Dispensing Gun for Wallboard Tape and Joint Compound

Filed March 15, 1971

2 Sheets-Sheet 1

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

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ABSTRACT OF THE DISCLOSURE

A dispensing gun has a hand held unit having a dispensing chamber through which wallboard tape is passed from a roll of tape. The tape enters an inlet opening in the chamber which is effectively the width of the tape and passes therethrough to an outlet opening which is associated with a tear off blade so that the operator may apply pressure through the hand held unit to the blade so that the tape is properly applied to the wallboard. The dispensing chamber contains a quantity of compound over which the wallboard contacting side of the tape passes. The compound is replenished when the operator actuates a switch on the handle of the device which causes a pressure pump to feed compound through a hose and admit the compound to the bottom of the dispensing chamber. The compound in the chamber forms a mound over which the tape must pass in a curved path thereby insuring the tape contacts and is covered with the compound thoroughly.

BACKGROUND OF THE INVENTION

This invention relates to a dispensing gun which will be used by workmen for applying wallboard tape and joint compound to seams between sections of wallboard as in the building construction trade.

A present method of constructing buildings involves securing wallboard to the structure of the building and then sealing, taping and plastering over the joints between adjacent wallboards so as to create the appearance of a single solid wall. The present methods include putting the wallboard tape inside a wallboard joint compound dispenser, filling the interior of the dispenser with compound, and feeding the tape from a roll through the dispenser so that the down or wall side of the tape is in contact with the compound in the dispenser. At the point the tape is pulled outwardly through a slot in the dispenser, it is covered with a suitable quantity of wallboard joint compound.

These hand held units can include a tear off blade under which the tape is drawn as it is applied to this joint in a single strip the length of the section of wallboard. The blade is used to apply pressure to the tape so that it forms a flat uniform surface with the two sheets of joined wallboard and also allows the tape to be easily torn at the end of the joint.

The method of sealing joints has a significant disadvantage in that periodically the dispensing chamber must be refilled with compound. Ordinarily the workman would have to refill the dispensing chamber several times while using a single roll of tape. The limiting factor in dispensing chamber size is the weight of compound the workman can conveniently handle. Moreover, if the work is being done while standing on a scaffold or in an otherwise awkward working position, the workman may delay filling the dispenser as long as possible, risking the possibility of running out of compound, at an inconvenient point in the work, in order to be able to refill the dispenser and to increase the possibility to the position whereby the compound is available for refilling the dispenser.

In addition, sealing wallboard joints with compound is ordinarily a sufficiently messy work project to involve considerable preparation and cleanup time by having the skilled workmen load their own dispensers continually. The additional cleanup time involved after each filling of a dispenser is such as to add considerably to the inefficiency of the process. Of course, it is well appreciated that the use of wallboard is less expensive than plastering a wall, but it is desirable to improve on the efficiency of this to an even greater extent. A wet tape banjo as presently used, is shown in the 1970 catalogue of the Goldblatt Tool Company of Kansas City, Kans. at page 49. A wet tape banjo may have the tape roll in the same compartment as the joint compound, while a dry tape banjo has the tape roll separated from the dispensing compound.

It is also known, of course, to put fluid such as paint or grease into a container and pump the fluid through a flexible hose to a point of use, such as a paint spray gun or a grease gun fitting. Such devices are also shown in the above identified Goldblatt catalogue at page 55. There is at the present time no known device which will allow a workman to apply tape and joint compound to the seams between wallboard sections without stopping periodically to refill the dispenser. It is clear from the foregoing, that the advantages of such a mechanism would add to the efficiency of building construction by reducing the amount of time that workmen are required to spend preparing the work and replenishing the dispenser so that more time may be spent sealing wallboard joints.

SUMMARY OF THE INVENTION

In the form of the invention shown, a dispensing gun is provided as a hand held unit which has a dispensing chamber and a means separate therefrom for supporting a roll of wallboard tape. It is possible, however, to incorporate the tape roll into the dispensing chamber. The dispensing chamber has an inlet opening and outlet opening, each effectively the width of the tape used with the gun. A separate dispensing pump is provided and is connected with the dispensing gun by an electrical circuit and a flexible hose which connects to the dispensing chamber. Means are provided on the hand held unit for actuating the pump. In the form of the invention shown, a switch in the handle of the hand held unit actuates the electrical circuit causing the pump, as desired by the operator, to pump a certain quantity of compound through the hose. The hose terminates in a conduit in a floor of the dispensing chamber beneath the wall side or down side of the wallboard tape.

The operator will, as he grows accustomed to the machine, know when the dispensing chamber is approaching a sufficiently low quantity of compound so that it will be necessary to replenish the quantity of compound therein and will accordingly actuate the switch refilling the gun with compound. When it is necessary to put a new roll of tape on the machine, the operator opens a door in the side of the machine, threads the tape through the dispensing chamber and mounts the new roll on the
open bracket provided. A tape roll of approximately 500 feet may be used with this machine, about twice as much as could be used with the old machine. Because a smaller quantity of compound is in the machine at any time, more work may be provided as tape without effecting the ease of use.

