Dec. 26, 1972 E. J. ERICKSON 3,707,427

DISPENSING GUN FOR WALLBOARD TAPE AND JOINT COMPOUND

Filed March 15, 1971 2 Sheets-Sheet 1

FIG. 1

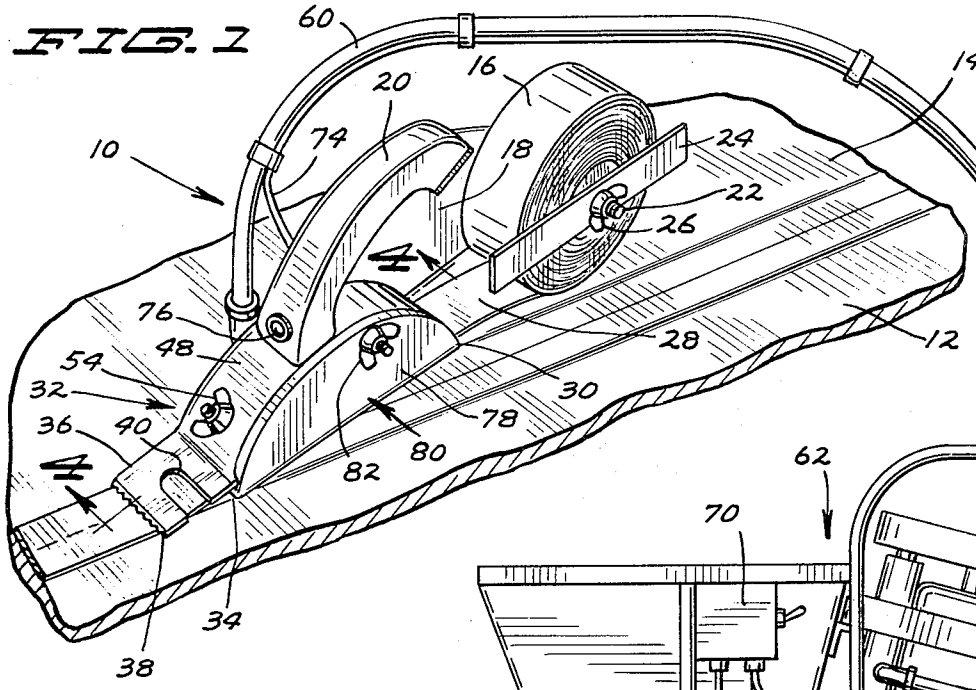


FIG. 2

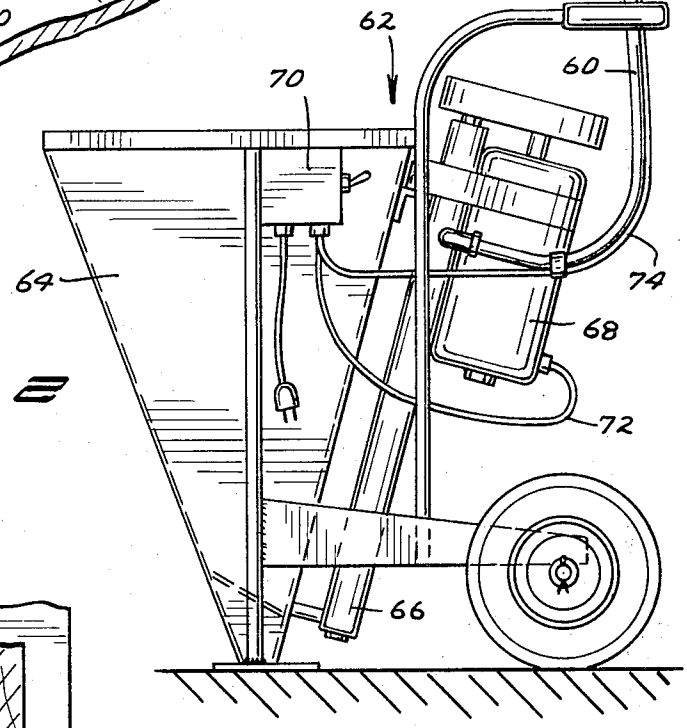
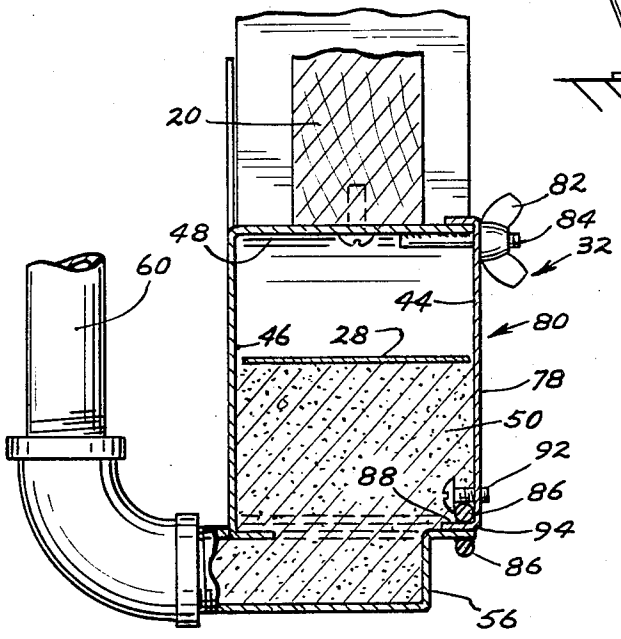


