July 7, 1959 R. L. DIXON 2,893,586

LABEL APPLYING MACHINE

Filed June 20, 1956 3 Sheets-Sheet 1

Fig. 1

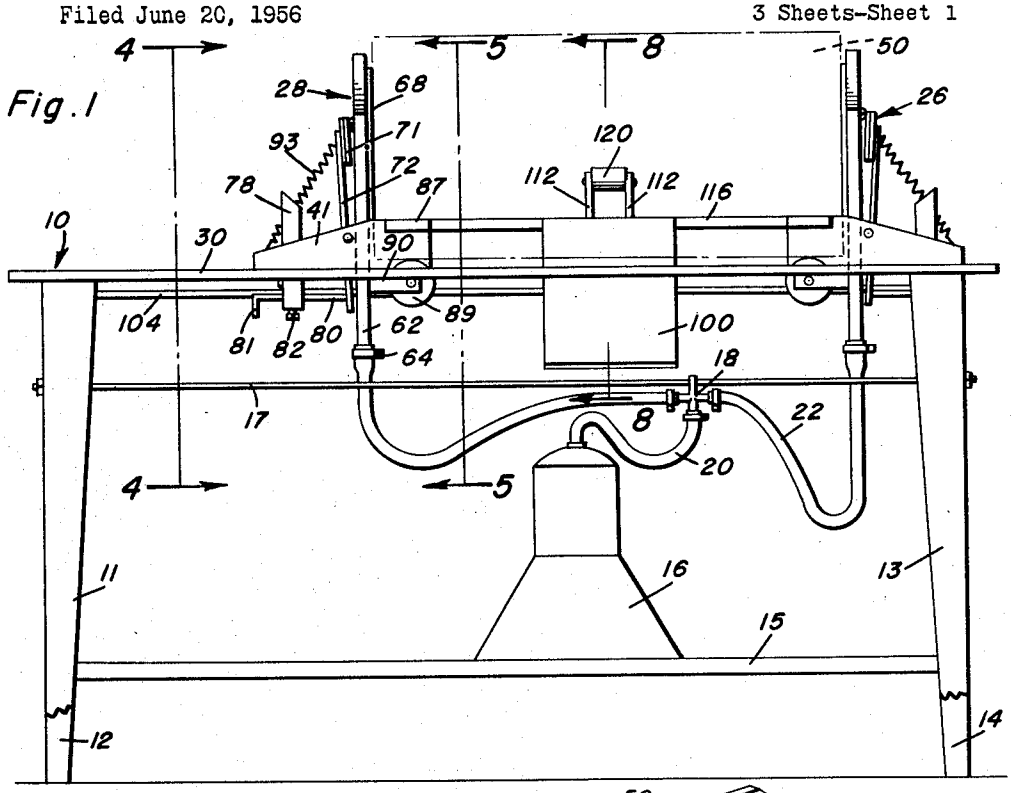
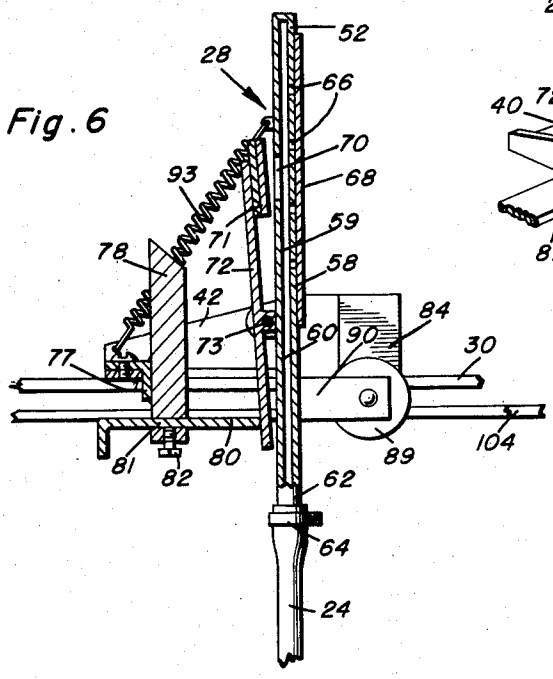


