Jan. 8, 1952 F. ELSNER 2,582,019

PASTER AND HOLD-DOWN MEANS FOR LABELING MACHINES

Filed May 25, 1949 3 Sheets-Sheet 1

FIG. 1.

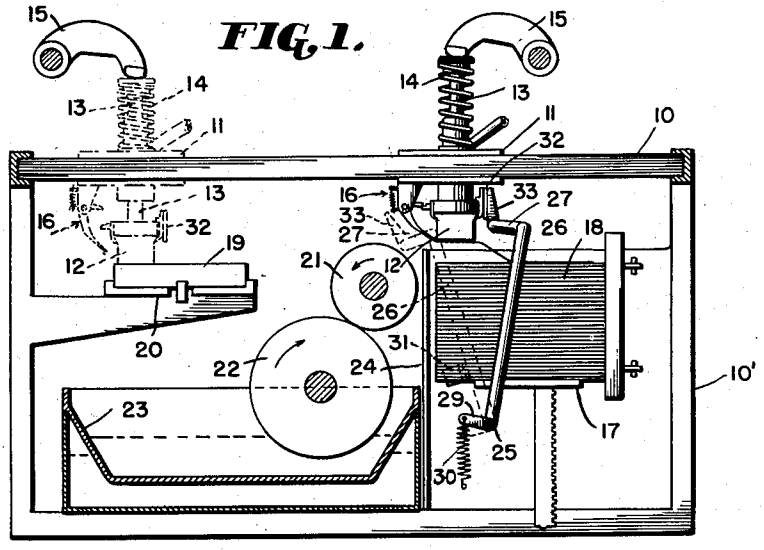


FIG. 2.

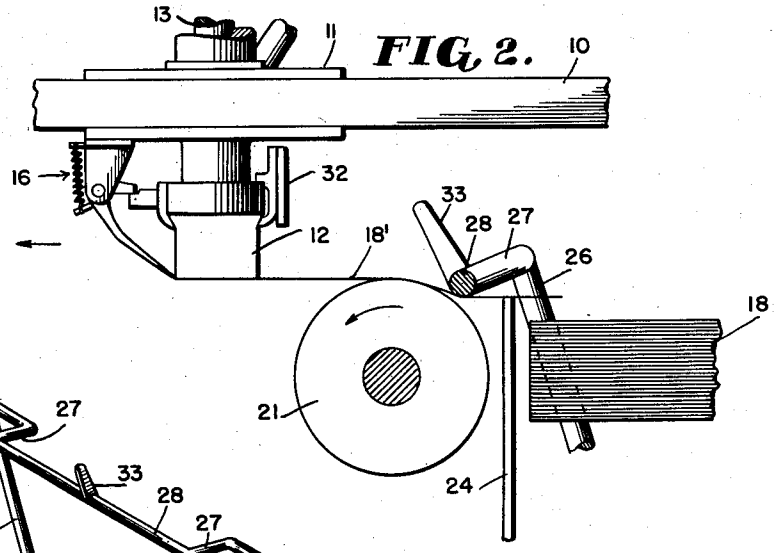
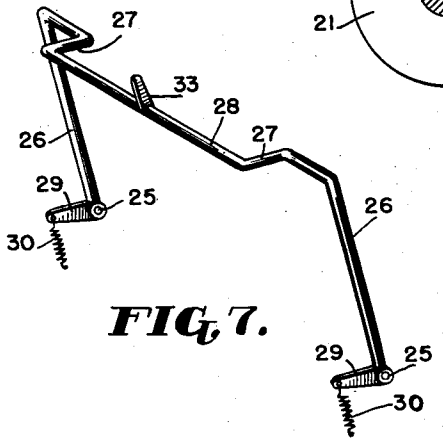


FIG. 7.