FIG. 5



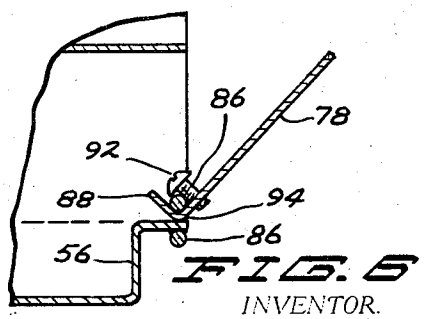


FIG. 6

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DISPENSING GUN FOR WALLBOARD TAPE AND JOINT COMPOUND

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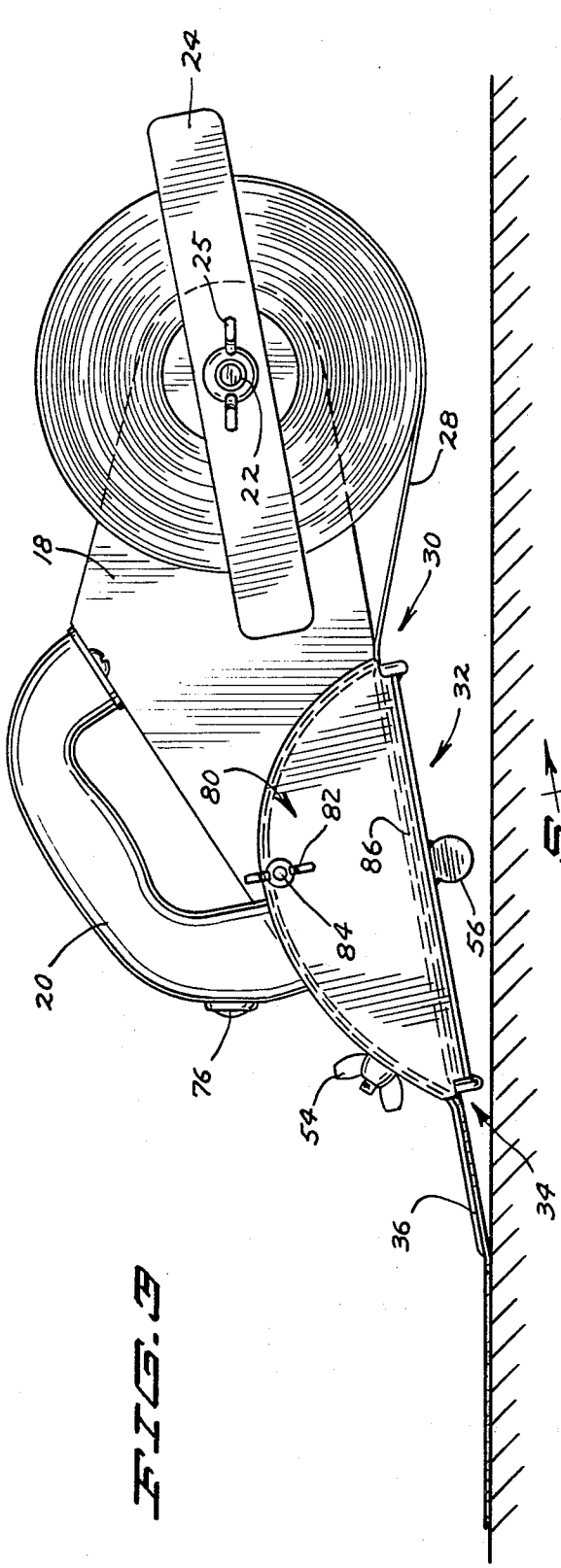


