Oct. 29, 1963 J. E. SUMMERS ETAL 3,108,313

BRICK MASON MORTAR APPLICATOR

Filed Nov. 30, 1961 3 Sheets-Sheet 1

Fig. 1

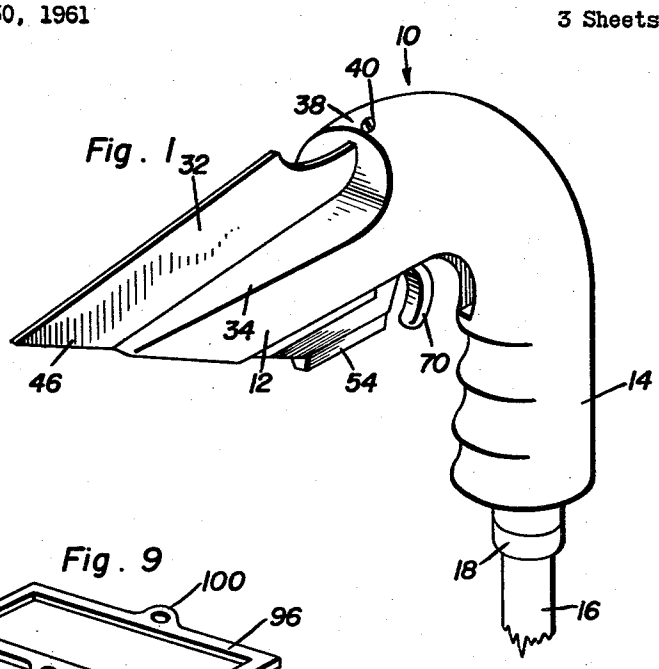


Fig. 9

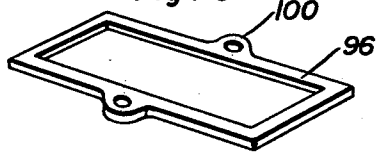


Fig. 7

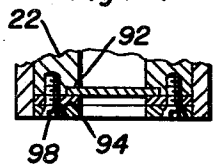


Fig. 6

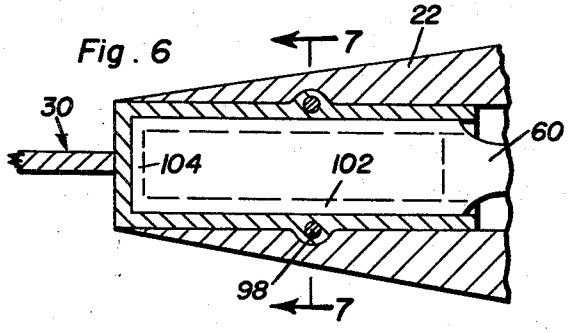


Fig. 10

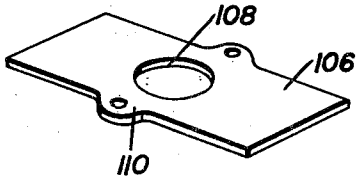
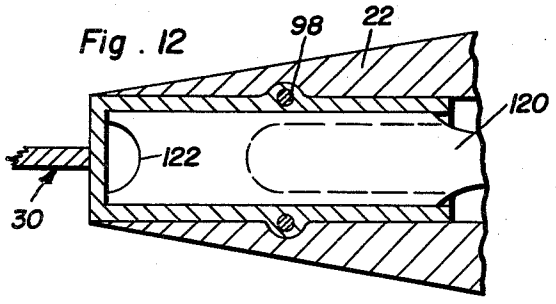


Fig. 12



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Oct. 29, 1963 J. E. SUMMERS ETAL 3,108,313

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Filed Nov. 30, 1961 3 Sheets-Sheet 2

