Oct. 9, 1951 E. R. SLOYER 2,570,876

LABEL GLUING AND ATTACHING APPARATUS, ESPECIALLY FOR ASSOCIATION WITH GLUING MACHINES

Filed June 30, 1949 5 Sheets-Sheet 1

Fig. 1.

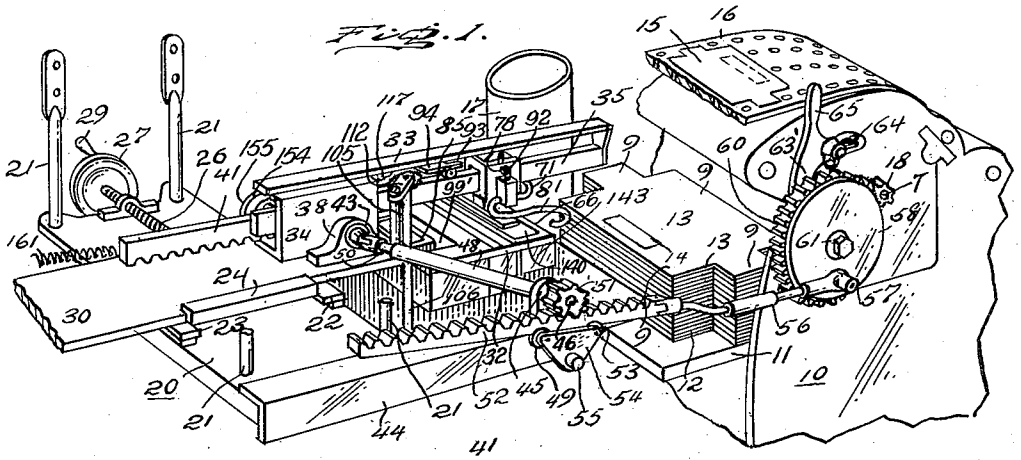


Fig. 2.

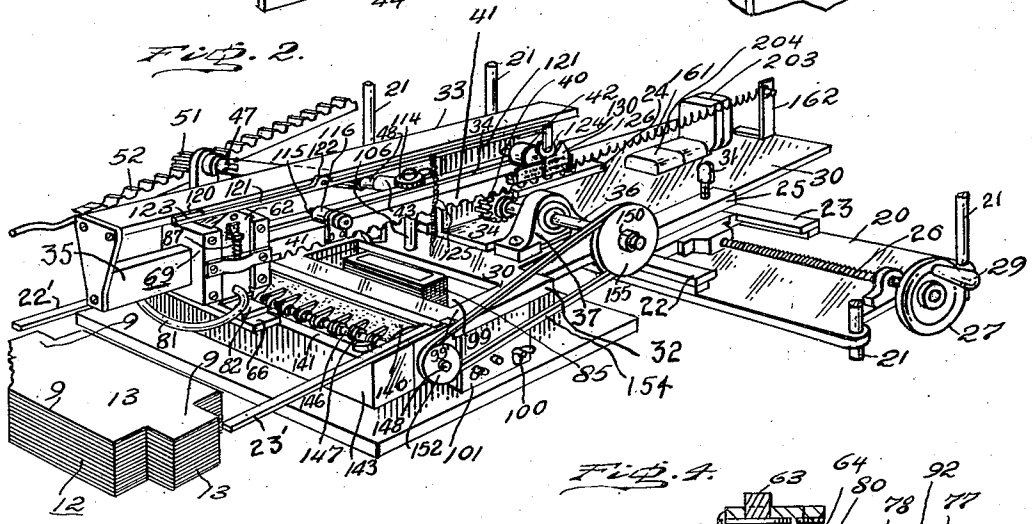


Fig. 3.

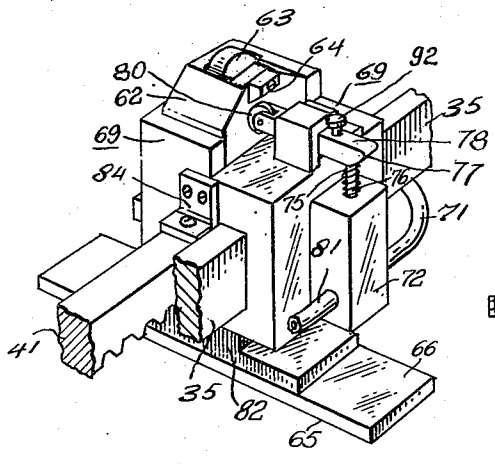
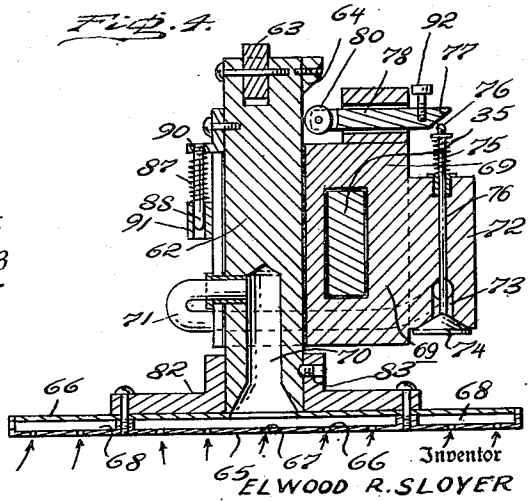


Fig. 4.



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Filed June 30, 1949 5 Sheets-Sheet 2

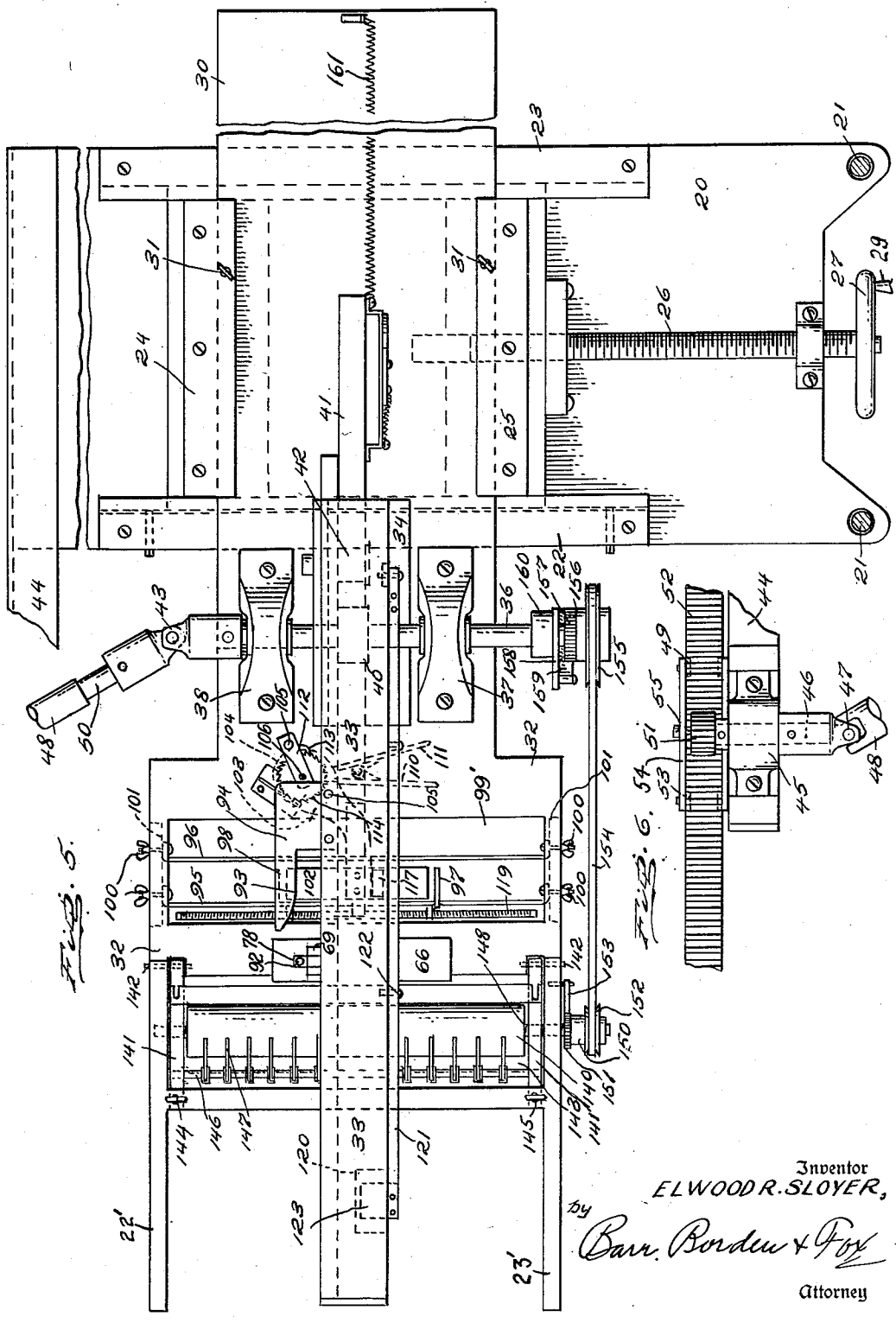


Fig. 5.

Fig. 6.

