June 8, 1965 E. L. TORRISON 3,188,262

DRY-WALL TAPING MACHINE

Filed Aug. 13, 1962 2 Sheets-Sheet 1

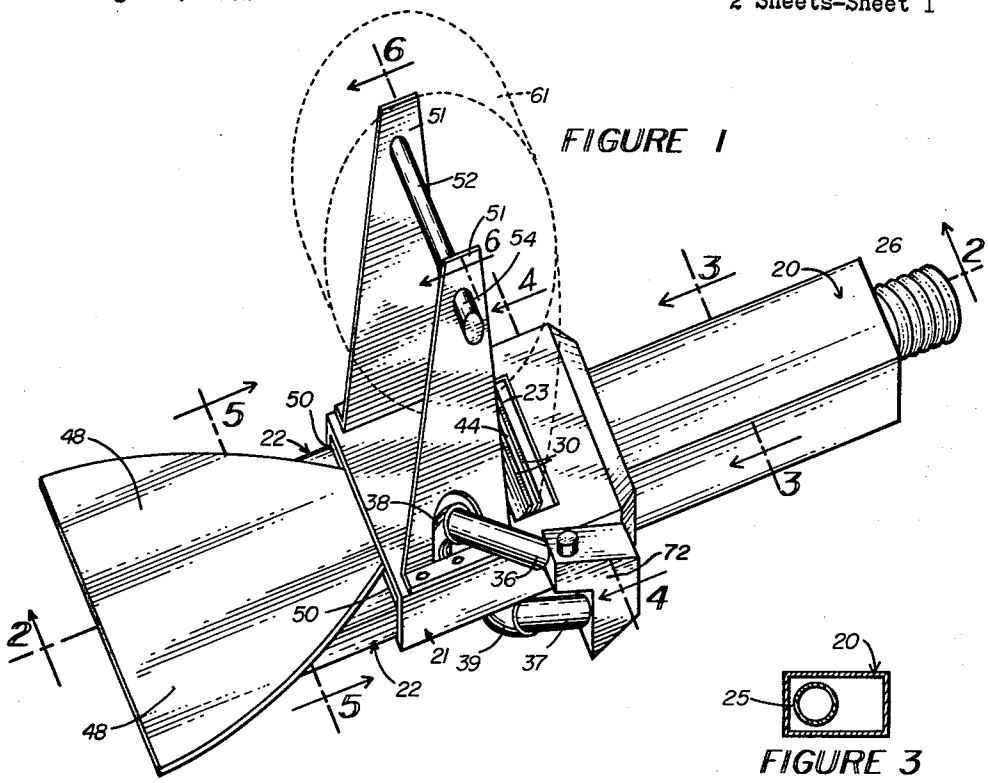

FIGURE 1

FIGURE 3

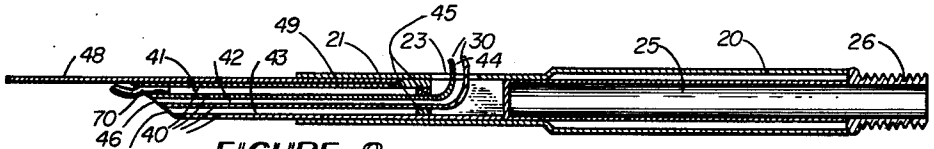

FIGURE 2

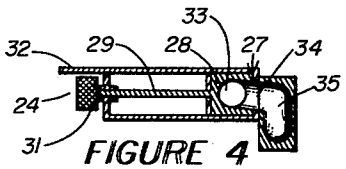

FIGURE 4

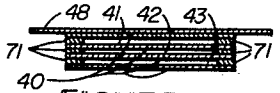

FIGURE 5

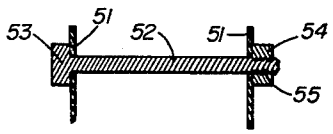

FIGURE 6

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DRY-WALL TAPING MACHINE

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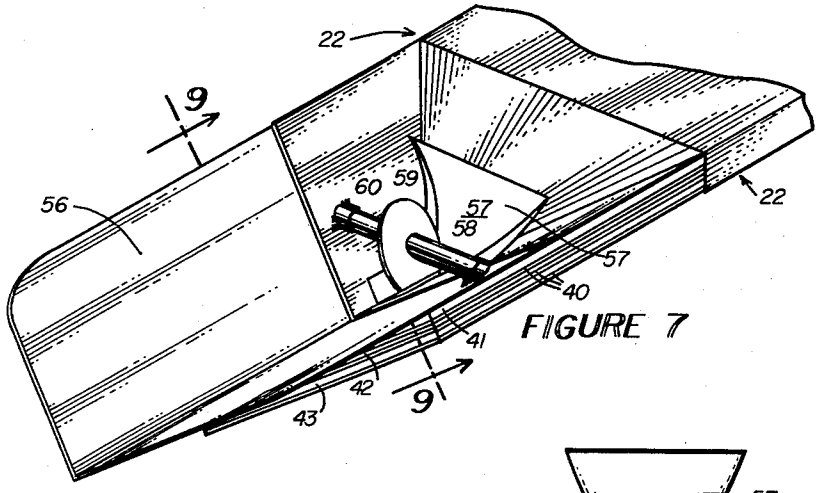

