Aug. 30, 1932. C. R. FREDSELL 1,875,301

LABELING MACHINE

Filed Sept. 12, 1930 3 Sheets-Sheet 1

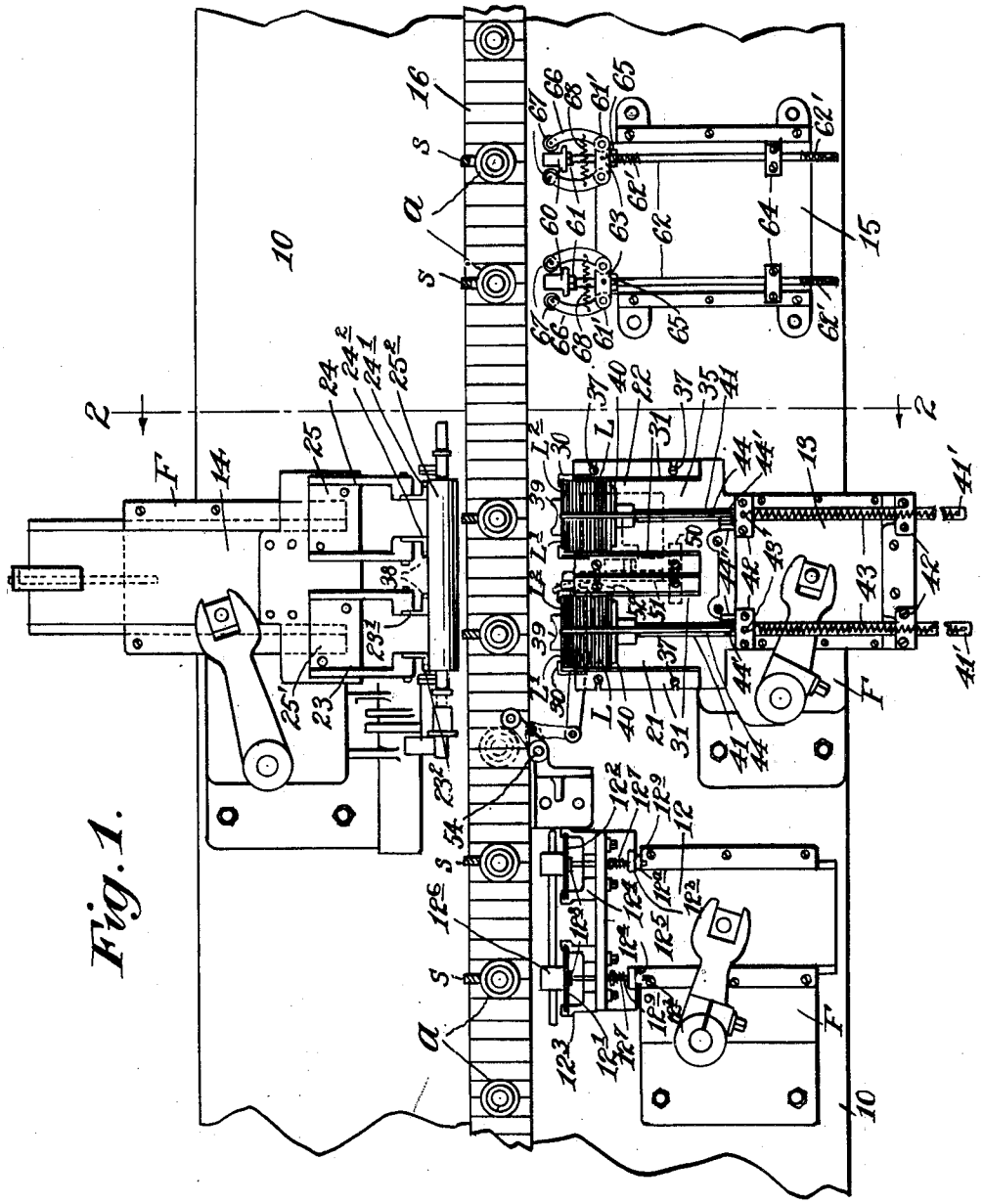

Fig. 1.

