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LABEL APPLICATOR SUPPORT STRUCTURE

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Fig. 1

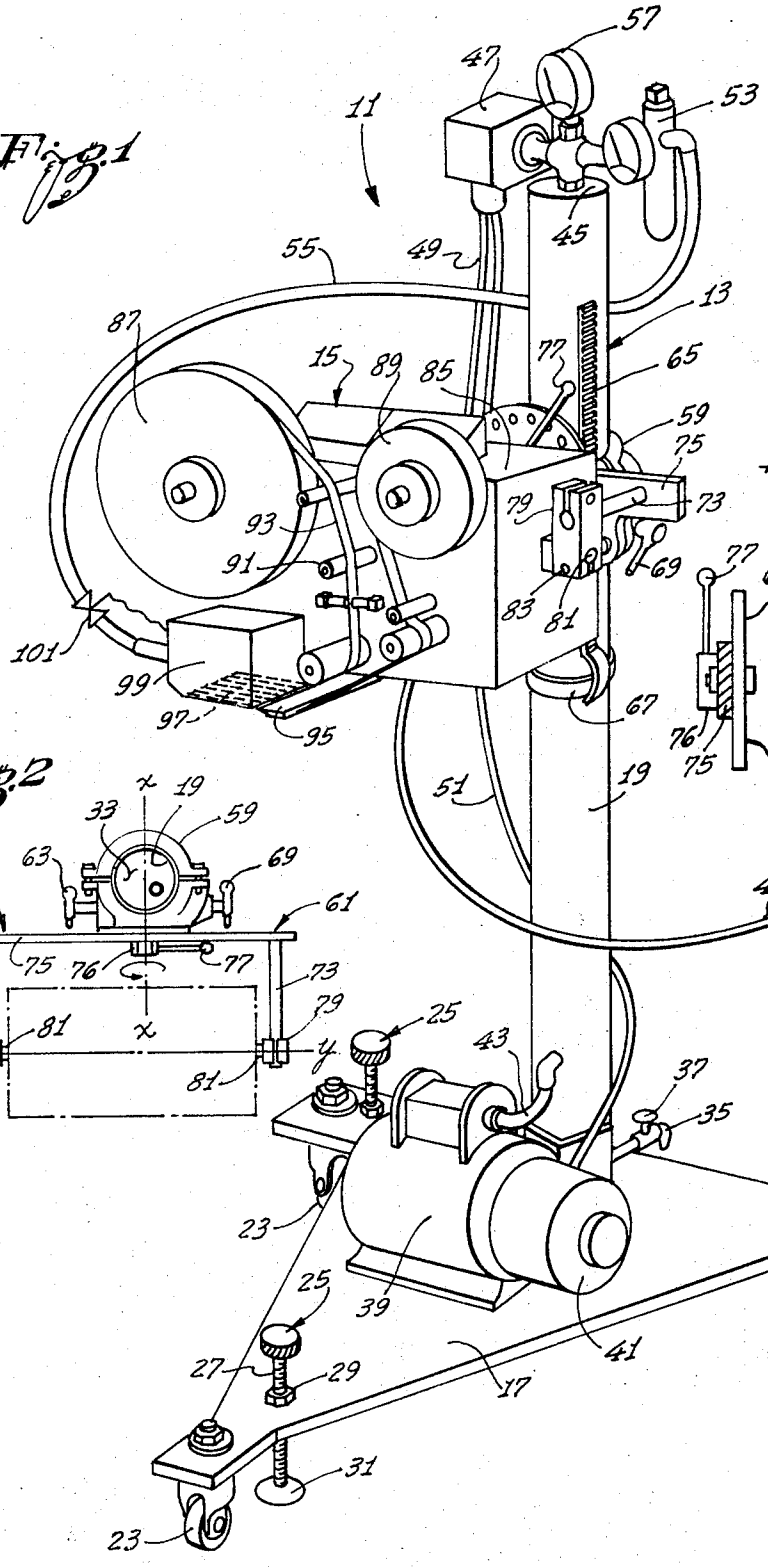


Fig. 3

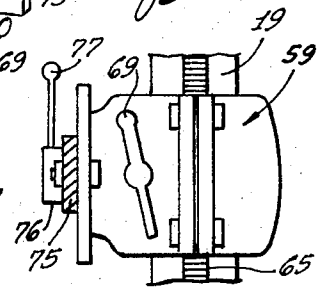
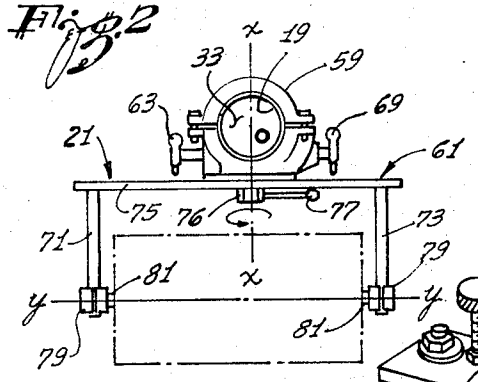