Fig. 6



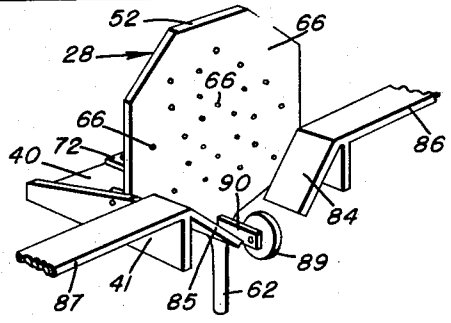


Fig. 9

Richard L. Dixon
INVENTOR.

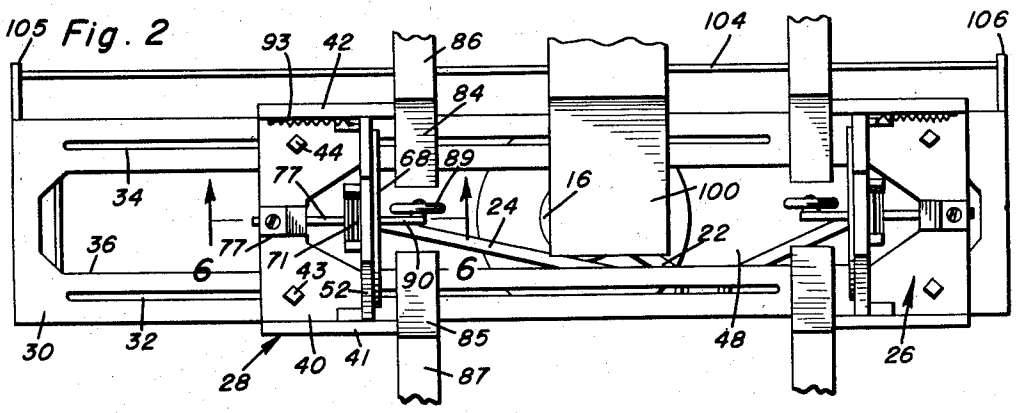
BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