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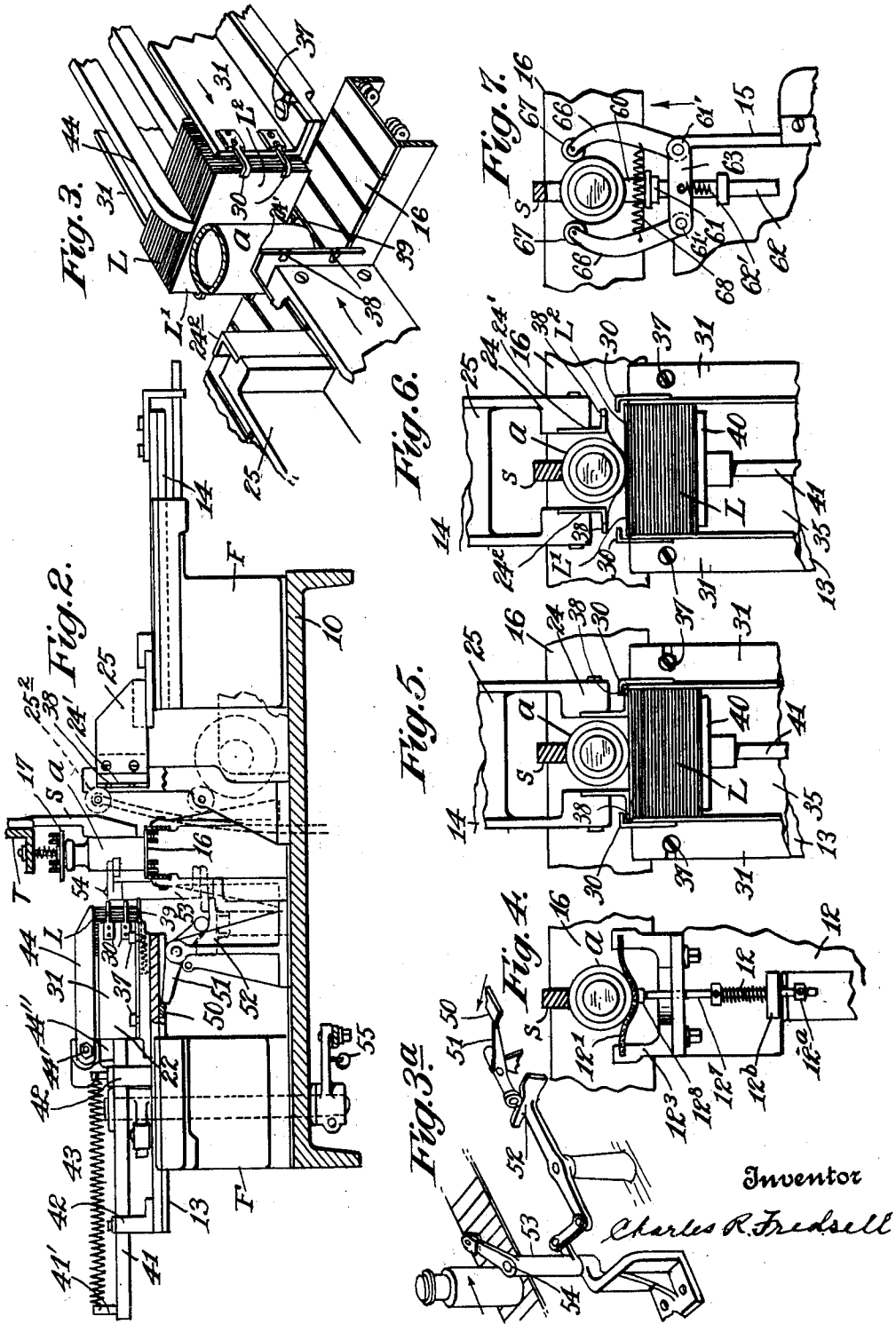
Aug. 30, 1932. C. R. FREDSELL 1,875,301

LABELING MACHINE

Filed Sept. 12, 1930 3 Sheets-Sheet 2



Aug. 30, 1932. C. R. FREDSELL 1,875,301

LABELING MACHINE

Filed Sept. 12, 1930 3 Sheets-Sheet 3

Fig. 9.

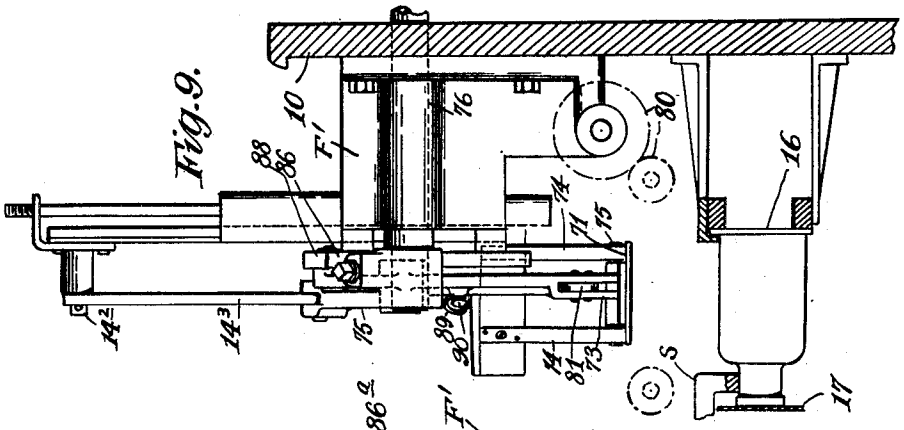


Fig. 10.