Also, if the roll of tape breaks and is lost in the dispensing chamber, it is possible to open the chamber and thread the new tape therein quite easily because the door in the chamber is provided on a hinge which will not allow compound to squeeze therethrough when the door is opened, thereby reducing the cleanup should the door have to be opened.

In the figures:

FIG. 1 is a perspective view of a hand held tape dispensing gun according to this invention shown applying tape to the joint between sections of wallboard partially shown;

FIG. 2 is a side elevational view of one type of pump unit suitable for pumping wallboard joint compound to the dispensing gun;

FIG. 3 is a side elevational view of the hand held dispensing gun shown in FIG. 1;

FIG. 4 is an enlarged side sectional view along the line 4—4 of FIG. 1;

FIG. 5 is an end cross sectional view taken along the line 5—5 of FIG. 4 and

FIG. 6 is an enlarged fragmentary detail view of a portion of the machine shown in FIG. 5.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIG. 1, a hand held tape dispensing gun 10 is shown in operative position at the seam between a first sheet of wallboard 12 and a second sheet of wallboard 14. A large roll of wallboard joint tape 16 is suspended from a bracket 18 to which a handle 20 is secured for use by the operator of the gun. The tape roll 16 is held in position on a shaft 22 by a plate 24 which is retained in position by a wing nut 26. Thus, the roll of tape may be easily removed and replaced when it has been used up and a larger tape roll may be provided because of the external bracket mounting.

Wallboard joint tape 28 is fed from the roll 16 to an inlet opening 30 in a wallboard joint compound dispensing chamber 32. The tape 28 passes through this dispensing chamber 32 and through an outlet opening 34. In association with outlet opening 34 is a tear off blade 36 which passes underneath the tape pass so that the operator may use the blade to forcibly apply the tape to the seam between the two sections of wallboard. When the operator has finished with a particular seam line, a serrated edge 38 on the blade 36 is used to tear off the tape. A slot 40 in the blade 36 is provided so that the operator may advance the tape once he has torn the tape on the edge 38, by gripping the blade in the slot. Dispensing chamber 32 is defined by a floor 42 and two essentially parallel side walls 44 and 46 which are spaced from one another effectively the width of the tape being used. A curved top wall 48 completes the enclosure. Chamber 32 contains a quantity of wallboard joint compound 50. A plate 52 is slideably mounted on the inside surface of the top wall 48 near the blade 36 with a lower edge thereof in contact with the tape 28 in the dispensing chamber. The plate 52 is released for sliding movement along the top wall 48 and locked in place by a wing nut 54. The wing nut 54 may be used to adjust the plate 52 so as to control the effective height of the outlet opening 34 thereby controlling the quantity of wallboard joint compound 50 which adheres to the tape 28 as it leaves the opening by narrowing or widening the gap at the outlet opening.

A conduit 56 has a slotted opening 58 through the floor 42 of the dispensing chamber which runs substantially the width of the chamber, so that compound forced through the conduit will tend to fill the chamber evenly.

The conduit 56 is connected by means of a hose 60 combined with unrefereed pipe fittings, to a pressure feed unit 62. Compound is stored in the pressure feed unit in a hopper 64. Compound is withdrawn from the hopper 64 by a pump 66 and forced through the hose 60 and pipe fittings. A motor 68 operates pump 66 to force the compound through the hose 60 in any usual or preferred manner, as for example, by means of a screw conveyor operating on a collapsible hose.

A control box 70 controls the operation of the motor 68 and regulating a current supply feed through electrical cable 72. The control box 70 is connected by a control cable 74 to the handle of the dispensing gun. An electrical button switch 76 in the handle 20 of the dispensing gun closes the electric circuit of the control cable 74 causing the motor 68 of the pressure feed unit to drive the pump forcing compound through the hose 60 thereby filling the dispensing chamber during the time that the operator has depressed the button.

The side wall 44 of the dispensing chamber is formed by a panel portion 78 of a door 80 which is opened by the operator to give access to the dispensing chamber 32 and as becomes necessary. The door 80 is secured to its top portion by a wing nut 82 which engages a threaded shaft 84 secured to the top wall 48 of the dispensing chamber. The door hinge is formed by a rod 86 which runs the length of the panel portion 78 of the door at the bottom edge which includes a flange 88, as best seen in FIG. 6. At both ends, the rod curves outwardly and downwardly through an enlarged portion of the inlet opening 30 and outlet opening 34, respectively, and extends beneath the dispensing chamber to be secured to the bottom of the floor 42 as at points 90, 90. Screws 92, 92 having relatively large heads engage the rod 86 and extend through the door to secure the door to the rod. The flange 88, the rod 86, and the radius of curvature of the door at a point running the length thereof which is designated by reference numeral 94, is such that if the door is swung outwardly and downwardly there is no gap at the bottom thereof from which compound may escape at anytime. As the door is swung shut, there is no way compound can escape therefrom because the compound is forced away from the door by the movement of the flange downwardly and outwardly to contact the floor portion of the dispensing chamber. Thus, an effective hinge is formed so that the dispensing chamber may be opened and closed by the operator as necessary without having compound escape to create a mess or otherwise. In addition, the screws 92, 92 will save the operator time in cleanup operations. In addition, if it is desired to remove the door entirely, the screws 92, 92 may be removed thereby releasing the door such as for cleaning of the unit at the end of a day or before a period of non-use.