July 7, 1959 R. L. DIXON 2,893,586

LABEL APPLYING MACHINE

Filed June 20, 1956 3 Sheets-Sheet 2

Fig. 2



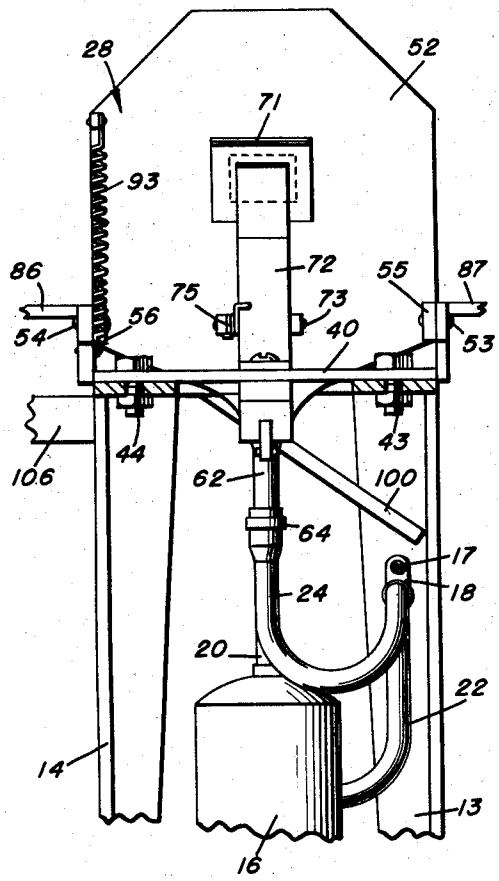


Fig. 4

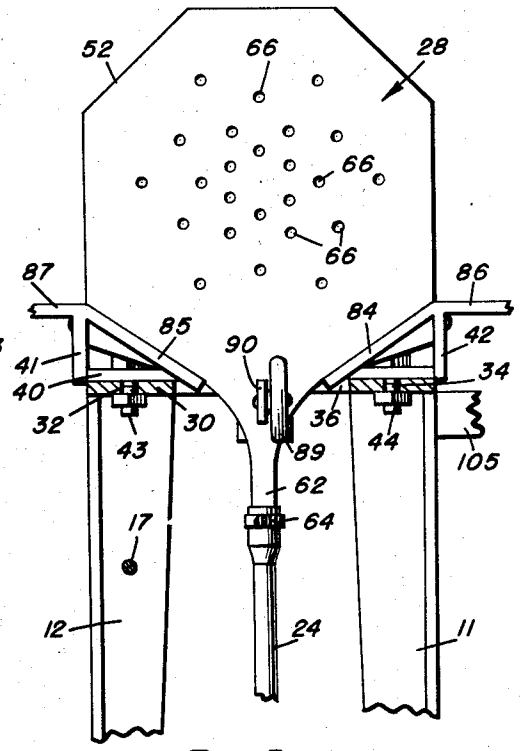


Fig. 5

Richard L. Dixon
INVENTOR.

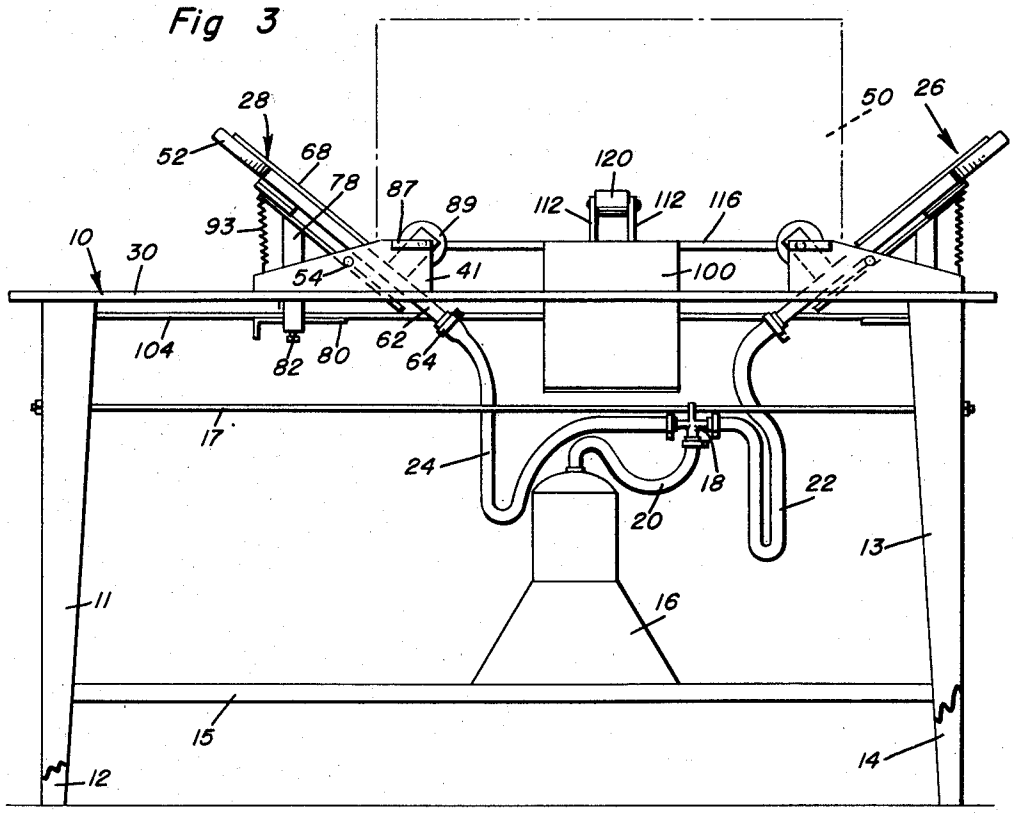
BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