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LABEL GLUING AND ATTACHING APPARATUS, ESPECIALLY FOR ASSOCIATION WITH GLUING MACHINES

Filed June 30, 1949 5 Sheets-Sheet 3

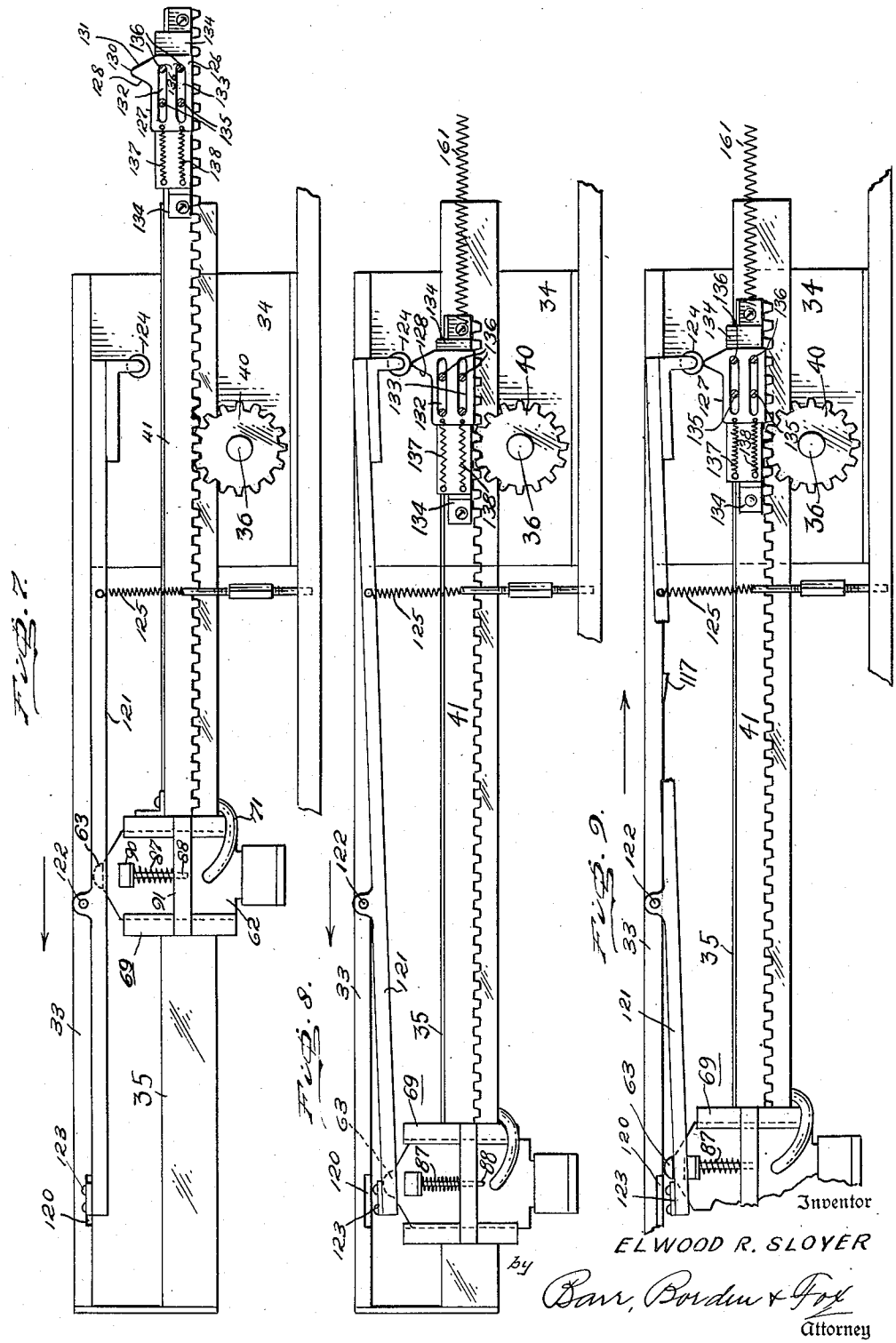


Fig. 7.

Fig. 8.

Fig. 9.

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LABEL GLUING AND ATTACHING APPARATUS, ESPECIALLY FOR ASSOCIATION WITH GLUING MACHINES

Filed June 30, 1949 5 Sheets-Sheet 4

Fig. 10.

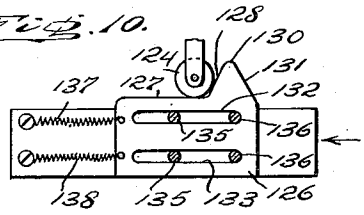


Fig. 11.

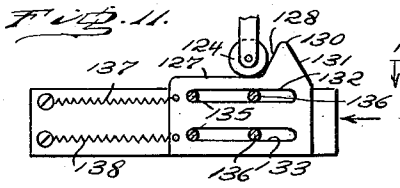


Fig. 12.

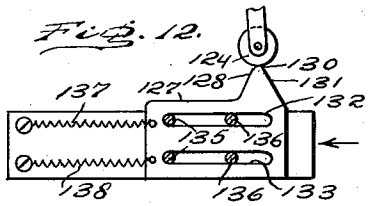


Fig. 13.

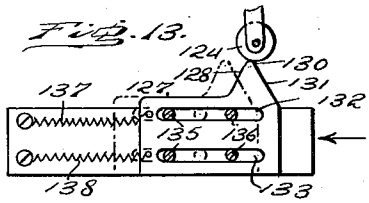


Fig. 14.

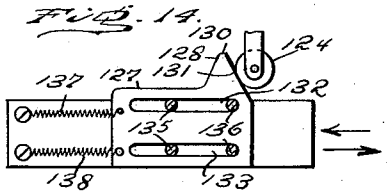


Fig. 15.

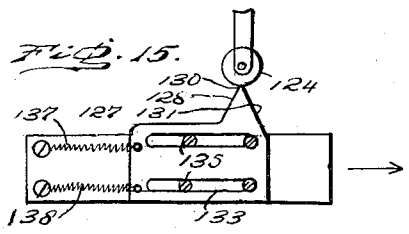


Fig. 16.

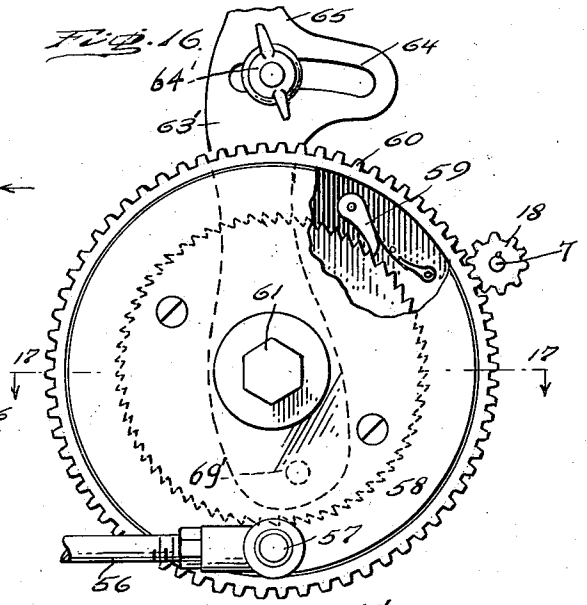


Fig. 17.

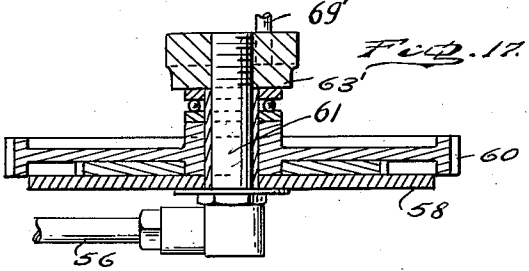
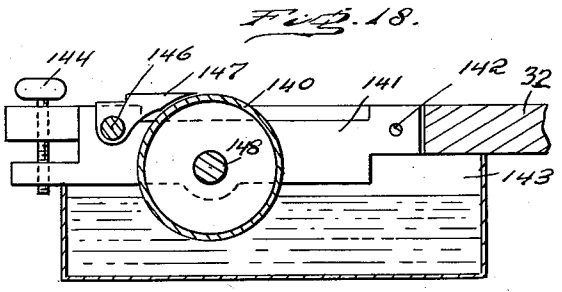


Fig. 18.