In operation, the operator will initially string a roll of tape 16 on the hand held dispensing gun 10 running it through the dispensing chamber 32 and out beneath the tear off blade 36. Initially, the operator will cause the pressure feed unit to feed compound through the tubing 60 filling the dispensing chamber relatively full but not full enough to jam the tape. The door is secured against the top wall 48 thereof which would prevent feeding of the tape therethrough. With the tape threaded through the dispensing chamber and the chamber substantially full of compound 50, the operator may use the gun to seal joints between wallboard sections until he senses that the supply of compound is becoming exhausted. At this time, the operator need only actuate the button switch 76 and the pump unit 62 will cause the chamber to again be filled with the substantially full compound. The operator repeats this process throughout his period of use of the machine. The machine may be used overhead, or to do corners or on flat wall seams without difficulty.
When a roll of tape is exhausted the operator need only open the door 80 to again thread the tape therethrough the dispensing chamber. The tape roll will need to be changed less often than with former units because a larger tape roll may be mounted on the external bracket. Yet, the weight of the machine will be no more than that of previous units because a lesser weight of compound needs to be kept in the dispensing chamber at any time than where constant reloading was necessary. This will avoid substantial inconvenience as the operator changes rolls.

To provide automatic regulation of the quantity of compound in the dispensing chamber, a limit switch operable upon rising or settling of the tape 28 in the chamber can be used to cause operation of the pump. However, since the compound has substantial weight, a skillful workman will be aware of the condition of the dispensing chamber due to the weight of the dispensing gun in his hand, and may conveniently use manual operation of a switch as described.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A dispensing and applying instrument for continuous strip, uniform wallboard tape with joint compound adhered thereto, this instrument comprising:
   a. hand held unit including:
      a dispensing chamber defined by a floor, two parallel side walls spaced apart effectively the width of the tape, and a top wall spaced from said floor, said chamber being provided with a tape inlet opening and a tape outlet opening for tape having compound adhered thereto,
      said chamber encompassing a quantity of compound which is located between the tape and the floor when the tape extends through the chamber and through said inlet and outlet openings, means for supporting a roll of wallboard tape in operative relation to the tape inlet opening of the dispensing chamber,
      conduit means disposed in the floor of said dispensing chamber for communicating wallboard joint compound into said chamber beneath said tape and in position to contact the wallboard contacting side of said tape;
      pump means for conducting wallboard joint compound under pressure into said conduit; and
      means for actuating said pump means.

2. The combination as specified in claim 1 wherein said pump means is a remote electrically operated pump; and wherein said means for actuating said pump means is comprised of an electrical switch on said hand held unit and an electrical circuit connecting said switch with said electrically actuated pump.

3. A dispensing and applying instrument for continuous strip, uniform wallboard tape with joint compound adhered thereto, this instrument comprising:
   a. hand held unit including:
      a dispensing chamber defined by a floor, two parallel side walls spaced apart effectively the width of the tape, and a top wall spaced from said floor, said chamber being provided with a tape inlet opening and a tape outlet opening for tape having compound adhered thereto,
      said chamber encompassing a quantity of compound which is located between the tape and the floor when the tape extends through the chamber and through said inlet and outlet openings, means for supporting a roll of wallboard tape in operative relation to the tape inlet opening of the dispensing chamber,
      conduit means disposed in the floor of said dispensing chamber for communicating wallboard joint compound into said chamber beneath said tape and in position to contact the wallboard contacting side of said tape;
      pump means for conducting wallboard joint compound under pressure into said conduit; and
      means for actuating said pump means.
means for supporting a roll of wallboard tape in operative relation to the tape inlet opening of the dispensing chamber, conduit means disposed in the floor of said dispensing chamber for communicating wallboard joint compound into said chamber beneath said tape and in position to contact the wallboard contacting side of said tape; pump means for conducting wallboard joint compound under pressure into said conduit; and means for actuating said pump means.

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CERTIFICATE OF CORRECTION

Patent No. 3,707,427 Dated December 26, 1972

Inventor(s) ELWYN J. ERICKSON

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1, line 58, "The" should be --This--
Column 6, line 55, "provide" should be --provided--
Column 6, line 62, "ineffective" should be --in effective--

Signed and sealed this 29th day of May 1973.

(SEAL)
Attest:
EDWARD M. FLETCHER, JR. ROBERT GOTTSCHALK
Attesting Officer Commissioner of Patents