Fig. 2

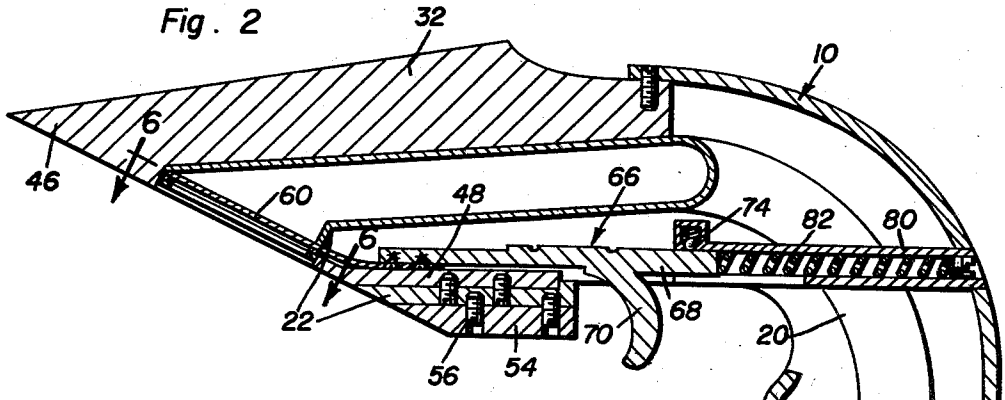


Fig. 13

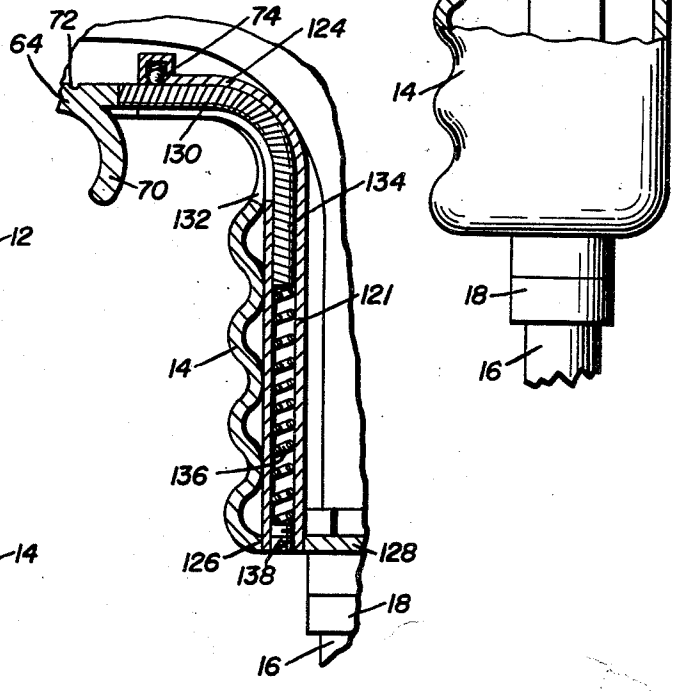
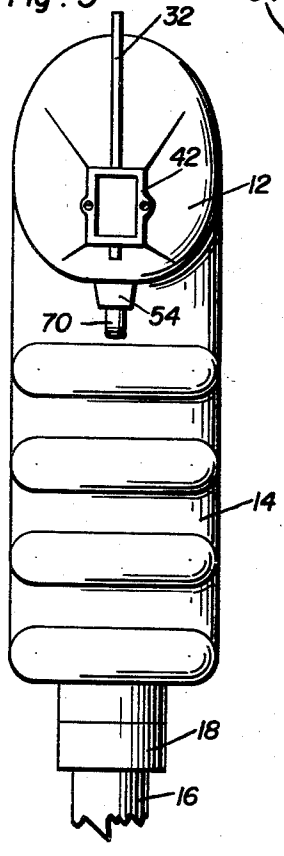


Fig. 3



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Oct. 29, 1963 J. E. SUMMERS ETAL 3,108,313