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PASTER AND HOLD-DOWN MEANS FOR LABELING MACHINES

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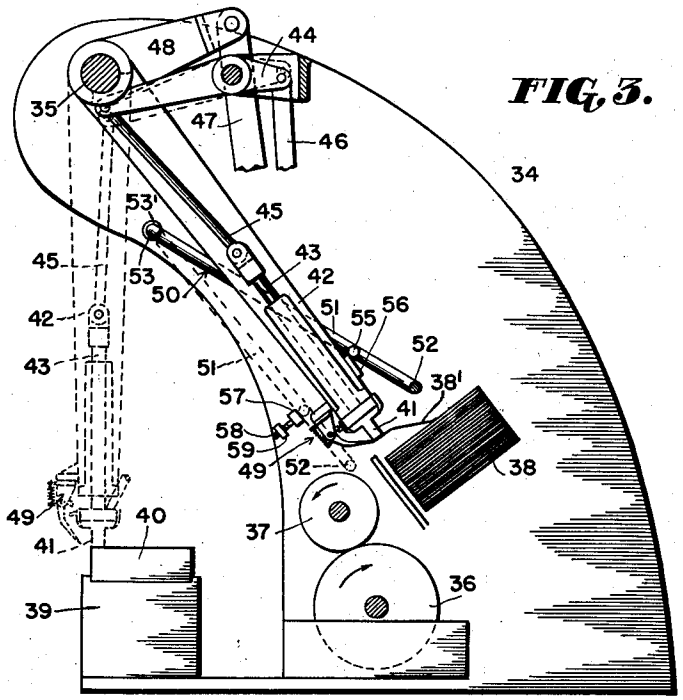


FIG. 3.

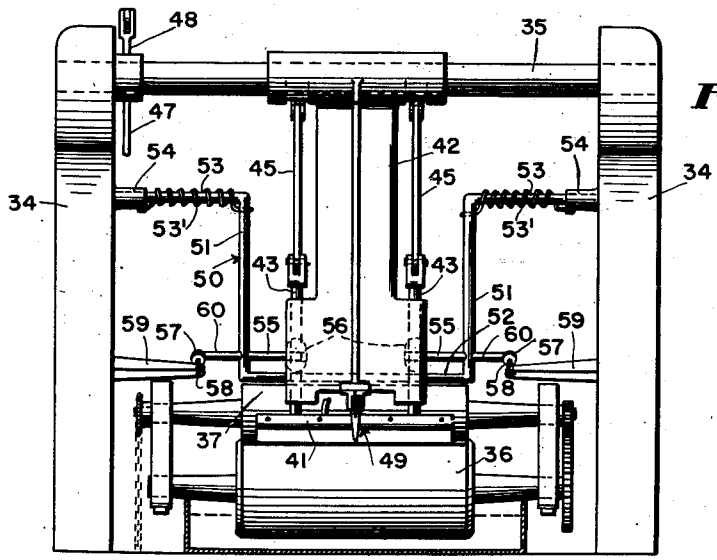


FIG. 4.

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FIG. 5.

