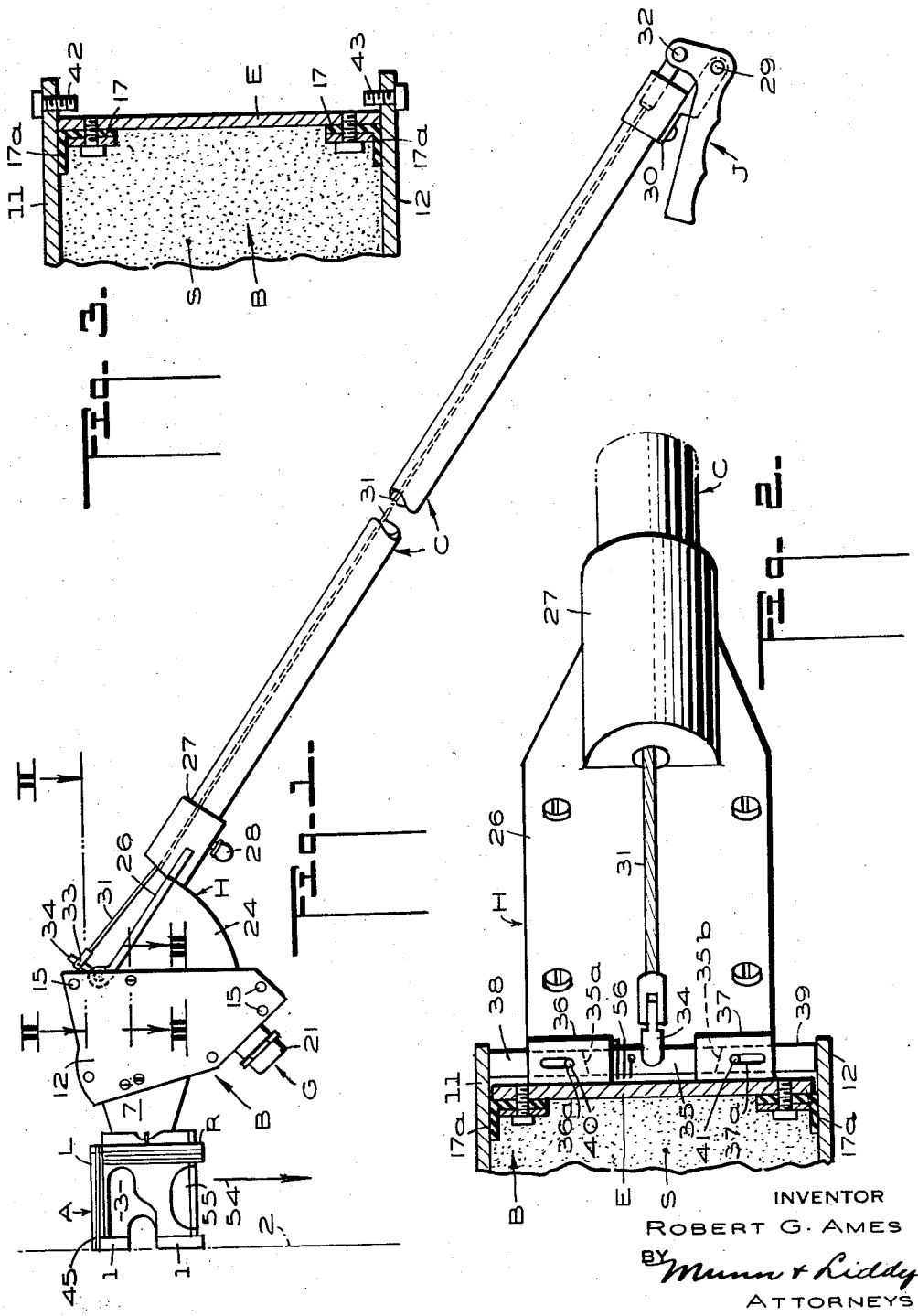
June 9, 1959 R. G. AMES 2,889,965

MASTIC APPLICATOR AND CORNER-FINISHING TOOL

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MASTIC