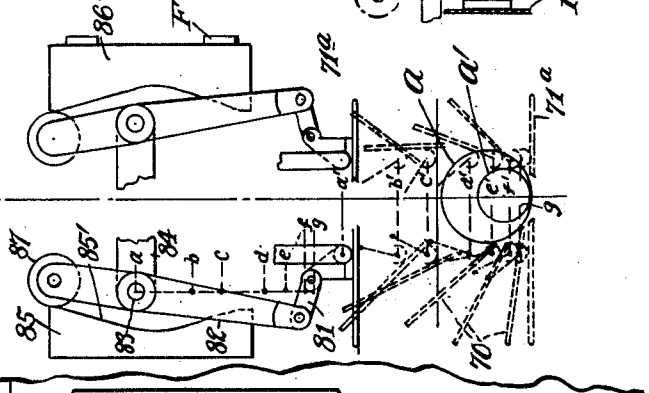


Fig. 11.

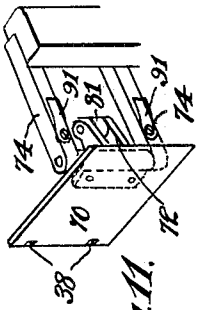


Fig. 8.

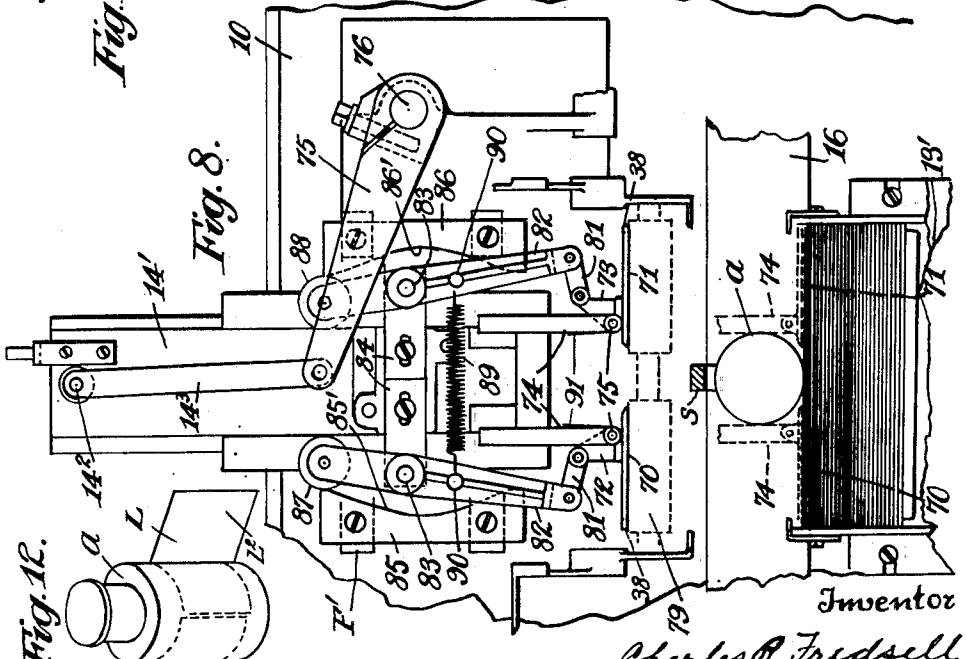
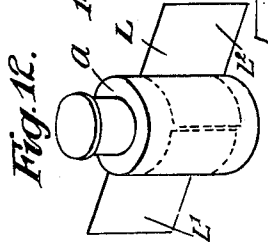


Fig. 12.



Inventor

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Patented Aug. 30, 1932 1,875,301

UNITED STATES PATENT OFFICE

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LABELING MACHINE

Application filed September 12, 1930. Serial No. 481,415.

This invention relates to labeling machines, and has to do more particularly with the taking of a label from the magazine, applying adhesive thereto and affixing the same to the article at the same station.

I have shown my invention as may be applied to any labeling machine, but particular reference may be had to Patent No. 1,743,018 granted to Magnusson and Fredsell, showing a type of machine to which my improvement is applicable.

While I am able to dispense with any supplemental adhesive applying means at a prior work station and perform the entire work of applying adhesive at one station, viz., the magazine station, I do not wish to limit my invention to a single work station and have therefore shown both methods of operation.

