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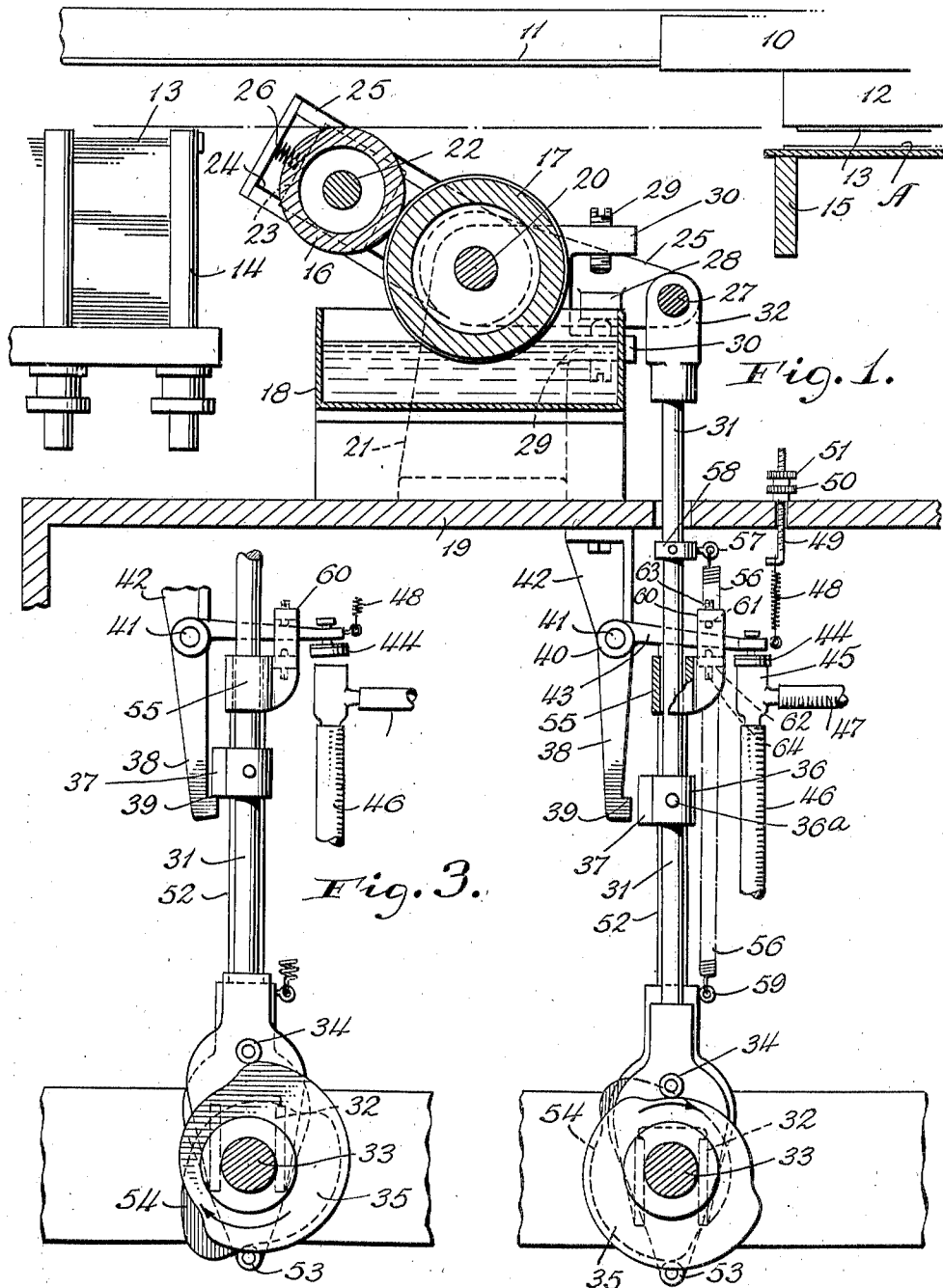
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CONTROLLING MEANS FOR ADHESIVE APPLYING APPARATUS

Filed June 26, 1940

2 Sheets-Sheet 1



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Fig. 2.