APPLICATOR AND CORNER-FINISHING TOOL

Filed Dec. 20, 1954 3 Sheets-Sheet 2

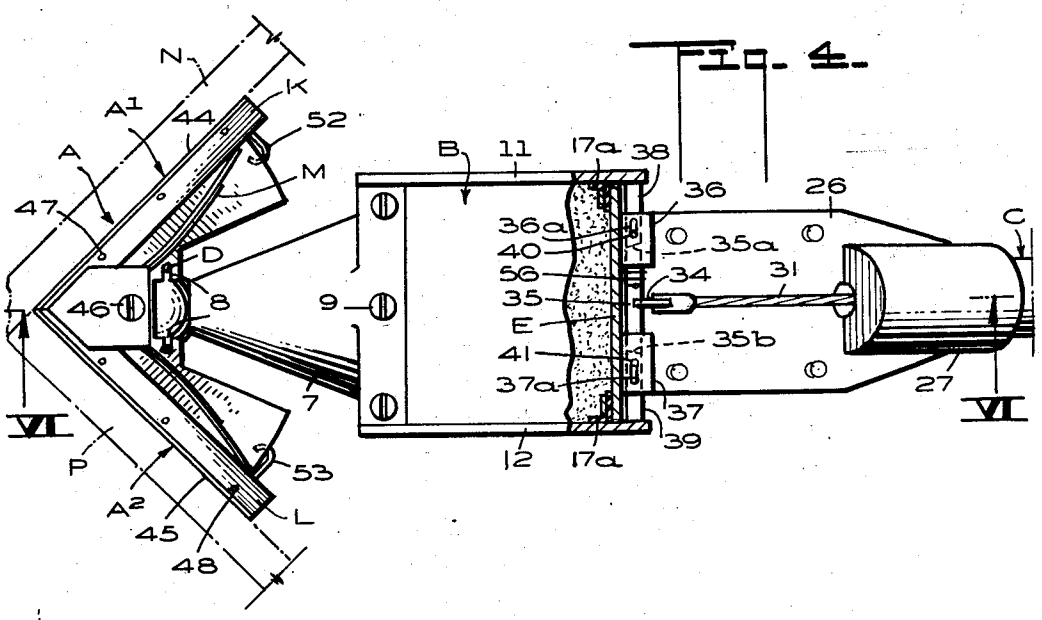


FIG. 4.

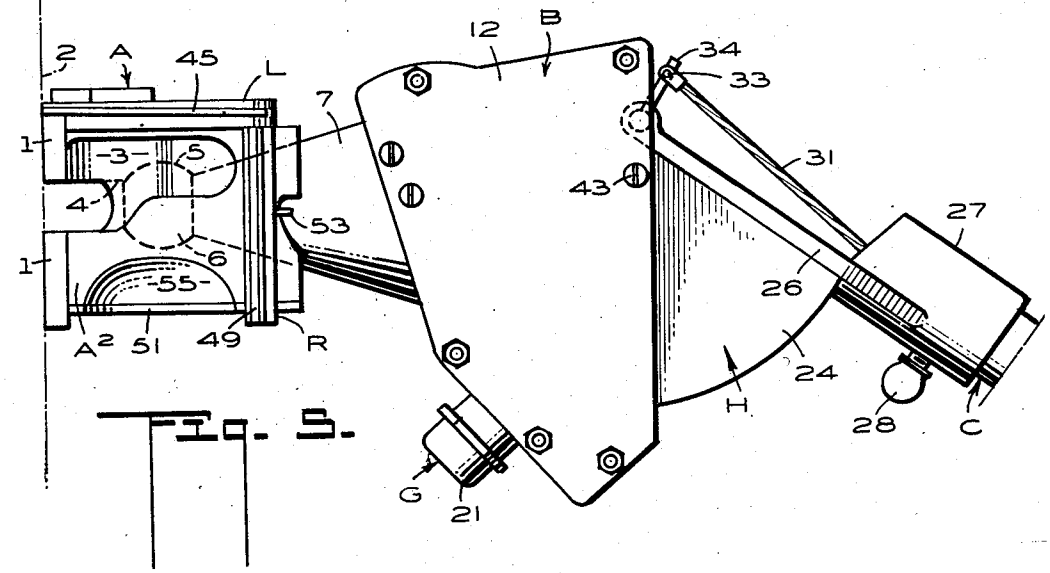


FIG. 5.