BRICK MASON MORTAR APPLICATOR

Filed Nov. 30, 1961 3 Sheets-Sheet 3

Fig. 4

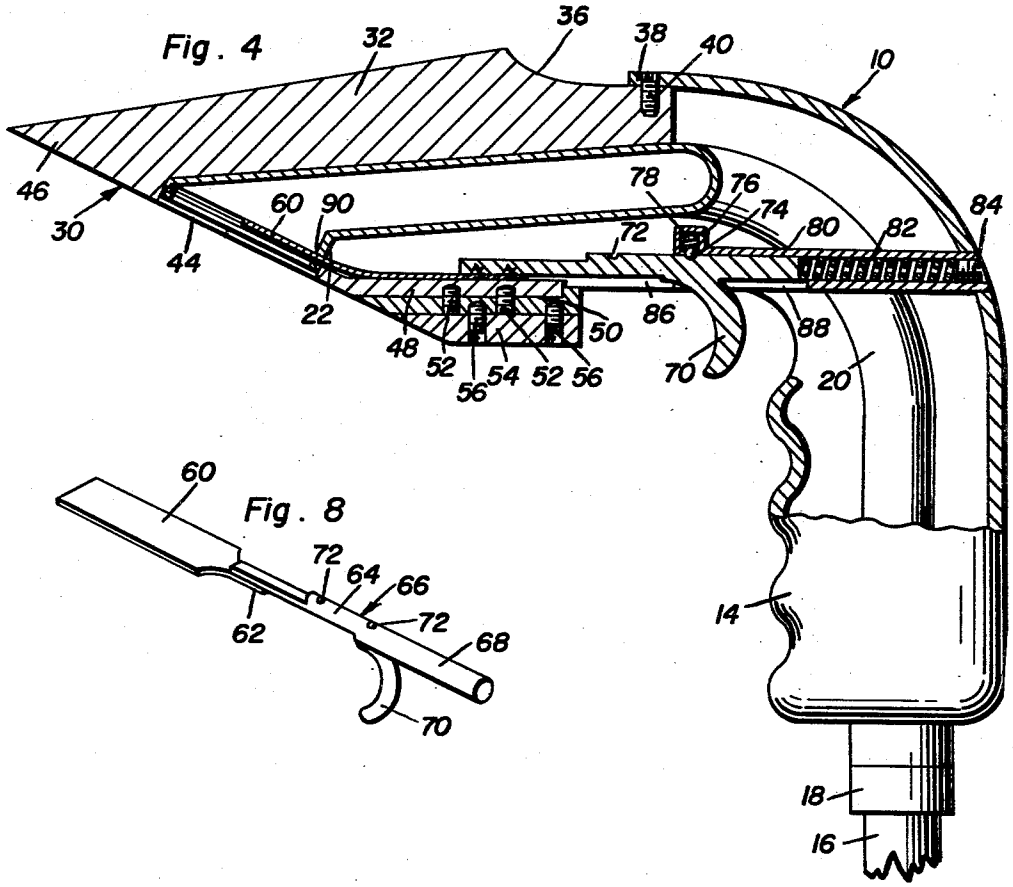


Fig. 8

Fig. 5

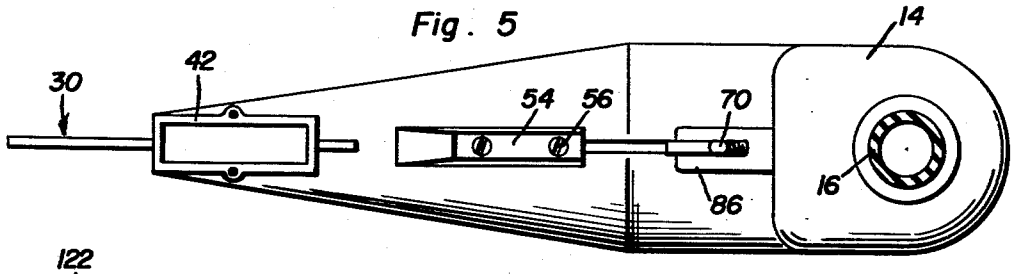
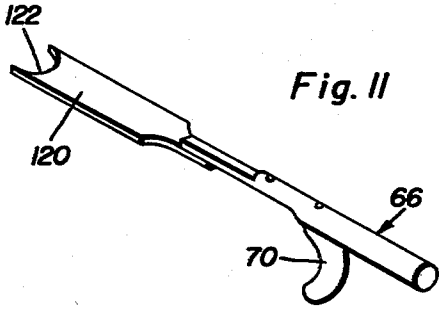


Fig. 11



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BRICK MASON MORTAR APPLICATOR

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Filed Nov. 30, 1961, Ser. No. 156,104
15 Claims. (Cl. 15—523)

This invention comprises a novel and useful brick mason mortar applicator and more particularly pertains to a pressure gun for applying mastic material for masonry and other building construction.

The primary object of this invention is to provide a brick mason's tool which will enable the masonry worker to successfully perform with a single implement all of the various operations of a brick mason such as applying mortar or cement to a course of brick or the joints thereof; scraping excess mortar from the masonry courses; pointing the joints between the blocks of the masonry course, and cutting or breaking bricks as required to fit into a masonry construction, thereby greatly reducing the fatigue resulting from and the time required to perform the customary operations of a brick mason.