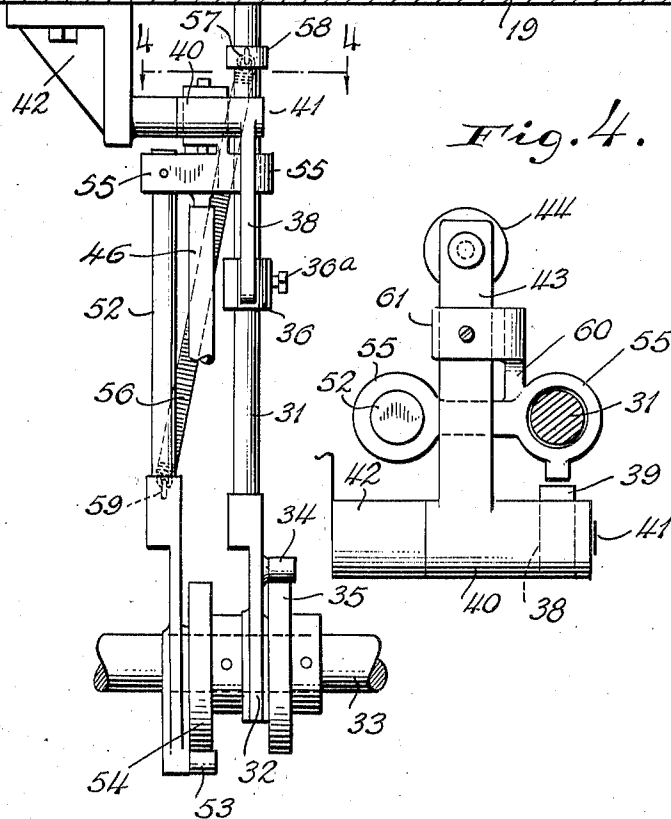
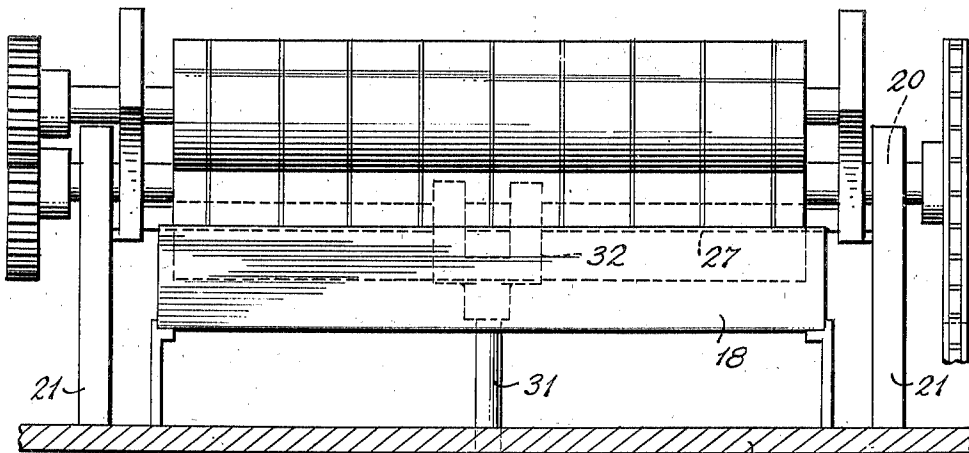


Fig. 4.

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CONTROLLING MEANS FOR ADHESIVE
APPLYING APPARATUS

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The invention relates to adhesive applying apparatus and more particularly to apparatus for applying adhesive to labels in labeling machines and has for its object to provide a novel controlling means for such apparatus whereby the application of adhesive to the labels or their equivalent is effected in a simple and efficient manner. The invention contemplates further the provision of a novel controlling means whereby the application of adhesive is controlled in dependence upon the presence of a label in correct and predetermined applying position on the label carrying means. Other objects will appear from the description hereinafter and the features of novelty will be pointed out in the claims.

In the accompanying drawings which illustrate an example of the invention without defining its limits, Fig. 1 is a fragmentary elevation, partly in section, of a labeling machine with the novel controlling means embodied therein; Fig. 2 is a front elevation of the adhesive applying apparatus and its novel controlling means; Fig. 3 is a detail view of said controlling means as it appears in Fig. 1, with the parts in different positions, and Fig. 4 is a detail horizontal section on an enlarged scale on the line 4—4 of Fig. 2.