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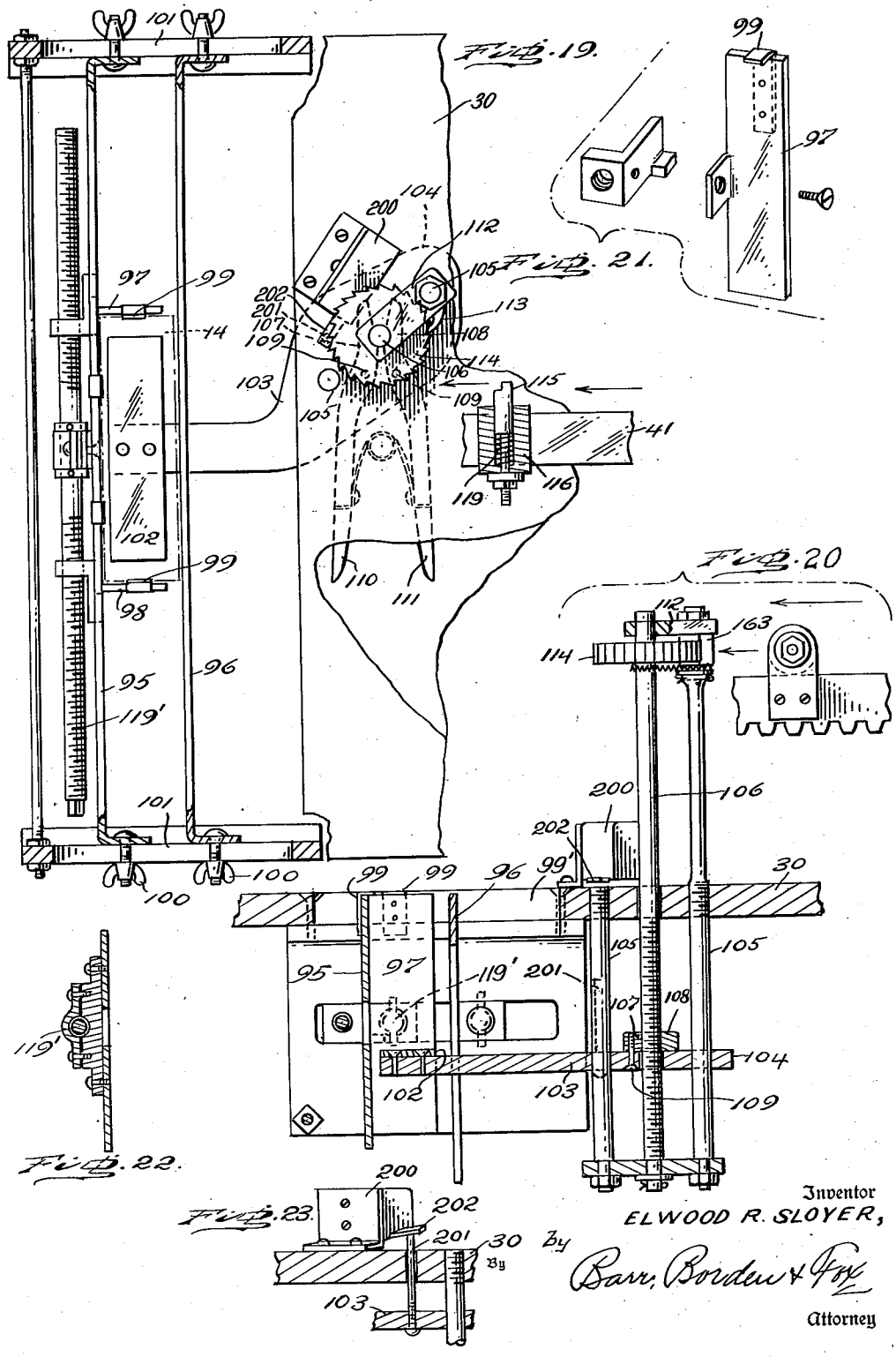
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LABEL GLUING AND ATTACHING APPARATUS, ESPECIALLY FOR ASSOCIATION WITH GLUING MACHINES

Filed June 30, 1949 5 Sheets-Sheet 5



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2,570,876

UNITED STATES PATENT OFFICE

2,570,876

LABEL GLUING AND ATTACHING APPARATUS, ESPECIALLY FOR ASSOCIATION WITH GLUING MACHINES

Elwood R. Sloyer, Nazareth, Pa.

Application June 30, 1949, Serial No. 102,326

18 Claims. (Cl. 216—55)

1

This invention relates to label gluing and attaching apparatus, especially for association with gluing machines.

In the art of "set-up" paper box making it has been customary to provide a stiff inner tray of relatively heavy cardboard or the like of rectangular shape, upon which a wrap having four flaps extending from a top (or bottom) area is folded in adhesive relation to complete a box portion. Both bottoms and tops of the box are similarly formed, when used in telescoping relation and the wrap is such usually as to have a pleasing visual effect in the finished box. After the boxes are formed, if the wraps are unprinted, it is customary in certain types of boxes to apply a printed label of some sort on the outer surface of the set-up box portion, usually on a side or end wall thereof, although, of course, being applied with equal facility to the top surface thereof, at some centered or uncentered point or area thereof. As previously practiced, the application of the label was a separate and independent activity requiring a plurality of additional operatives, being expansive from this standpoint alone, as well as from the necessity for storing the finished but unlabeled boxes within reach of the label-applying operatives, adjacent to the mechanisms, for securing such attachment, which complicates the problem. Such hand attached, or even machine attached, labels interfere with the smooth and cheap volume production of the complete set-up boxes.

It is common in the box making plants to have one or a plurality of gluing machines in which the wraps are successively coated with a laver of glue, and fed toward an operative or an endless conveyor and held in place, while feeding, by a vacuum maintained on the lower face of the conveyor effective against the glued wrap through pores, apertures, or like interstices in the conveyor. At the delivery end the operative manipulates the glued wrap to remove it from the suction grip of the conveyor to associate the tray and glued wrap together in pressed relation to form a complete set-up box portion bearing a label.

In the broadest aspect of the invention a device is provided having a linear path of movement, and so disposed as to enable a label-engaging element at one end of the path to move vertically downwardly upon the uppermost label of a stack of labels, to engage and by suction to retain such label on said element, to transport the element with the label across a glue roller disposed in its linear path, and finally to move

2

the label-attached portion of the element, glued side down, against the uppermost wrap of a stack of wraps or such other devices (such as a succession of box portions in place of the labels). This basic vertical-ended linear movement is secured by various important forms of actuation and control, especially such as to coordinate and synchronize the label-attaching with the actuation of a standard gluing machine for paper wraps. The invention, therefore, in its complete aspects, visualizes an operative entity arranged for support on or adjacent to a standard gluing machine and from which it derives the timing, the power, and the suction to synchronously attach labels to wraps as the latter are moved from a stack, coated with glue and transported on an endless conveyor toward the operative. This represents a cheap but highly efficient, and the preferred embodiment of the invention. Another phase of utilization of the invention is comprised of what may be designated as portable or semi-portable label attaching apparatus, in that, although in the preferred instance, arranged for coupling and for timing synchronism with the standard or conventional gluing machine, it is provided with its own power plant and its own suction device, and this therefore may be attached to such gluing machine or may be simply operatively associated therewith. In a modified portable type the organization is a self-energized and controlled device self-supported and movable to any point desired, as, for instance, to a point at which labels are to be applied to set-up box lids after the formation of the latter, so as to be independent of the wrap and tray assembly.

It is among the objects of this invention: to provide a label applying attachment for gluing machines; to provide a device for gluing and attaching labels to desired surfaces; to improve the art of label applying devices; to improve the detailed structure of label applying devices; to provide a label applying attachment for coupling or association with a gluing machine of such adjustment as to apply a label to any portion of a wrap prior to the attachment of the latter to a tray for the formation of a box portion having an applied label; to reduce the cost of applying labels to boxes; to reduce the costs of manufacturing boxes; to provide an improved method of applying labels to boxes; to provide means for attaching a label to a box with a greater than usual number of pressings so as to enhance the adhesive attachment thereof; and other ad-

vantages will become more apparent as the description proceeds.

In the accompanying drawings forming part of this description:

Fig. 1 represents a fragmentary perspective of the apparatus of this invention with certain parts omitted for clarity, attached to a conventional gluing machine, shown in broken or skeletonized form.

Fig. 2 represents a perspective of the apparatus of this invention, taken from the opposite direction from Fig. 1 with certain parts omitted for clarity, with the standard or conventional gluing machine removed.

Fig. 3 represents a perspective of the label carrier of the device.

Fig. 4 represents a transverse vertical section through the label carrier shown in Fig. 3.

Fig. 5 represents a partially fragmentary plan of the label attaching assembly of this invention, with the actuating portion broken away in part.

Fig. 6 represents a fragmentary plan of the actuating portion broken away from Fig. 5.

Fig. 7 represents a fragmentary side elevation of the guide bar, the label carrier slidable thereon, the rack for actuating the label carrier and the tripping lever for actuating the label carrier, in mid stroke remote from tripping actuation of the tripping lever.

Fig. 8 represents a similar side elevation, toward the end of the stroke.

Fig. 9 represents a similiar fragmentary side elevation of the parts shown in Figs. 7 and 8, at the beginning of the return stroke in the opposite direction from the stroke of Fig. 7.

Figs. 10 to 15 inclusive represent fragmentary diagrammatic side elevations of the roller on the lever and the sliding cam plate on the central rack bar in the several successive relative positionings thereof in completing the end of a relative stroke in one direction and the beginning of a relative stroke in the other direction.

Fig. 16 represents a side elevation partially broken away of the ratchet drive for the actuating rack of the label attaching device of this invention.

Fig. 17 represents a horizontal section through the assembly of Fig. 16.

Fig. 18 represents a fragmentary transverse section through the glue roller of this invention.

Fig. 19 represents a fragmentary plan, partially in section, of the label hopper and its step-by-step feeding mechanism.

Fig. 20 represents a fragmentary vertical section through the mechanism of Fig. 19.

Figs. 21, 22, and 23 represent fragmentary details of the assembly of Fig. 19.

The detailed construction of the standard gluing machine with which the invention is primarily adapted to cooperate varies according to the particular manufacture involved, and as this, per se, forms no part of the present invention, it need be merely briefly described to recite the portions thereof of importance so far as this invention is concerned.