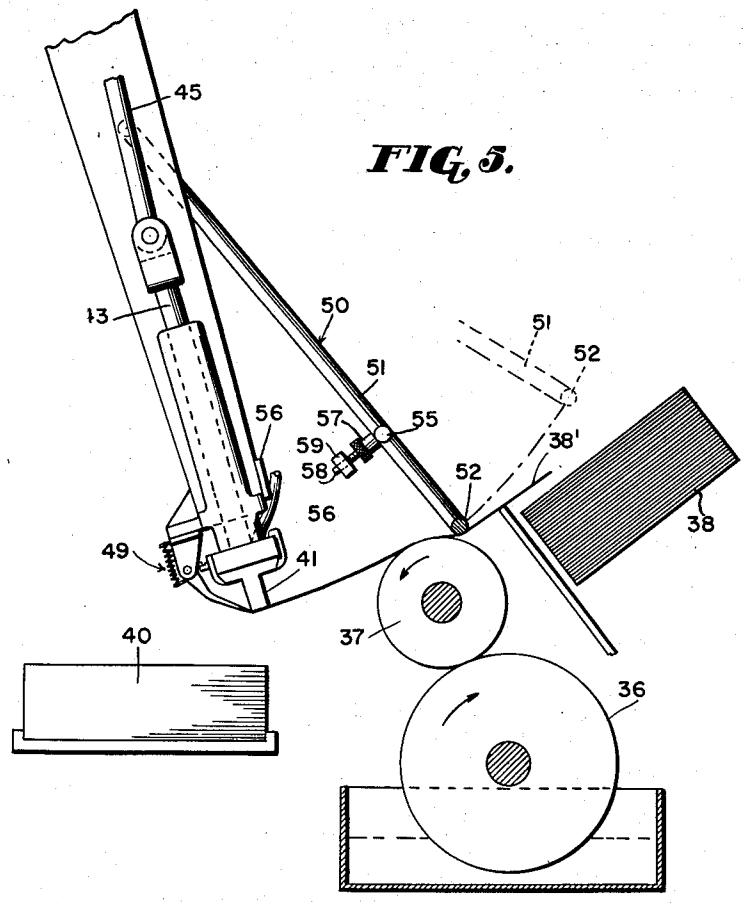
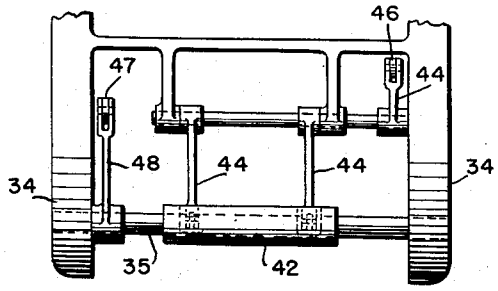


FIG. 6.



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PASTER AND HOLD-DOWN MEANS FOR LABELING MACHINES

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10 Claims. (Cl. 91—50)

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This invention relates generally to the class of label pasting and is directed particularly to improvements in mechanism for carrying or sweeping a label across the surface of a rotating paste transfer roller.

The present invention is directed particularly to label pasting mechanisms of the character disclosed in Patent No. 2,384,241 which issued September 4, 1945, wherein a traveling suction head removes a label from a stack and carries it across the surface of a paste transfer roller to a deposit station where the label is applied to an article and it is an object of the present invention to provide in association with a pick-up and carrying mechanism of this character a novel means whereby the label will be held down against the surface of the paste transfer roller, after the carrying nozzle has passed the highest point of the roller, to curve the label around a part of the surface of the roller whereby to maintain the portion of the label trailing the carrier head in contact with the roller and also to increase the area of contact so that a complete application of adhesive will be obtained upon the underface of the label.

Another object of the invention is to provide in a mechanism of the above described character a means for holding down the rear end of a label as it crosses the surface of a paste transfer roller while the forward end of the label is attached to and drawn along by a carrier head, wherein such hold-down means follows closely behind the label carrier head and comes into effective operation immediately upon the passage of the head beyond the high point or crown of the paste transfer roller.

Still another object of the invention is to provide in a mechanism of the above described character a hold-down means which is directly engaged and actuated by the label pick-up and transfer head or the carrying means therefor.

Another and more specific object of the invention is to provide in association with a traveling label pick-up and transfer head either of a type adapted for rectilinear movement or of a type for swinging movement, a spring actuated pivoted arm which is shifted to an inoperative position by engagement with some part of the head carrying mechanism as such mechanism moves the head into label pick-up position and is permitted to move toward operative position under the action of the control spring as the pick-up head moves with a label across a paste transfer roller, whereby the swinging arm then contacts the label and presses it down upon the side of the high

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point or crown of the roller remote from the moving head whereby the trailing portion of the label is caused to follow a part of the curvature of the roller.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming a part of the specification, with the understanding, however, that the invention is not to be limited to the exact details of construction shown and described since obvious modifications will occur to a person skilled in the art.

In the drawings:

Figure 1 is a view in elevation of the label hold down mechanism constructed in accordance with one embodiment of the present invention and shown in association with a label pick-up and carrier head which has rectilinear movement, the head and hold down mechanism being in starting position in full lines, the head being shown in dotted outline in label depositing position.

Fig. 2 is a detail view illustrating a relative position of a label carrying head and the hold down means after the pick-up head has passed the crown or highest point of the paste transfer roller.

Figure 3 illustrates a modified form of the invention wherein the pick-up head is of the swinging type, the head being shown in full lines in starting position with a picked-up label and the hold down means being shown elevated behind the head, the dotted line showing of the head illustrating the deposition of the label on a body.

Figure 4 is a view in front elevation of the structure illustrated in Figure 3.

Figure 5 is a detailed view illustrating the relative positions of the label pick-up and carrying head and the hold down means after the head has passed the high point or crown of the paste transfer roller, and showing the hold down means in fully operative position.

Figure 6 is a view in top plan of the supporting standards showing the shafts and cross connecting member therebetween.

Figure 7 is a detail perspective view of the label hold-down element shown in Figures 1 and 2.

Referring now more particularly to the drawings the description will first be directed to the form illustrated in Figures 1 and 2 where the suction pick-up head for the label has rectilinear movement.

In this embodiment of the invention the reference numeral 10 generally designates a rail mounted in a suitable supporting structure 10' which is shown in broken lines and may repre-

sent any type of support or housing in which the mechanism is located.

Upon the rail 10 is a reciprocable runner member 11 which carries for vertical movement or reciprocation a suction head 12. The suction head is connected with a stem 13 which passes upwardly through the runner 11 and is engaged by a spring 14 between the upper part of the stem and the top of the runner, which normally urges upward movement of the suction head. At the two extreme positions of movement for the runner and the suction head carried thereby are located presser members 15 which are actuated by a suitable mechanism, not shown, at the proper intervals to apply downward pressure to the suction head stem 13 so as to lower the head to a desired position either to pick up a label or to deposit the label upon a body to which it is to be applied.

Carried upon the runner member upon the side of the suction head facing in the direction of movement of the head when transferring a label from starting position to a position where it is applied, is a label edge gripping unit which is generally designated 16 and which is illustrated and claimed in the issued patent hereinbefore referred to. This label gripping unit, of course, forms no part of the present invention and accordingly it is believed to be unnecessary to give a detailed description of the construction and operation of the same as these are fully set forth in the above referred to patent.

In accordance with the present invention means is provided in the form of a vertically movable platform 17 for supporting a stack of labels or other sheets of material 18 which are to be coated on one surface with an adhesive and applied to a body such as that illustrated in broken lines and designated 19. Such body is supported upon a suitable table 20 at one side of the stack 18 and below a suction head actuator 15. The stack 18 is positioned below the other actuator 15 as illustrated to force the suction head 12 down, when it comes to position over the edge of the stack nearest to the table 20 to pick up a top sheet from the stack. This position will be referred to as the starting position and the position over the body 19 as the final position for the suction head.

Disposed between the starting and final positions for the suction head is an adhesive transfer roller 21 which receives fluid adhesive from a pick-up roller 22 which in turn takes the adhesive from a receptacle 23 into which the lower part of the roller 22 extends. The elevation of the crown or topmost part of the transfer roller 21 is in a plane to have the bottom face of the suction head 12 pass in sufficiently close proximity thereto to effect the contact therewith of the underface of a label or sheet of material, designated 18' which it is holding as it passes over the top of the transfer roller 21. The suction head attaches itself to the label or sheet 18' adjacent to the advancing edge of such sheet and accordingly as will be readily apparent upon reference to Figure 1, a considerable portion of the label or sheet trails behind the suction head and under ordinary conditions would merely be dragged across the surface of the transfer roller 21 with, possibly, the result that the entire undersurface of the sheet would not contact the roller surface and would not receive the proper application of adhesive.

In order to avoid the possibility of the adhesive being improperly applied to the undersurface of the sheet 18' the holddown mechanism forming the present invention is employed.

In the embodiment of the invention shown in Figures 1 and 2 there is provided at one side of the stack 18 or the enclosure in which the stack is located, such enclosure being defined by the upstanding wall 24, a suitable bearing or pivot 25 upon which is oscillatably mounted, at one end, the upstanding arm 26. This rock arm 26 at its upper end carries a short right angular extension 27 which is directed toward the suction head and connected to this extension is a press bar 28 which extends transversely of the stack 18 for the full width of the latter.

The lower end of the rock arm 26 carries the angularly directed lever 29 to which is attached an end of a spring 30, the other end of which is suitably secured to an adjacent part of the machine so that the spring constantly exerts a down pull on the lever 29 tending to swing the upper end of the rock arm 26 forwardly and downwardly toward the transfer roller 21.

The forward swinging movement of the rock arm 26 is limited by the stop plate 31. This plate is so positioned that it stops the rock lever 26 in a position where the press bar 28 is in closely spaced relation with the transfer roller 21 below the crown or highest part of the roller and on the side thereof remote from the body 19 to which the label or sheet is applied.

The reverse movement of the rock lever 26 in opposition to the pull of the spring 30, is effected by the suction head 12 as the latter moves back to starting position and for this purpose the head 12 is provided with a strike plate 32 upon the side opposite from the label gripping unit 16 or, what might be termed the rear side of the suction head and the holddown or press bar 28 carries an upstanding finger 33 which is positioned for contact with the strike plate 32. Thus it will be seen that when the suction head is in starting position as shown in full lines in Figure 1 the strike plate 32 will be pressed against the finger 33 and the rock arm 26 will be swung back and the spring 30 will be under tension. The suction head 12 may then be lowered to pick up a sheet or label 18', the strike plate 32 sliding down the surface of the finger 33 and when the head comes back to elevated position and starts forwardly the label or sheet 18' will be drawn across the top of the transfer roller 21 and the holddown or press bar 28 will follow the suction head by reason of the action of spring 30. The press bar will swing forwardly and downwardly and contact the top of the sheet 18' so as to force it or bend it down to conform to the contour of a portion of the roller surface, holding the label in this position as shown in Figure 2 so that proper wiping contact of the label with the roller will be effected.

In the form of the invention illustrated in Figures 3 to 5 the same holddown or press down action upon the label is effected in association with a suction head which is mounted for swinging movement in an arcuate path from the label or sheet stack to the final position where the body to receive the label is located. In this embodiment the numeral 34 designates a pair of supporting standards between the upper ends of which is supported a shaft 35. Between the lower ends of the standards 34 are located the adhesive pick-up and transfer rollers designated respectively 36 and 37 and upon one side of the rollers the stack of labels or sheets 38 is positioned, while upon the opposite or forward side

is located the support 39 for a body 40 which is to receive a label.

The suction head 41 is suspended by a hanger 42 from the shaft 35 to swing from the maximum forward position in which it is shown in dotted outline in Figure 3, rearwardly to a position over the forward part of the stack 38 of sheets or labels. As shown the suction head 41 is connected with the hanger 42 by means of the pins 43 which have slidable mounting in suitable passages in the hanger 42 to facilitate the up and down movement of the suction head by means of the rock lever 44 which at one end is connected with a pin 43 by a link 45 while at its other end it is connected with an operating pitman 46. A corresponding pitman 47 is connected by a crank arm 48 with the shaft 35 whereby to turn the latter to effect oscillation of the hanger 42.

The numeral 49 generally designates the label gripping finger unit which is actuated by the suction head 41 in its up and down movements for the holding and release of the label which, as shown in Figure 3, is lifted by the suction head and gripped by the unit 49 when the head has been raised, the label being here designated 38'. It will be seen that the underface of the suction head 41 together with the label or sheet 48' swings in an arc passing over and in close proximity to the surface of the transfer roller 37 when the suction head is swung from the starting or rearmost position where it is shown in full lines in Figure 3, forwardly to the final position over and at the far side of the body 40 from the stack of labels.