A further object of the invention is to provide a device in accordance with the preceding object which shall be connected to a remote source of a mastic material supplied by a hose under pressure including particularly such materials as mortar or other cementitious materials, thus greatly minimizing the time and labor required to erect a masonry construction.

A further and very important object of the invention is to provide a mastic gun to enable the applying under pressure of various mastic materials and particularly cementitious material either intermittently or in a constant stream as required, in layers of controlled variable thickness, and further in streams of various predetermined cross sectional shapes.

Still another object of the invention is to provide a device in accordance with the preceding objects which shall include a cleaver or chisel shaped blade secured to the underside of a gun to enable the cutting or breaking of bricks by use of the tool and wherein the blade is securely mounted and carried upon the barrel portion of the device.

A still further and important object of the invention is to provide a device in accordance with the preceding object, in which the orifice or discharge opening of the nozzle portion of the apparatus shall be disposed in a plane which is angularly inclined with respect to the longitudinal axis of the barrel of a gun and the longitudinal axis of the hand-grip portion of the gun thereby rendering less fatiguing the proper positioning of the gun for applying mortar or cementitious materials to surfaces.

A still further and important object of the invention is to provide a gun applicator for applying mastic materials under pressure wherein an extremely effective control of the pressure discharge of the mastic material is obtained through the use of a valve member disposed immediately at the discharge end of the barrel portion of the gun and controlling the discharge orifice thereof and which has a secure sealing and seating engagement with its seat to thereby prevent the accidental discharge of material even though the device is employed as a scraping tool or as a chisel for breaking brick.

Yet another important object of the invention is to provide a device in accordance with the immediately preceding object in which the valve element shall consist of a flexible plate or strip guidably mounted inside the barrel of the gun and connected to an improved form of trigger-like valve actuating mechanism.

A still further important object of the invention is to provide a device in accordance with the preceding object wherein a suitable plastic composition body shall receive and have embedded therein a mastic supplying tube in connection with a discharge orifice, valve and valve actuating means and wherein a metallic cap shall enclose the discharge end of the tube and its orifice, shall be received and mounted upon the barrel portion of the device in an improved manner and shall in itself provide the scraping and pointing elements of the tool while in turn reinforcing and strengthening that portion of the barrel to which the cleaver element of the invention is attached.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of a preferred embodiment of a brick mason's mortar applicator in accordance with the principles of this invention;

FIGURE 2 is a vertical longitudinal sectional view taken upon an enlarged scale through the device of FIGURE 1 and showing the valve element in its closed position, certain elements being shown in elevation therein;

FIGURE 3 is a front elevational view of the device of FIGURES 1 and 2;

FIGURE 4 is a view similar to FIGURE 2 but showing the position of the valve element when the latter is operated to partially open the discharge orifice of the applicator;

FIGURE 5 is a bottom plan view of the device of FIGURES 1, 2 and 4;

FIGURE 6 is a sectional view taken substantially upon the plane indicated by section line 6—6 of FIGURE 2 and showing said structural details of the discharge orifice portion of the device.

FIGURE 7 is a vertical transverse sectional detail view taken substantially upon a plane indicated by section line 7—7 of FIGURE 6;

FIGURE 8 is a perspective view of the flexible valve member and the valve actuating mechanism to which the valve is attached;

FIGURE 9 is a perspective view of an element of the orifice assembly of the device;

FIGURE 10 is a perspective view of the modified or adapter element which may be utilized to vary the shape of the discharge orifice of the valve assembly;

FIGURE 11 is a perspective view of a modified valve member utilizable in conjunction with the valve plate of FIGURE 10;

FIGURE 12 is a view similar to FIGURE 6 but showing the valve and orifice assembly of the modified construction of FIGURES 10 and 11;

FIGURE 13 is a fragmentary view similar to FIGURE 2 of a preferred and modified form and arrangement of the valve actuating trigger assembly.

In the accompanying drawings which illustrate for exemplary purposes a suitable form of apparatus for carrying out the principles of this invention the numeral **10** designates generally a body of a pistol-like configuration including a barrel portion **12** and a hand-grip portion **14**. The applicator is adapted to receive from any suitable source by means of a pressure supply conduit **16** a flowable material such as a mastic and particularly including cementitious material such as mortar which passing through the body is discharged from the barrel portion of the latter.