Referring to Fig. 1, the gluing machine **10** which is essentially a "wrap" gluing machine, provides a step-by-step, vertically adjustable, wrap-supporting shelf or platform **11** which is arranged to receive and suitably to retain in vertical columnar form, a plurality of box wraps **13**, shown in a stack **12** in Figs. 1 and 2. The wraps are of any useable shape and usually include a plurality of flaps **9**. In Fig. 1, the upper wrap **13** is shown as having a label **14** applied to a selected flap

9 thereof, prior to the application of glue to the reverse side of the entire wrap **13**. The label **14** shown has been applied to the top wrap **13** of stack **12** by the machine of this invention, in synchronism with the removal of the previous top wrap in the stack **12**, shown at **15** on the perforated conveyor **16**, the latter having passed through the glue roller assembly of the gluing machine **10**, and automatically disposed on the intermittently moving conveyor **16**, leading toward a suitable box-assembling and pressing machine. The label **14** on wrap **15** has been given a plurality of pressings, one by the label-attaching device of this invention in applying the label to the wrap, one by the pressing the combined wrap and label receive in passing through the glue rollers and on to the conveyor of the gluing machine, and receives an additional pressing when wrap **15** is applied to the tray of the set-up box. This is of importance in securing better adhesion of labels than has heretofore been possible. The glue machine **10** is operated through a cycle, starting with the removal of the top wrap **13** from the stack **12**, moving it through glue-applying rollers internally of machine **10**, and delivering it upon the conveyor **16**, and advancing same through a certain predetermined cyclic distance. The complete cycle, including the operation of the internal glue roller assembly, advances the glued wrap on the conveyor **16**. The cycle is initiated in any desired manner, usually automatically or manually when the operator removes a glued wrap **15** from the conveyor **16**, remote from the label applying or gluing end thereof after a succession of cycles has moved the instant glued wrap close enough to the box-making machine end thereof for the operator to remove the glued wrap for application to a tray to make a set-up box. It will be understood that upon pulling a suitable trip wire (not shown) by the operator or by other actuation effective upon gluing machine **10**, a mechanism (not shown) including a suction-operated head or other wrap manipulating mechanism, is superimposed against the upper surface of the top wrap **13** of the stack or wraps or wrappers **12**, as an incident to the initiation of a gluing cycle for a wrap. Suitable power means are provided with machine **10** by which the glue and complemental rollers, the wrapper-elevating and feeding instrumentality, and the conveyor **16** on the rollers, are all cyclically actuated. It is a feature of gluing machine **10** also to provide a suitable blower or suction device to create a suction, not shown, but represented by the stack **17** with which it is in communication. The intake for stack **17** is adjacent to and effective against the under-surface of the conveyor **16**, inducing downward flow through the perforations therein, to hold the glued wrapper tightly against the surface of the conveyor during its progress toward the operator. This constitutes a suction device which is utilized with the preferred form of the instant invention.

The Stokes and Smith gluing machine may be considered as illustrative of the gluing machine **10**. In this type of machine the driven glue roller makes 8⅔ revolutions in each complete cycle of gluing and conveyor advancing. The gudgeon or like bearing element in which the shaft of the glue roller is journalled on one side of the Stokes and Smith machine is removed, and the driving pinion gear **18**, by means of a simple adapter shaft **7**, is mounted externally of the apparatus and its keyed to and turns with the internal glue roller (not shown) by the power source

provided therefor in the machine. The driving pinion gear 18 is unidirectionally intermittently driven. In the preferred use of the instant invention the pinion gear 18 is the power source and the stack 17 is the suction source, and together furnish all of the power for the actuation of the label-attaching apparatus.

The preferred embodiment of the instant invention provides a generally transversely extending horizontal bed plate 20, rigidly mounted by the supporting posts or columns 21, removably connected to the conveyor assembly housing of the gluing machine 10 (not shown) or which columns 21 alternatively project downwardly from the bed plate 20 to form legs to support the labeling machine assembly independent of the gluing machine 10. This latter form of support is preferred where the labeling machine is to be comparatively portable, either with or without its own power and suction devices, in contrast to the more or less permanent attachment contemplated with the assembly of Fig. 1.

Upon the bed plate 20, two spaced parallel horizontal guides 22 and 23 are provided in fixed relation, parallel to the longitudinal extent of the bed plate and parallel to the axis of driving pinion gear 18, having undercut portions to receive the ends of the perpendicularly intersecting horizontal longitudinal guides 24 and 25. Guide 25 is suitably apertured and threaded transversely to receive the horizontal threaded shaft 26, controlled by the hand wheel 27, having handle 29, by means of which longitudinal guides 24 and 25, with the plate 30 which they embrace (to be described), may be moved transversely of the plate 20 moving as a unit in the guides 22 and 23.

In order to support, guide and control the label carrier, to be described, an adjustable support plate 30 is positioned initially adjustably in the movable guides 24 and 25, so as to be susceptible to longitudinal adjustment of the position thereof relative to the bed plate 20. Plate 30 is clamped in adjusted position in guides 24 and 25, as by wing nuts 31, or the like, controlling clamping screws attached thereto. The plate 30 is of uniform width and thickness for the major longitudinal portion thereof in alignment with the guides 24 and 25, so as to permit a wide range of longitudinal adjustments. At the delivery end of the label-attaching machine, plate 30 is laterally enlarged, as at 32, to support the label hopper or label stack support, the driven glue roller, and the extensions 22' and 23' which assist in aligning or supporting the stacks of wraps, all to be described. Centrally above and spaced from the plate 30, at a desirable location relative thereto, a longitudinally extending stationary horizontal planar supporting bar 33 is disposed, firmly mounted by suitable additional angle members or the like (not shown) upon the upstanding channel or angle bar 34. Channel 34 is rigidly anchored to the upper surface of plate 30. This assembly of supporting bar and angle bar 34 also carries the rigid and fixed vertically planar horizontal guide rail 35, normal to horizontal supporting bar 33, upon which the label carrier, to be described, is movable longitudinally of the assembly.

A shaft 36 is firmly journalled in the two thrust bearings 37 and 38 mounted on plate 30, spaced on opposite sides of the channel 34 and carries the central or delivery pinion 40. Pinion 40 is in permanent mesh with the centrally disposed delivery rack 41 guided in parallel relation to the stationary guide bar or rail 35 by the flange roller 42 journalled on channel 34 above delivery pinion 40. Rack 41, illustratively and preferably, has downwardly presenting teeth. For clarity, roller 42 is omitted from Figs. 7 to 9, inclusive. At the power input end, shaft 36 is connected to a universal joint 43. The base plate 20 includes, or at one side carries, the longitudinally extending side bar 44 extending toward the delivery end of the label attaching machine, parallel to the longitudinal axis of plate 30 and bar 33, to which side bar a bracket 45 is attached.

A short shaft 46 is journalled in the bracket 45 and one end thereof connects to a universal joint 47. Adjacent or juxtaposed ends of the universal joints 47 and 43 are connected in mutually driven relation by the telescopic co-axial drive shaft components 48 and 50 respectively. The outer end of the short shaft 46 carries a transmitting pinion gear 51, in permanent mesh with the upwardly presenting teeth of a transmitting or actuating rack 52. The latter is slidably guided between the transmitting pinion 51 and the rollers 49 and 53 mounted on the rocking guide plate 54. The latter is journalled or pivoted at 55 to the side bar 44. The pivot 55 forms an axis about which the rack 52 and plate 54 rock as the rack reciprocates in response to the input of power from the power take-off to be described. Reciprocation of upwardly presenting rack 52 forces an opposite reciprocation of the downwardly presenting delivery rack 41, through the gearing linkage just described. The free end of delivery rack 41 is engaged by a tension spring 161 anchored to the plate 30 by arm 162, and imposing a constant bias urging rack 41, the gearing linkage and rack 52, toward a predetermined starting attitude or position of the parts.

In order to drive the actuating or transmitting rack 52, a telescopically adjustable connecting rod 56 engages, through an offset, at one end with the rack 52 and at the other end is pivotally mounted on the crank throw or wrist pin 57. The latter is eccentrically mounted on the ratchet driven plate 58, journalled on the stub shaft 61. Plate 58 is driven from the gear 60, when the latter is meshed with drive pinion 18, in one direction only through the spring pressed pawl device 59. Gear 60 is also mounted on the stub shaft 61 and the latter is mounted rigidly on the pivoted lever 63', having a pivot mounting by pin 69' or the like on the frame of gluing machine 10. The lever 63' has a handle portion 65 and a motion limiting and adjusting slotted extension 64, having the adjustable wing nut 64' for setting the lever 63' with gear 60 thereof selectively in mesh, or out of mesh, with the glue roller driven pinion gear 18 of the gluing machine 10. When gear 60 is in mesh with the pinion 18, upon cyclic operation of the glue roller driving pinion 18, upon the master energization of the gluing machine 10, the pinion 18 drives gear 60 and through the pawl 59 also drives plate 58 and the attached connecting rod from the predetermined angular setting of the latter against the bias of spring 161. The gear 60 is predetermined in its tooth relation to gear 18 so that the proper cyclic rotations of the pinion gear 18 in response to the energization of the gluing machine 10 rotates the gear 60 to such degree that the connecting rod end pivoted to the crank throw 57 moves beyond dead center of the axis 61 in one stroke of the cycle of rack movements. Thereafter the thus stored energy of spring 161 is effective to pull the racks back to the starting position in the other stroke of the rack cycle. This pulls plate 58 rela-

tive to the gear 60 and is freely permitted by the spring pressed pawl 59, as will be clear.

It will be observed that a driven reciprocation of the plate 58, driving the rack 52 in one direction, will cause an opposite simultaneous reciprocation of the delivery rack 41.