For purposes of illustration and description and without intent to define the limits of the invention, the novel controlling means for adhesive applying apparatus is shown as embodied in a labeling machine of the type disclosed in the Apfelbaum Patent No. 1,711,257 of April 30, 1929.

The type of labeling machine illustrated in the drawings includes a transfer carriage 10 slidably mounted on guideways 11 suitably fixed on the frame of the machine. A suction head 12 is adjustably supported on the carriage 10 and is reciprocated thereby between a label pick-up station at which a supply stack of labels 13 is located in a container 14, and a label applying station at which a support 15 for the article A to be labeled is mounted in any convenient way. Suitable means is provided for enabling the suction head 12 to pick up terminal labels 13 from the upper end of the supply stack at the label pick-up station and for adjusting said suction head 12 on the carriage 10 at the label applying station to apply the carried labels to the articles on the support 15. During the travel from the label pick-up station to the label applying station the label 13 carried by the suction head 12 in correct applying position at the time, receives

an application of adhesive from a suitable adhesive applying apparatus.

The latter in the illustrated example, consists of an adhesive applying roller 16 in tangential receiving relation to or contact with an adhesive distributing roller 17 which dips into a supply of suitable adhesive contained in a receptacle 18 supported in any convenient manner on a bed plate 19 forming part of the frame of the machine.

The distributing roller 17 is fixed upon a shaft 20 which is rotatably mounted in bearing brackets 21 projecting upwardly from the bed plate 19, while the applying roller 16 is carried by a shaft 22 journaled in bearing blocks 23 movably mounted in guideways 24 provided in levers 25 pivoted on the shaft 20; for the purpose of yieldingly maintaining the roller 16 in adhesive receiving relation or contact with the roller 17, springs 26 may be located between the bearing blocks 23 and the end portions of the levers 25. The latter are connected by a cross-rod 27 and each has a lug 28 movable between stop screws 29 mounted in ears 30 forming integral parts of the bearing brackets 21.

The novel controlling means for the adhesive apparatus comprises a main operating rod 31 having its upper end pivotally connected at 32 with the cross-rod 27 and provided at its lower end with a forked member 32 which slidably straddles a driving or power shaft 33 included in the labeling machine, said shaft 33 being actuated in any suitable manner as shown for instance in the Apfelbaum patent referred to hereinbefore. A roller 34 is mounted on the forked member 32 in rolling engagement with a suitable cam 35 fixed upon the shaft 33, said cam 35 in cooperation with the roller 34 controlling the operation of the rod 31 in a manner to adjust the adhesive applying roller 16 to and from its operative position in the normal operation of the machine. The operating rod 31 carries a collar 36 adjustably fixed in place by a set screw 36^a and from which a lug 37 projects into operative relation with a locking member 38 for the purpose to be more fully set forth hereinafter. The locking member 38 at its free end terminates in a locking nose 39 arranged to cooperate with said lug 37 to lock the rod 31 and prevent it from shifting the adhesive applying roller 16 to its operative position if no label has been picked up by the suction head 12 or a label is incorrectly positioned thereon; the locking member 38 depends from a sleeve 40 of which it preferably forms an integral part, said sleeve 40 being rotat-

ably mounted on a pivot pin 41 projecting from a bracket 42 secured to and extending downwardly from the bed plate 19. A valve arm 43 preferably also forming an integral part of the sleeve 40 extends therefrom in a substantially horizontal direction and at its free end carries a valve 44 preferably mounted on the arm 43 so as to be adjustable relatively thereto. The valve 44 is arranged to control the vacuum opening of a suitably supported valve casing 45 which is connected preferably by means of a flexible tube 46 with a conventional source of suction such as a vacuum pump; in addition the valve casing 46 is connected by means of a preferably flexible tube 47 with the preferably mentioned suction head 12. A spring 48 has its one end secured to the outer end of the arm 43 and its other end connected with a screwthreaded hook 49 adjustably mounted on the bed plate 19 by means of a nut 50 and a lock nut 51. The spring 48 acts to normally maintain the valve 44 in an open position and to return it thereto as will appear more fully from the description hereinafter.

The novel controlling means further comprises an auxiliary operating rod 52 located in spaced parallel relation to the main operating rod 31 with its lower end slidably straddling the shaft 33 and carrying a roller 53; the latter is in rolling engagement with a suitable cam 54 secured upon the shaft 33 to rotate therewith. At its upper end the auxiliary rod 52 carries a bracket 55 in slidable engagement with the main rod 31 for guiding the auxiliary rod 52 in its vertical movements. A spring 56 has its one end secured at 57 to a collar 58 adjustably fixed upon the main operating rod 31 and its other end fastened at 59 to the auxiliary operating rod 52; the spring 56 serves to yieldingly maintain the rollers 34 and 53 in rolling engagement with the respective cams 35 and 54 and to otherwise act on said rods 31 and 52 as will be pointed out more fully hereinafter. The bracket 55 includes an upright arm 60 from which transverse members 61 and 62 project in horizontal directions above and below the valve arm 43 respectively, in spaced relation thereto. The members 61 and 62 carry adjustable projections in the form of screws 63 and 64 respectively located in vertical registry with said arm 43.

In the operation of the labeling machine referred to herein the carriage 10 is reciprocated on the guideways 11 by suitable mechanism as disclosed for instance in the Apfelbaum Patent No. 1,711,257 to shift the suction head 12 from the label pick-up station to the label applying station and back again. At the label pick-up station provision is made, for instance, by periodically elevating the stack of labels 13, to cause the suction head 12 to pick-up successive terminal labels 13 from said stack and to transfer the carried labels to the applying station. During the travel from the pick-up station toward the applying station, the label 13 carried by the suction head 12 passes in tangential contact with the adhesive applying roller 16 and receives an application of adhesive therefrom. When the applying station is reached, the carried label 13 is deposited on the article A on the support, for instance by moving the suction head 12 downwardly on the carriage 10. During these operative steps the suction in the suction head 12 is controlled in operative synchronism therewith to effect the desired results. In Fig. 1 the carriage 10 is at that stage in the operative cycle at which

the label 13 carried by the suction head 12 is about to be adhesively applied to the article A on the support 15. In proper timing with this application of the label 13 to the article A the cam 54 in co-operation with the roller 53 and spring 56 raises the auxiliary rod 52 which carries with it the bracket 55 and causes the screw 64 thereof to engage and swing the valve arm 43 in a direction to shift the valve 44 away from the valve casing 45 to open the vacuum opening thereof. The suction in the suction head 12 is thus relieved to release the particular label 13 and thereafter the suction head 12 is returned to the raised position on the carriage 10 shown in Fig. 1.

The carriage 10 is then shifted to the left on the guideways 11 to return the suction head 12 to the pick-up station ready to remove the next successive terminal label 13 from the stack thereat. In proper synchronism with this movement of the carriage 10 to the left in Fig. 1, the cam 35 acting on the roller 34 raises the main operating rod 35 and thereby rocks the levers 25 on the shaft 20 in a direction to shift the adhesive applying roller 16 to an inoperative position below the path of travel of the active face of the suction head 12; the latter accordingly does not contact with the roller 16 and therefore is not covered or soiled with adhesive during this movement. At the same time the locking member 38 is actuated to swing its locking nose 39 beneath the lug 37 of the collar 36 fixed upon the main rod 31. At this stage the parts of the controlling means are in the positions illustrated in Fig. 3 and the main rod 31 is held against downward movement and the adhesive applying roller 16 is temporarily locked in its inoperative position.

As the operative cycle proceeds, the auxiliary operating rod 52 is moved downwardly by the action of the cam 54 on the roller 53 and carries with it the bracket 55 which is slidably shifted in a downward direction on the main operating rod 31. The screw 63 movable with the bracket 55 is thereby caused to engage and rock the valve arm 43 and to shift the valve 44 against the tension of the spring 48 into engagement with the casing 45 to close the vacuum opening thereof whereby suction is again developed in the suction head 12. The aforesaid movement of the valve arm 43 rocks the sleeve 40 on the pivot pin 41 to concurrently actuate the locking member 38 in a direction to shift the locking nose 39 to its inoperative position out of the path of the lug 37 carried by the main operating rod 31.

During these operations, the terminal label 13 of the supply stack and the suction head 12 are brought into surface engagement with each other. If this surface engagement is such as to correctly position said terminal label 13 on the active surface of said suction head 12, a vacuum will be developed in the suction line and the valve 44 will be held in its closed position by atmospheric pressure, even though the auxiliary rod 52 moves upward to permit said valve 44 normally to be opened by the spring 48.

With the locking nose 39 in its operative position the cam 35 and roller 34 in co-operation with the spring 56, the main operating rod 31 will be pulled downwardly and the levers 25 will be pivotally actuated to shift the adhesive applying roller 16 to the operative position shown in Fig. 1. In continuing the operative cycle, the carriage 10 moves toward the right in Fig. 1 along the guideways 11 from the pick-up station to the label applying station, the label 13 held in place

on the suction head 12 by atmospheric pressure will pass in tangential contact with said adhesive applying roller 16 and will receive an application of adhesive therefrom before the label applying station is reached. At the latter station the label 13 will be applied to an article A on the support 15 in the manner previously described after which the carriage 10 again moves to the left in Fig. 1 to bring the suction head 12 in position at the pick-up station to pick-up the next succeeding terminal label 13 from the top of the supply stack.

If the label 13 as it is picked up by the suction head 12 is incorrectly positioned thereon or no label 13 is picked up from the supply stack, air will leak through the uncovered holes in the suction head 12 and reduce the effect of the vacuum on the inner face of the valve 44 and permit the spring 48 to open said valve 44 due to the lost motion between the arm 43 and the screw 63. The auxiliary rod 52 in its upward movement under the influence of the cam 54 will next slidably move the bracket 55 along the main rod 31 in a corresponding upward direction, and at the same time will actuate the arm 43 and member 38 in a manner to shift the nose 39 of the locking member 38 into the path of the lug 37. At this stage the parts of the controlling means are in the positions illustrated in Fig. 3 in which the lug 37 occupies a raised position and the adhesive applying roller 16 is concurrently in its inoperative position. As the main operating rod 31 starts downwardly in the further operation of the mechanism, the lug 37 will engage the locking nose 39 and lock the main rod 31 against further downward movement to thereby prevent the adhesive applying roller 16 from being shifted to its operative position at the label line.

As a result, the suction 12 with the incorrectly positioned label 13 thereon or with no label in place on its active surface, will not engage the adhesive applying roller 16 and consequently will not be contaminated or soiled with adhesive therefrom. As soon as the suction head 12 in the continued operation of the machine thereafter picks up a label 13 at the label pick-up station in proper position on its active surface, the controlling means will automatically resume its normal operation and will continue to so operate until another label 13 is improperly positioned on the suction head 12 or no label is picked up thereby.

During an operative period of the machine, the lug 28 in co-operation with the stop screws 29 serves to arrest the rocking movements of the levers 25 and to insure the correct location of the adhesive applying roller 16 in its recurrent operative position.

From the aforesaid description it will be clear that the controlling means controls the adhesive applying means in a manner to insure applications of adhesive only to labels properly positioned on the suction head, and to definitely prevent the application of adhesive to the active face of the suction head if it has failed, for some reason, to pick up a label at the pick-up station.

The novel controlling means is simple in construction and efficient in operation and requires no particular supervision at any time. The said controlling means is capable of being installed in existing labeling machines without material difficulty.

Various changes in the specific forms shown and described may be made within the scope

of the claims without departing from the spirit of the invention.

I claim:

1. In an adhesive applying apparatus including pivotally mounted levers, and an adhesive applying roller rotatably mounted on said levers, that improvement which comprises a suction line having a vacuum opening, a main operating rod connected with said levers, a cam whereby said main operating rod is actuated to rock said levers and adjust said adhesive applying roller from an inoperative to an operative position and vice versa, a valve for controlling said vacuum opening to render the suction effective and non-effective to develop a vacuum in said suction line in dependence upon the position of said valve, a pivoted valve arm carrying said valve, a spring for normally maintaining said valve in its open position and for returning it thereto, an auxiliary operating rod, a cam for reciprocating said auxiliary rod vertically, projections movable with said auxiliary rod and acting on said valve arm to initially close said valve and to open the same, said valve being held in its closed position independently of said auxiliary rod and its projections by atmospheric pressure when a vacuum exists in said suction line, a locking member movable with said valve arm, and a locking lug carried by said main operating rod for engagement by said locking member when said valve is in its open position to thereby lock said main rod against operation and maintain said adhesive applying roller in its inoperative position.