Fig. 2



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LABEL APPLICATOR SUPPORT STRUCTURE

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ABSTRACT OF THE DISCLOSURE

A support for a machine which utilizes compressed air comprising a base, an elongated column mounted on the base and projecting upwardly therefrom, and means for mounting the machine on the column so that the machine can be supported by the column. The column defines a chamber for compressed air and a conduit is coupled to the column for transmitting the compressed air from the chamber to the machine.

BACKGROUND OF THE INVENTION

Many machines are operated by, or otherwise utilize compressed air. For example, many label applicators use compressed air to blow a pressure sensitive adhesive label onto an article.

The labels are supplied on an elongated backing strip with the labels being adhesively secured to the backing strip. The label applicator removes the labels from the backing strip, retains each label so removed at a preselected location, and then applies the removed labels to articles as the articles are conveyed past the label applicator. A blast of compressed air is used to propel the label from the applicator to the article.

The label applicator is supported on a stand or support. The compressed air is stored in a tank and is supplied to the label applicator by a hose. The air tank and the support for the label applicator add to the cost of the total applicator system. In addition, the air hose extending between the air tank and the label applicator hinders movement and may present a tripping hazard.

SUMMARY OF THE INVENTION

The present invention reduces the cost and complexity of machines utilizing compressed air by combining the supporting structure for the machine with the compressed air tank. Although this concept is particularly adapted for label applicators, it is also applicable to other machines which use compressed air or other compressed gases.

According to the present invention, the air tank and the support are combined into a single integral unit. To this end, the support includes a base, a column mounted on the base and projecting upwardly therefrom, and means for mounting the label applicator on the column. The column defines the chamber for receiving and storing compressed air. Thus, the machine is mounted on the compressed air tank with the result that one of the basic elements for a system of this kind is eliminated while the function of such eliminated element is retained. The hoses extending between the air chamber and the label applicator are short and present no hindrance to movement.

To assure that the compressed air supplied to the label applicator is dry, the conduit between the applicator and the chamber is coupled to the column adjacent the upper end of the chamber. To facilitate elimination of condensation in the chamber, a drain opening is provided in the column adjacent the lower end of the chamber.

To further minimize the length of hose connections between components and to enhance portability, and air compressor for supplying compressed air to the tank and a motor for driving the compressor are mounted on the base. The entire unit is made readily portable by rollers

which are provided on the base. Levelling devices are attached to the base to permit the base to be leveled.

In addition to combining the air tank and the supporting structure, the present invention provides for locating of the label applicator in any desired orientation. To this end, the rollers on the base permit movement of the entire unit in any direction in a horizontal plane. The mounting means for the label applicator includes a column clamp, the position of which along the column can be readily adjusted. The rollers on the base and the column clamp cooperate to provide three-axis adjustment of the location of the label applicator.

The label applicator mounting means also provides for pivoting of the label applicator about first and second transverse axes. To accomplish this, the amounting means includes a U-shaped frame having a pair of flanges joined by a web. The web is pivotly connected to the column clamp and the label applicator is pivotly connected to the flanges.

The invention can best be understood by reference to the following description taken in connection with the accompanying illustrative drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of a labelling apparatus constructed in accordance with the teachings of this invention.

FIG. 2 is a plan view of the mounting means for the label applicator with the applicator being shown in dashed lines.

FIG. 3 is a fragmentary elevational view of the column and the column clamp.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 shows a labelling apparatus **11** which generally includes a support **13** and a label applicator **15** mounted on the support. The support **13** generally includes a base **17**, a column **19** mounted on and projecting vertically upwardly from the base, and mounting means **21** (FIG. 2) for mounting the label applicator **15** on the column **19**. In the embodiment illustrated, the base **17** is in the form of a plate having three corner regions to which rollers **23** are mounted, respectively. The base **17** can be levelled by three levelling devices **25**. Each of the levelling devices **25** includes a threaded stud **27** and a nut **29** attached to the base **17** for cooperating with the associated stud. Each of the studs **27** terminates in broad contact member **31** which is adapted to contact the floor or other supporting surface for the rollers **23**.