FIGURE 7

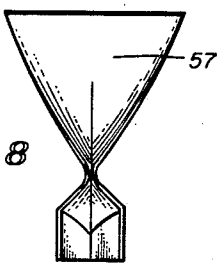

FIGURE 8

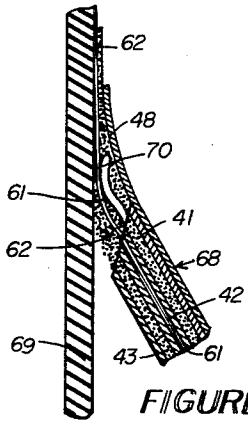

FIGURE 10

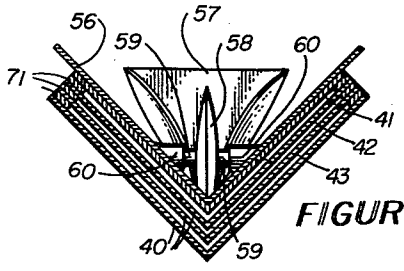

FIGURE 9

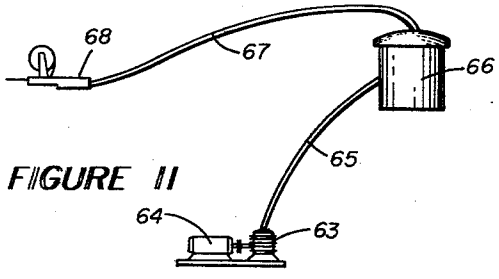

FIGURE 11

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3,188,262

DRY-WALL TAPING MACHINE

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Filed Aug. 13, 1962, Ser. No. 216,486
2 Claims. (Cl. 156—575)

This invention relates generally to a machine for the application of seam tape to gypsum wall board, most commonly known as dry-wall, and more particularly to such a device that may be hand held and operated and is supplied with mastic through a low pressured supply system having a reservoir at a point distant from the taping machine.

Gypsum wall board, the so-called dry-wall, has become an increasingly popular product for the finishing of interior structural walls. The board, by nature, is commonly of a matrix size smaller than a planar structural surface to be covered and it therefore is most commonly necessary to cover a wall surface with several pieces of dry-wall and thereafter finish and conceal the joints between such pieces. This joint finishing operation today commonly comprises the application of a casein type mastic directly to the joint, the application of paper tape over such mastic while in a wet condition, and the application of several additional coats of mastic on top of the papered tape, the later coats being applied over a dried under coat and finished smooth.

In the past, various tools have become known in the art to apply seam tape and mastic to dry-wall seams and particularly such devices have become known which simultaneously apply the first coat of mastic, the tape and the coat of mastic immediately covering said tape. The present invention seeks to present such a device, of a simple rugged nature, readily handled by one hand of an operator, which has great reliability and durability and is very easily cleaned. To accomplish these ends:

It is a primary object of my invention to provide a dry-wall taping machine which successively, in one operation, applies mastic to a joint, tape on top of said mastic and additional mastic on top of said tape and contains means by which an operator may smooth said mastic to a finished state.

It is another principal object of my invention to provide such a device that has a low pressure mastic supply system with a mastic reservoir at a distance from the taping machine.

It is an additional object of my invention to provide such a device that has means of variably regulating the flow of mastic therethrough.

It is an additional object of my invention to provide such a device that may be readily cleaned by flushing with pressurized water from an ordinary garden hose.

It is a further object of my invention to provide such a device of simple and economic design and construction and of an extremely rugged and durable nature.

For further comprehension of my invention and of the objects and advantages thereof, reference is now made to the following specification and accompanying drawings and appended claims, wherein the various novel features of the invention are more particularly set forth.

In the accompanying drawings, which form a part of the specification, and in which like numbers of reference refer to similar parts throughout:

FIGURE 1 is an isometric view of the flat-seam taping machine showing its configuration and various parts and their relationship.

FIGURE 2 is an orthographic projection of a vertical cross section of FIGURE 1 taken on the line 2—2 in the direction indicated by the arrows thereon.

FIGURE 3 is an orthographic cross sectional view

taken on the vertical plane 3—3 of FIGURE 1 in the direction indicated by the arrows thereon.

FIGURE 4 is a vertical cross section view of FIGURE 1, taken on the line 4—4 in the direction indicated by the arrows thereon.