In labeling machines, it is the usual practice to reciprocate work slides to and from the articles to be labeled, while said articles are intermittently passed along on a suitable support, to successive work stations, where first, at one station, the full area or a portion only of the article is supplied with adhesive, and then passed to the next station, where a label is removed from the magazine and attached to the article by adhering thereto, and finally at another station the label is pressed to the article. By this method it must be conceded, it is difficult to apply all the adhesive to the article so accurately that the label will register precisely with the adhesive of the article thus supplied, and further if the article is round or of oval shape, the contact made therewith by the label is not sufficient to properly cling to the article to remove the label from the magazine, as the latter withdraws from the article.

It is an object therefore of this invention to provide means whereby substantially the full face of the label may be supplied with adhesive at one and the same station at which the label is removed from the magazine, and attached to the article, or when applying only a fractional part of the adhesive to the article as done at a prior station by using a flexible adhesive pad, adapted to yield and thereby cover a greater area of surface of the article so as to conform to cylindrical or oval shapes thereof and when engaging the central part of the label, at the next station, the magazine station, to affix the label to the article, and at the same time apply adhesive to the remaining ends of the label by a two part adhesive pad that straddles the article by a direct forward line action, and by either means stated facilitate the removal and separation of the foremost label taken from the stack of labels from the magazine, as the pads make their return stroke, and thereby assist in the application of the label to the article of a curved form by stripping the label, so to speak, from the adhesive pads and thereby draw the label around the article, as these pads continue in their return motion from the magazine.

A further object being to provide a two part adhesive pad adapted to swing or open during its motion to and away from the article, to pass the article and close around the same so that the pads will deliver adhesive to the full or substantially full face of the label, located in the same plane and carried by a magazine movable to and from in front thereof, whereby the partial application of adhesive to the article at a prior station may be omitted.

Another object is to provide a means to bring the article to a vertically aligned position with respect to the label stack before and during the time the pads return with the label from the magazine to apply the label to the article.

Other objects will appear in the following detailed description and more fully referred to in connection with the drawings.

Before explaining in detail the present im-

provements and mode of operation thereof, I desire to have it understood that the invention is not limited to details of construction and arrangement of parts, which are illustrated in the accompanying drawings, and that the phraseology which I employ is for the purpose of description and not of limitation.

As shown:—Figure 1 is a plan view of a portion of a labeling machine, showing the magazine slide and its associate mechanism.

Figure 2 is a cross sectional view, taken on line 2—2 of Figure 1.

Figure 3 is a perspective view of a portion of the magazine and the two part adhesive pad.

Figure 3*a* is a perspective detail showing the means that control the movement of the magazine slide with respect to the articles fed to the label applying position.

Figures 4, 5, 6 and 7 are progressive views of the parts showing their operation.

Figures 8 and 9 show respectively plan and side views of a hinged form of adhesive applying and picker plate pads,

Figure 10 is a composite diagrammatical view, showing the movements of the picker plates.

Figure 11 is a perspective detail of the picker plate mounting.

Figure 12 is a view of the article showing a label attached.

While the drawings show only a portion of the labeling machine, it is deemed unnecessary to show other than the magazine and its co-acting mechanism, to which this invention particularly relates.

As shown, the table 10 and frame-work F are provided and fitted with work slides 12, 13, 14 and 15, each of which have certain functions to perform by suitable work members carried thereby, on the articles that are moved along step by step between the slides on a supporting conveyor belt 16, arranged to have working in unison therewith a holder belt 17, that firmly holds the articles under tension between these belt surfaces to accurately deliver the articles at their respective stations.

The slides as shown in Figure 1, due to the small articles on which the work is to be performed, are arranged to work on two articles at one time, at each station. This however is not essential, as a single work member may be used on single articles of larger proportion.

At the station where the slide 12 is positioned, it is the usual practice, particularly when the article is of a rectangular form, to apply adhesive to one face of the article by a contact pad, the face of which is usually a fraction smaller than the face of the label to be attached, or the adhesive pad may be of the sectional form to fold around the box shaped article when the label, of course, will be longer to fold around the sides. In the present instance however, the articles designated by "A", shown as bottles of cylindrical formation, are acted upon by flexible adhesive pads 12^1 and 12^2, preferably of rubber strips that revert to a flat plane position at all times, except when in contact with the article, at which time the pads will be depressed so that the face thereof will conform to a greater portion of the curved face of the article. (See Figure 1 and Figure 4.) This will supply a fractional part of the adhesive to the article. The slide 12, it will be noted, is of such proportions as to accommodate two flexible pad members, side by side, held by brackets 12^3 and 12^4, adjustably fixed to an angle bracket 12^5, when the pads are in the position as in Figure 1, an adhesive supply roll 12^6 is actuated to roll over the face of the pads to supply adhesive thereto.

To support these flexible pads in their flat plane position during this adhesive applying action, spring plungers 12^7 are provided that rest against the rear of the pads to positively bring them to this position. The plungers have a head 12^8, of suitable diameter to provide a proper backing against the back of the pads, and are held in this forward position by a spring 12^9 against adjustable stop collars 12^a, the plungers sliding in bearings 12^b. The supply roll then returns to permit the slide to move forward and make contact with the article to apply the adhesive. When the articles are small, as before stated, I prefer to use two pads mounted on one slide to double up the production of the machine, but usually on larger work one slide carries a single work member. This is also to be understood of the slides 13, 14 and 15 which will be hereinafter referred to.

The movable support 16 is then actuated to move two articles forward to the next work station, where the labels designated by "L" will be supplied by a pair of label magazines 21 and 22, carried by the reciprocating slide 13 which is carried forward so the labels will contact with the articles and deposit the labels thereon.

It will be here seen that the end portions L^1 and L^2 of the labels L, which will thereafter lap around the articles to encircle the same or nearly so, as the case may be, have yet to be supplied with adhesive. A pair of supplemental adhesive applying members are provided for this purpose and are shown in the form of two part adhesive pads 23—24, carried by the slide 14 to be reciprocated in a plane with the aforesaid magazines on the slide 13 and timed to move toward and away from each other. These two-part pads are shown preferably made in two sections, 23^1—23^2 and 24^1—24^2, each adjustably fixed to a bracket 25—25^1, attached to the slide 14, so that a true register with the position of the labels carried by the slide 13 may be had.

The pads are spaced apart to straddle the articles which at this time are at rest and in position to receive adhesive from a supply roll 25^2. When the slide moves forward at this station, the pads will clear the sides of the articles and straddle the same to make contact with the foremost labels of the magazines and apply adhesive to the ends L^1 and L^2 thereof, as the labels are brought to contact with the articles by the forward movement of the slide 13. The magazine slide 13 moves a small distance further than just making contact with the article and depresses the stacks of labels rearward in the magazine box and away from the overhanging stops 30 at the sides 31 of the magazine, and free from the edges of the labels as clearly shown in Figure 6. This position of the stack of labels is held during the retracting motion of the pads on slide 14 and holds the label intact with the article while the pads are pulling the ends of the labels L^1 and L^2 free from the stops, separating the labels to assure the taking of but one label from the stack. This operation is aided by the flexibility of the labels while being attached to the curved form of the article at its center, and further drawn around and against the article by the continued retracting motion of the pads. The stack of labels now resumes its position in the magazine box against the stops, as both slides return to their outer positions, the pads at this point are given a fresh coat of adhesive.

The magazines are mounted on a plate 35 carried on the slide 13, and this plate which forms the base on which the labels rest, and to which the side plates 31 of angle pieces are fastened by screw 37 in slotted holes, so the side plates may be adjusted to bring the labels into perfect alignment with the adhesive pads and central with the articles.

The stops 30 are arranged on the side members 31 in pairs to provide two on each side, one above the other so as to provide a stop at each corner of the labels, these stops may overhang the label to a greater extent than is usually done, because of the backing up of the labels when the contact with the article is made, at which time it will be seen the two part pads reach into the magazine, see Figure 5, there being cut outs in the pads, as at 38, which pass the stops 30 when applying the adhesive to the labels.

A movable overhanging support 39 of the magazine, which forms an extension of the base plate 35 and is flush therewith for the labels to rest on, and arranged to slide forward against a stop, and is under a spring pressure so as to extend a small distance forward of the stack of labels to support the foremost labels from dropping; this support is pressed rearward when the labels are in contact with the articles. Each magazine is provided with a plunger head 40 mounted on a rod 41 that slides in bearings 42 and urged forward by a spring 43 to keep the stacks of labels feeding forward to the stops, the rods being square to prevent rotation of the heads which are fast to the ends of the rods. The springs 43 are fixed at one end to the forward bearing as at 43^1, and the other ends to a pin 41^1 on the extreme end of the rods 41. A swinging cover piece 44 is also provided for each magazine, and is here shown as a bar pivoted as at 44^1 to the rear of the magazine to uprights 44'' adapted to be swung back when filling the magazine, and these bars further serve to hold the labels down on the base. A means is also provided to prevent the magazine slide from making its full forward stroke when an article is missing in front thereof, the movable support may fail for some reason to feed the articles to this work position, a stop piece 50 is provided and fitted to the underside of the slide 13—see Figures 1, 2 and 3*a*, and movable therewith, which stop co-acts with a spring pressed arm 51 normally in the path of the stop, but held out of the path thereof by a cam arm 52, shifted by a two armed rock member 53, pivoted at 54, the movement of which is controlled by an article on the support as the article is being moved to its work station. Should there be an article missing on the support the arm 51 will not be shifted and will therefore engage the stop 50, the movement of the article being so timed to lift the arm 51 against the stop 50 of the slide 13 to interrupt the forward stroke of the magazine slide, the picker plates therefore would not engage the labels. The slide 13 for this reason is actuated by a cam (not shown) to move the slide outward or away from the article but moved inward to follow the cam by a spring 55 to force the slide inward and hold the cam levers to the cam, except when this stop 50 is engaged by the arm 51 which will hold the slide against its further movement.

When the labels have thus been applied to the articles, the movable support carries the articles forward to the next work station where the slide 15 is positioned. See Figure 1 which is likewise reciprocated to and from the article and carries a pair of work members to firmly press and smooth the loosely attached labels down. These members as shown are preferably under a spring pressure, and include in their make up, a center block 60 of rubber or other suitable material, the face of which may be fitted to conform to the shape of the article at the point of contact, and these blocks are mounted on heads 61 fast on squared rods 62 to prevent rotation thereof and sliding in bearings 63—64 fast to the carriers slide. Stop collars 65 on the rods serve to check the forward movement of the head 61 held in this forward position by springs 62^1 fast to the extreme ends of the rods and to the front bearings 63. These front bearings are

provided with ears 63^1 to which swinging arms 66 are pivoted; having rollers 67 on the ends thereof the arms are held together in any desirable manner as here shown by springs 68 to normally hold the arms closed as seen in Figure 1, and on the forward motion of the slide, the blocks 60 will rest against the articles and yielding, due to the spring pressed rods, while the slide continues forward, carrying the arms forward therewith, as a result the swinging arms will spread, and the rollers follow the contour of the articles, and thereby press and smooth the labels firmly to the articles. As the articles are moved from station to station on the supporting belt 16 and top belt 17 which is employed to hold the articles in position under a tension against shifting during the moving of the belts, is not sufficient however, to hold the articles against the work members while the articles are at rest at these stations. Therefore, stationary supporting members are provided which form rests placed in such position to support the articles against the work members as the latter contact therewith and thereby prevent displacement on the belt. These supports are indicated at S. and are in the form of depending arms held in place on a top rail T., the latter being a part of the frame work F.

In Figures 8 and 9 another form of the two part pads is shown, in which the pads 70—71 are carried on rock members 72—73 pivoted on adjustable arms 74, located on the slide 14^1; as will be remembered, the stationary bifurcated brackets 25 and 25^1 of Fig. 1 have a spread to clear the article, as these pads carried thereby move toward the labels of the magazine mounted on the slide 13, making it necessary to first apply adhesive to such an amount to the article at the prior work station at the position of the slide 12 to cover this part of the article with adhesive to coincide with the spread of the pads. In this form, now being described however, it is possible to apply adhesive substantially to the entire face of the label, omitting if desired the use of the work station where a partial amount of adhesive is first applied to the article; this depending of course on the article to be labeled, since many forms of articles are adapted to my improvement whereby it may be more convenient to use both stations to apply adhesive, but this mechanism now being described and located at the magazine station, all the adhesive supplied to the label is done at this station.

The slide 14^1 is reciprocated by a rock arm 75 mounted on a rock shaft 76, the arm connecting the slide at 14^2 by a link connection 14^3. The rock shaft 75 is rocked by a suitable cam (not shown) which controls the movement of the slide in timed relation to the label magazine carrying slide 13^1. The arms 72—73 that carry the pads 70 and 71 are controlled in such a manner, to be in a flat plan position, as shown in full lines, in Figure 8. When the slide 14^1 is fully retracted to a position of rest to receive adhesive at this position from a supply roll 79, the roll receiving a supply of adhesive from a supply means, as at 80, Figure 9, then traverse the face of the pads to apply the adhesive thereto, which is then transferred to the label of the magazine, after the pads have received the supply of adhesive and the supply roll clear of the forward motion of the slide, the latter starts forward the rock arms 72—73 are swung on their pivots 75 by links 81 pivoted to cam arms 82 that are pivoted at 83 on adjustable brackets 84 on the slide whereby the pivots 83 and the aforesaid pivots 75 reciprocate with the slide.

Fixed to the frame F^1 but adjustably mounted for different size articles, I provide oppositely disposed cams 85 and 86 which have cam faces 85^1 and 86^1 of any desired formation to rock the arms 82 by engaging rolls 87 and 88 on the arms located at the ends thereof, and opposite to the end carrying the links 81 with the pivots 83 on which they rock approximately midway thereof. The rolls 87—88 are urged against the cam faces by a spring 89 attached as at 90 to the two arms, so the levers 82 will be rocked to provide the movement to shift the picker plate pads 70 and 71 to clear the article and swing to their flat plan positioned to engage the foremost label and apply adhesive thereto. See dotted line contact position with the label Figure 8, also Figure 10 shows a diagram on the left hand side thereof, by which I have indicated the action of one of a pair of picker plates as 70, the other plate 71 being the same, only the action of this one side being described, as noted in this diagram the picker plate 70 when the slide carrying the supports 74 and 84 are at the point a and a^1 is shown at rest and in its flat plan position, at which time the adhesive is applied, at the points b, c, d, e and f, and b^1, c^1, d^1, e^1 and f^1, the several angular positions of the picker plate is indicated in broken lines showing how the plate is swung to clear the article A and again revert to a flat plan position as at G and G^1, to make contact with the label as in Figure 8. In this diagram on the right hand side thereof is shown an example of a smaller article A^1—the article is positioned forward on the support, to present the front face therefore to the magazine labels, so no adjustment need be made to the magazine, except to change the side walls thereof for a shorter label. A suitable cam 86^a is positioned on the frame F^1 to provide a motion as indicated by the dotted line of the picker plate 71^a as will be readily understood.

It has been found that articles, especially bottles the bases of which are not always square with the sides thereof, and would therefore not stand in a perfectly vertical

position on the support, would when the label is pressed to the face thereof and wrapped around the same, especially, when fully wrapped around, as in Figure 12, the ends would show as indicated in the dotted line to meet in an offset position to one another. This is obviated by providing the supports 74 that are normally spaced apart to provide free action to straddle the article when in the forward position as in dotted lines Figure 8 to engage the sides and tilting the article on its base by the side contact thereof to a true vertical position, the label in this position of the article is attached thereto, and when wrapped around will make a proper aligned connection at the ends, as will be understood.

The arms 74 at one side or both, may be provided with spring fingers 91, (see Figure 11) of such proportions to yield slightly to prevent breaking of the articles and accommodate themselves to varying sized articles.

When the slide 14^1 returns after having taken a label from the magazine, the label is curved and lapped around the article as the picker plates take their angular return positions to their final normal adhesive applying position. During this return the picker plates, instead of releasing the label as would be the case, by a direct flat return, as in Figure 6, and strip the label from the picker plates at a point in its return much earlier than would be the case, of swinging the picker plates to an angular position as is here done, the plates instead hold the label during their return stroke and laps it further around the article, by slipping or sliding from the angularly disposed picker plates to such a position to have the label wrapped a considerable distance around the article. In many cases labels are not carried completely around the article, and in such a case the wiping station following the labeling station could be omitted, and the complete operation performed at this station, the label supplied with adhesive and affixed to the article. To completely encircle the article with a label, any wiping means may be employed, such as disclosed in Figure 7.

From the foregoing it will be noted by this improvement I am able to apply adhesive to a label substantially covering the full face thereof, at the same station where the magazine is located, by adhesive pads swinging to clear the article on their movement in a plane of the article and magazine in a direct line, to engage the label moving in the same line toward the picker to engage each other, and at or approximately the time the label is contacting with the article, and on the separation of the slides the label is stripped from the stack and wrapped around the article. In some classes of work where the label does not entirely encircle the article, the complete labeling operation is fully carried out at this one work station, viz. applying adhesive, taking the label from the magazine, applying the label to the article and wrapping the same around the article.

It will further be noted, by making an application of adhesive to the article at a prior work station, with the flexible adhesive pad to thereby apply a greater portion to a curved faced article, will not at the next station when the label is removed from the magazine aid the removal of the label therefrom, since contact with the label at the foremost, or high point of the article is only a line contact, this would be true also were the entire face of the label supplied with adhesive at this prior station. In either case this contact is not sufficient to draw the foremost label from the magazine.

It is therefore one of the essential features of my improvement, to provide a means to draw the label from the magazine. The bifurcated picker if not of the swinging type, must straddle the article, and this space between the two part pickers, to enable the passing of the article to make the contact in this direct line action with the label, leaves approximately one-third of the surface of the article without adhesive, to be supplied by some other means. For this reason the flexible pad at the prior work station cannot be dispensed with for some classes of work, and therefore I do not wish to limit my invention to one form alone, as it may even be desirable to use the prior work station with the swinging type of picker plates. In connection with the bifurcated form of picker the flexible pads at the prior work station must be able to flex into the curved form to lay around the article to cover approximately one-third thereof to provide the adhesive for the full length of the label when joined with the article.

Having described my invention, I claim:—

1. In a labeling machine, comprising a work station, a pair of opposing slide members, a label magazine carried by one of said slides and a bifurcated picker plate carried by the other, a support between the slides to hold an article, means to apply adhesive to the picker plates, means to actuate the slides to make contact with the picker plate and the label and affix the same to the article.