The label transferring device comprises a carrier body 69 guided slidably on the rail 35, and having suitable guiding extensions for the vertically movable labeling head 62. The latter at its upper end carries the roller 63 in substantial transverse alignment with the vertically adjustable cam surface 64. At the lower end the movable head portion 62 merges into the label-contacting apertured-surface lower plate 65, mounted in peripherally sealed spaced relation to a parallel plate 66, mounted on and movable vertically with the movable labeling head 62 by flanged tubular connector 82.

The apertures 67 in the plate 66 connect with a space 68 leading through a vertical bore 70 to a lateral flexible conduit 71. The latter connects with a fixed valve portion 72 of the vertically fixed portion 69 in communication with a vent aperture 73 therein. The latter is normally closed by the valve 74, biased by the spring 75 toward closing, with the upper end of rod 76 of the valve disposed at a suitable point vertically as to be horizontally in line with the camming surface 77 of the horizontally disposed and movable venting rod or link 78. The horizontal rod 78 at one end carries the roller 80, arranged to be abutted and moved by the camming surface 64 of the movable head when the latter is vertically depressed to a desired degree. The other side of the venting aperture 73 from line 71 communicates with a source of suction through the flexible conduit 81. Preferably, this leads into the evacuated conduit or stack 17 of the gluing machine 18. Alternatively, in the form of the device having its own power and suction apparatus it will be coupled to the suction side of the latter, independent of any gluing machine suction source.

The label suction head comprised of the bottom apertured plate 65, the upper plate 66, and the flanged tubular connector 82, is removably mounted on the end of the movable labeling head 62, held in place by the set screw or the like temporary connector 83. A series of such heads of varying lateral dimensions and sizes is provided, respectively according with the various sizes of labels 14 to be manipulated. When changing from one label size to another, the label head is changed to accord with the size of the new label, so that the selected apertured plate 65 is substantially coextensive with the instant label.

The label manipulating carrier device 69, slidable on and relative to the guide bar 35, is attached to the end of the rack 41 in any suitable manner, and, illustratively, by means of the flanged plate 84, engaged with the device 69 and rack 41, as will be clear. The arrangement of the parts of the label manipulating carrier are such that with one given degree of downward motion of the movable head portion 62 and its assembly, the attached label-engaging plate 65 is moved downwardly through a desired vertical stroke without disrupting the suction on and through the lower face of the plate 65. Therefore, with such given degree of downward motion, the upper label 14 is engaged, and upon the return upward movement of plate 65, is removed from and elevated above a stack 85 thereof, when the plate 65 is juxtaposed to the stack 85 in the appropriate portion of the cyclical motion of the apparatus. On the other hand, a given downward motion of the movable head assembly 62 and 65 of greater vertical extent than the first instance mentioned, is sufficient to cause vertical engagement and horizontal reaction of the roller 80 from cam surface 64, moving horizontally slidable rod 78 carrying cam surface 77, horizontally. At the substantial termination of the downward stroke the valve rod 76 is forced downwardly, driving the valve 74 from its seat to vent the vacuum. This permits a glued label, previously adherent by suction to the lower face of plate 65, to be pressed downwardly against the appropriate portion of the top wrap 13 of a stack of wraps 12 when juxtaposed thereto, or against the appropriate surface of a formed box portion, in an alternative use of the label-attaching mechanism. The movable element 62 is normally biased upwardly by the spring 87 surrounding guide pin 88, which is effective between the flange of bracket 90 movable with head 62, and the stationary guide 91, carried by the vertically stationary portion of the label-carrying device. In this connection, it will be observed that although upward movement of the assembly including sliding member 62, under the bias effects release of the pressure from cam surface 64 against roller 80 and this may secure horizontal retraction of shaft 78, through reaction by cam face 77 from the upwardly pressed end of rod 76, this may not be sufficiently effective. It is preferred to provide a rigid abutment element 92 extending vertically from the upper surface of the venting rod 78, in position to be engaged transverse'y by the camming surface 93 of the bracket 94 mounted on the supporting bar 33. The bracket 94 is adjustably mounted on the supporting bar so as to positively retract the valve-actuating horizontal rod 78 through reaction with the pin or abutment 92, just before the movable portion 62 of the carrier device is deflected downwardly to the final degree necessary to pick up the top label of a stack by suction effective on the bottom plate. This ensures the avoidance of venting of the suction at the time that the suction in the pick-up is essential.

Suitably supported upon the plate 30 in aperture 99' are the label hopper or magazine defining plates 95, 96, 97, and 98, adjustable by wing nuts 100 in depending end walls 101, to define a label stack magazine hopper. The lower surface of the label stack rests upon a table 102. The latter is mounted upon the substantially horizontally curved arm 103 enlarged into the generally oval guiding extension 104, guided for vertical movement by fixed posts 105. The oval portion 104 is centrally apertured to permit a vertical threaded shaft 106 to pass through to engage the complemental split nut portions 107 and 108, the halves of which are mounted for mutual relative pivotal motion on respective pins 109 between shaft meshing and unmeshing relations, with the spring biased manual gripping arms 110 and 111. When the gripping arms are released, they cause the nut portions to engage and mesh threads with the threaded shaft 106, so that rotation of the latter moves the split nut and therefore the table 102 and its actuating connections 103 and 104 vertically. The shaft 106 is journalled at the upper end in a bracket 112 carrying the spring pressed pawl 113. Keyed to the shaft 106 is the ratchet wheel 114, the teeth of the periphery of which are engaged by the pawl 113 to ensure motion in one direction only.

Mounted upon the centrally movable rack 41

is the spring pressed detent element 115, movable is a fixed housing 116 against the bias of spring 119 and adjustable transversely of rack 41 so as to engage and turn the ratchet wheel 114 selectively through at least two different degrees of angular motions. The first degree is through one tooth movement between latchings of the pawl 113, with the detent 115 at its greatest adjusted retraction in housing 116, at which it engages behind one tooth of ratchet wheel 114 as the carrier moves past the detent. The other degree is with the detent 115 extended further from the housing to engage behind two or more teeth on wheel 114. This moves the ratchet wheel through two of such teeth, or through three of such teeth, or even more, if desired. This is to regulate the vertical adjustments of the supporting plate or table 102 at the bottom of the label stack, in accordance with the thickness of the respective labels in the stack, and to vertically advance the stack by the thickness of a label as the top label thereof is removed. The ratchet wheel 114 and its driven shaft are capable of rotation only in one direction and the detent 115 simply moves axially in the housing 116 against the spring in one direction of motion of rack 41; whereas, in the reverse direction it actuates the ratchet wheel, while yielding in the housing as the wheel turns.

In order to actuate the roller 63 and thus the movable portion 62 of the label carrier, the lower surface of the plate or bar 33 carries a downwardly sloping cam 117 vertically generally registered with the stack of labels, and of such disposition and contour as to be engaged by roller 63 to depress the label plate 65 into firm engagement with the upper label 14 of the stack 65, while maintaining the vacuum or suction thereon.

In order to actuate the same element at the opposite end of the stroke, comprising a half cycle of operation of the label manipulating device 69, a similar cam construction may be used, if desired, but it is preferred to use the pivoted lever assembly about to be described.

In this preferred form of the device the lower surface of the bar 33 is recessed or countersunk as at 120. A lever 121 pivoted to the bar 33 by a horizontal pivot 122, is provided, having a horizontal plate 123 seated in said recess 120, so that the lower surface of the plate 123 is substantially flush with the lower surface of the bar 33 in the normal biased-together position of the parts attained under the urge of spring 125. The plate 123 is in substantial vertical alignment with the stack of wraps or to an anvil upon which set-up boxes can be mounted when direct application of the label to such box is preferred (not shown), to which the glued labels are to be caused to adhere. The opposite end of the lever 121 from plate 123 carries a roller 124 adjustable both longitudinally and perpendicularly of the lever 121. The roller end of lever 121 is biased downwardly by the spring 125, and the same biasing means urges plate 123 into the recess 120. The lever 121 has rocking motion relative to its supporting bar 33. The roller end of the lever moves vertically upwardly relative to the bar 33, as the opposite end thereof moves downwardly to move plate 123 out of its recess.