The column **19** in the embodiment illustrated is in the form of a cylindrical tube, the opposite ends of which are appropriately closed to define in a cylindrical compressed air chamber **33** (FIG. 2). Preferably the chamber **33** extends for the full axial length of the column **19**. The column **19** has a drain to drain water from the chamber **33**, and in the embodiment illustrated, the drain includes a pipe **35** mounted on the column **19** and communicating with the lower end of the chamber **33** and a manual valve **37** for selectively opening and closing the drain.

An air compressor **39** and an electric motor **41** for driving the air compressor are suitably mounted on the base **17**. A conduit **43** is coupled to the compressor **39** and the column **19** to supply air from the compressor to the lower end of the chamber **33**.

The upper end of the column **19** is closed by a plate **45**. A pressure switch **47** is mounted on the plate **45** and is in communication with the compressed air within the chamber **33**. The pressure switch **47** closes when the pressure within the chamber **33** drops to a predetermined level and opens when the pressure in the chamber increases to a higher predetermined level. The pressure switch **47** is

coupled by electrical leads 49 and 51 to an electrical power source and to the motor 41, respectively. Thus, the pressure switch 47 provides an automatic on/off control for the motor 41 and assures that the pressure of the air in the chamber will remain within predetermined limits.

A pressure regulator 53 is mounted on the plate 45 in communication with the upper end of the chamber 33. An air supply conduit 55 is connected to the pressure regulator 53 and supplies compressed air to the label applicator 15. The pressure regulator 53 regulates the pressure of the compressed air supplied to the label applicator 15. Suitable gauges such as a pressure gauge 57 are also mounted on the plate 45 in communication with the chamber 33.

The mounting means 21 includes a column clamp 59 and a U-shaped frame 61. The column clamp 59 compressively grips the column 19 with a force which can be varied by turning of the crank 63. A rack 65 extends axially of the column 19 and through the column clamp 59. The rack 65 is held against downward movement by a ring clamp 67. With the crank 63 turned to loosen the column clamp 59, the column clamp can be moved axially of the column 19 by turning of a crank 69. The column clamp 59 includes appropriate gearing (not shown) which is driven by the crank 69 and which cooperates with the rack 65 to cause the column 59 to translate axially of the column 19. The column clamp 59 is known per se.

The frame 61 includes a pair of arms 71 and 73 interconnected by a bar 75. The frame 61 is U-shaped in plan with the arms 71 and 73 being shorter than the bar 75.

In the embodiment illustrated, the bar 75 is in the form of a metal bar which is pivotally connected to the column clamp 59 for pivotal movement about an axis X—X. The frame 61 can be fixed in any desired angular position about the axis X—X by tightening of a nut 76 using a handle 77.

In the embodiment illustrated, each of the arms 71 and 73 is in the form of an elongated rod. The outer ends of the arms 71 and 73 are received in clamps 79. The label applicator 15 includes axially aligned stub shafts 81 projecting laterally outwardly from the label applicator in opposite directions and received by the clamps 79, respectively. The portion of the clamp 79 which grips the stub shaft 81 can be loosened or tightened by a screw 83. By loosening of the screw 83, the label applicator 15 can be pivoted about the axis Y—Y which is coaxial with the stub shafts 81. The axes X—X and Y—Y extend at 90° to each other.

The label applicator 15 may be of any construction which uses compressed air. In the embodiment illustrated, the label applicator 15 is of the type described in copending application Ser. No. 100,283 which names applicant as a joint inventor. Generally, the label applicator 15 includes a supporting structure 85, a storage reel 87, a takeup reel 89, and rollers 91 for moving a strip 93 having labels thereon from the storage reel 87 to the takeup reel 89. The labels on the strip 93 are removed in a conventional manner by a peeling bar 95 and retained on the lower face of a grid 97 by vacuum pressure within an applicator section 99. The conduit 55 is coupled to the applicator section 99 and a control valve 101 is appropriately automatically opened and closed to allow the conduit 55 to supply bursts of compressed air to the applicator section 99. When a blast of air is supplied to the applicator section 99, it has sufficient force to remove the label which is retained on the lower face of the grid 97 and blow the same onto an article (not shown) beneath the grid.

In use, the labelling apparatus 11 is first positioned in a horizontal plane by moving the apparatus as permitted by the rollers 23. The height of the label applicator 15 is then adjusted by loosening of the crank 63 and turning of the crank 69 to move the column clamp 59 up or down along the column 19. The crank 63 is then turned to securely tighten the column clamp 59. The position of the applicator 15 about the axis X—X can be adjusted by turning of the handle 77 to loosen the pivotal connection joining the bar 75 to the clamp 59. This allows movement of the frame 61 and the label applicator 15 as a unit about the axis X—X. Positioning of the applicator 15 about the axis Y—Y is accomplished by loosening of the screws 83 and turning the applicator and the stub shafts 81 relative to the clamp 79.

With the label applicator 15 properly positioned, it can be used in a well known manner to apply labels to articles brought adjacent to the grid 97. As compressed air in the chamber 33 is used the pressure of the air within the chamber decreases. Cycling of the compressor 39 on and off is controlled by the pressure switch 47 so that pressure within the chamber 33 is maintained within desired tolerances.

Although an exemplary embodiment of the invention has been shown and described, many changes, modifications, and substitutions may be made by one having ordinary skill in the art without necessarily departing from the spirit and scope of this invention.

What is claimed is:

1. A support for a labeling machine which utilizes compressed air comprising:
   - a base;
   - an elongated column mounted on said base and projecting upwardly therefrom;
   - said column defining an elongated chamber therein for compressed air;
   - means for mounting the labeling machine on said column whereby the labeling machine can be at least partially supported by said column; and
   - conduit means coupled to said column for transmitting compressed air from said chamber, said conduit means being attachable to the labeling machine to supply compressed air from the chamber to the labeling machine.

2. A support as defined in claim 1 including a drain opening in said column adjacent the lower end of said chamber to permit water to be drained from said chamber.

3. A support as defined in claim 1 including a compressor mounted on said base and conduit means providing a passage between the compressor and said chamber so that the compressor can supply compressed air to the chamber.

4. A support as defined in claim 1 wherein said mounting means includes first means for mounting the labeling machine for pivotal movement about at least two pivotal axes extending generally transverse relative to each other and second means for mounting the labeling machine on said column for movement axially of said column.

5. A support as defined in claim 1 wherein said mounting means includes a column clamp attached to said column, a frame mounted on said column clamp for pivotal movement about a first pivotal axis, means for fixing said frame in any one of a plurality of positions about said first pivotal axis, means for mounting the labeling machine on said frame for pivotal movement about a second pivotal axis, and means for fixing the labeling machine in any one of a plurality of positions about said second pivotal axis, said pivotal axes extending generally transverse to each other and to the longitudinal axis of said column.

6. A support as defined in claim 5 wherein said mounting means includes a rack for moving the column clamp longitudinally of the column.

7. A support as defined in claim 6 including a drain opening in said column adjacent the lower end portion of said chamber to permit water to be drained from said tank, a compressor mounted on said base, conduit means providing a passage between the compressor and said chamber so that the compressor can supply compressed air to the chamber, said conduit means for transmitting compressed air from said chamber being coupled to said

column adjacent the upper end of said chamber, and a plurality of rollers on the base for supporting the base for movement along a supporting surface.

8. A labelling apparatus comprising:

a base;

an elongated column mounted on said base and projecting upwardly therefrom;

said column defining an elongated chamber therein for compressed air;

a label applicator for applying labels to articles;

means for mounting said label applicator on said column whereby said column supports the label applicator;

conduit means for conducting compressed air from the chamber to the label applicator; and

said label applicator including valve means for controllably releasing the compressed air supplied thereto to cause the compressed air so released to blow a label onto an article.

9. A labelling apparatus as defined in claim **8** wherein said column includes an elongated tube and means for closing the opposite end portions of said tube to thereby define said chamber, said tube having a drain opening therein adjacent the lower end of said chamber, and means for selectively closing said drain opening.

10. A labelling apparatus as defined in claim **8** wherein said mounting means includes a column clamp, means for moving the clamp longitudinally of the column, a U-shaped frame including a web and a pair of flanges connected by the web, means for pivotally mounting the web on the said column clamp, and means for pivotally mounting the label applicator on said flanges.

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