2. In a labeling machine comprising a work station, a pair of opposing slide members adapted to have movement to and away from each other, a magazine for labels carried by one of said slides, and a two-part picker plate, each part hinged to a carrier arm fixed to the other slide, an article support to hold at rest and move articles in a step by step manner to said station, and means to swing the picker plates to clear the article and make contact with the label

during the movement of the said slides to their contact position.

3. In a labeling machine, comprising a work station, a support, a pair of opposing slide members, located one on each side of the support, one slide carrying a magazine for labels and the other a bifurcated picker plate, means to move the slides to and away from each other, means to apply adhesive to the picker plate in one position thereof.

4. In a labeling machine, comprising a work station, a pair of opposing slide members, an article support between said slides, one of said slides carrying a magazine for labels and the other a bifurcated picker plate adapted to receive adhesive at one end of its motion and make contact with the foremost label of the magazine as both said slides make contact with each other, and apply adhesive to the label and affix the same to the article on the partial return of said picker slide.

5. In a labeling machine, a work station, a pair of opposing slide members, an article support between said slides, one slide carrying a bifurcated picker plate to straddle the article and make contact with a label carried by the magazine supported by said other slide, and means to hold the article in aligned position while the label is affixed to the article.

6. In a labeling machine, comprising a movable article support, means to move the same to bring articles to rest at work stations located along its length, work members at said stations movable to engage the articles at rest and means to prevent shifting of the articles away from the work members during their action, including stationary supports mounted on the frame work opposite the work members.

7. In a labeling machine, comprising a movable support, means to move the same to bring the articles to rest at a work station, a movable work slide at said station normally held against motion in one direction thereof, means controlled by an article during its transit thereof to said position of rest, to free the slide to permit the movement of its work member to engage the article.

8. In a labeling machine comprising an article support, a pair of work slides cooperating with each other and located on opposite sides of the support at one station, one of said slides carrying a pair of magazines with labels and adapted to move forward to bring the labels into contact with the articles, and the other said slides carrying a pair of bifurcated adhesive pads adapted to straddle the articles in their movement toward the labels carried by the other slide and apply adhesive thereto, and on the partial return motion of said slide carrying the adhesive pads to release and lap the label around the article.

9. In a labeling machine, in combination a movable article support, reciprocating work slides located at work stations along the support, said slides carrying work members performing in their respective order, applying adhesive by a flexible adhesive pad to a curved face of an article at one station, and at another station and at opposite sides of the support, and in the same plane a pair of slides, one carrying a magazine at one side to hold labels to be supplied with adhesive, and removed therefrom by a bifurcated adhesive pad carried by the other slide, and partially wrap the label around the article, and means at a final station to wipe the label to the article.

10. In a labeling machine, comprising a work station, a support to carry articles in a step by step manner to said station, a label carrier on one side of the support and a bifurcated picker plate on the other side thereof, adapted to straddle the article and apply adhesive to the foremost label supported by said carrier, means to reciprocate the label carrier and picker plates to contact with each other and strip a label from the carrier and apply it to the article.

11. In a labeling machine comprising a work station, an article support, a label magazine, and a pair of picker plates, each plate adapted to swing to and from a normal flat plane position to oppositely disposed angular positions to clear the article on the support in a straight line motion to contact in the same flat plane position with a label of the magazine located on the other side of the support to make face contact with said picker plates.

12. In a labeling machine, comprising a work station and an article support, a label magazine on one side thereof, and a pair of picker plates on the other, means to move the picker plates in a straight line motion to straddle the article and contact with the foremost label of the magazine.

13. In a labeling machine, comprising a work station and an article support, a label magazine on one side thereof and a pair of picker plates on the other, means to move the magazine and plates together to engage the label, and means to swing the plates during said motion to clear the sides of the article.

14. In a labeling machine comprising an article support adapted to move articles in a step by step manner to work stations, a flexible adhesive pad located at one station, yielding means to hold the pad in a flat plane position, means to move the pad into contact with the article and flex the pad to conform to the contour of a section thereof, and means to apply adhesive to the pad when in its flat plane position.

15. In a labeling machine, a bifurcated picker plate adapted to take a label from the magazine apply the label to the article and

affix said label around the same, and means to apply adhesive to said picker plate at one station of operation.

16. In a labeling machine comprising a magazine, a bifurcated picker plate adapted to straddle the sides of an article on a support in a straight line movement to apply adhesive to the foremost label of the magazine located in the same plane with said picker plate and article, and affix the label to the article, means to apply adhesive to the picker at the same station of operation.

Signed at city of New York, Borough of Brooklyn, in the county of Kings and State of New York.

CHARLES RAGNAR FREDSELL.