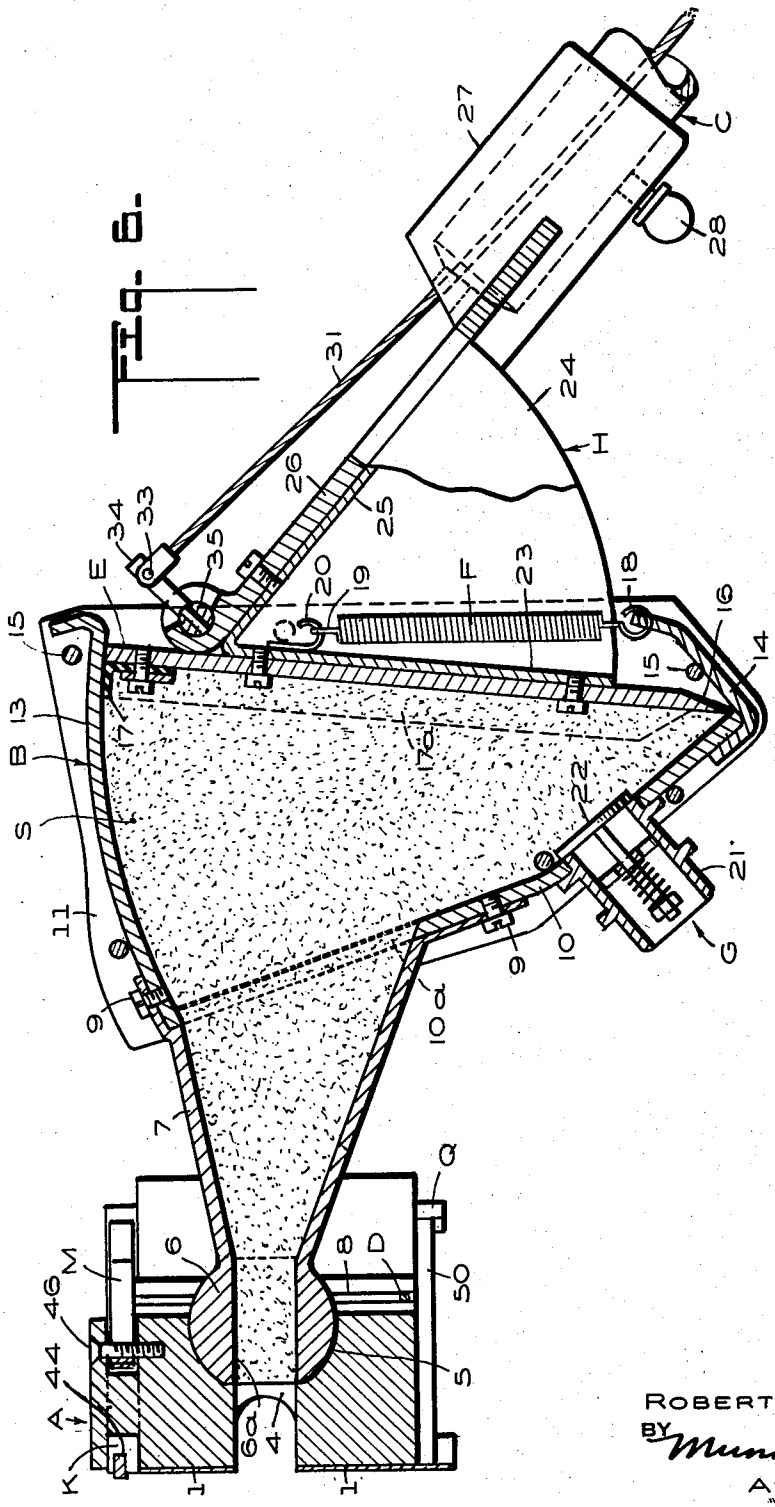
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Fig. 6.