FIGURE 5 is a vertical cross sectional view of the feeding mechanism of FIGURE 1 taken on the line 5—5 in the direction indicated by the arrows thereon.

FIGURE 6 is a partial cross sectional view of the tape spool of my invention taken on the line 6—6 of FIGURE 1 in the direction indicated by the arrow.

FIGURE 7 is an isometric projection of a corner taping form of my invention showing the tape folding wheel and the knife configuration.

FIGURE 8 is an orthographic plan view of the holding die used in my corner taping device showing its general configuration.

FIGURE 9 is an orthographic projection of a vertical cross sectional view of FIGURE 7 taken on the line 9—9 in the direction indicated by the arrows thereon.

FIGURE 10 is an idealized cross sectional view showing the flat seam form of my device as it would appear in applying tape and mastic to an untaped seam.

FIGURE 11 is a diagrammatic representation of the various elements of the pressure supply system of my device showing their relationship to each other.

Referring now to the drawings in greater detail and in particular to that of FIGURE 1, it will be seen that my invention comprises essentially a handle member 20 structurally communicating with a central body member 21 which at its opposite end carries the feeding mechanism and taping knife 22.

The handle 20 and body portion 21 of my invention are formed substantially in the shape illustrated, from a fairly rigid sheet metal, to form a hollow shell adapted to carry and support the various other parts of my invention. The handle 20 should be of a size and shape that may comfortably be carried by one hand of an operator.

The body portion 21 of my invention is a hollow rectangular box somewhat more square than handle portion 20, with which it structurally communicates. The upper surface of the body 21 is provided with an elongate rectangular opening 23 to receive the tape feeding lips 30. On the right side of the body 21, adjacent its junction with the handle 20, a recess 24 is provided for the valve knob 31, so that the top portion 32 will project over the valve knob 30 and thus protect it from debris from above.

A mastic supply system comprising the cylindrical closed end pipe 25 communicates from the rearward-most portion of the handle 20 through the handle and to the rearward portion of the body member 21 and is contained in and structurally supported by said members. The rearward-most portion of the pipe 25 is provided with a threaded male coupling 26 of a type adapted to mate with the coupling of an ordinary plastic water hose of commerce. The forward portion of the pipe 25 is provided with the flow valve 27 comprising the cylindrical valve chamber carrying the rotatable valve member 28, movable by the valve knob 31, which communicates therewith through the stem 29. Flow of mastic through the orifice 33 will thus be controlled by the rotary positioning of the valve knob 31, as best shown in FIGURE 4 of the accompanying drawing.

From the flow valve 27 the mastic supply system enters the chamber 34 and then the divider 35 carried on the left rearward portion of the body 21. From the chamber 35 the flow of mastic is divided more or less equally into the upper pipe 36 and lower pipe 37, which communicate respectively through the fittings 38, 39 with the feeding mechanism of my invention.

A rotary valve 72 of the ordinary commercial variety is interposed in the upper pipe 36 to regulate the mastic flow therethrough. With this valve 72 in combination with the valve 27 it is readily seen that the flow through the upper pipe 36 and lower pipe 37 may be regulated relative to each other as well as absolutely.

The feeding mechanism 22 of my invention is best illustrated in the cross sectional view of FIGURE 2 and in that of FIGURE 5. Here it will be seen that the feeding mechanism comprises four sheet like metal septums 40 arranged as illustrated to form 3 chambers, the upper mastic chamber 41, the intermediate tape chamber 42 and the lower mastic chamber 43. The sides of these chambers are closed by the elongate metal filets 71 and the rear of the mastic chambers 41, 43 are closed by the metal filets 45. The rearward portion of the metal septums 40, which form the sides of the tape chamber 42, are bent upwardly as illustrated so that they project through the opening 23 in the body 21 to provide an opening for simple and easy insertion of tape 61 therebetween. From this structure it will thus be seen that tape 61 may move freely through the chamber 42, while mastic under pressure introduced into the chambers 41, 43, must of necessity flow through the openings 46, 47 at the forward-most portion of the feeding mechanism 22.

The fitting 38 structurally communicates to the body 21 and communication of its central orifice is provided to the upper mastic chamber 41; the fitting 39 structurally communicates to the lower portion of the body 21 and communication is provided from its central chamber to the lower mastic chamber 43, thus completing the mastic supply system from the pipe 25 to the mastic chambers 41, 43.

An appropriately sized and shaped recess is provided between the upper septum 40 and the body member 21 to receive the tongue 49 of the smoothing knife 48 and it is rigidly supported in its position illustrated by the metal filets 50 fitting snugly on each side of the tongue 49.

Several tape fingers 70 of the shape illustrated in FIGURE 2 are provided in the forward orifice 46 of the upper mastic chamber 41 to cause tape 61 to be pressed into underlying mastic 62 when it be applied to a seam. There fingers 70 must allow for the free passage of mastic through the orifice 46 around the fingers 70.