Mounted on the delivering rack bar 41 for movement therewith, and off-set laterally thereto by a supporting bracket 134 so as to be vertically in line with the roller 124 on lever 121 in its lateral off-set relation to the bar 33, is the horizontally slidable, spring-biased cam-plate 126, lying in a vertical plane. Plate 126 has an upper cam surface comprising a horizontal or flat area 127, merging into the upwardly extending sloping cam surface 128, intersecting at 130 the downwardly oppositely sloping surface 131. The plate has preferably two parallel horizontal slots 132 and 133, by which the plate 126 is both held to the bracket 134 mounted on the rack 41, and is guided for horizontal motion thereon by means of the pairs of pins 135 and 136 respectively in each slot 132 and 133. A pair of springs respectively 137 and 138 are connected to the bracket 134 and to plate 126 to urge the latter toward the label carrier device 69, connected to the same rack bar 41. It is desired to force the movable head portion 62 in its maximum stroke downwardly when it is necessary to apply the adhesively coated label to the top wrap of the stack of wraps when juxtaposed thereto. During the course of which action the roller 124 passes both up and down the cam formed of the convergent surfaces 128 and 131 of plate 126. However, it will be understood that it is preferred that the return trip of the roller 124 across the dwell be timed so that the downward motion of the plate 123 on lever 121 is ineffectual to actuate any portion of the label-manipulating carrier 69. This is the function of the slot and pin lost motion connection of the plate 126 on bracket 134. It will be seen that continued motion of the rack 41 from its label-engaging pick-up, through the glue-applying glue roller assembly (to be described), to its ultimate terminal position for applying the glued label to a wrap or other device, such as a box lid, or set-up box half, will bring cam surface 128 of the plate 126 against roller 124 of lever 121. The engagement of the roller 124 against the cam surface 128, because of the bias of the spring 125 holds the plate 126 stationary while the rack 41 and bracket 134 respectively complete the final end portion of their stroke. During the first part of this portion of the stroke, starting from the position shown in Fig. 10, the rack movement moves the pins 135 and 136 to the forward end of the respective slots 132 and 133, as shown in Fig. 11, as the downwardly biased roller 124 abutting sloping surface 128 holds the plate 126 relatively stationary. This stores the lost motion. At this point the horizontal distance between the cam peak or apex 130, on plate 126, and the substantial center of the roller 63 on the label-manipulating carrier device 69 of the assembly both moving with the rack 41, is substantially the same as the horizontal distance between the center of the roller 124 and the general center of the plate 123, both on horizontally stationary lever 121. When, therefore, following the engagement of the end pins 135 against the ends of the slots and relative motion of cam plate 126 stops, the roller 124 is forced to move vertically upwardly climbing on the sloping surface 128. This motion is synchronized with the substantial attainment of vertical juxtaposition between the roller 63 on the label-manipulating carrier device 69 and the plate 123 on the lever, so that the roller 63 is forced downwardly as the roller 124 rises on the cam surface 128. This reaches a limit when the roller 124 attains the zenith or apex 130 at the intersection of sloping surfaces 128 and 121, as shown in Figs. 8 and 12, in one direction of movement of rack 41. This maximum lever motion moves the movable portion 62 of the label-manipulating device 69 through its complete cycle of disposing and pressing the glued label into engagement with the receiving surface of the article to which it is being

attached, including the temporary venting of the vacuum on the label-engaging surface of the movable head. It will be understood that the vertical motion of portion 62 from actuating plate 123, venting the head, is of greater amplitude than the vertical motion caused by sloping cam 117.

Simultaneously with this functioning, however, and the attainment of the apex 130 by the roller 124, the bias of the springs 137 and 138 becomes effective to release the stored lost motion and pull the plate 126 relative to the pins 135 and 136, moving from the full line position of Fig. 13 to the secondary position indicated in dotted lines therein, aided by vertical pressure from roller 124 against the downwardly sloping surface 131. This is accompanied or followed immediately by downward relative movement of roller 124 on and toward the lower edge of slope 131, as shown in Fig. 14, which returns the plate 126 to its extreme forward position to which it is biased, as in the dotted lines of Fig. 13 and the full lines of Fig. 14. Synchronously, as the lever 121 has returned to normal, horizontally, the plate 123 thereof has returned to the recess 120 of bar 33.

As soon, however, as the return stroke begins, which may be under the tension of rack spring 161, on the return movement of the rack 41, indicated by the arrow pointing toward the right in Fig. 14, the advancing surface 131 of plate 126, being immovable on rack 41 in this reversed direction of pressure, exerts pressure against roller 124. This forces the roller upwardly until the apex 130 of the cam plate is reached as indicated in Fig. 15. At this point the horizontal distance between the apex 130 of the cam plate and the center of the roller 63 of the rack-movable assembly is shorter than the fixed horizontal distance between the roller 124 and the substantial center of the lever-mounted plate 123. Accordingly a secondary downward stroke of the plate 123 occurs after the roller 63 has moved out of juxtaposed vertical relation thereto, as shown in Fig. 9, and is therefore inoperative as regards any effective action relative to the label-manipulating device. The return of the roller 124 to the other side of the cam apex, in position for the next operative cycle is accomplished without adverse effect, despite the second lever manipulation which is entailed.

The glue roller 140 is journalled in a frame 141 pivoted to the enlarged portion 32 of the guide plate 30 by horizontal pivot means 142, within a glue pot or container 143. The frame 141 is adjustable vertically and both equally and differentially by the thumb screws 144 and 145 respectively. A rod 146 is mounted in the frame 141 and carries the plurality of pivoted wiping-finger devices 147, to prevent accidental adhesion of a label to the surface of the glue roller 140. The fingers 147 are slightly below the uppermost surface or upper horizontal level of the roller 140. The shaft 148, upon which the glue-roller 140 is mounted, is prolonged at one end into a hub 150, having a ratchet wheel 151 and the pulley 152 mounted thereon. A spring pressed pawl 153 is mounted on the enlargement 32, in engagement with the teeth of the ratchet wheel 151, to insure intermittent unidirectional rotation of the glue roller 140 in one direction, by precluding rotation thereof in the other direction. The glue roller is driven by and in timed relation to the driven shaft 36, driving the rack 41, by means of a belt 154 passing about pulley 152 and a pulley 155. The latter pulley is mounted on a hub 156, carrying a ratchet wheel 157 journalled for rotation with the hub and the pulley, on and relative to the end of shaft 36. The glue-roller drive therefor, is by means of the spring-pressed pawl 159 carried on the flange 158 of a hub 160 keyed to the shaft 36, driving pulley 155, and through belt 154 and pulley 152, driving glue roller 140. The arrangement is such that on the drive in one stroke, in which the label-manipulating device 69 engages a dry label, transports it horizontally across the glue roller, the glue roller turns in timed relation thereto so as to spread an even coat of glue on the transported label, and at the conclusion of the stroke the glued label is moved downwardly into adherent pressed relation to the surface to which the label is to be applied. This latter, as noted in the illustrative preferred use, is the top wrap of a series of wraps. On the return stroke of the complete cycle, after the pressed unloading of the glued wrap, the empty (labelless) carrier 69 moves in a return horizontal stroke transverse of the roller, which stands still and thus fails to smear the lower surface of the plate 65 with glue on the return path of the latter. The completion of the return stroke finds the carrier superpositioned over and in engaging contact with the top label of a stack of labels, preparatory to the start of a new cycle, in one illustrative cycle of the machine.

Mention should be made of the adjuncts of the machine conducing toward its elastic adaptibility to various uses. It has been observed that labels of various sizes and proportions can be used in stacks disposed in the adjustable hopper or magazine, as has been broadly described and the details of which will be appreciated from the disclosure. Mention has also been made of the fact that the designated label can be applied anywhere within a wide area by the adjustability which is provided so that on a wrap the label can be applied to any portion thereof. This is by the lateral and longitudinal adjustments accorded by the guides 22 and 23, and 24 and 25, augmented by the telescopic adjustment 56 of the connecting rod drive and the universal joints in the transmission. It will be understood that as the gluing machine is operated in the preferred form of the invention, the label-attaching machine is also put through its cycle in synchronism with that of the gluing machine.

It only remains to mention the preferred form of signal device which is utilized in order to duly and properly apprise the operator of the fact that the stack of labels is, or is about to become, exhausted. To this end the vertically moving follower plate 102 on which the stack of labels is supported and fed upwardly in step-by-step feeding, moves vertically between guide plates 95 and 96. The table 102 is mounted on said supporting arm 103, on oval extension 104, and the latter carries the vertical switch-engaging post 201 in position to engage the switch arm 202 of a snap switch 200, mounted on plate 30, with predetermined vertical movement of the arm 103. The circuit is not shown, but from a suitable power line a transformer 203 is energized and the secondary circuit thereof is controlled by the closing of the snap switch 200, to energize the signal device 204. The latter may comprise either a visual or audible signal, or a combination thereof. Preferably it comprises a bell or buzzer, the energizing of which indicates to the operator that the label stack needs replenishing.

In connection with the label stack, it will be apparent that any auxiliary or other devices can

be associated with same, such as the resilient metallic hold-downs 99, under the inwardly projecting flange ends of which the upper label of the stack is engaged frictionally at plural points, but with such light grip as to be readily pulled from under same when the label is engaged under suction by the plate 65. A double threaded shaft 119' is provided in the label hopper in position to effect a quick reciprocal adjustment of the transverse hopper members 97 and 98, as will be clear.

The quickness of the adjustments, as in the replacing of a used or exhausted stack of labels with a fresh stack, is of importance herein. This is facilitated by the manual grip means 110 and 111 by means of which when the platform or follower plate 102 and its associated horizontal elements have reached the vertical upward limit, through rotation of the shaft 106 in the closed separable nut comprising the sections 107 and 108, squeezing the handles 110 and 111 together separates the split nut and permits the whole horizontal assembly of the follower to drop to a new low position, without tedious rotations of the shafting, etc.

In operation, the size of wrap or of the box lid, and the size of the label to be attached thereto, both being known, it is necessary first to decide the location of the label upon the repository thereof, whether box or wrap. The longitudinal adjustments of the plate 30 in its guides 24 and 25 account for the position of the label on the wrap in a direction longitudinally of the machine and transverse of the wrap, as disclosed in Fig. 1. The location of the label upon the wrap in the other dimension is determined by the turning of the hand wheel 27 by handle 29. With the labels provided in a stack 85 and mounted upon the plate 102, which, as noted, is located by simply squeezing the finger pieces 110 and 111 to open the split nut and permit the plate to drop to its lowest position, the label stack is positioned. Turning the dual threaded shank 119 adjusts plates 97 and 98 to define the edge portions of the hopper. The adjustments for positioning of the label may place the universal joints in almost any mutual relation between a position almost in horizontal alignment, and a rather acute angular relation, but this is taken care of by the telescoping shaft, 48 and 50, extending between them.