July 7, 1959 R. L. DIXON 2,893,586

LABEL APPLYING MACHINE

Filed June 20, 1956 3 Sheets-Sheet 3

Fig 3



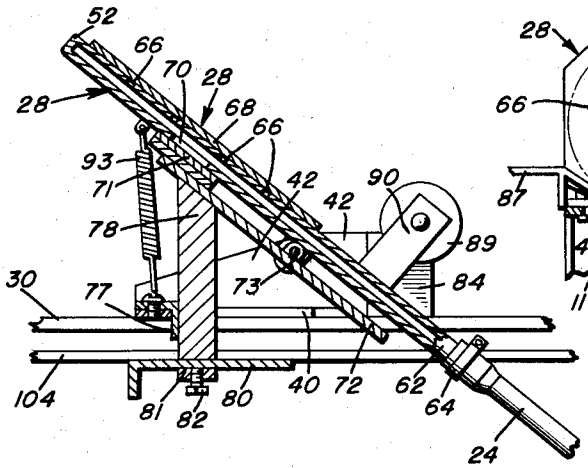


Fig. 7

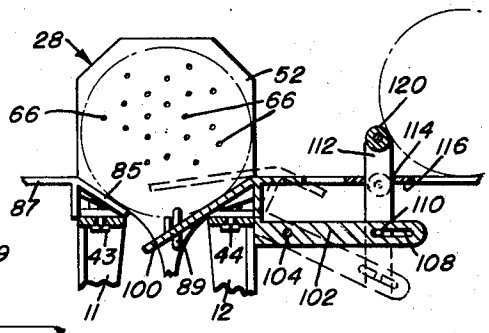


Fig. 8

Richard L. Dixon
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

United States Patent Office 2,893,586 Patented July 7, 1959

2,893,586

LABEL APPLYING MACHINE

Richard L. Dixon, Lebanon, Oreg., assignor of fifty percent to Victor B. Dixon, Lebanon, Oreg.

Application June 20, 1956, Serial No. 592,659

18 Claims. (Cl. 216—12)

This invention relates to machines for applying labels and particularly to a machine for applying labels simultaneously onto the opposite ends of an article.

An object of the present invention is to provide a practical machine for applying labels onto the opposite ends of cylindrical objects, as rolls of paper, the machine having in its support a labeling station which is fitted with a pair of presses that operate in response to the entry of an article into the station, the presses being pivotable toward the ends of the article and arranged to press a gummed label on opposite surfaces of the article, the gummed label being held in place by suction in the presses which suction is released by a novel valve mechanism at or near the top of the stroke of the presses whereby the pressure sensitive adhesive on the labels maintains them on the article.

A further object of the invention is to provide a label applying machine as described above wherein there are automatically operative means for ejecting the article from the labeling station after labels have been applied to opposite surfaces thereof, the ejection being caused by the entry of another article into the labeling station, this movement of the second or approaching article being used to operate a lever that is mechanically connected to a part on the support which is contacted by the article in the labeling station.

A still further object of the present invention is to provide a machine which is capable of applying labels onto opposite surfaces of articles wherein the presses used to lift the labels and place them onto the surfaces of the article are fitted with valve assemblies that automatically vent the suction chambers of the presses so that the labels are released and adhere to the article, the valve assemblies being of extremely simple construction and each including only a rocker having a valve element at one end and an adjustable stop on the main frame or support of the machine, this adjustable stop being in the path of movement of the rocker so that the valve timing may be altered in accordance with the desires of the machine operator by changing the location of the stop so that the rocker strikes the stop for valve actuation at different positions of the stroke of the press with which it is associated.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is an elevational view of a labeling machine that is constructed in accordance with the principles of the present invention;

Figure 2 is a top view of the structure in Figure 1;

Figure 3 is an elevational view similar to Figure 1 but showing a second position of operation;

Figure 4 is a sectional view taken on the line 4—4 of Figure 1;

Figure 5 is a sectional view taken on the line 5—5 of Figure 1;

Figure 6 is a sectional view taken on the line 6—6 of Figure 2 and showing principally the press construction and in one position, that is, a position with an article in the labeling station of the machine;

Figure 7 is a sectional view similar to Figure 6 but showing the press in another position, that is, the position when the labeling station is empty;

Figure 8 is a sectional view taken on the line 8—8 of Figure 1 and illustrating principally the ejector mechanism used to discharge the article from the labeling station after it has had gummed labels applied to opposite surfaces thereof; and,

Figure 9 is a fragmentary perspective view illustrating the press at one end of the labeling station in the machine.