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MASTIC APPLICATOR AND CORNER-FINISHING TOOL

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Application December 20, 1954, Serial No. 476,219

2 Claims. (Cl. 222—323)

In my Patent No. 2,300,398, issued November 3, 1942, on a pressure plastic applicator, I show a device for applying a layer of mastic over a tape that has been placed in the corner of two adjoining pieces of wall board that extend at right angles to each other. The device applies the mastic layer so as to cover the tape and the edges of the layer are feathered to merge imperceptibly into the wall board surfaces. Another patent, No. 2,413,684, was issued to me on January 7, 1947, and pertained to an improved plastic applicator in which the two wings of the corner tool were hinged together. This was followed by a further patent, No. 2,420,062, issued to me on May 6, 1947, and covering an improved corner finishing tool.

One of the more recent patents received by me is Patent No. 2,594,606, issued April 29, 1952, and in which a mastic applying and corner finishing tool is provided with trowelling bars at the trailing edges of the tool and the sides of the tool are also provided with side bars.

It is customary to tape the corner where two wall board sections meet each other and form an angle of substantially 90°. A layer of mastic is applied to the wall board surfaces in order to attach the tape and cause it to adhere and cover the joint. In my Patent No. 2,502,499, issued April 4, 1950, I show a combined plastic and tape applicator which will apply the layer of mastic and tape to the corner joint in one operation. After the layer of mastic and tape have been applied, the tape is smoothed out and any excess mastic is forced out at the sides of the tape by my corner roller, Patent No. 2,533,209, issued December 12, 1950. The forced out mastic from under the tape will usually remain clinging to the wall board surfaces.

It is this excess mastic which my present corner-finishing tool will pick up and automatically apply to the surface of the tape for covering it with a layer of mastic. Should additional mastic be necessary to cover the tape to the desired extent, my tool can supply this mastic in the required quantities. In the present case, I will describe and claim an improved corner-finishing tool that has a head that fits into a room corner, a mastic-feeding compartment having a universal connection with the head, and a handle for the compartment. In a copending application on a Corner-Finishing Tool Head for Applying Mastic, Serial No. 476,493, filed December 20, 1954, now Patent Number 2,824,443, issued February 25, 1958, I show the head in detail and the head may be used with or without the mastic feeding compartment.

The present invention is an improvement over my Patent No. 2,594,606, issued April 29, 1952, on a mastic-applying and corner-finishing tool. In the patent, the grooves for receiving the mastic and for transferring it

to the surface of the tape are not deep enough and the mastic will have a tendency to dry out as its moisture is absorbed by the tape and by the adjacent wall board surfaces. As the mastic loses its moisture, it will require more force to move it along the grooves and therefore the pressure to move the mastic will be more than an operator can manually apply. This necessitates the use of a source of power for feeding mastic to the tool, such as a motor driven pump.

Applicant has found that by deepening the grooves gradually from the point where the mastic enters the grooves to the outer ends of the grooves, the body of mastic will be greater in volume and therefore less of its mass will give up moisture to the tape and wall board. The mastic will remain more flowable and less force will be needed to move it into the grooves. Add to this advantage the further one of bringing the walls of the corner tool closer to the adjacent surfaces of the tape and wall board that the tool overlies and there will be no tendency for the mastic to drop from the tool which sometimes occurred with Patent So. 2,594,606. Because of this change, the inlet opening to the mastic-receiving grooves can be appreciably enlarged to permit a greater quantity of mastic to be delivered to the grooves. As the feed opening is made larger, the amount of force necessary to move the mastic to the tool is reduced and therefore manual pressure has been found sufficient for feeding the mastic to the tool.

In the present case I show a compartment for holding a supply of mastic and this compartment is connected to the corner tool head by a universal joint that also acts as a feeding means between the compartment and the head for the mastic. The compartment has a pressure plate of the type shown in my mastic applicator and finishing tool, Serial No. 374,722, filed August 17, 1953, now Patent Number 2,824,442, issued February 25, 1958, except that in the present case, the tool handle is rigidly secured to the plate, whereas in the pending case the handle is pivotally secured to the plate. The purpose of this will be explained in the following description.

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

My invention is illustrated in the accompanying drawings in which

Figure 1 is a side elevation of the corner-finishing tool;

Figure 2 is an enlarged horizontal section taken on the line II—II of Figure 1, and illustrates a part of the mechanism for temporarily securing the pressure plate against swinging movement in the mastic-receiving compartment;

Figure 3 is a horizontal section taken on the line III—III in Figure 1 and illustrates the stops for limiting the outward movement of the pressure plate in the mastic-receiving compartment;

Figure 4 is a top plan view of the device shown on a larger scale than Figure 1 and a portion of the mastic-receiving compartment has been broken away to illustrate the gripping mechanism for holding the pressure plate in any predetermined position;

Figure 5 is a side elevation of Figure 4; and

Figure 6 is a transverse section taken along the line VI—VI of Figure 4 and shows the device in full size.

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

In carrying out my invention, I provide a corner-finishing tool which includes a tool head indicated generally

at A, a mastic-receiving compartment indicated generally at B, and a handle indicated generally at C. The corner tool head A will be described in detail and claimed in my copending application, Serial No. 476,493, now Patent Number 2,824,443, and therefore only a limited description of the tool head need be given in the present case.

Corner tool head

The corner tool head A is shown in Figures 4, 5 and 6 and it comprises a casting that has two wings A^1 and A^2, that extend substantially at right angles to each other. In practice, I have made the angle between the two wings slightly less than a right angle. Where the two wings join each other, I mount an angle plate **1** or clip, see Figure 6, and this angle plate is designed to be moved into a room corner indicated by the dot-dash line **2** in Figure 5. Each wing is provided with a recess **3** that receives mastic in a manner presently to be described. In Figure 5 only the mastic-receiving recess **3** is shown for the wing A^2.

Referring to Figure 6, it will be seen that the casting has a passage **4** therein and this passage opens up into the recess **3** as clearly shown in Figure 5. The passage **4** is enlarged and formed into a spherical recess **5** in which a spherical head **6**, forming a part of a universal joint, is rockably received. The spherical head has a passage **6***a* therein for the flow of mastic and the head is integral with a conical-shaped nozzle **7**. A U-shaped wire or clamp D is received in parallel grooves **8** that face each other and are formed in the casting and adjacent to the spherical recess **5**. It will be seen from Figures 4 and **6** that the upright spaced-apart spring arms of the U-shaped clip frictionally engage with the spherical head **6** at a point slightly rearwardly of the center of the head so that the clip will hold the spherical head in the recess **5**. In this simple manner, the spherical end **6** is secured to the corner tool head A and permits a universal movement between the tool head and the spherical member.

Mastic-receiving compartment

The conical nozzle **7** forms a part of the mastic-receiving compartment B and is secured thereto by screws **9** or other suitable fastening means, see Figure 6. The compartment B has a base plate **10**, provided with an opening **10***a*, that communicates with the conical nozzle **7**. The conical nozzle is made as large as possible to reduce the skin friction of the mastic flowing therethrough. The compartment B has sides **11** and **12**, see Figure 4, and an arcuate end wall **13**. At the opposite end of the compartment B, I provide an angle-shaped end-wall **14** and one edge of the base plate **10** is received in the angle formed by the two bent portions of the wall **14**. Staybolts **15**, or other suitable fastening means, are used for securing the sides **11** and **12** together.

A pressure plate E forms a hinged wall for the compartment B and is disposed opposite to the base plate **10**. The pressure plate has a chamfered edge **16** that is designed to fulcrum at the juncture between the end of the plate **10** and the adjacent portion of the inner surface of the end plate **14**. The opposite end of the pressure plate E is provided with a rubber flange **17** that wipes against the inner surface of the arcuate wall **13**. The rubber flange has sides **17***a* and these are secured to the sides of the pressure plate E, see Figure 2, to wipe against the inner surfaces of the side walls **11** and **12**. It will be seen that any mastic received in the compartment B will be forced into the conical nozzle **7** as the pressure plate E is moved inwardly into the compartment. A coil spring F has one end **18** attached to the end wall **14** and has its other end **19** attached to a hook **20**, which in turn is secured to the pressure plate E. As soon as the pressure is relieved on the plate E, the spring F will return the plate to the position shown in Figure 6.

I provide a simple means for filling the compartment B with mastic S. A flapper valve indicated generally at G has a cylindrical housing **21**, and this housing is carried by the plate **10** and enters an opening provided in the plate. A spring-pressed disk-valve body **22** is normally held seated against the inner end of the housing **21** so as to keep the flapper valve G, closed. When filling the compartment with mastic, a hose from the pump, not shown, is attached to the housing **21** and then mastic is forced from the pump into the compartment, the mastic flowing past the spring-pressed disk-valve body **22**. Mastic is forced into the compartment until it is filled and the operator is made aware of this when the mastic also fills the conical nozzle **7** and starts to issue from the passage **4** in the tool head A. The detachment of the conduit from the flapper valve G will permit the spring-pressed disk to immediately close. The compartment is now filled with mastic and is ready for use. Usually one pumping action is sufficient to fill the compartment with mastic.

In Figure 6 I show the pressure plate E provided with a bracket H and this bracket has a base portion **23** that is secured to the plate E. The plate also has sector-shaped sides **24**, and an inclined wall **25** that forms an angle with the base **23**. To the inclined wall **25**, I attach the base **26** of a handle-receiving socket **27**. The socket **27** receives the hollow handle C and this is secured in place by a set screw **28**. The handle C is illustrated in Figure 1 as being provided with a gripping lever J. This lever is pivoted at **29** to a bracket **30** which in turn is secured to the outer end of the handle C. A control wire **31** has one end pivotally secured to the gripping lever J at **32** and has its other end pivotally secured at **33** to an arm **34** and this arm extends radially from a central shaft **35**, see Figures 2 and 6. The central shaft **35** is rotatably mounted in two bearings **36** and **37** that are carried by the base **26**, and the ends of the shaft are cut on a bevel as shown at **35***a* and **35***b*.

These bevelled ends contact bevelled inner ends of friction gripping plungers **38** and **39** that are slidably mounted in the bearings or sleeves **36** and **37** respectively. The bearings have slots **36***a* and **37***a*, see Figure 2, and in these slots are slidably mounted pins **40** and **41** that project radially from the friction gripping plungers **38** and **39**. The plungers **38** and **39** are preferably made of nylon, although I do not wish to be confined to this particular material. When the gripping lever J is swung toward the handle C, by the hand of the operator that also grips the handle C, it will pull on the control wire **31** and rock the central shaft **35** causing the bevelled ends of this shaft to move the friction gripping plungers **38** and **39** outwardly and into contact with the inner surfaces of the side walls **11** and **12**. This will clamp the pressure plate E to the sides of the compartment so that it will be held rigid with respect to the compartment B. The purpose of this will be set forth hereafter. When the gripping lever J is released, a torsional spring **56**, see Figure 2, will return the central shaft to starting position.

In Figure 3, I also show the pressure plate E disposed adjacent to stop pins **42** and **43** that are mounted in the side walls **11** and **12** of the compartment B. The spring F urges the plate E in a clockwise direction in Figure 6 about its lower edge as a fulcrum until the plate contacts with the stop pins **42** and **43**, whereupon further movement in a clockwise direction is prevented.

Returning to the corner tool head A for a further description, it will be seen in Figures 4 and 5, that the side wings A^1 and A^2 of the casting are provided with trailing bars or blades **44** and **45** that are mounted in matrices K and L respectively. Only the matrix L of the trailing bar **45** is illustrated in Figure 5. The two matrices K and L have mitered inner corners that are fulcrumed against the upper and inner part of the angle plate **1**, see also Figure 5. A leaf spring M has its middle portion passed in back of a holding screw **46**, see Figure 6, and has its ends bearing against the outer ends of the

matrices K and L for urging the trailing bars **44** and **45** against the adjacent surfaces of wall board sections N and P, see Figure 4. I will describe in my copending application, Serial No. 476,493, now Patent Number 2,824,443, how the trailing bars **44** and **45** are held in place in the matrices K and L by set screws **47** and **48** respectively, and how a slight crown effect is formed in the trailing bars so that their outer ends will be curved toward the wall board surfaces.

The wings A^1 and A^2 of the corner head also have side matrices Q and R, see Figures 5 and 6. Both of the side matrices carry side bars or blades and Figure 5 illustrates one of these bars at **49**. The side matrices Q and R are integral with the top matrices K and L and will move therewith. The lower ends of the side matrices Q and R are connected to arcuate supports **50** and **51**, see Figures 5 and 6, which in turn are pivotally secured at their inner ends to the inner surface of the lower angle plate **1**. The leaf spring M urges the matrices toward the wall board surfaces. The side matrices Q and R carry hooks **52** and **53** that limit the swinging movement of the matrices in one direction. The hooks will bear against the rear portions of the tool head A when the side matrices move to a certain point and stop further movement.

Operation

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. I have already set forth how the mastic S is fed into the compartment B. In use the tool is supported by the handle C and the operator places the corner tool head A in the corner of the room so that the angle plate **1** will bear against the wall board corner **2**, see Figures 1 and 5. As already stated, the corner has had a layer of mastic applied thereto, not shown, and this layer has been covered by a tape. It is now necessary to cover the tape with a second or outer layer of mastic. This is accomplished by moving the handle C and causing the corner tool head A to travel downwardly along the corner **2** in the direction of the arrow **54**, shown in Figure 1. Pressure is applied on the handle C by the operator during this movement for forcing the pressure plate E into the compartment B and causing the plate to force the mastic S through the conical nozzle **7** and into the mastic-receiving recesses or grooves **3** in the tool-head. The front surfaces of the wings A^1 and A^2 will be spaced by a slight distance from the wall board surfaces due to the fact that the wings form an angle of slightly less than 90° with respect to each other and the trailing bars **44** and **45** will contact with the wall and form a 90° angle. The side bars **49** will also contact with the wall.

As the tool is moved downwardly in Figure 1, the mastic will be applied to the tape indicated by the dot-dash line **2**, and it will also be applied to the wall board surface disposed adjacent to the tape. In my copending

compartment B, see Figure 2. This will secure the pressure plate E to the walls **11** and **12** so no further mastic will be fed. At the same time, the operator can continue to move the corner tool head A along the corner to apply the second mastic layer thereto. No mastic will be fed to the tool head as long as the pressure plate E is held against movement by the plungers **38** and **39**.

Should the first layer of mastic, not shown, have portions extending beyond the sides of the tape, not shown, the tool head A is provided with recesses **55**, see Figures 1 and 5, that will scoop up this excess mastic as the tool head is moved downwardly and direct this excess mastic into recesses **3**, where it will be applied to the outer surface of the tape in the manner already described. My copending application, Serial No. 476,493, now Patent Number 2,824,443, will go into this phase of operation more thoroughly.

When the operator has completed applying a second layer of mastic to the tape, he can remove the tool head A from the corner and the very act of lifting the head away from the corner will permit the spring F to return the pressure plate E to its normal position where it will contact with the stop pins **42** and **43**, see Figure 3. The return movement of the pressure plate E, will tend to create a vacuum in the compartment B and this will be sufficient to stop any further feeding of mastic to the tool head. In fact, there will be a slight return flow of mastic to the compartment B. The result is that there will be no excess mastic deposited on the corner, nor will any mastic fall on the floor at the time the tool is removed from the corner.

The torsional spring **56** is mounted on the central shaft **35** for the purpose of returning the shaft to its original position when the gripping lever J is released by the operator. This frees the friction gripping pins or plungers **38** and **39** from their frictional engagement with the inner surfaces of the walls **11** and **12** of the compartment B. The pressure plate E is now free to swing.

The U-shaped spring clip D, permits the tool head A to be removed from the spherical head **6**. The tool heads A may be of different sizes for different kinds of work. When the device is used, there is a tendency for the lower end of the angle plate **1** to ride on the tape in the inside corner **2**. The lower angle plate **1** is therefore preferably plated with iron carbide to give a carbide coating to prevent wear. This gives the angle plate a long life. The tool rides on the lower end of the angle plate **1** or clip and on the outer ends of the trailing bars or blades **44** and **45**. This three point contact permits the device to accommodate itself to any inequalities in the wall surfaces forming the inner corner. The wings A^1 and A^2 of the tool head form an angle of slightly less than 90°. The trailing blades **44** and **45** can swing so as to make an obtuse angle. In this way the blades **44** and **45** will conform to the angle of the

which said manually-controlled means includes friction pins slidably carried by the plate; a rockable shaft for forcing the pins into frictional engagement with walls of the compartment; and a gripping lever carried by the handle and operatively connected to the shaft for rocking it and causing the pins to grip the compartment walls.

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