June 2, 1964 J. B. CALDWELL 3,135,430

ADHESIVE APPLICATOR FOR ROOFING PAPER

Filed Oct. 3, 1962 2 Sheets-Sheet 1

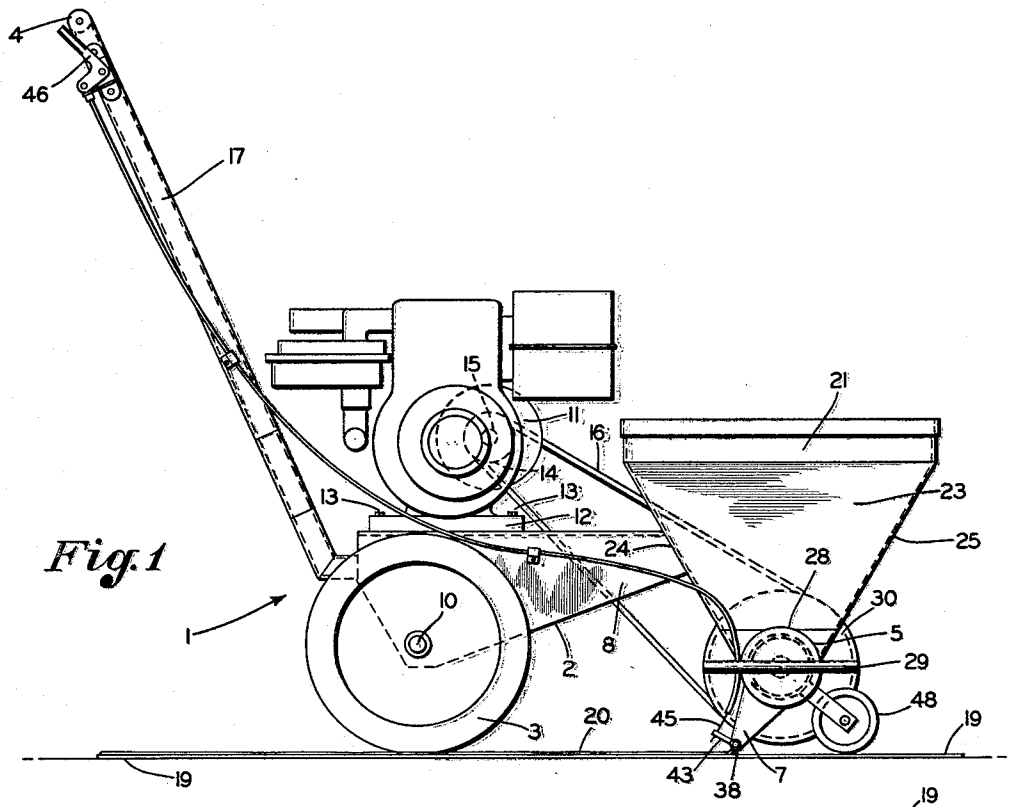



Fig. 1

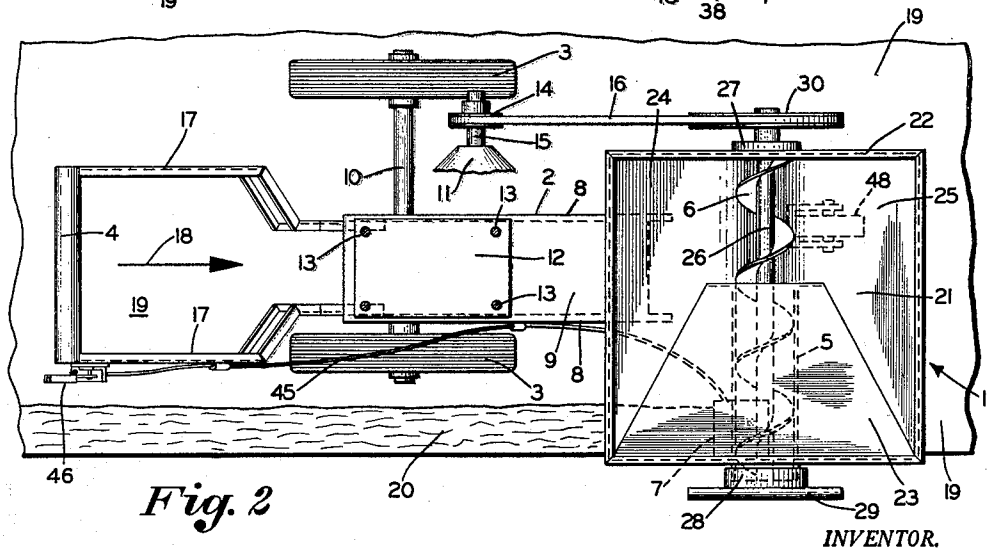



Fig. 2

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Fig. 3

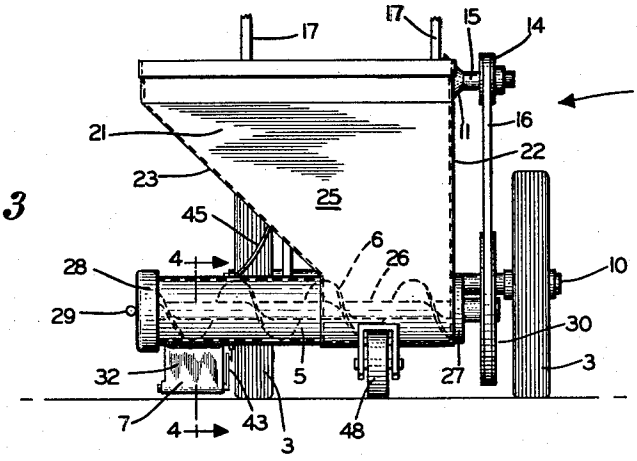
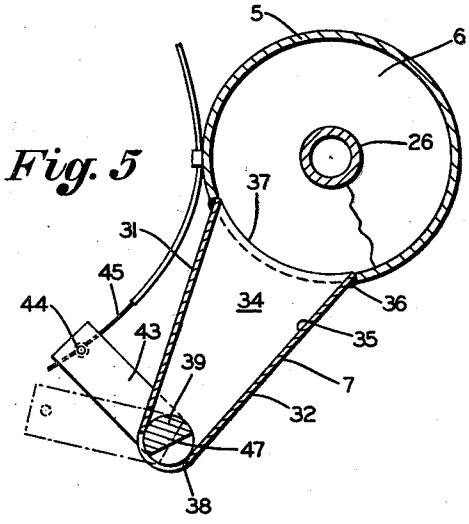



Fig. 5



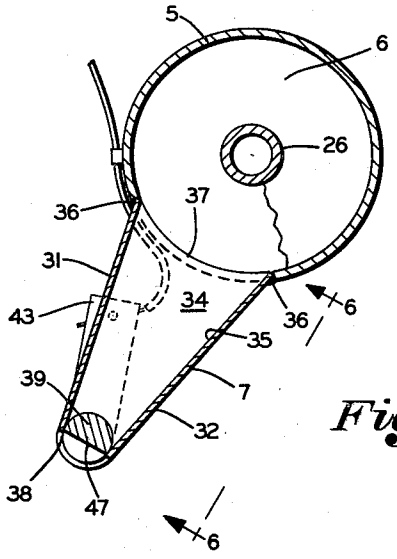




Fig. 4

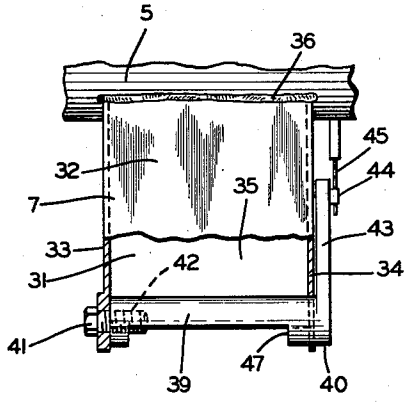



Fig. 6

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United States Patent Office 3,135,430 Patented June 2, 1964



3,135,430

# ADHESIVE APPLICATOR FOR ROOFING PAPER

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Filed Oct. 3, 1962, Ser. No. 228,061
1 Claim. (Cl. 222—178)

This invention relates to a device for dispensing and applying a layer of adhesive material of high viscosity to overlapping edge portions of roofing paper.

Prior devices for applying a fluid adhesive substance to the surface of various materials have been used. Such substances are usually fluids with low viscosity and are, therefore, readily applicable through an applicator nozzle.

It has been found, however, that where the adhesive substance has a high viscosity, such as tar, the application of pressure to cause it to flow and spread onto roofing paper involves difficulties which prior devices have not completely solved.

The device of the present invention provides a nozzle for readily spreading a high viscosity adhesive which will not flow without pressure behind it, and for adjusting the nozzle opening to varying dimensions in order to increase and decrease the amount of adhesive applied.

Another advantage of the device is that the adjustable nozzle enables an operator to eliminate any irregularities arising due to any foreign solid body blocking the nozzle. Where such a body becomes lodged in the nozzle of prior devices, the application of a continuous and uniform coating of adhesive substance to the edge portion of roofing paper is impossible.

The provision of a valve at the outlet end of the nozzle enables the operator to readily eliminate any foreign body lodged therein. As a result, a new and useful embodiment in applicators for adhesive substances on overlapping portions of roofing paper is available and greatly eliminates the cost of labor and reduces the time involved in applying a roof on a building.

Moreover, because the adhesive substance is primarily composed of a tar or asphaltic base, the adjustment and maintenance of a clear nozzle opening is of critical importance.

Accordingly, it is a general object of this invention to provide an applicator for a highly viscous adhesive, which being mounted on wheels, permits the application of a uniform and continuous layer of adhesive substance onto the overlapping edge portions of roofing paper.

Another object of the invention is to provide an improved adhesive applicator for roofing paper in which the adjustment and maintenance are readily made for continuous operation of the device.

It is another object of this invention to provide an adhesive applicator for roofing paper in which an adjustable nozzle for the adhesive is provided in order to control and maintain a uniform and continuous coating of adhesive in the desired position.

Finally, it is an object of this invention to provide a new adhesive applicator construction eliminating difficulties heretofore encountered in the art, satisfying problems inherent in prior devices and achieving the stated objects in a simplified and inexpensive manner.

These and other objects and advantages, apparent to those skilled in the art from the following description and claim, may be obtained, the stated results achieved, and the described difficulties overcome, by the apparatus, combinations, parts, elements, subcombinations, arrangements and constructions which comprise the present invention, the nature of which is set forth in the following general statement, a preferred embodiment of which—illustrative of the best mode in which applicant has contemplated applying the principles—is set forth in the following description and shown in the drawings, and which are particularly and distinctly pointed out and set forth in the appended claim forming part hereof.



The nature of the adhesive applicator construction of the present invention may be stated in general terms as including a frame mounted on wheels, a handle for manipulation of the device extending upwardly and rearwardly from the frame, an adhesive compression cylinder on the frame, an adhesive compression screw in the cylinder and mounted on an axial shaft extending through opposite end walls of the cylinder, a prime mover mounted on the frame and operatively connected to the shaft for rotation of the screw, a hopper having inclined walls mounted on the cylinder at one end thereof, wall means including opposite side and end walls forming an adhesive outlet chamber which communicates with the cylinder, said walls forming a nozzle mouth having a length substantially greater than its width, the longitudinal axis of the opening being transverse to the direction of movement of the device, a manually operated valve within the chamber including an elongated shaft having ends journally mounted in opposite end walls of the chamber, the shaft having a circular cross section and having notch means substantially coextensive with the outlet opening of the nozzle, and the shaft being rotatable between fully open and fully closed positions for presenting varying amounts of cross section of the notch means to the outlet opening.

By way of example, an embodiment of the adhesive applicator for roofing paper is shown in the accompanying drawings forming part hereof, in which:

FIGURE 1 is a side view of the applicator;

FIG. 2 is a plan view of the device with the gasoline engine omitted and showing the manner in which adhesive is spread over an edge portion of roofing paper;

FIG. 3 is a front elevational view with the upper handle portion omitted;

FIG. 4 is an enlarged fragmentary view taken on the line 4—4, FIG. 3 showing the valve in a fully closed position;

FIG. 5 is a view similar to that of FIG. 4 showing the valve in alternate positions; and

FIG. 6 is an elevational view having parts broken away to show the valve.

Similar numerals refer to similar parts throughout the drawings.

The adhesive applicator is generally indicated at **1**. It includes a frame **2** mounted on a pair of wheels **3**, a handle **4**, a compression cylinder **5**, a screw **6**, and an adhesive outlet nozzle **7**.

As shown in FIGS. 1 and 2, the frame **2** is a generally inverted U-shaped member having spaced sides **8** and a cross member **9**. The wheels **3** are mounted on an axle **10** which extends through and is journalled in the lower portions of the spaced sides **8** of the frame.

A prime mover or gasoline engine **11** as shown in FIG. 1 includes a base plate **12**, which plate is shown in FIG. 2 where it is bolted on the cross member **9** of the frame by bolts **13**. As shown in FIGS. 1 and 2, a pulley **14** is mounted on a drive shaft **15** of the engine **11** which turns the screw **6** by a conventional belt **16**.

The handle **4** is disposed between the upper ends of a pair of spaced arms **17** which at their lower ends are connected to the frame in a conventional manner, and which extend upwardly and rearwardly from the frame as shown. Accordingly, the operator of the applicator **1** can push the device in the direction of the arrow **18** (FIG. 2) upon an elongated strip of roofing paper **19** to apply a coating **20** of adhesive material on and along an edge portion of the paper **19**. As shown in FIG. 2, the wheels **3** are out of longitudinal alignment with the nozzle

7 to prevent one wheel from rolling over the freshly-applied coating 20.

In FIG. 3, the cylinder 5 is mounted at the forward end of the frame 2 and extends transversely to the direction of travel of the applicator as shown by the arrow 18. The cylinder 5 is provided with a hopper 21 having a vertical end wall 22 and opposite inclined end wall 23 and side walls 24 and 25. The lower end of the inclined wall 23 terminates at the top of the screw.

The lower end of the hopper container communicates with the chamber of the cylinder 5 and, as shown in FIG. 2, the screw 6 extends throughout the length of the cylinder and through the bottom portion of the hopper 21. The screw 6 includes an elongated shaft 26, one end of which extends through and is journalled at 27 in end wall 22. The opposite end of the shaft terminates at the remote end of the cylinder 5 which end is crossed by a detachable cap 28 in a conventional manner such as by bayonet joint. A cap handle 29 is provided for removal and attachment of the cap. A pulley 30 is mounted on the outer end of the pulley worm shaft 26 and the belt 16 is disposed over and around it.

The outlet nozzle includes a pair of inclined side walls 31 and 32 and a pair of end walls 33 and 34 which form a chamber 35 that communicates with the interior of the cylinder 5. The upper ends of the walls 31–34 are secured by weld 36 at edges forming an opening 37 in the underside of the cylinder wall 5.

As shown in FIGS. 4 and 5, the walls 31 and 32 forming the nozzle 7 are tapered toward the lower ends to form an opening or mouth 38 of the nozzle. A valve 39 is mounted across the opening 38 within the chamber 34 and is secured at opposite end walls 33 and 34 as shown in FIG. 6. For that purpose, the end wall 34 is apertured at 40 and a bolt 41 extends through the end wall 33 and is seated within a tapped bore 42 in the corresponding end of the valve 39.

The outer end of the valve 39 includes a valve lever 43 which extends radially from one end of the valve and which is connected at 44 to an operating cable 45 (FIG. 1), the upper end of which is connected to a cable-operating lever 46 near the handle 4.