The label pressing or holddown means comprises a swinging substantially U-shaped frame structure which is generally designated 50. This frame comprises the upright side bars or rock arms 51 which are connected at their lower ends by the transversely extending holddown or press bar 52 while at their upper ends each of the rock arms 51 carries a laterally extending journal 53 which is pivotally supported in a cup bearing 54 which is carried upon the inner side of the adjacent standard 34. As shown in Figure 3 the label or sheet holddown bar 52 is disposed at the rear side of the suction head 41 and when the suction head is in the starting position the bearings 54 are disposed forwardly of the plane of the hanger 42 so that the rock arms 51 extend rearwardly downwardly across the hanger. Also will be noted the bearings 54 are positioned considerably lower than the shaft 35 so that the arcs upon which the bar 52 and the bottom face of the suction head move, cross before the advancing end of the sheet or label 38' has passed the top of the transfer roller 37. Since the rate of advance for the bar 52 is controlled by the engagement of a part of the holddown mechanism with the hanger for the suction head it will be seen that the bar 52 advances at a slightly faster rate than the suction head so that when the suction head is just passing over the top of the roller 37 the bar 52 will be closely behind the head and contacting the top of the sheet or label 38'.

The advance movement of the frame 50 is effected by gravity assisted by twist springs 53' and, as previously stated, such movement is controlled by the movement of the hanger 42 by the sliding engagement of the strike fingers 55, each of which is carried by a rock arm 51, with a strike plate 56 carried by the hanger 42 upon the rear side or, that is, the side opposite from the label gripping unit 49.

The forward movement of the frame 50 is controlled by an adjustable stop or bumper 57 which is carried upon a screw 58 having threading engagement through an arm 59 which extends inwardly from the inner face of each standard 34. Each bumper 57 is in the path of movement of a stop finger 60 carried upon the outer side of an arm 51 as shown in Figure 4. By proper adjustment of the bumpers 57 the sheet or label press bar 52 is caused to stop in close proximity to the surface of the transfer roller 37.

As shown most clearly in Figure 5 when the holddown bar is at the forward limit of its movement it will be pressing down upon the sheet or label 38', causing the same to be curved over and in contact with the top surface of the transfer roller 37 while the suction head 41, which has passed the roller 37, draws the label under the press down bar 52 and over the surface of the roller thereby insuring a full and even application of adhesive to the undersurface of the sheet.

After the sheet or label has been deposited on the body 40 by the suction head being moved downwardly, the suction head is returned to its starting position and in its return movement it picks up the frame 50, of which the press or holddown bar 52 forms a part and swings the frame back to its starting position in which it is shown in Figure 3.

While the present illustration of the rollers 36 and 37 does not show means for moving the same since such means forms no part of the invention as disclosed in this application, the roller mechanism as illustrated in an accompanying copending application is shown with means whereby the rollers can be lowered automatically upon the return movement of the suction head to prevent the label contacting undersurface of the head from wiping the surface of the transfer roller 37 and thus picking up adhesive.

From the foregoing it will be seen that there is provided in the invention herein disclosed a novel means whereby a label or other sheet while being drawn across an adhesive transfer roller, will be pressed down evenly so as to conform to a part of the curvature of the roller and thereby insure the application of a proper amount of adhesive to the entire surface of the label or sheet.

I claim:

1. In combination with a label pasting apparatus, a label pick-up unit supported for translational movement from a label pick-up position to a label deposit position, means supporting a stack of labels at the pick-up position, an adhesive transfer roller arranged between said positions to have a label drawn over the surface thereof by the unit in its movement from the pick-up to the deposit position, a movable member, and means supporting said member for movement into engagement with the top of a label carried by the pick-up unit, at the rear of the unit, to press the label down toward the roller surface behind the line of first contact of the label with the roller, to cause the label to conform to and follow a portion of the curved surface of the roller.