In the accompanying drawings there is a labeling machine **10** that has been constructed in accordance with the principles of the invention. This labeling machine has legs **11** and **12** at one end together with legs **13** and **14** at the opposite end. A lower platform **15** is secured to the four legs and has a motor and compressor **16** located thereon. A support rod **17** extends between a pair of the legs on which T-fitting **18** is slidably mounted for movement from one end of the machine to the other end, within the limitations of a copiously supplied suction line **20** which extends from the compressor to the T-fitting **18**. Suction lines or hoses **22** and **24** are connected with the T-fitting **18** and proceed respectively to the presses or heads **26** and **28** that are fed by hand or by standard label feeding equipment.

A table top **30** is secured to the upper ends of the legs **11**, **12**, **13** and **14** and it has a pair of parallel elongated slots **32** and **34** in order to provide for necessary adjustment of press **28** with respect to the fixed head **26**. A central elongated cutout **36** is in the table top **30** and is located between the slots **32** and **34** in order to have ample room for the passage of the suction lines **22** and **24** that must connect to the heads **26** and **28**.

Press **28** comprises a plate **40** having sides **41** and **42**. There are a pair of bolts **43** and **44** passed through holes in the plate **40** and passed through slots **32** and **34**. There are nuts on the ends of these bolts, and the bolt and nut assemblies function to hold plate **40** and hence the entire press **28** in a selected position of adjustment on table top **30**. By altering the location of press **28** with respect to press **26**, the distance between the presses is altered, thereby adjusting the length of the labeling station **48** to fit the size of article **50** that is being handled by the machine. Suction head **52** is mounted for pivotal movement on a pair of trunnions **53** and **54** that are carried by the sides **41** and **42** that rise from plate **40**. These trunnions pass through holes in ears **55** and **56** on suction head **52**. The head is formed of a pair of spaced parallel plates **58** and **59** that are joined at their edges and have a suction chamber **60** between them. The plates are reduced to a conduit **62** at their lower ends, on which suction line **24** is fastened, as by a hose clamp **64**. A number of orifices **66** are in plate **58** in order to hold by suction the typical label **68** thereon. A valve opening **70** is in plate **59** and is adapted to be controlled by a valve element **71** at the upper end of rocker **72**. Spindle **73** that is carried by a bracket or brackets on the rear surface of plate **59**, is passed through ears on the rocker **72**, mounting the rocker intermediate its ends for pivotal movement on the suction head **52**. Torsion spring **75** has one end reacting on rocker **71** and the other end reacting on the suction head **52**, constantly biasing the rocker **72** in such direction that the valve element **71** closes the valve opening **70**.

At the rear center part of plate **40** there is a bracket **77** that is fastened to the plate **40**. Stop **78** is welded or otherwise fixed to bracket **77** and forms a seat for the valve rocker when the press is in one position (Fig. 7). This assures that the valve will remain in the

closed position during this period of the operation of the machine. Stop **80** is adjustably carried by stop **78** and comprises a rod that is passed through a bore **81** in stop **78** and that is held in place by means of set-screw **82** adjustably carried by stop **78** and bearing on rod **80**. When press **28** is moved to the position shown in Figure 6, the lower end of rocker **72** bears against the extremity of stop **80** thereby oscillating the rocker and separating the valve element **71** from the valve opening **70**. This vents the suction chamber **60** thereby freeing the label **68** from the suction head.

Press **28** has a pair of downwardly inclnied walls **84** and **85** near the lower edges thereof, these downwardly and inwardly inclined walls **84** and **85** being secured to plate **40** and the sides **41** and **42** which rise therefrom. Horizontal extensions **86** and **87** of the inclined walls **84** and **85** lead articles, such as article **50** into the labeling station **48** whose bottom is formed by the inclined walls **84** and **85** of press **28** and identical inclined walls on press **26**.