With glue in the pot partially surrounding the roller, and the parts assembled as shown, the operator manually or automatically trips the gluing machine, which in its sequence removes the top wrap 13 from the top of the stack 12, and sends it through the glue roller and mounts it upon the conveyor, during which it is subjected to transverse compression. Synchronously therewith the pinions 18 starts to drive the gear 60 and through the ratchet and pawl assembly and driven plate 58 forces the connecting rod journal or crank throw 57 angularly about axle 61. This, through connecting rod 56, moves rack 52 to the rear, and through the gearing and shafting described, drives delivery rack 41 toward the front. This follows cyclically the previous actuation of the movable portion of the label manipulating carrier 69 by sloping cam 117 forcing the head downwardly against the top label of the stack of labels without disrupting the suction head flow causing the top label of the stack to adhere to the plate 65. Starting its cycle with a label adherent by suction to plate 65, the carrier 69 moving with rack 41 leaves cam 117, and the spring 87 forces the head portion and its attached label vertically. Continued linear movement of carrier 69 causes the suction-attached label to move across the glue roller, which is moving in synchronism therewith, to smoothly and evenly apply a coat of glue to the lower surface thereof. Finally, the stroke of rack 41 brings the movable portion 62 into the proper juxtaposed relation to the wrap 13 or to the other repository for the label, and the glued label is then pushed firmly down and compressed tightly thereagainst by pressure from plate 123 on rocked lever 121. As this action also opens valve 74 to vent the vacuum holding the label against apertured plate 65, the carrier is conditioned to release the label then adherent to the label-receiving surface, when the movable portion 62 is elevated by spring 87 with the beginning of the return stroke of the cycle. At this point, in the cyclic progression of the plate 58, driven by the gear 59, the journal or crank throw 57 of the connecting rod 56, has gotten beyond dead center and the tension spring 161, extending between the end of rack 41 and the bracket 162 on the plate 30, smartly returns rack 41 to the rear, forcing rack 52 forwardly and pushing plate 58 about its stub shaft 61 to its starting position, without disturbing gear 60. The beginning of the return stroke of rack 41 and of carrier 69 tied thereto, by the action of the triangular cam 126 and roller 124 is synchronous with the upward movement of plate 123 into recess 120, and the return linear movement of the carrier 69 is with the movable portion 62 in its upper position to which it is urged by spring 87.

In this manner, using but a portion of the stroke, the 8⅔ revolutions of the pinion 18 can secure a synchronized operation of the label-attaching device without the complicated gearing that would be necessary, if available at all, if the pinion 18 were in constant driving mesh with a rack-actuating gear. The said starting position illustratively is at the conclusion of the dry label-engaging operation of the label-manipulating head, so that the next cycle can start with a label carried by said head. If desired, of course, the sequence can be readily varied so that the starting position is just prior to picking up a dry label and the complete cycle picks it up, transports it, glues it, and discharges the glued label, and returns to a starting position. In many cases this cycle is preferred.

The advantages, simplicity, and economy of the instant invention will be appreciated.

Having thus described my invention, I claim:

1. A label gluing and attaching apparatus for driven connection with an instrumentality having an intermittently actuated shaft, comprising a supporting plate, means for supporting the plate in horizontally adjusted relation to such instrumentality, a label manipulating carrier, means guiding the carrier for horizontal translational movement in a substantially fixed path relative to said plate between a first position and a second position horizontally beyond the plate, means for supporting a stack of labels to which the carrier is juxtaposed in the first position, means for supporting a stack of wraps to which the carrier is juxtaposed in the second position a gluing roller adjacent to said means for supporting the stack of labels for coating an engaged label on said carrier when the latter moves between said first and second positions, suction means associated with said carrier for holding an engaged label in contact therewith, means operative at the said first position for actuating said carrier for suctionally engaging

a label from such stack, means operative at said second position for actuating said carrier for delivering said engaged label toward a horizontal surface of a wrap of such stack of wraps including suctional release of said engaged label and adjustable transmission means disposed for coupling at one end to such intermittently operated shaft and at the other end coupled to said carrier, whereby rotations of the shaft effect reciprocations of said carrier regardless of the instantaneous horizontal adjustment of said plate relative to such instrumentality.

2. In combination with an intermittently driven instrumentality comprising a suction source and a driving shaft, a label gluing and attaching apparatus comprising a label manipulating carrier, mounting means supporting the carrier for cyclic reciprocation on a path of predeterminedly fixed length between limits, means for adjusting the mounting means spacially relative to said driving shaft so as to predetermine and vary the relation of said path to said shaft, transmission means disposed between the said shaft and said carrier to effect said cyclic reciprocation in any predetermined relation of said path to said shaft, an apertured label-engaging plate mounted on the carrier, means establishing communication between said suction source and said plate for engaging a label to said plate when the plate moves into contact therewith, means for moving said apertured plate relative to said carrier, a label glue roller disposed between the limits of said path, means for moving the carrier with an engaged label transversely of said label glue roller to coat such label with glue, means for moving said plate relative to said carrier for discharging said glue-coated label adjacent to the instrumentality including means for venting said suction in its communication with said apertured head to release said glued label.

3. In combination with an instrumentality comprising an intermittently driven pinion sliding means, means for guiding the sliding means for generally linear movement beween limits, a driven gear in driven relation to said pinion, gear linkage comprising two generally parallel racks, a pinion gear in mesh with each of said respective racks, means for driving said last mentioned pinion gears in synchronism, a crank throw driven by said gear in mesh with said driven first mentioned pinion, a connecting rod engaging between said throw and one of said racks to drive same as the throw rotates, and means coupling the other of said racks to said sliding means for actuating the latter on its means for guiding.

4. A label gluing and attaching device comprising a support, a first pair of horizontal parallel guides on the support, a second pair of horizontal parallel guides slidable on the first pair of guides and perpendicular thereto, a plate slidable in said second pair of guides for adjustment therein transverse of the first pair of guides, means for temporarily locking the plate in a desired adjusted position in said second guides, means for moving the plate and the second guides to which it is temporarily locked transversely of the plate in said first guides and for locking same in an adjusted position relative to the support, a guide bar mounted on the plate extending longitudinally thereof parallel to the second pair of guides and spaced vertically above said plate, a label carrier slidable on the guide bar, a rack engaged with said carrier, means guiding the rack for longitudinal movement parallel to said guide bar, a shaft mounted on the plate transverse of the rack, a pinion on said shaft in mesh with said rack, means for rotating said shaft for actuating said carrier in a cyclic movement having two strokes in opposite directions, means for supporting a stack of labels adjacent one end of a stroke, means for supporting a label-receiving element adjacent to the other end of said stroke, and means operative as a function of and in response to carrier movement for engaging a dry label from the stack thereof with said carrier and at the end of said stroke disengaging said engaged label from said carrier.

5. In a label gluing and attaching devices, a support, a rack, means guiding said rack for longitudinal movement relative to the support, a shaft journalled on the support transverse of said rack, a pinion gear on said shaft in mesh with said rack, a second shaft journalled on said support, a second pinion gear on said second shaft, a transmitting rack in mesh with said second pinion, means for guiding said transmitting rack for longitudinal movement, the center lines of said respective racks lying in parallel spaced vertical planes, means for reciprocating said second rack, and connections between said shafts for transmitting torque from said second pinion to said first pinion so that the first rack is reciprocated synchronously with reciprocation of the second rack, reciprocatory means guided for movement relative to said support, and means for coupling the first rack and said reciprocatory means for synchronous movement.

6. A label gluing and attaching device comprising a supporting frame having first and second station areas, a support mounted on the frame and adjustably movable in a horizontal plane in at least one direction relative to the said station areas thereof, a first rack, means guiding said rack for longitudinal reciprocatory movement relative to the frame, a first shaft journalled on the frame transverse of said rack, a first pinion gear on said shaft in mesh with said rack, a second shaft, means journalling said second shaft on said support, a second pinion gear on said second shaft, a second rack in mesh with said second pinion, means for guiding said second rack for reciprocatory longitudinal movement on and relative to said support, driving connections between said first and second shafts comprising telescoping shafts between two universal joints, a label carrier in driven connection with said second rack, means on said support guiding said carrier for reciprocatory motion relative to said support in a predetermined path between stations, and means for reciprocating said first rack, whereby said label carrier reciprocates in synchronism with reciprocations of said first rack in all adjusted positions of the support relative to the frame and consequent adjusted relations of the label carrier stations to the station areas of said frame.

7. In a label gluing and attaching devices, a support, a rack, means guiding said rack for longitudinal movement relative to the support, a shaft journalled on the support transverse of said rack, a pinion gear on said shaft in mesh with said rack, a second shaft journalled on said support, a second pinion gear on said second shaft, a transmitting rack in mesh with said second pinion and, means for guiding said transmitting rack in longitudinal movement, the center lines of said respective racks lying in parallel spaced vertical planes, means for reciprocating said second rack, and connections between said

shafts for transmitting torque from said second pinion to said first pinion so that the first rack is reciprocated synchronously with reciprocation of the second rack, reciprocatory means guided for movement relative to said support, and means for coupling the first rack and said reciprocatory means for synchronous movement, said racks respectively having oppositely presenting teeth so that one engages beneath one pinion and the other engages on top of the other pinion whereby the racks reciprocate oppositely.

8. A label gluing and attaching device comprising a horizontal stationary bar, a lever pivoted to the bar on a horizontal pivot, a carrier-engaging portion on the lever on one side of the pivot and a roller on the lever on the other side of the pivot, a label carrier, means for guiding said label carrier substantially in parallelism with said bar, said carrier having a vertically movable portion, an element movable with said carrier, a cam plate mounted for limiting sliding on the element and having upwardly converging surfaces each in position to engage said roller and move said lever.

