Oct. 20, 1953 F. ELSNER 2,655,896

PASTER AND HOLDDOWN MEANS FOR LABELING MACHINES

Filed Nov. 30, 1951 3 Sheets-Sheet 1

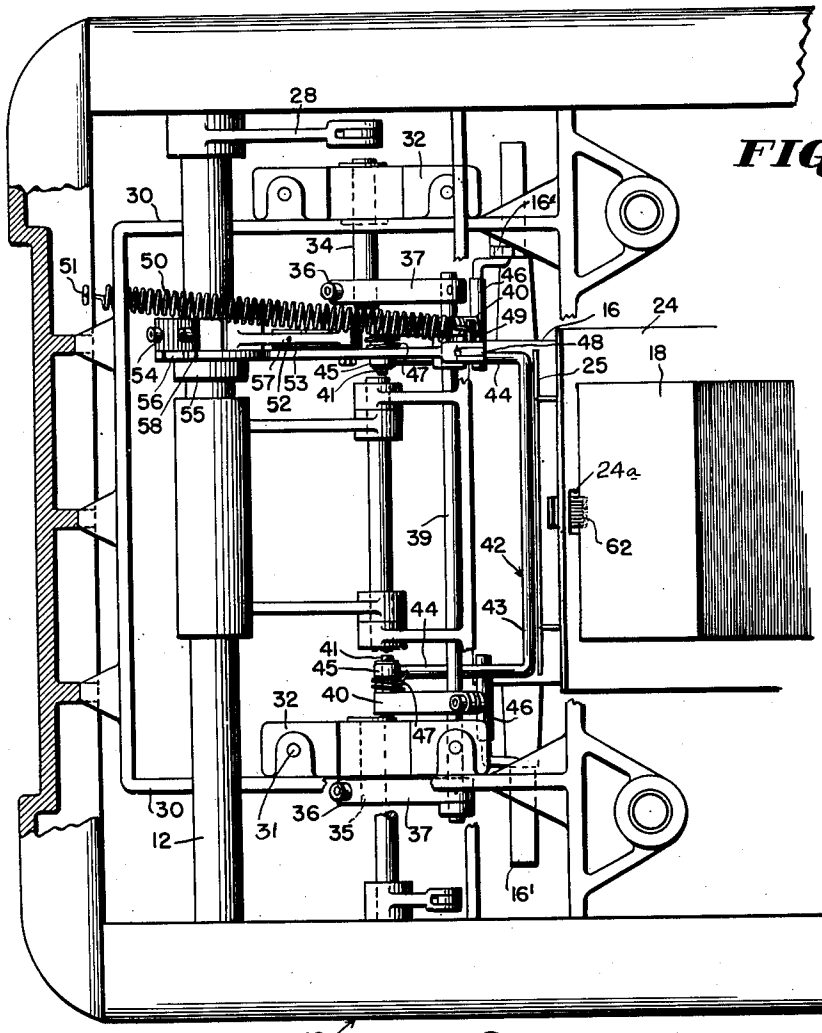


FIG. 1.

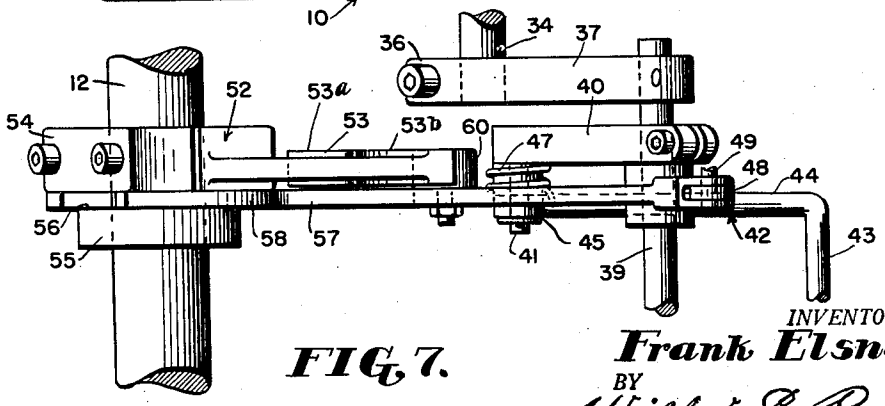


FIG. 7.