As an article enters the labeling station **48**, it comes to bear on a wheel **89** which is mounted on arm **90**, the latter being a cantilever which proceeds from plate **58** and moves into the station **48** between the confronting but spaced ends of inclined walls **84** and **85**. The force and weight of the article **50** swings the suction head **52** of press **28** upwardly about trunnions **53** and **54**, the movement of the suction head **52** being yieldingly opposed by spring **93** which is secured at one end to suction head **52** and secured at the other end to one of the walls that rise from plate **40**. Just prior to reaching the top of the stroke, valve rocker **72** has its lower end come to bear against the extremity of stop **80** thereby opening the valve against the yielding opposition of spring **75**. This position is depicted in Figure 6. Upon removal of the article from the labeling station, spring **93** returns the suction head of the press to the position shown in Figure 7 whereby torsion spring **75** closes the valve and this is assured by having the rocker come to bear against stop **78**. In addition, the spring **93** returns the suction head to such position that the station **48** is in condition to receive and accept another article to be labeled. Inasmuch as press **26** is identical in all respects to press **28**, including both structure and operation, a detailed description of the parts which make up press **26** is considered unnecessary. Press **26** has inclined walls which make up a part of the bottom of station **48** and has a suction head fitted with a wheel identical to wheel **89** and other structures also identical to their corresponding structures in press **28**. Accordingly, upon the entry of an article **50** into the labeling station **48**, the presses **26** and **28** simultaneously apply labels to opposite surfaces thereof. If these labels are gummed beforehand, preferably by pressure sensitive adhesive, they will adhere to the article **50**.

Means are operatively connected with the main frame or support of the machine for automatically ejecting an article **50** from the labeling station **48** after the labels have been applied to opposite surfaces thereof and when another article commences to enter the labeling station **48**. These means are best in Figures 2 and 8.

These means consist of an ejector plate **100** whose normal rest position is generally coplanar with inclined wall **84** and beneath the article **50** in labeling station **48**. Lever **102** is secured to plate **100** and is mounted on rod **104** for oscillatory movement. This rod extends across the back of the support and is carried by brackets **105** and **106** which extend from the legs **12** and **14**. Rod **104** forms a fulcrum about which lever **102** oscillates. The outer extremity of this lever has a slot **108** in which pin **110** is mounted, the latter being secured to push rod **112**. This push rod is passed through a guide opening **114** in a supporting member **116** that is secured to the table top **30**. Roller **120** at the upper extremity of push rod **112** is adapted to be contacted by an advancing article seeking to enter the labeling station **48**.

The articles may be fed from an inclined conveyor or otherwise arranged to enter the machine. In entering the labeling station, the article must roll over push rod **112** and specifically, the roller **120** at the upper extremity thereof. This depresses the lever **102** causing the ejector plate **100** to be elevated and push the article that occupies labeling station **48** from the labeling station.

At the time that article **50** enters the station **48**, it comes to bear on the two rollers or wheels of the presses **26** and **28** causing them to operate in the manner described previously in order to apply gummed labels onto opposite surfaces thereof. Then, when the next article commences to enter the labeling station **48**, the article occupying that station is ejected by the ejecting mechanism allowing the two presses to return to the rest position (Fig. 3) for actuation in connection with the article that is entering the labeling station **48**.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In a machine to apply gummed labels onto opposite surfaces of an article, the combination of a support having a labeling station, a pair of confronting presses, means pivotally mounting said presses on said support for movement toward said station, mechanical means on said presses and protruding into said station to pivot said presses toward said surfaces of the article in response to the movement of the article into said labeling station, means including a source of suction for holding labels on said presses, and suction valves carried by said presses and arranged to open as the labels on said presses come to bear on said article.

2. In a machine to apply gummed labels onto opposite surfaces of an article, the combination of a support having a labeling station, a pair of confronting presses, means pivotally mounting said presses on said support for movement toward said station, mechanical means on said presses and protruding into said station to pivot said presses toward said surfaces of the article in response to the movement of the article into said labeling station, means including a source of suction for holding labels on said presses, suction valves carried by said presses and arranged to open as the labels on said presses come to bear on said article, ejecting means adjacent to the article in said station and carried by said support, a lever connected to the last-mentioned means and having an end in the entrance to said station and adapted to be oscillated by another article entering said labeling station in order to empty said station by pivoting said ejecting means.

3. A machine to apply gummed labels onto the opposite ends of an article, said machine comprising a support having a labeling station, a press pivoted to said support, means on said press and actuated by the article as it moves into said station for moving the press in a direction to move against a part of the article and deposit a label thereon, a spring connected to said press and said support to return said press when the article is moved from said station, said press having a plurality of apertures, and a suction chamber in said press with which said apertures are in registry in order to hold the label on said press.

4. A machine to apply gummed labels onto the oppo-

site ends of an article, said machine comprising a support having a labeling station, a press pivoted to said support, means on said press and actuated by the article as it moves into said station for moving the press in a direction to move against a part of the article and deposit a label thereon, a spring connected to said press and said support to return said press when the article is moved from said station, said press having a plurality of apertures, a suction chamber in said press with which said apertures are in registry in order to hold the label on said press, a valve carried by said press, and means to open said valve when said press is pivotally moved to a label applying position.

5. The machine of claim 4 wherein there are automatic means to eject the article from said station when another article enters said station.

6. In a machine to apply gummed labels onto opposite surfaces of an article, the combination of a support having a labeling station, a pair of confronting presses, means pivotally mounting said presses on said support for movement toward said station, mechanical means on said presses and protruding into said station to pivot said presses toward said surfaces of the article in response to the movement of the article into said labeling station, means including a source of suction for holding labels on said presses, suction valves carried by said presses and arranged to open as the labels on said presses come to bear on said article, ejecting means adjacent to the article in said station and carried by said support, a lever connected to the last-mentioned means and having an end in the entrance to said station and adapted to be oscillated by another article entering said labeling station in order to empty said station by pivoting said ejecting means, and a spring secured to each press and to said support, said springs being arranged to return said presses after applying the labels on the articles in said station.

7. In a machine to apply gummed labels onto opposite surfaces of an article, the combination of a support having a labeling station, a pair of confronting presses, means pivotally mounting said presses on said support for movement toward said station, mechanical means on said presses and protruding into said station to pivot said presses toward said surfaces of the article in response to the movement of the article into said labeling station, means including a source of suction for holding labels on said presses, suction valves carried by said presses and arranged to open as the labels on said presses come to bear on said article, ejecting means adjacent to the article in said station and carried by said support, a lever connected to the last-mentioned means and having an end in the entrance to said station and adapted to be oscillated by another article entering said labeling station in order to empty said station by pivoting said ejecting means, a spring secured to each press and to said support, said springs being arranged to return said presses after applying the labels on the article in said station, a valve to control the suction in each press, each valve including a valve element, a rocker on which said valve element is secured and said rocker being arranged to contact a part of said support and open the valve as its press is pivoted to a position wherein the label is being applied to the article.

8. The machine of claim 7 wherein said part of said support is a stop, and means adjustably mounting said stop so as to vary the timing of said valve.

9. In a machine for applying gummed labels onto opposite surfaces of an article, a main support, a press, said support having a top on which said press is attached, a second press, means adjustably mounting said second press on the first press so that the space between presses may be altered to suit the size of articles being handled by the machine, said space between said presses constituting a label applying station, inclined walls in said station for supporting the article while a label is being applied thereto, said presses including suction heads, means mounting said suction heads for oscillation inwardly and from said station, a valve operatively connected with each suction head in order to release the label that is carried by suction, spring means on each head biasing said valve to the closed position, spring means opposing the operation of said suction heads in one direction and for returning said heads, and means constituting a part of each press for retaining said valves in the closed position when said suction heads are spread from away from said station.

10. The machine of claim 9 together with additional means that also constitutes a part of each press for opening said valves automatically in response to motion of said suction heads to the label applying position.

11. In a machine for applying gummed labels onto opposite surfaces of an article, a main support, a press, said support having a top on which said press is attached, a second press, means adjustably mounting said second press on the first press so that the space between presses may be altered to suit the size of articles being handled by the machine, said space between said presses constituting a label applying station, inclined walls in said station for supporting the article while a label is being applied thereto, said presses including suction heads, means mounting said suction heads for oscillation inwardly and from said station, a valve operatively connected with each suction head in order to release the label that is carried by suction, spring means on each head biasing said valve to the closed position, spring means opposing the operation of said suction heads in one direction and for returning said heads, means constituting a part of each press for retaining said valves in the closed position when said suction heads are spread from away from said station, an ejector plate carried by said support and located between said presses, and means operatively connected to said ejector plate and arranged in the entrance of said station for actuating said ejector plate by a succeeding article that enters the station.

12. In a machine for applying gummed labels onto the opposite surfaces of an article, a pair of presses which include pivotally mounted suction heads, each suction head having a valve to release a suction held label that is carried by it, a stop for each press, said stop being arranged to contact its valve to hold its valve in the closed position when its press is in one position, and adjustable stop means to open said valve when its press is in the label applying position.

13. A machine to apply labels on an article, said machine comprising a support having a stationary label applying station, means in said station against which one part of the article is adapted to temporarily rest, a press, means movably mounting said press on said support, pneumatic means connected with said press to hold a label while moving the press and thereby conveying the label onto the article in said station, means connected to said press and operable in response to the movement of an article into said station for moving said press to the label applying position in said station, said means against which the article is adapted to temporarily rest including a second press against which a label is adapted to adhere, means pivotally attaching said second press to said support, means connected to said second press for moving said second press inwardly of said station in response to the entry of an article into said station, said pneumatic means comprising suction applying means connected with said presses, each press having a suction chamber, a valve opening connected with said chamber, a valve member for said opening, and means for separably retaining said valve member in a position to close said opening.

14. A machine to apply labels on an article, said machine comprising a support having a stationary label applying station, means in said station against which one

part of the article is adapted to temporarily rest, a press, means movably mounting said press on said support, pneumatic means connected with said press to hold a label while moving the press and thereby conveying the label onto the article in said station, means connected to said press and operable in response to the movement of an article into said station for moving said press to the label applying position in said station, and said means against which the article is adapted to temporarily rest including a second press against which a label is adapted to adhere, means pivotally attaching said second press to said support, means connected to said second press for moving said second press inwardly of said station in response to the entry of an article into said station, suction applying means connected with said presses, each press having a suction chamber, a valve opening connected with said chamber, a valve member for said opening, a spring reacting on said valve member and holding said member separably over said opening, a stop against which said valve member bears when said press is moved to the label applying position and by which said valve member is pivoted to separate from said opening.

15. The machine of claim 14, wherein there are means adjustably mounting said stop to alter the press position at which said valve opening admits air into said suction chamber.

16. The machine of claim 15, wherein there is a stop carried by said support on which said valve member seats when said press is in a rest position, and said stop constituting the means which hold said press in the rest position.

17. A machine to apply labels on an article, said machine comprising a support having a stationary label applying station, means in said station against which one part of the article is adapted to temporarily rest, a press, means movably mounting said press on said support, pneumatic means connected with said press to hold a label while moving the press and thereby conveying the label onto the article in said station, means connected to said press and operable in response to the movement of an article into said station for moving said press to the label applying position in said station, and said label applying station having pairs of inclined walls forming a cradle within which to accommodate the articles.

18. A machine to apply labels on an article, said machine comprising a support having a stationary label applying station, means in said station against which one part of the article is adapted to temporarily rest, a press, means movably mounting said press on said support, pneumatic means connected with said press to hold a label while moving the press and thereby conveying the label onto the article in said station, means connected to said press and operable in response to the movement of an article into said station for moving said press to the label applying position in said station, said label applying station having pairs of inclined walls forming a cradle within which to accommodate the articles, and said press moving means including an arm secured to said press and protruding between the walls of one of said pairs of inclined walls.

References Cited in the file of this patent

UNITED STATES PATENTS

1,425,351	Weeks	Aug. 8, 1922
1,912,989	McNair	June 6, 1933
2,201,207	Schmidt et al.	May 21, 1940
2,342,583	Hoppe et al.	Feb. 22, 1944
2,553,057	Lobasso	May 15, 1951
2,597,431	Beck	May 20, 1952
2,687,819	Hill et al.	Aug. 31, 1954