9. A label attaching apparatus comprising supporting means for a stack of labels at a first station, means for supporting an element to receive a label at a second station horizontally spaced from the first station, a substantially horizontal guide rail extending between and in part at least overlying both stations, a label carrier mounted on the guide rail, means for reciprocating the carrier in a complete cycle of two strokes, the first stroke starting at the first station and terminating at the second station and the return stroke starting at the second station and terminating at the first station and comprising with the carrier a translatory unit, said carrier comprising a guide part vertically immovable relative to the guide rail, and a normally elevated vertically movable portion guided in the guide part and including a label-contacting suction head, conduit means for establishing suction on said head and including a normally closed venting valve, complemental means on said rail and said portion for converting translational movement of the unit relative to the rail into transitory downward vertical motion of the portion at the first and second stations as functions of the translational movement, and means on said unit for opening said venting valve toward the termination of the transitory downward movement of the portion at said second station.

10. A label attaching apparatus comprising supporting means for a stack of labels at a first station, means for supporting an element to receive a label at a second station horizontally spaced from the first station, a substantially horizontal guide rail extending between and in part at least overlying both stations, a label carrier mounted on the guide rail, means for reciprocating the carrier in a complete cycle of two strokes, the first stroke starting at the first station and terminating at the second station and the return stroke starting at the second station and terminating at the first station and comprising with the carrier a translatory unit, said carrier comprising a guide part vertically immovable relative to the guide rail, a normally elevated vertically movable portion guided in the guide part and including a label-contacting suction head, conduit means for establishing suction on said head and including a normally closed venting valve, complemental means on said rail and said portion for converting translational movement of the unit relative to the rail into transitory downward vertical motion of the portion at the first and second stations as functions of the translational movement, means on said unit for opening said venting valve toward the termination of the transitory downward movement of the portion at said second station, said complemental means providing a longer downward movement at the second station than at the first station, and said means for opening said venting valve being responsive only to the longer downward movement.

11. A label attaching apparatus comprising a support, supporting means for a stack of labels at a first station, means for supporting an element to receive a label at a second station horizontally spaced from the first station, a substantially horizontal guide rail extending between and in part at least overlying both stations, a label carrier mounted on the guide rail and having a path of sliding movement relative thereto, means for reciprocating the carrier in a cycle of an out stroke and a return stroke between the stations and comprising with the carrier a translatory unit, said carrier comprising a guide part vertically substantially immovable relative to the guide rail and a normally elevated vertically movable portion guided in the guide part and including a label carrying and pressing suction head, conduit means for establishing suction on said head and including a normally closed venting valve, complemental means on said rail and said portion for converting translational movement of the unit relative to the rail into transitory downward vertical movements of the portion at the first and second stations as functions of the translational movement, means on said unit for opening said venting valve toward termination of the transitory downward movement of the portion at said second station, and means supporting said rail and carrier on said support, said means supporting being adjustable relative to said path of said carrier to deposit said carried label at a selected area of said second station.

12. A label attaching apparatus comprising a support, supporting means for a stack of labels at a first station, means for supporting an element to receive a label at a second station horizontally spaced from the first station, a substantially horizontal guide rail extending between and in part at least overlying both stations, a label carrier mounted on the guide rail and having a path of sliding movement relative thereto, means for reciprocating the carrier in a cycle of an out stroke and a return stroke between the stations and comprising with the carrier a translatory unit, said carrier comprising a guide part vertically substantially immovable relative to the guide rail and a normally elevated vertically movable portion guided in the guide part and including a label carrying and pressing suction head, conduit means for establishing suction on said head and including a normally closed venting valve, complemental means on said rail and said portion for converting translational movement of the unit relative to the rail into transitory downward vertical movements of the portion at the first and second stations as functions of the translational movement, means on said unit for opening said venting valve toward termination of the transitory downward movement of the portion at said second station, means supporting said rail and carrier on said support, said means supporting being adjustable relative to said path of said carrier to deposit said carried label at a selected area of said second station, and means

for adjusting the guide rail and carrier longitudinally and laterally of said path to deposit said carried label at a selected area of the second station.

13. A label attaching apparatus for driven relation to a rotatable shaft fixed in space, comprising a primary support in fixed relation to said shaft, a second support, means mounting the second support for adjustable positioning relative to the primary support, means comprising a first station on the second support for supporting a stack of labels, a guide rail mounted on the second support, a carrier slidable in a fixed path on said guide rail and comprising a normally raised vertically movable label head, conduit means for applying suction to said head, complemental means on the vertically movable head and said rail for forcing the head downwardly at selected points on said path, and a gear train in driven relation to said shaft for reciprocating said carrier on said rail, said gear train incorporating a lost motion drive whereby the same cyclic reciprocation of said carrier is obtained from said shaft in all adjusted positions of said second support relative to the first whereby the head carrying a suction attached label can deliver same over a wide area determined by the adjustment of the second support relative to the first.

14. A label gluing and attaching device comprising horizontal guide means, a label carrier comprising a portion slidable on the guide means and a vertically slidable portion, an apertured replaceable plate on said vertically movable portion, conduit means for connection between a source of suction and the apertures in said plate and including a venting valve for breaking the suction to the apertures, means associated with the guide means for moving the vertically movable element in two respective strokes of different length as a function of sliding movement of the label carrier, and means on said vertically slidable portion responsive only to the longer of said two strokes to open said venting valve.

15. A label gluing and attaching device comprising horizontal guide means, a label carrier comprising a portion slidable on the guide means and a vertically slidable portion, an apertured replaceable plate on said vertically movable portion, conduit means for communication between a source of suction and the apertures in said plate and including a venting valve for breaking the suction to the apertures, means associated with the guide means for moving the vertically movable element in two respective strokes of different length as a function of sliding movement of the label carrier, means on said vertically slidable portion responsive only to the longer of said two strokes to open said venting valve, and means for positively reversing said venting valve opening means in response to sliding motion of the label carrier subsequent to the opening of said venting valve.

16. A label gluing and attaching device comprising horizontal guide means, a label carrier comprising a portion slidable on the guide means and a vertically slidable portion, an apertured replaceable plate on said vertically movable portion, conduit means for connection between a source of suction and the apertures in said plate and including a venting valve for breaking the suction to the apertures, means associated with the guide means for moving the vertically movable element in two respective strokes of different length as a function of sliding movement of the label carrier, means on said vertically slidable portion responsive only to the longer of said two strokes to open said venting valve, and said means associated with the guide means comprising separate elements spaced along said horizontal guide means so that the respective two strokes of different length occur at opposite ends of the paths of sliding of said label carrier.

17. A label gluing and attaching device comprising horizontal guide means, a label carrier comprising a portion slidable on the guide means and a vertically slidable portion, an apertured replaceable plate on said vertically movable portion, conduit means for connection between a source of suction and the apertures in said plate and including a venting valve for breaking the suction to the apertures, means associated with the guide means for moving the vertically movable element in two respective strokes of different length as a function of sliding movement of the label carreir, means on said vertically slidable portion responsive only to the longer of said two strokes to open said venting valve, said means associated with the guide means comprising separate elements spaced along said horizontal guide means so that the respective two strokes of different length occur at opposite ends of the paths of sliding of said label carrier, the element of said spaced elements effecting the longer of the two strokes comprising a lever pivoted relative to said horizontal guide means, generally transversely thereof, a roller mounted on one end of said lever and carrier-engaging means at the other end of the lever, means movable with the sliding label carrier portion in fixed horizontal spacing from said label carrier, a generally triangular vertical cam plate mounted with limited sliding connection to said last means, a spring urging the cam plate toward a fixed position at one limit of its connection at which the distance from the apex of the generally triangular vertical cam to the vertically movable portion of the label carrier is relatively smaller, whereas when the generally triangular vertical cam plate is moved relative to the lever to the farther limit, said distance is greater and is substantially the same as the distance between said roller and the carrier-engaging portion of the lever, whereby movement of the lever through relative motion of the generally triangular vertical cam plate and the roller in one direction actuates the vertically movable portion of the label carrier, while movement of the lever through reversal of this motion fails to actuate the vertically movable portion of the label carrier.

18. A label gluing and attaching device comprising generally linear guide means, a label carrier slidable on said guide means and including a vertically slidable portion, means spaced on said guide means for imparting vertical motion to said vertical slidable portion, means for reciprocating said label carrier in a cycle of two opposite strokes, a lever pivoted generally transversely of said guide means and mounting a roller and a carrier-engaging element on opposite sides of said pivot, an element fixed for reciprocation with said label carrier, a triangular cam plate mounted with limited sliding connection to said element and for engagement by said roller, said lever being actuated by reaction from the cam plate and roller in one stroke of the carrier so that said carrier-engaging element initiates vertical sliding of said vertically slidable portion with the triangular cam plate at one limit and on the return stroke the triangular cam plate moves

to its other limit and the reaction of said roller moving said lever is ineffectual to initiate vertical sliding of said vertically slidable portion.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
727,692	Rodgers	May 12, 1903
1,162,323	Wardlaw	Nov. 30, 1915
1,305,111	Hutchinson	May 27, 1919
1,440,856	Westcott	Jan. 2, 1923
1,627,811	Smith	May 10, 1927
2,032,166	Brewer	Feb. 25, 1936
2,156,134	Von Hofe	Apr. 25, 1939