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FIG. 2.

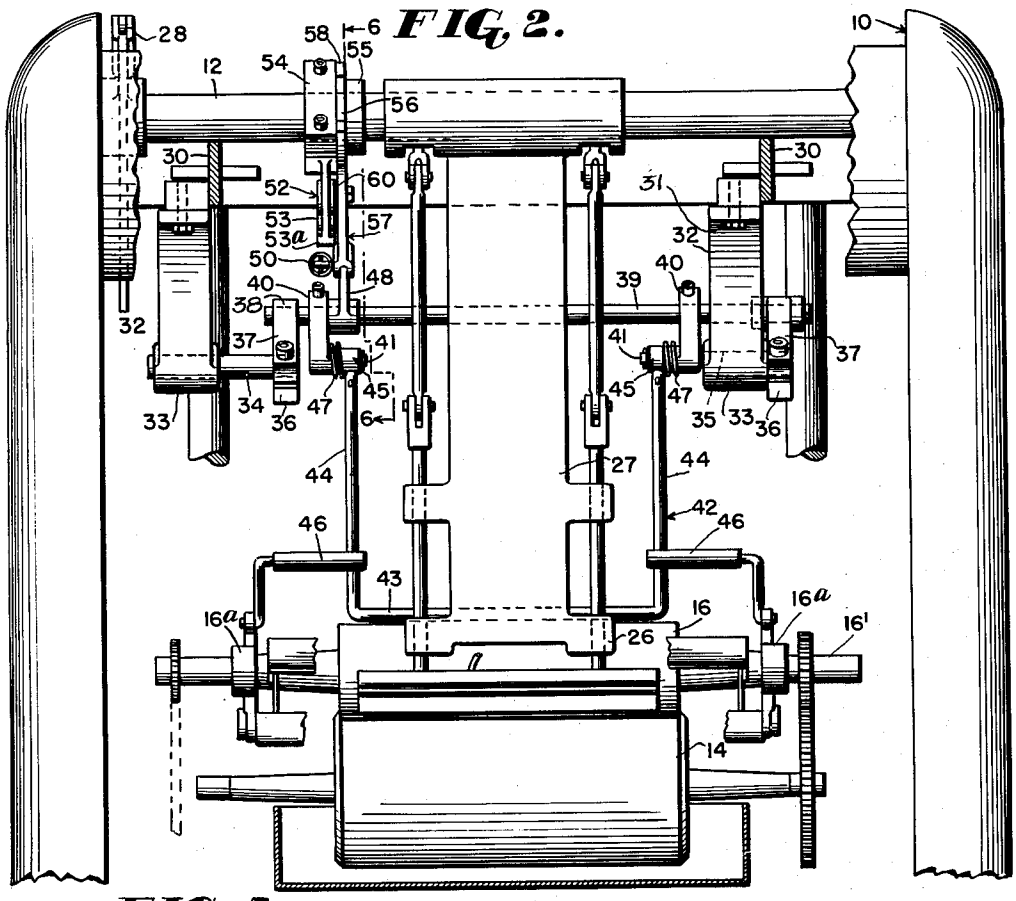


FIG. 5.

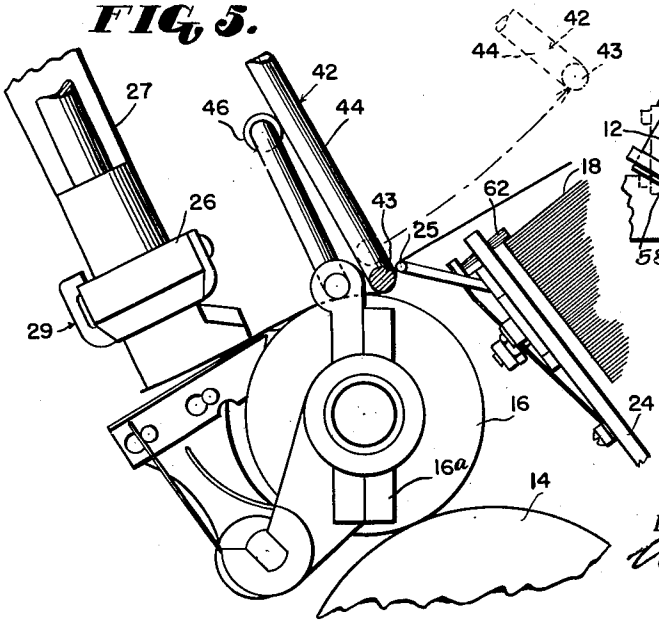
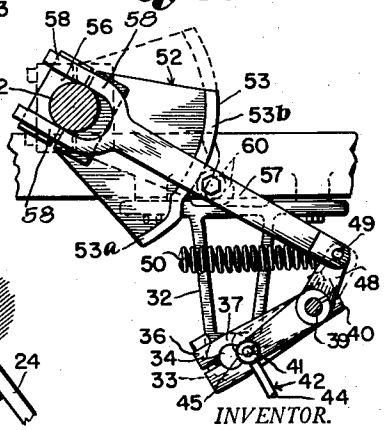