A roll of seam tape 61 is supported upon the spindle 52. This spindle 52 is supported in a position over the body 21 by the upright support 51 which structurally communicate with the upper surface of the body 21. The spindle 52 is provided at one end with the rigid cap 53 and at the other with the removeable cap 54, threadedly carried by the threads 55 at the end of the spindle 52.

The corner taping version of my invention is quite similar to that described for flat seam taping, with the exception of the feeding mechanism 22 and taping knife 56 which of necessity must have the configuration of the corner to be taped. The corner taping mechanism is illustrated in FIGURE 7. Here the smoothing knife 56 is bent to form an angle, the degree of angularity between the two legs being preferably somewhat slightly greater than 90° to provide some pressure against corners to be taped and take into account irregularity therein, and feather the edges of the mastic 62. The feeding mechanism 22 likewise must be formed to the right angular shape, illustrated best in the cross sectional view of FIGURE 9. The arrangement of septums 40 and feed mechanism remains the same.

To tape a corner, it is necessary to fold the flat tape 61 to the corner shape. To do this, the tape feed 57 is extended and formed to a shape illustrated in FIGURES 7, 8 and 9. A folding wheel 58 carried by the axle 59 is journaled in the member 60 of the body 21 to allow for free rotation. An appropriate recess is provided

to allow the folding wheel 58 to extend downwardly to the tape chamber 42, so that when tape 61 is pulled through the feeder 57 it will be creased by the wheel 58 and thus formed to the configuration of a corner so that it will feed freely through the tape chamber 43 of the corner device.

The forward portion of the taping machine body 21 for flat seams and for corners may obviously be made similar and may be made in a removable fashion so that either the corner of flat blade and feed mechanism 23 may be interchanged at will on one particular handle 20 and body 21 device.

The idealized diagrammatic operation of my device is illustrated in FIGURE 10. Here it will be seen that mastic 62 from the lower chamber 43 is applied directly to the wall board seam. The tape 61 is then applied over the freshly deposited mastic pressed into it by the fingers 70, and additional mastic from the upper chamber 41 is deposited on top of the tape 61 and smoothed by the knife 48.

Tape may be readily inserted in the opening 44 between the lips 30 and through the tape chamber 42 by hand by an operator to load the device, and it may readily be torn against the blade 48 when the seam is completed.

The mastic pressurized supply system of my device is illustrated in FIGURE 11. A compressor 63 activated by a motor 64 supplies air under pressure through the line 65 to the reservoir 66. The reservoir 66 contains taping mastic 62 which is forced by the pressure through the lead 67 to the taping machine 68 to complete its course through the device 68 as heretofore indicated. I prefer to use large plastic hose for the line 67 to provide a relatively free and substantially frictionless flow of mastic 62 to my taping device 68 thus lowering the required pressure to move the mastic 62.

From the construction heretofore described it is to be noted that an ordinary garden hose can be attached to the male coupling 26, water pressure applied therethrough and the water soluble mastic thereby cleaned from my device when desired.

Although the foregoing description is necessarily of a detailed specific character, in order that a specific embodiment of my invention may be set forth, it is to be understood that this specific terminology and structure are not intended to be restrictive or confiing and that various rearrangements of parts and modification of detail may be resorted to without departing from the essence, scope or spirit of the invention herein set forth.

Having thusly described my invention, what I desire to protect by Letters Patent and, what I claim is:

1. In a dry-wall taping machine of the nature aforesaid, in combination, a hollow elongate handle structurally communicating with a hollow body member having an elongate slit in its upper surface to allow tape to pass therethrough and carrying two spaced upwardly extending supports having a removeably mounted spindle therebetween adapted to rotatably carry a roll of tape thereon; a feeding mechanism carried by said body member opposite said handle having a plurality of sheet-like septums and filets forming two spaced mastic chambers each having a forward elongate narrow orifice on either side of a central tape chamber adapted to deposit mastic passing therethrough on both side of tape passing from said tape chamber; a smoothing knife removeably carried by said feeding mechanism to smooth said mastic and tape to a finished seam; fingers carried in the orifice of said upper mastic chamber to press tape passing thereover into underlying mastic; a mastic supply system communicating from the rearward portion of said handle member through said device to said upper and said lower mastic chambers, said system having a valve therein to regulate complete flow therethrough and a second valve to regulate the relative flow of mastic to said upper chamber relative to that through said lower chamber.

2. The invention of claim 1 wherein said feeding mechanism and smoothing knife are bent in a V shape to include an angle substantially 90° and a tape holding mechanism associated therewith comprising a funnel-like feed adapted to form tape passing therethrough in a V shape with rotatable wheel therein adapted to crease the fold of said tape passing therethrough.

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