As shown in FIGS. 4, 5 and 6, the valve 39 is preferably a round shaft having a notch 47 cut out of one side thereof, so that upon rotation of the valve by the cable 45, the notch may be turned to varying degrees of clearance with respect to one of the side walls 32 to permit greater or smaller amounts of adhesive material to pass through the opening 38. The notch 47 is preferably coextensive with the distance between the end walls 33 and 34.

A pilot wheel 48 is attached to the front end of the cylinder 5 to hold the nozzle 7 at the proper height. The device of the present invention is preferably used for applying a coating 20 of adhesive to the border portion of roofing paper in an expeditious manner. In order to show the operating parts of the device with greater clarity, the adhesive material is not shown within the hopper 21, the compression cylinder 5, or the nozzle 7. Also, the engine 11 has been omitted except in FIG. 1 for the same reason.

It is understood, however, that the material is fed into the cylinder 5 from the hopper by the screw 6 where the material is compressed and packed under pressure for moving the viscous material in a ribbon-like stream of uniform thickness through the nozzle 7.

The device is used for an adhesive material having a high viscosity which does not readily flow and requires pressure behind it as provided by the screw in the cylinder.

Where, for some reason, foreign substances become imbedded in the adhesive material, it may cause clogging or bridging across the opening formed by the notch 47 in



the valve 39 and thereby results in a broken or uneven coating 20 on the paper 19. For that reason, the valve 39 may be manually rotated in order to dislodge any such foreign body and to thereby obtain a more uniform and unbroken coating 20.

After the coating 20 is applied to one sheet of roofing paper 19, another sheet is placed upon it in order to provide a tight seal between the two overlapping sheets.

Accordingly, the present invention provides an improved adhesive applicator which permits the application or spreading of a uniform coating of adhesive material, which greatly minimizes the labor force otherwise required, and which assures the application of a steady stream of adhesive coating in the desired location.

In the foregoing description certain terms have been used for brevity, clearness and understanding, but no unnecessary limitations are to be implied beyond the requirements of prior art because such terms are used for descriptive purposes and are intended to be broadly construed.

Moreover, the description and illustration of the invention is by way of example and the scope of the invention is not limited to the exact structure shown, because the sizes, shapes and movements of the various parts and components may be varied to provide other structural embodiments without departing from the fundamental principles of the invention.

Having now described the features, discoveries and principles of the invention, the assembly, characteristics, operation and use of a preferred form thereof, and the advantageous, new and useful results obtained thereby; the new and useful apparatus, combinations, parts, elements, subcombinations, arrangements and constructions, and mechanical equivalents obvious to those skilled in the art are set forth in the appended claim.

What is claimed is:

A portable device for applying an adhesive coating of highly viscous material to overlapping sheets of roofing paper, including a frame mounted on wheels, a handle for manipulation of the device extending upwardly and rearwardly from the frame, an adhesive compression cylinder on the frame, an adhesive compressing screw in the cylinder and mounted on an axial shaft extending through opposite end walls of the cylinder, a prime mover mounted on the frame and operatively connected to the shaft for rotation of the screw, a hopper having inclined walls mounted on the cylinder at one end thereof, wall means including opposite side and end walls forming an adhesive outlet chamber which communicates with the cylinder, said wall means forming a nozzle mouth having a rectangular cross section with a length substantially greater than the width, the longitudinal axis of the mouth being transverse to the direction of movement of the device and out of alignment with the wheels, a manually operated valve within the chamber including an elongated shaft having opposite ends journally mounted in opposite end walls of the chamber, the shaft having a cross-section which is greater than a semicircle and smaller than a circle, the widest portion of the shaft having a diameter equal to the width of the nozzle mouth, the shaft being rotatable between a fully open position and a fully closed position and being adjustable to any intermediate position, an opening in the mouth extending between the shaft and one wall forming the nozzle mouth, and the widest portion of the shaft completely covering the mouth opening in the fully closed position.

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