FIG. 6.



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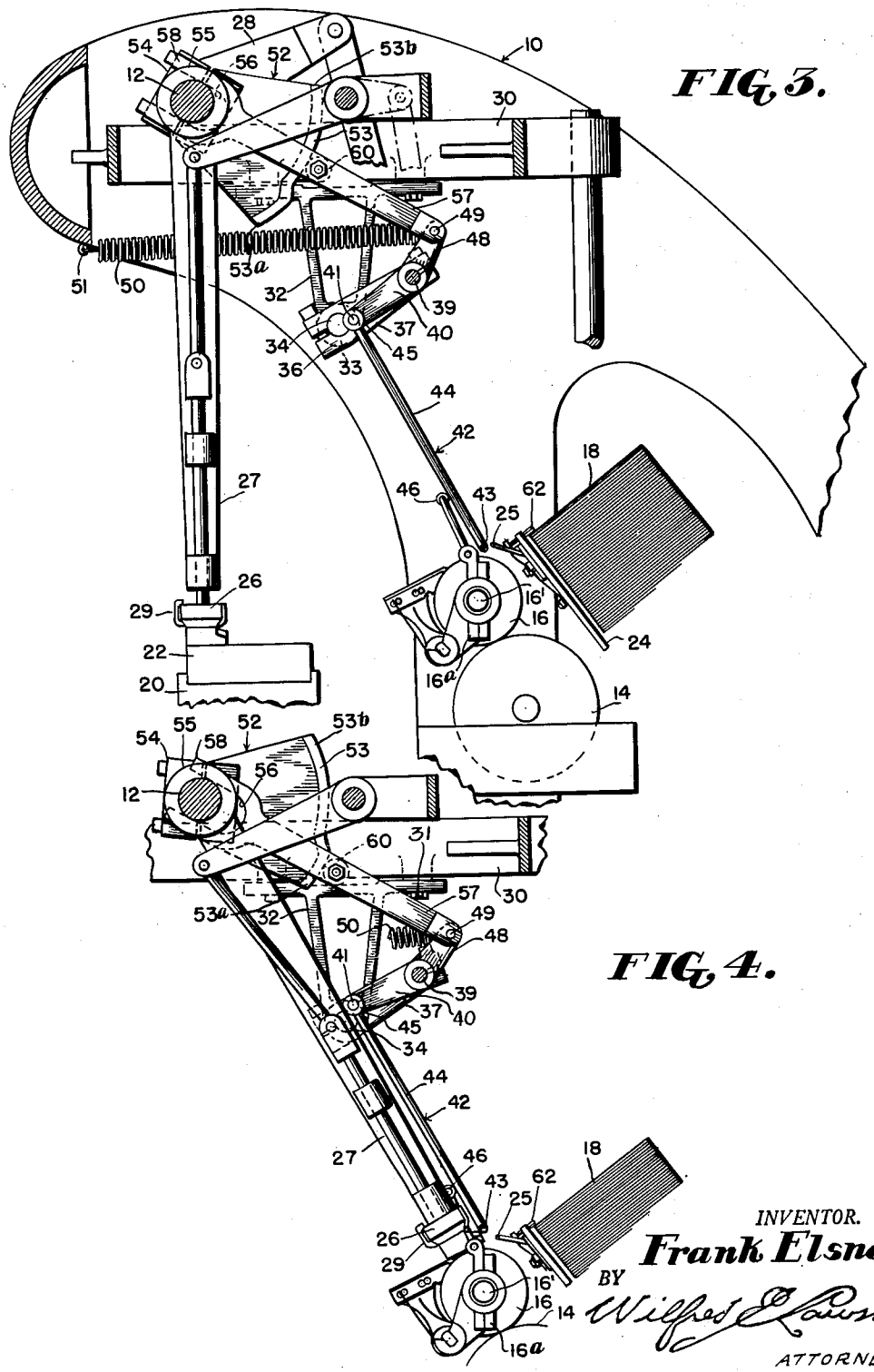


FIG. 3.

FIG. 4.

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PASTER AND HOLDDOWN MEANS FOR LABELING MACHINES

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9 Claims. (Cl. 118—236)

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This invention relates generally to the class of label pasting and is directed particularly to improvements in mechanism for moving or drawing a label, or the like, across an adhesive covered surface for applying adhesive to the label.

The present invention constitutes an improvement upon my prior machine disclosed in Patent No. 2,582,019 of January 8, 1952, 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 wherein there is employed a swinging follow-up bar working behind the suction head and moving to a stop position above the paste transfer roller for contacting the label carried by the suction head and holding it down against the surface of the roller while the suction head draws the label thereacross.

A particular object of the present invention is to provide an improved mechanism associated with the follow-up bar whereby the latter is caused to have movement in two directions successively whereby the bar after moving to a stop position behind the advancing label carrying suction head where it comes to rest above the paste transfer roller and also above the label carried by the suction head, is caused to move in a direction transversely of its first line of movement to more effectively press the label down against the surface of the paste transfer roller and thereby effect a more even and complete application of paste to the label over the entire surface of the latter.

A further and more specific object of the invention is to provide in association with a pivotally hung swinging follow-up bar working behind the traveling label pick-up suction head, a cam and follower mechanism which imparts rectilinear movement to the follow-up bar at the end of the arcuate path of travel whereby to apply a downward pressure against the label to press it against the paste transfer roller.

A still further object of the invention is to provide in a machine of the character stated a stationary rail over which a label is drawn, causing a sudden reversed bend of the label during rectilinear movement of the follow-up bar, thus straightening and leveling any waves caused by embossing or paper stretching and forcing the currently straightened portion of the label into intimate contact with the paste transfer 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

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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 top plan of the apparatus constructed in accordance with the present invention, parts of the structure being broken away.

Figure 2 is a view in front elevation with parts broken away and in section.

Figure 3 is a sectional view taken in a vertical plane perpendicular to the hanger supporting shaft, showing in side elevation the improved features of the present invention with the suction head in the forward label deposit position and the follow-up bar in lowered position.

Figure 4 is a sectional view illustrating the suction head at the moment of contact with the follow-up bar, in its rearward travel, the follow-up bar being elevated.

Figure 5 is a detailed view on an enlarged scale showing full line and dotted line positions for the follow-up bar, the suction head being forwardly of the follow-up bar and moving away therefrom with a label being carried thereby.

Figure 6 is a detailed view illustrating in full lines and in dotted outline positions of the sector plate and parts immediately adjacent thereto.

Figure 7 is a view in top plan of the elements shown in Figure 6.

Referring now more particularly to the drawings the numeral 10 generally designates a pair of supporting standards between the upper ends of which is supported the rock shaft 12.

Between the lower ends of the standards 10 are located the rotatable adhesive pick-up and transfer rollers 14 and 16 respectively and at the rear side of the rollers the stack of labels or sheets 18 is positioned while upon the opposite or forward side of the rollers from the stack of labels is located a suitable support 20 upon which is mounted the body 22 which is to receive or have applied thereto a label taken from the stack.

The numeral 24 designates a portion of the front wall of the structure in which the stack of labels is maintained and secured across the front side of the wall 24 is a rail 25 which lies above but relatively close to the top of the transfer roller 16 slightly rearwardly of the vertical plane of the axis of the supporting shaft 16' which carries the roller 16.

The numeral 26 generally designates the suction head which is suspended by a hanger 27

from the shaft 12 to swing from the maximum forward position in which it is shown in Figure 3, rearwardly to a position over the forward part of the stack of sheets or labels 18.