FIG. 3

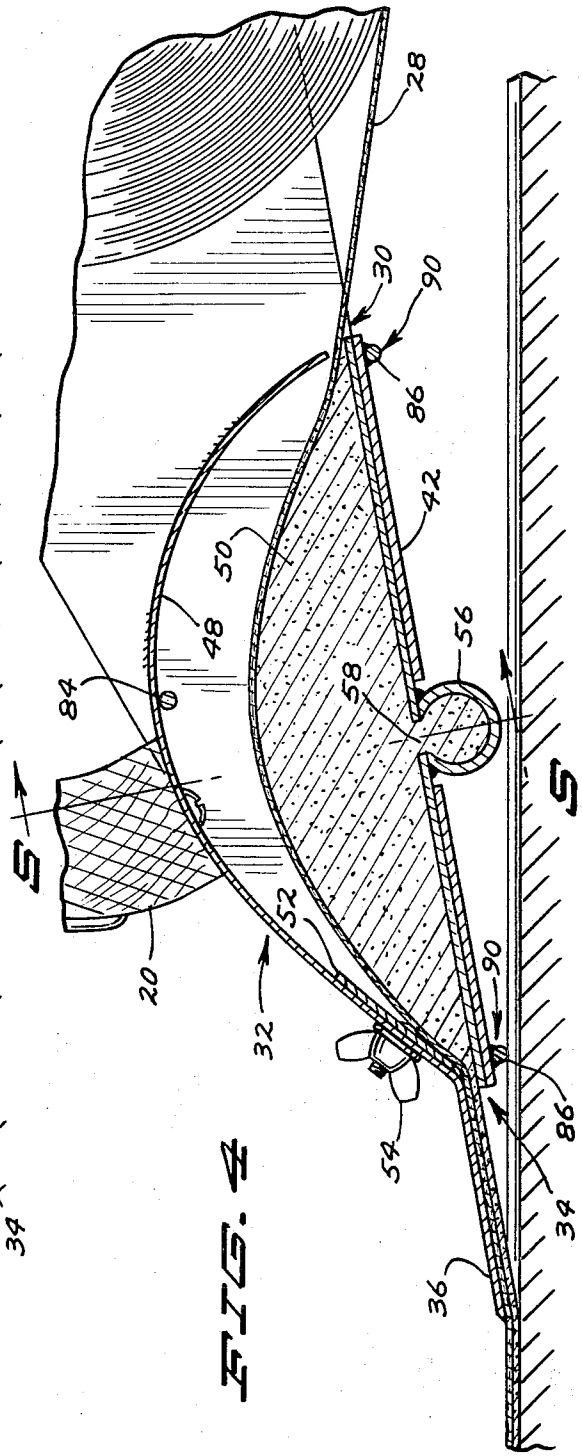


FIG. 4

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DISPENSING GUN FOR WALLBOARD TAPE AND JOINT COMPOUND

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U.S. Cl. 156—575 5 Claims

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 part of a seam in order to have to make as few trips as possible 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 weight 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 cross sectional view taken 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** underneath which the tape passes so that the operator may use the blade to forceably 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 tape 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 wall board 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 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 unreferenced 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 fed through this hose and these 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 by 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** as this becomes necessary. The door is secured at the 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 lose compound. This 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 forcefully 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 to the substantially full condition. Normally the tape is drawn in a curved path over the compound, forcing it into contact therewith so that it is thoroughly coated. 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,

said top wall being formed in a curve from said inlet opening adjacent the floor of said chamber upwardly and outwardly from the floor to the outlet opening adjacent the floor of said chamber and in which the wallboard tape follows a generally curved path over a quantity of said compound in said chamber from said inlet opening to said outlet opening, thereby causing said tape to be forced into contact with said compound,

means for supporting a roll of wallboard tape in operative relation to the tape inlet opening of the dispenser, 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, said pump means being a remote electrically operated pump; and

means for actuating said pump means, said actuating means being comprised of an electrical switch on said hand held unit and an electrical circuit connecting said switch with said electrically actuated pump.

4. 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; said conduit means being formed with a slotted opening effectively the width of said dispensing chamber for conducting compound into said chamber generally uniformly across the width thereof;

pump means for conducting wallboard joint compound under pressure into said conduit; and

means for actuating said pump means.

5. 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 provide with a tape inlet opening and a tape outlet opening for tape having compound adhered thereto,

said dispensing chamber being formed with a door having a panel, which forms at least part of one of the parallel side walls of said chamber, said panel having a flange at the bottom thereof parallel to and ineffective contact with the floor of said chamber, and a rod secured to the outside of said dispensing chamber and running inside the dispensing chamber inside the radius of curvature of the side panel as it forms the flange, so that as said door is opened no space occurs between said floor and said door panel, and

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.

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U.S. Cl. X.R.

118—410; 156—525, 578, 579; 222—63, 152, 262, 263; 401—188

PO-1050
(5/69)

UNITED STATES PATENT OFFICE
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.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents