Nov. 3, 1942. R. G. AMES 2,300,398

PRESSURE PLASTIC APPLICATOR

Filed July 3, 1940 2 Sheets-Sheet 1

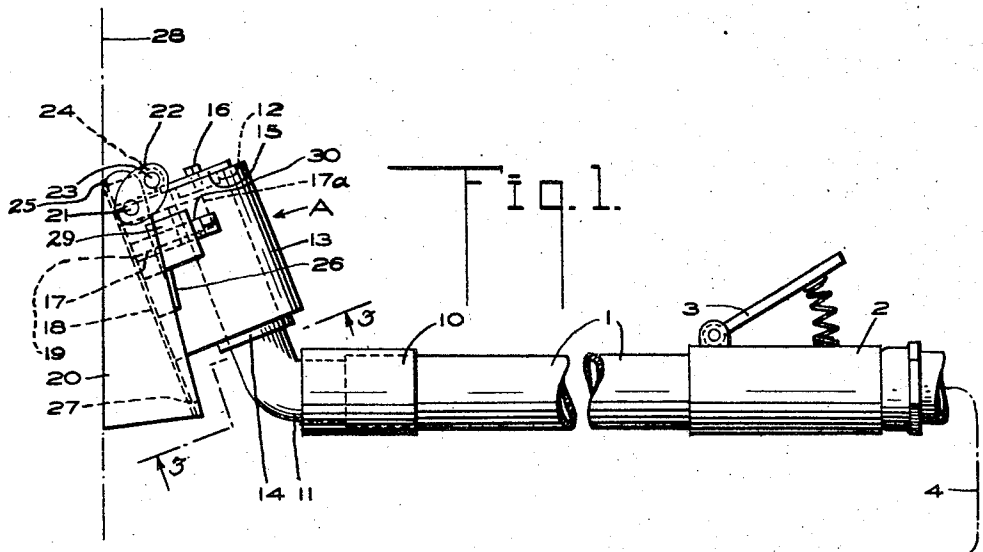


Fig. 1.

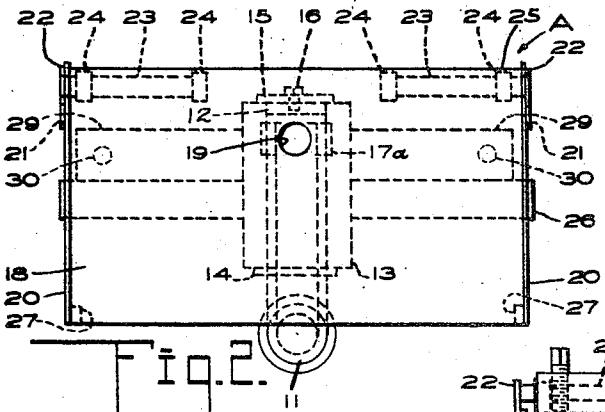


Fig. 2.

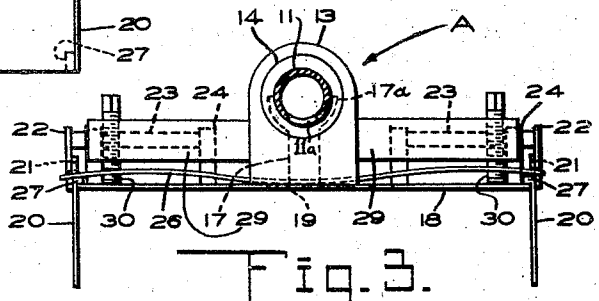


Fig. 3.

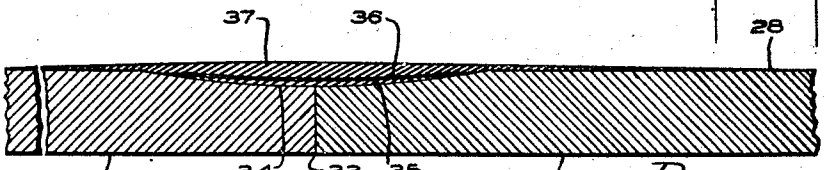


Fig. 4.

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PRESSURE PLASTIC APPLICATOR

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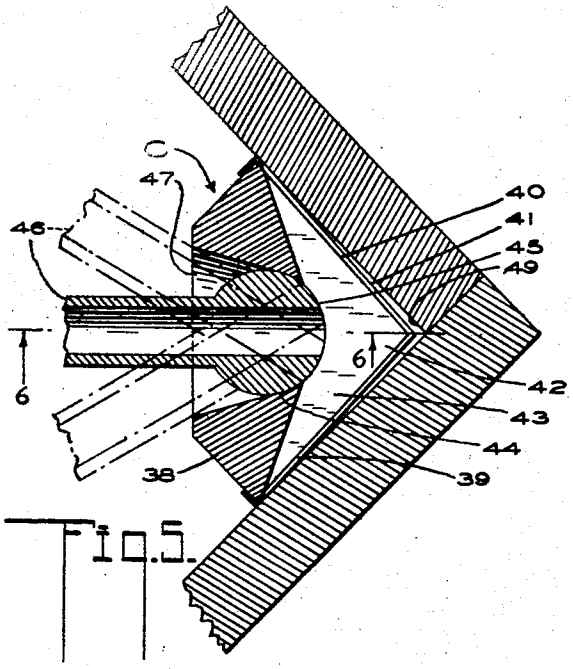


Fig. 5.

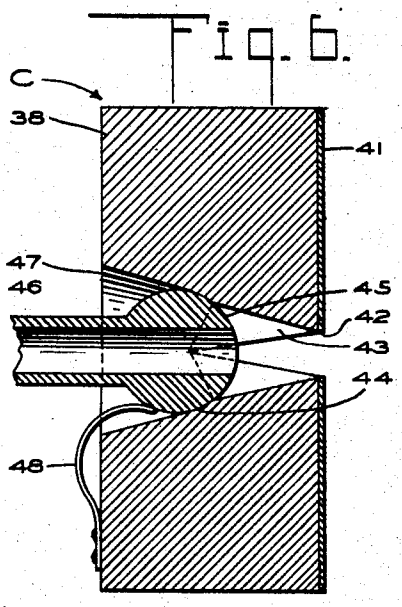


Fig. 6.

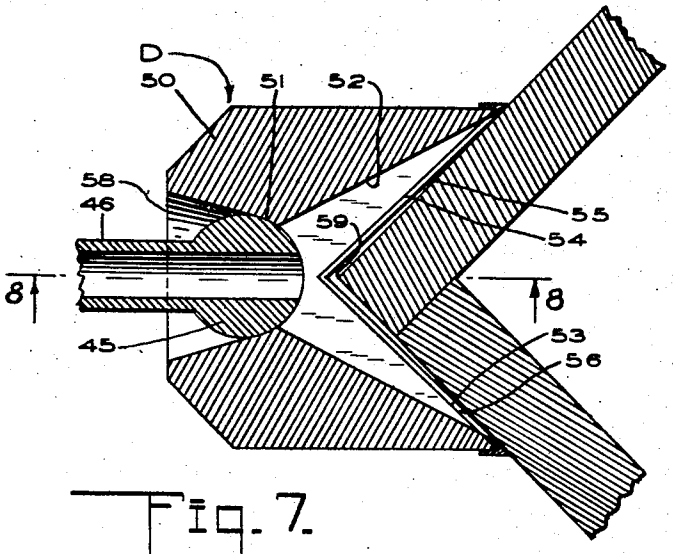


Fig. 7.

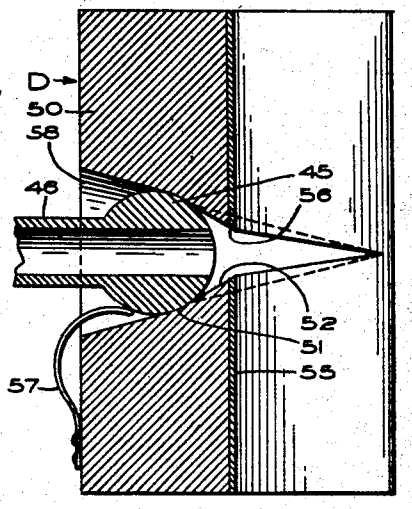


Fig. 8.

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Patented Nov. 3, 1942

2,300,398

UNITED STATES PATENT OFFICE

2,300,398

PRESSURE PLASTIC APPLICATOR

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Application July 3, 1940, Serial No. 343,826

5 Claims. (Cl. 72—130)

The present invention relates to improvements in a pressure plastic applicator, and it consists of the combinations, constructions and arrangements hereinafter described and claimed.

Some wall boards are recessed at the joinings of adjacent boards and it is customary to fill the recess of the joint with mastic. The recess or groove is partially filled with mastic and then a tape is pressed against the mastic surface and extends over the joint. Additional mastic is then applied over the tape and this not only fills the recess or groove, but extends beyond the groove or recess sides and gradually merges into the wall board surface. A broadknife is generally used for applying and smoothing the mastic surface.

The principal object of my invention is to provide a pressure plastic applicator that will automatically deliver a controlled volume of mastic to the desired place and will act as a surfacing tool for smoothing the surface of the mastic and cause it to merge gradually into the surface of the wall board. The speed of application of the mastic can greatly be increased and the work can be more uniformly accomplished. The tool may be used to cover wall seams or joints whether they extend horizontally or vertically. An extension adapts the device to be used for ceiling work without the necessity of using a ladder or scaffolding.

It is possible to control the depth of the mastic with the device and also the shape of the outer surface whether concave or convex. The tool is jointed so that it will freely swing and conform to any surface irregularities in the wall board. One type of tool is used for flat recessed wall joints and two other types of tools are used for inside and outside corner joints. The device is simple in construction, and is durable and efficient for the purpose intended.

Other objects and advantages will appear as the specification continues, and the novel features will be particularly set forth in the appended claims.

My invention is illustrated in the accompanying drawings, forming part of this application, in which:

Figure 1 is a side elevation of the flat wall tool, which is shown diagrammatically connected to a mastic retaining pressure tank;

Figure 2 a front elevation of the working face of the tool;

Figure 3 a section taken along the line 3—3 of Figure 1;

Figure 4 a section through two abutting pieces of wall board, illustrating a recessed joint;

Figure 5 a horizontal section through a tool used for inside corner joints;

Figure 6 a vertical section of the tool taken along the line 6—6 of Figure 5;

Figure 7 a horizontal section through another tool used for outside corner joints; and

Figure 8 a vertical section of the same tool taken along the line 8—8 of Figure 7.

While I have shown only the preferred forms of my invention, it should be understood that various changes or modifications may be made within the scope of the appended claims without departing from the spirit of the invention.

In carrying out my invention, I provide a tool indicated generally at A in Figures 1, 2 and 3 for filling recessed joints in flat surface wall board. The device comprises a tubular and rigid handle 1 provided with a valve 2 at one end controlled by a valve handle 3. A flexible hose 4 extends from the valve to a mastic retaining pressure tank diagrammatically shown at B. The tank is supported by rollers 5 and a removable cover permits the device to be filled with mastic. Air under the desired pressure may be forced into the top of the tank by any means, such as a pump 6. A pressure gage 7 will indicate the pressure. The mastic 8 is forced from the tank through an outlet pipe 9 that communicates with the hose 4.

The tool head is removably secured to the handle 1 by means of a coupling sleeve 10. The head comprises a short pipe 11 closed at one end by a plug 12. The other end is bent and screwed into the sleeve 10. When an extension (not shown) is used, the additional length of tubular rigid handle is secured to the coupling 10 and the tool head is then attached to the free end of the extension.

The short pipe 11 has a body member 13 rotatably mounted thereon. A flange 14 on the pipe 11 prevents longitudinal movement of the body 13 in one direction and a washer or cap 15 bears against the other end of the body and is secured to the plug 12 by a screw 16. The body has a radially-extending passage 17 designed to register with an elongated opening 11a in the pipe 11 (see Figure 3). The passage or bore 17 may have its inner end enlarged into an arcuate chamber 17a that partially surrounds the pipe 11.

An applicator plate 18 is rigidly secured to a flat side of the body 13 and the ends of the plate may flex slightly when pressure is applied thereto. The plate has an opening 19 registering with

the bore 17. The side edges of the plate are bounded by side members 20 that are pivoted at 21, see Figure 1, to arms 22, which in turn are carried by stub shafts 23. The latter are rotatably mounted in bearings 24. Figure 2 shows the bearings 24 disposed near the trailing edge 25 of the plate 18. A leaf spring 26, see Figure 3, extends between the body 13 and the plate 18 and has its ends yieldingly engaging with the side members 20 for holding them in a position where lugs 27, integral with the members, will abut the rear face of the plate 18. The function of the spring 26 is to keep the members 20 against a wall board surface 28, see Figure 1, and the floating pivots 21 permit the members to independently adjust themselves so that their wall-contacting edges will continuously bear against the wall surface throughout their lengths, regardless of the angle made between the plate 18 and the wall.

I provide means for limiting the convex flexing of the plate 18 when the plate is forced against the wall. This means consists of two rigid and laterally-extending arms 29 that project from the member 13 and carry adjusting screws 30 near their free ends. The screws bear against the plate 18 near the sides thereof and may be adjusted for limiting the movement of the sides toward the arms 29. In certain cases, the screws are adjusted forwardly for forming the plate 18 into a slight concave curve. The purpose of this will be hereinafter set forth.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. Before describing the tools shown in Figures 5 to 8, inclusive, I will show the use of the tool illustrated in Figures 1, 2 and 3. In Figure 4 I show two sections of wall board 31 and 32 that abut each other at 33. Each wall board section is recessed along its edge to provide a groove 34 or recess coextensive with and bisected by the joint.

It is customary at present to fill the lower portion of the groove 34 with mastic 35 by hand, then apply a paper or cloth tape 36, and then cover the tape and fill the remaining part of the groove with additional mastic 37 whose side edges extend well beyond the sides of the groove and merge into the wall surface 28. A broadknife is used for the purpose of adding both layers of mastic to the groove and the operator has to periodically keep adding mastic to the groove as he fills it.

When using the tool for the same purpose of applying the first layer of mastic 35 to the groove 34, the screws 30 are adjusted to permit the plate to flex into a convex arc when the plate is manually applied to the groove 34 and moved therealong under sufficient pressure to flex the blade. Air pressure has previously been applied to the tank B and then the opening of the valve 2 to the desired extent by depressing the handle 3 will permit the mastic under pressure to flow through the pipe 9, hose 4, valve 2, tubular handle 1, short pipe 11, opening 11*a*, passage 17, and out through the opening 19 in the plate 18. The thickness of the bottom layer of mastic 35 is controlled by the flexing of the plate 18, limited by the screws 30, and the amount of mastic delivered by the tool is controlled by the handle 3. The tool is grasped by the handle 1 and moved along the groove, the plate smoothing the surface of the mastic as fast as it is applied.

The plate and body member 13 are free to rock about the axis of the short pipe 11 to automatically accommodate the plate to any unevenness in the wall surface 28 adjacent to the opposite edges of the groove 34. The thickness of the layer 35 is determined by the difference in curvature between the plate and the groove 34, and this thickness can be altered by swinging the handle and plate in a plane at right angles to the wall surface and parallel to the length of the groove 34. This will move the trailing edge 25 of the plate toward or away from the groove bottom. It is obvious that the plate could be connected to the handle by a universal joint, if desired. The tape 36 is now applied to the mastic. The lower layer of mastic is preferably allowed to harden one day before the top layer 37 of mastic is applied.

When applying the top layer, the screws 30 are adjusted to give the plate a slight concave curvature and then the tool is moved along the groove for covering the tape and filling the groove with mastic. The top layer of mastic 37 will have a crown and its sides will extend beyond the sides of the groove and will gradually taper in thickness to merge into the wall surface 28. The side members 20 prevent the mastic from moving beyond the sides of the plate 18 and also aid in determining the depth of the crown of the top mastic layer. It will therefore be seen that the plate 18 will be slightly convex in shape when applying the first layer of mastic 35, and slightly concave in shape when applying the second layer 37. In the first instance, the screws 30 limit the flexing of the plate into convex shape and in the second instance, the screws perform the desired concave arc in the plate.

In Figures 5 to 8, inclusive, I show two tools for applying mastic to inside and outside corners. The inside corner tool is indicated generally at C in Figures 5 and 6. The tool comprises a body 38 with two surfaces 39 and 40 that form an angle slightly larger than a right angle. A plate 41 covers the two sides and it has a slot 42 that is widest at the bend or corner in the plate and tapers down to an acute angle at each end, the ends of the slot terminating close to the outside edges of the body 38.

The body 38 has a recess or outlet 43 or passageway that communicates with the plate slot 42 and the recess is provided with a spherical seat 44 for rockably receiving a spherical head 45 formed on the end of the nozzle 46. The rear of the recess or passageway 43 is enlarged to form an outwardly-flaring conical wall 47 that will permit the nozzle 46 to swing into various angular positions as shown by the broken line positions in Figure 5. A spring 48 removably holds the head 45 in the seat 44 and permits the body 38 to rock into different angular positions on the head.

Figure 5 shows two sections of wall board forming an inside corner at 49. The tool C is placed in the position shown when applying mastic to the corner and in reality the mastic flowing from the slot 42 will strike the wall board and act as a lubricant for the tool for spacing it slightly from the wall board so that it may be readily moved along the corner without actually coming into contact with the board. This is the reason why the ends of the slot 42 extend substantially to the side corners of the body 38.

It is possible to remove the nozzle 46 from the tool C and use the spherical head 45 as a separate tool for particular kinds of work. This arrangement also permits the head 45 to be removably secured to another tool, indicated generally at D, and designed for applying mastic to an out-

side corner. The tool D is quite similar to the tool C.

The tool D comprises a body portion 50 having a spherical seat 51 for removably receiving the head 45 of the nozzle 46. A passage 52 for mastic leads from the seat 51 to two surfaces 53 and 54 that extend substantially at right angles to each other and form an inside corner. A plate 55 bent at an angle slightly less than a right angle covers the surfaces 53 and 54 and has its side edges bent and secured to opposite sides of the body 50. The plate has a slot 56 widest at the inside corner of the plate and tapering to a point adjacent to each side of the plate. The slot 56 communicates with the passage 52. A spring 57 similar to the spring 48 removably and rotatably secures the head 45 in the seat 51. The body 50 has an outwardly-flared conical opening 58 extending rearwardly from the seat for permitting the nozzle 46 to swing into various angular positions.

The tool D is used in much the same manner for applying mastic to an outside corner as the tool C is used for an inside corner. The tool is first moved along the corner 59 for applying the first layer of mastic. A piece of tape similar to the tape 36 is first folded along its center to form the sides into a right angle and then the tape is applied to the layer of mastic. The tool is moved over the tape to press it against the mastic and during this movement no additional mastic issues from the tool. Finally, the tool is moved over the tape and this time a layer of mastic is applied over the tape. This completes the process. The same process is followed for the inside corner.

There are three main types of wall board joints which the device is adapted to cover with mastic. The common flat joint is one that generally occurs between the boundaries of a wall or ceiling. The other two types are inside and outside corner joints. The tool can apply mastic to a wall in which the two surfaces of adjacent wall board lie flush with each other and are not provided with the groove. Any crack in the joint is filled by the lower layer of mastic. The tool in applying the second layer, both fills the joint and smooths off the surface of the second layer in one operation and this can be accomplished at a much faster rate than when done without the tool.

I claim:

1. A pressure plastic applicator comprising a handle, an applicator swivelled to the handle and having a flat surface with an outlet orifice therein and a trailing edge, controllable means for delivering a plastic under pressure to the orifice, said trailing edge determining the thickness of the plastic layer, and adjustable side members pivoted at the sides of the applicator and adjacent to the trailing edge for continuously contacting with the wall for confining the plastic within the sides of the surface while permitting the applicator to have its flat surface swung into various angular positions with respect to the wall over which the applicator is moved.

2. A pressure plastic applicator comprising a handle, a flexible plate for applying the plastic and being connected to the handle, said plate having an outlet opening therein, controllable means for delivering plastic under pressure to the opening, adjustable means connected to the handle for flexing the plate into a concave arc, said means being adjustable for limiting the flexing of the plate to form a convex arc when the plate is partially forced into a groove in a wall surface.

3. A pressure applicator comprising a handle, an applicator carried by the handle and having an outlet opening and a trailing edge, means for feeding a desired quantity of plastic to the opening under pressure, side members pivotally carried by the applicator and bearing against the surface receiving the plastic for limiting the spread of the plastic beyond the sides of the applicator, and spring means for continually urging the members against the surface receiving the plastic, the members being pivoted to the applicator on aligned pivots disposed adjacent to the trailing edge, whereby a rocking of the handle about the aligned axes of the pivots will vary the distance between the trailing edge and the wall surface and the pressure applied to the applicator will determine the thickness of the plastic layer applied to the surface.

4. A device of the type described comprising a handle, a pressure plastic applicator movably carried by the handle and being swingable into various angular positions with respect thereto and having a trowel-like semi-flexible member with its mid-portion connected to the handle and its end portions free to flex, said member having an outlet orifice therein, means for feeding a plastic material to the orifice for discharging it onto a surface over which the member is moved, said member being free to flex slightly into a convex shape when the member is moved over a grooved surface and sufficient pressure exerted to move the member slightly into the groove, and adjustable means for limiting the flexing of the member into a convex shape.

5. A device of the type described comprising a handle, a pressure plastic applicator movably carried by the handle and being swingable into various angular positions with respect thereto and having a trowel-like semi-flexible member with its mid-portion connected to the handle and its end portions free to flex, said member having an outlet orifice therein, means for feeding a plastic material to the orifice for discharging it onto a surface over which the member is moved, said member being free to flex slightly into a convex shape when the member is moved over a grooved surface and sufficient pressure exerted to move the member slightly into the groove, and adjustable means for limiting the flexing of the member into a convex shape, said adjustable means being manipulatable for forming the member into a concave shape for causing the plastic material to be formed with a slight crown effect.

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