As is clearly set forth in my prior patent hereinbefore referred to the suction head 26 has up and down movement with respect to the hanger 27, which movement is effected by the system of rocker arms generally designated 28. Since the operation of the rocker arms and the suction head, together with the label gripping finger generally designated 29 has been fully illustrated and described in my prior application and forms no part of the present invention it is believed that further description of these parts is unnecessary to an understanding of the operation of the improved features herein set forth and claimed.

In accordance with the present invention there are provided at opposite sides of the machine and between the standards 10, the spaced parallel horizontal beams 30 which may be at an elevation below the shaft 12 and which extend transversely of the shaft as shown. To each of the supporting beams 30 there is secured, as at 31, a hanger bracket 32 carrying a bearing 33. These bearings 33 are in axial alignment transversely of the machine below and to the rear of the shaft 12 and parallel with the latter and each bearing 33 carries a stub shaft, one of which shafts is designated 34 while the other one is designated 35. The shafts also are, of course, in axial alignment and parallel with the shaft 12.

Each of the shafts 34, 35 has secured thereto by the split clamping bearing 36, an arm 37 which extends upwardly and rearwardly as shown in Figure 3 and which has a bearing 38 at its outer or free end.

Extending between and supported by the free ends of the arms 37 is a rock shaft 39 which has each of its ends supported in a bearing 38 for turning movement therein.

Secured to the rock shaft 39 are the downwardly and forwardly directed extension arms 40, each of which carries at its free end the short transverse pin 41. These extension arms are spaced apart on the shaft 39 a distance approximating the length of the transfer roller 16 as is clearly shown in Figure 2.

The numeral 42 generally designates a substantially U-shaped frame constituting a horizontal bar 43, which comprises the follow-up bar hereinafter referred to, and the side arms 44, each of which terminates in an eye 45 which receives an extension arm pin 41, on which it is maintained for turning movement.

The extension arm pins 41 are in alignment transversely of the machine at a position forwardly of the transfer roller 16 and the follow-up bar frame 42 extends at an inclination downwardly and rearwardly when the follow-up bar is at the limit of its forward swinging movement.

This forward swinging movement of the frame 42 for the follow-up bar, is limited by upstanding stops 46 which are supported upon the bearings 16*a* for and at the two ends of the transfer roller 16.

In order to maintain the frame 42 steady or firmly against the stops 46 when the follow-up bar 43 comes to rest above the paste transfer roller 16 as illustrated in Figure 3, twist springs 47 are mounted upon the pins 41 between the arms 44 and the adjacent extension arms 40, and engage the arms 44 of the frame 42 to apply a downward pressure on the arms.

Adjacent to one of the extension arms 40 the rock shaft 39 has secured thereto the upwardly and rearwardly directed crank arm 48 which carries at its free end the transverse pivot pin 49 to which is attached one end of a pull spring 50, the other end of which spring is secured to a suitable fixed part of the machine structure as indicated at 51 whereby the spring exerts a constant forward pull on the crank arm 48 tending to rotate the rock shaft 39 in a direction to swing the extension arms 40 downwardly.

The numeral 52 designates a sector plate having the arcuate edge portion formed to provide a cam track 53 having a portion 53*a* positioned farther from the radial center of the sector than the remaining portion 53*b*, thereby providing what may be defined as the high and low parts of the cam. This sector is secured at the apical end to the shaft 12 by means of the clamping yoke 54 which encircles a portion of the shaft, the remaining portion of the shaft being set into a suitable recess in the sector as illustrated, whereby the cam track 53 is directed rearwardly and downwardly from the shaft 12 and is concentric therewith.

On one side of the sector 52 there is fixed to turn with the sector a collar 55 which encircles and is fixed to the shaft and which with the securing yoke 54 provides a circumferential slot 56 around the shaft for the purpose about to be described.

The numeral 57 generally designates the cam slide bar which at one end is formed to provide a fork consisting of two spaced parallel longitudinally extending furcations 58 which enter and have sliding movement in the slot 56 so that the fork straddles the shaft as illustrated.

The outer or free end of the cam slide bar 57 is pivotally connected to the pin 49 carried by the crank arm 48.

As shown the bar 57 lies in close proximity to one side of the sector 52 and pivotally or rotatably supported on the bar on the pivot pin 59 is a cam follower in the form of a roller 60 which engages against the cam track 53.

It will be apparent that as the shaft 12 turns to swing the hanger 27 and suction head 26 back and forth the cam track 53 will also swing and the high and low portions will alternately engage the follower 60 so as to slide the bar 57 in and out. This will transmit through the crank 48, a rocking motion to the shaft 39 to impart rectilinear movement to the frame 42.

As the hanger 27 swings rearwardly it will contact the follow-up bar 43 carried by the frame 42 and swing the frame rearwardly until the pick-up head 26 is in a position over the stack of labels 18 to pick up one of the labels.

The cam sector 52 is adjusted to move the cam track 53 around the shaft to such a position that the mechanism will be timed in such a way that as soon as the label pick-up head 26 swings forwardly to a position where the follow-up bar frame 42 engages the stops 46, the cam roller or follower 60 will begin to leave the high part 53*a* of the cam and move onto the low part 53*b*. This will permit the spring 50 to effect the oscillation of the rock shaft 39 and cause the follow-up bar 43 to move downward in a direction transversely of its arcuate path of movement, to engage and press the label downwardly against the surface of the transfer roller 16 in the manner illustrated in Figure 5. In this downward movement of the label by the follow-up bar, the label will be drawn across the rail 25 and it will be bent or pulled

down in a curve against the curved surface of the pick-up roller as here illustrated.

Upon the return movement of the pick-up unit 26, the high part 53a of the cam will engage the follower 66 slightly in advance of the beginning of the rearward movement of the frame 42 by the swinging hanger 27 so that the follow-up bar will be shifted back to a position where it can swing backwardly and upwardly across and without contacting the rail 25.

In order to facilitate the separation of the labels when the pick-up unit engages the top one of the stack and moves away with it, the forward edges of the labels as they are picked up, are drawn across the bristles of a brush 62 which projects through an opening 24a in the wall 24 to overlie the forward edges of the labels. Thus if two labels should be stuck together for any reason the bristle ends of the brush will be drawn across the edges of the labels and the underneath one will be separated from the top one which is held by the suction head 26.

I claim:

1. In combination in a label pasting apparatus including a means for supporting a stack of labels at a label pick-up position, a label pick-up unit supported for translational movement from said label pick-up position to a label deposit position, an adhesive transfer roller arranged between said positions to have a label drawn over the surface thereof by the unit in the movement of the unit from the pick-up to the deposit position, a label engaging member, means swingingly supporting the member in the path of travel of said unit whereby the member will be swung by the unit toward said pick-up position, means for applying swing torque to said member in the direction of said pick-up unit, means for limiting the reverse swing of the member to a stop position over said roller upon the forward movement of the unit toward said deposite position, means for moving said member transversely of the line of swing relative to the roller when the member is in said stop position and mechanism operatively coupled with the last means and operating synchronously with the pick-up unit to effect the said movement of the member.

2. In combination in a label pasting apparatus including means for supporting a stack of labels at a label pick-up position, a shaft supported for rocking movement, a label pick-up unit suspended from said shaft to be swung from the label pick-up position to a label deposit position, an adhesive transfer roller arranged between said positions to have a label drawn over the surface thereof by the unit in the movement of the unit from the pick-up to the deposite position, a label hold-down bar disposed parallel to the roller, means supporting the bar for swinging movement in an arcuate path on an axis parallel to the shaft, means for applying swing torque to said bar in the direction of said pick-up unit, means for effecting coupling of the pick-up unit with the bar in the rearward movement of the unit to swing the bar from a position adjacent to the surface of the roller to a position above the stack of labels, means by which the bar is moved in a rectilinear path across the arcuate path of movement, and mechanism operatively coupled with and actuated by the shaft for imparting said rectilinear movement to the bar in coordination with the swing of the unit whereby to move the bar down against a label when the bar is at the limit of its forward swing.

3. In combination in a label pasting apparatus

including means for supporting a stack of labels at a label pick-up position, a label pick-up unit, means supporting the unit for translational movement from said label pick-up position to a label deposit position, an adhesive transfer roller positioned to have a label drawn thereacross by the unit, a label hold-down bar extending across the path of travel of the unit adjacent to the top of the roller, means supporting the bar for back and forth movement in the direction of movement of and with the unit, means urging movement of the bar in the direction of said pick-up unit, means limiting the forward movement of the bar to a position above the roller, means supporting the bar for rectilinear movement across its arcuate path of movement, and mechanism operatively coupled with the bar to effect said rectilinear movement when at the limit of its forward movement, such rectilinear movement of the bar by said mechanism being timed to press down on a label as the label is being drawn by the unit across the roller.

