

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