2. In an adhesive applying apparatus including pivotally mounted levers, and an adhesive applying roller rotatably mounted on said levers, that improvement which comprises a suction line having a vacuum opening, a main operating rod connected with said levers, means whereby said main operating rod is actuated to rock said levers and adjust said adhesive applying roller from an inoperative to an operative position and vice versa, a valve for controlling said vacuum opening to render said suction effective and non-effective to develop a vacuum in said suction line in dependence upon the position of said valve, a movable valve arm carrying said valve, a spring for normally maintaining said valve in its open position and for returning it thereto, auxiliary means co-operating with said valve arm for initially closing said valve and for opening the same, said valve being held in its closed position independently of said co-operating means by atmospheric pressure when a vacuum exists in said suction line, a locking member movable with said valve arm, and a locking lug carried by said main operating rod for engagement by said locking member when said valve is in its open position to thereby lock said main rod against operation and maintain said adhesive applying roller in its inoperative position.

3. In an adhesive applying apparatus including pivotally mounted levers, and an adhesive applying roller rotatably mounted on said levers, that improvement which comprises a suction line having a vacuum opening, main operating means for pivotally rocking said levers to adjust said adhesive applying roller from an inoperative to an operative position and vice versa, a valve for controlling said vacuum opening to render the suction effective and non-effective to develop a vacuum in said suction line in dependence upon the position of said valve, auxiliary operating means for initially closing said valve and for

opening the same, said valve being held in its closed position independently of said auxiliary operating means by atmospheric pressure when a vacuum exists in said suction line, and locking means controlled by said valve whereby said main operating means is prevented from adjusting said adhesive applying roller to its operative position to thereby maintain said roller in its inoperative position.

4. In an adhesive applying apparatus including pivotally mounted levers, and an adhesive applying roller rotatably mounted on said levers, that improvement which comprises a suction line having a vacuum opening, operating means for pivotally rocking said levers to adjust said adhesive applying roller from an inoperative to an operative position and vice versa, a valve for controlling said vacuum opening to render the suction effective and non-effective to develop a vacuum in said suction line in dependence upon the position of said valve, the latter being held in its closed position by atmospheric pressure when a vacuum exists in said suction line, a spring for opening said valve when no vacuum exists in said suction line, and locking means controlled by said valve whereby said operating means is locked against operation to thereby maintain said adhesive applying roller in its inoperative position.

5. In an adhesive applying apparatus including an adhesive applying roller movable from an inoperative to an operative position and vice versa, that improvement which comprises a suction line, a valve controlling said suction line to render the suction effective and non-effective to develop a vacuum therein, operating means for shifting said adhesive applying roller to its operative position and to its inoperative position, and locking means controlled by said valve for locking said operating means against operation when no vacuum exists in said suction line to thereby maintain said adhesive applying roller in its inoperative position.

6. In a labeling machine including means for supporting a supply stack of labels, means for supporting articles to be labeled, a suction transfer head for removing terminal labels from said stack and depositing said labels on said articles, and adhesive applying means for applying adhesive to said labels during transfer from the supply stack to the articles, said adhesive applying means being movable from an inoperative to an operative position and vice versa, that improvement which comprises a suction line connected with the suction head and provided with a vacuum opening, the development of a vacuum in said suction line being dependent upon the presence of a label on said suction head, operating means for shifting said adhesive applying means to its operative position, a valve for controlling said vacuum opening and held in its closed position by atmospheric pressure when a vacuum exists in said suction line, and locking means movable with said valve whereby said operating means is prevented from shifting said adhesive applying means from its inoperative to its operative position when said valve occupies its open position because of the non-existence of a vacuum in said suction line due to the absence of a label on said suction head.

7. In an adhesive applying apparatus including an adhesive applying roller movable from an inoperative to an operative position and vice versa, that improvement which comprises a suction line, a valve controlling said suction line to render the suction effective and non-effective to develop a vacuum therein, operating means for shifting said adhesive applying roller to its operative position and to its inoperative position, and mechanical locking means controlled by the existence or non-existence of a vacuum in said suction line and serving to lock said operating means against operation when no vacuum exists in the suction line to thereby maintain said adhesive applying roller in its inoperative position.

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