4. The invention according to claim 3, with a fixed bar disposed adjacent to the top of the roller and parallel with the hold-down bar, said fixed bar being in a position close to but behind the hold-down bar when the latter is at the limit of its forward movement and at an elevation to have the unit and hold-down bar pass thereover, the hold-down bar in pressing down on the label moving below the fixed bar.

5. The invention according to claim 3, wherein said hold-down bar has upwardly extending end arms by which it is coupled with said mechanism, and said mechanism including rocker arms pivoted to swing on an axis paralleling the hold-down bar and pivot couplings between the first arms and the rocker arms having a turning axis paralleling the first axis.

6. In combination in a label pasting apparatus including means for supporting a stack of labels at a label pick-up position, a label pick-up unit, means supporting the unit for swinging translational movement from said label pick-up position to a label deposit position, an adhesive transfer roller positioned to have a label drawn thereacross by the unit, a rock shaft supported at an elevation above the roller and in a vertical plane lying between the label pick-up position and the turning axis of the unit, a pair of arms secured to the shaft, a substantially U-shaped frame comprising a horizontal label hold-down bar and spaced side arms, means pivotally coupling the side arms to the first arms for the swinging of the frame on an axis paralleling the shaft and in the same direction of swing as the unit, means limiting forward swinging of the frame to a position in which the hold-down bar lies above and in spaced parallel relation with the roller, means by which the frame is caused to swing back and forth with the movement of said unit, and means for imparting rectilinear movement to the frame when it is at the limit of its forward movement.

7. The invention according to claim 6, wherein the last stated means comprises a crank carried by said rock shaft, a cam element supported for turning movement on the swinging axis of said unit and movement with the unit, a slide bar supported for reciprocal movement and coupled with said crank, a cam follower carried by the bar and engaged by the cam, and means constantly urging the arm in a direction to maintain the follower and cam in operative connection.

8. In combination in a label pasting apparatus including a means for supporting a stack of

labels at a label pick-up position, a label pickup unit supported for translational movement from said label pick-up position to a label deposit position, an adhesive transfer roller arranged between said positions to have a label drawn over the surface thereof by the unit in the movement of the unit from the pick-up to the deposit position, a label engaging member, means swingingly supporting the member in the path of travel of said unit whereby the member will be swung by the unit toward said pick-up position, means for applying swing torque to said member in the direction of said pick-up unit, means for limiting the reverse swing of the member to a stop position over said roller upon the forward movement of the unit toward said deposit position, means for moving said member transversely of the line of swing relative to the roller when the member is in said stop position, and mechanism operatively coupled with the last means and operating synchronously with the pick-up unit to effect the said movement of the member, said last means comprising a pivoted rocker element and said mechanism comprising coacting cam and follower elements, one of said elements being supported for movement with said pick-up unit and the other element being coupled with the rocker element.

9. In combination in a label pasting apparatus including a means for supporting a stack of labels at a label pick-up position, a label pick-up unit supported for translational movement from said label pick-up position to a label deposit position, an adhesive transfer roller arranged between said positions to have a label

drawn over the surface thereof by the unit in the movement of the unit from the pick-up to the deposit position, a label engaging member, means swingingly supporting the member in the path of travel of said unit whereby the member will be swung by the unit toward said pick-up position, means for applying swing torque to said member in the direction of said pick-up unit, means for limiting the reverse swing of the member to a stop position over said roller upon the forward movement of the unit toward said deposit position, means for moving said member transversely of the line of swing relative to the roller when the member is in said stop position, and mechanism operatively coupled with the last means and operating synchronously with the pick-up unit to effect the said movement of the member, said pick-up unit moving about the axis of a supporting shaft, said last means comprising a pivoted rocker arm with one end of which said member is coupled, and said mechanism comprises a slide bar connected with the rocker arm and coacting cam and follower elements, one of said elements being supported by and turning with said shaft and the other element being carried by said bar.

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