2. In combination in a label pasting apparatus, a label pick-up unit supported for translational movement from a label pick-up position to a label deposit position, means supporting a stack of labels at the pick-up position, an adhesive transfer roller arranged between said positions to have a label drawn over the surface thereof by the unit in its movement from the pick-up to the deposit position, and a means including a

swinging label engaging member controlled by the moving unit for applying downward pressure to the label at the rear of the unit to press the label toward the roller behind the line of first contact of the label with the roller, and cause the label to conform to and follow a portion of the curved surface of the roller.

3. In combination in a label pasting apparatus, a label pick-up unit supported for translational movement from a label pick-up position to a label deposit position, means supporting a stack of labels at the pick-up position, an adhesive transfer roller arranged between said positions to have a label drawn over the surface thereof by the unit in its movement from the pick-up to the deposit position, a label holddown member disposed transversely of the rear side of the pick-up unit, means supporting said member for swinging movement with the pick-up unit through a part of the travel of such unit, the movement of the holddown member in one direction being toward the surface of the roller from above a label attached to the pick-up unit, and means for stopping the movement of the holddown member in close proximity to the roller surface behind and below the line of first contact of the label with the roller.

4. Apparatus of the character stated in claim 3, in which said holddown member is in the form of a bar disposed parallel with the axis of the roller to extend across the top of the label.

5. Apparatus of the character stated in claim 3, with means for effecting operative engagement of the pick-up unit with the holddown member upon the return movement of the pick-up unit to label pick-up position to reversely move the holddown member.

6. In a label pasting apparatus including a suction pick-up head, means supporting the head for translational movement between a label pick-up position and a label deposit position, means supporting a stack of labels at the pick-up position, an adhesive transfer roller disposed between the pick-up and deposit positions and having the uppermost part of its surface positioned to have a label drawn thereacross by said pick-up head, an arm oscillatably mounted adjacent to the label stack supporting means for swinging movement in the direction of movement of the pick-up head, a label holddown bar carried by said arm to extend across the top of a label at the rear of the head, means urging said arm and bar to swing in the direction of movement of the pick-up head from its pick-up position to its deposit position, said bar when so swung moving in a downward arc toward the surface of the roller, the downward swinging movement of the bar being controlled by the movement of the pick-up head, and means for limiting the downward swinging movement of the bar.

7. Label pasting apparatus of the character stated in claim 6, wherein the swinging movement of the arm and bar in the said one direction is effected by a spring connected between the arm and a fixed part of the apparatus, and coacting means between the suction head and the bar for effecting the reverse swinging movement of the arm and bar by and upon the return of the suction head to label pick-up position.

8. Label pasting apparatus of the character described in claim 6, wherein the means supporting the suction head comprises a swinging hanger upon the lower end of which the suction head is carried to move through an arcuate path, and said oscillatably mounted arm being suspended for oscillation on an axis paralleling the swinging axis for said hanger, the pivot point for the arm being disposed a substantial distance below the swinging axis of the hanger.

9. In a label pasting apparatus, a rock shaft, a hanger carried thereby, a label pick-up unit carried by the hanger, means for swinging the hanger to move said unit from a label pick-up position to a label deposit position, an adhesive transfer roller between said positions arranged to have a label drawn thereacross by said unit, a frame member swingingly mounted to oscillate on an axis parallel with and below said shaft, said frame including a label hold down bar disposed across the unit to follow the unit when a label is being carried thereby across said roller, the frame swinging down with the unit to move the bar downwardly and forwardly toward the surface of the roller, and means for limiting the down swing of the frame to stop the bar in close proximity to the surface of the roller at a position a substantial distance behind the line of first contact of the unit carried label with the roller.

10. Apparatus of the character stated in claim 9, in which said frame carries an inwardly extending finger disposed in the path of travel of the hanger for engagement by the hanger unit upon its back-swing from label deposit position to label pick-up position to effect the up-swing of the frame and the elevation of the said bar above the next label to be picked up by the unit.

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