Although various types of mastic or plastic material may be applied and discharged by the gun forming the subject matter of this invention, the gun is especially designed for the dispensing of cementitious material and particularly mortar and the gun itself is particularly designed not only to dispense the material for use by brick and stone masons in the laying of courses of masonry from various types of masonry block but also to enable the operator to perform other brick mason functions with the same device such as scraping excess mortar or cement from the masonry construction, pointing joints in the masonry construction, and using the device as a cleaver or chisel in order to break or cut bricks or masonry blocks to a required size for the purpose intended.

Referring now primarily to FIGURES 2 and 4 in conjunction with FIGURE 1 it will be observed that the mastic supplying conduit **16** is detachably secured to the lower end of a hand-grip portion **12** by any suitable quick detachable coupling such as that indicated generally at **18**. In this manner the gun can be readily connected to or removed from the flexible conduit **16** which constitutes the source of supply of the mastic material.

The body **10** of the gun is preferably formed of a suitable plastic composition such as a nylon or similar composition which possesses a great structural strength, great hardness and resistance to shock as well as possessing some resiliency and ability to absorb shocks. The body may be of one piece construction and may be molded about other elements of the gun or may be formed as two or more separately prefabricated elements assembled together and connected to the other elements of the device. In either event, the body serves to enclose and house and support various elements of the gun in a manner to be now described.

Disposed in the interior of the body and extending from the opposite ends of the barrel portion and of the hand-grip portion thereof is a tube or conduit **20** of copper or other suitable material and to which the coupling **18** is connected at its lower end. This tube comprises means for supplying and delivering mastic from the source of supply to the nozzle portion of the gun at the outer end of the barrel portion.

Mounted upon and communicating with the outlet end of the tube **20** is an orifice or nozzle assembly indicated by the numeral **22**. Although the cross section of the tube is preferably circular, the nozzle assembly is preferably rectangular in shape in order to provide a rectangular orifice or area through which the mastic dispensed by the gun is to be discharged. The orifice assembly can be either integral with the tube or may be separately formed and united thereto in any desired manner. In any event, the orifice assembly and its discharge end lies in a plane which is inclined to the longitudinal axis of the barrel portion of the tube and the hand-grip portion thereof as will be readily apparent from FIGURES 2 and 4, when the gun is held in an upright position, while the mastic material is being applied to the horizontal or vertical surface of a masonry construction.

A valve means cooperates with the orifice assembly to control and regulate flow therethrough in a manner and by a means to be subsequently set forth. The barrel portion of the gun further includes a metallic cap designated generally by the numeral **30** which performs a number of important functions. This cap includes a

plate-like element **32** forming the top portion of the cap and which elements constitutes a scraping blade and lies upon the top surface of a seat or recess **34** constituting the top and forward portion of the barrel **12**. At its rearward end the blade **32** is downwardly recessed at **36** to be received under or within a hollow portion **38** of the barrel portion **12** which hollow portion **38** in turn is detachably secured as by setscrew or other fastening means **40** in a secure, fixed and overlapping engagement with the blade **32**.

As will be observed from FIGURE 1 in particular, the top edge of the blade **32** has a relatively straight and sharp edge ideally adapted for the purpose of scraping excess mortar from the surface of a masonry construction, and for similar purposes.

The front portion of the cap **30** as will be also apparent from FIGURES 3 and 5, has a plane surface which is inclined to the longitudinal axes of the barrel portion and hand-grip portion of the gun and is substantially parallel to the corresponding planar surface of the orifice assembly **22** and is in closely spaced relation thereto. Intermediate its ends this forward portion is laterally enlarged as at **42** to provide an opening **44** which corresponds in size and shape to and registers with the orifice opening for the orifice assembly **22**.

The junction of the forward portion of the cap with the top portion thereof constitutes a point **46** which is adapted to form a number of operations normally performed by the bricklayer's trowel including pointing of the joints of masonry construction and the like.

The lower portion of the cap **30** is of a cylindrical configuration as shown or suggested at **48** to be received in and engaged upon a correspondingly shaped recess or seat **50** forming the lower portion of the barrel **12**. Fastening screws **52** cooperate with the previously mentioned fastener **40** to thus rigidly but effectively secure the cap **30** to the barrel portion of the gun.

Detachably secured to the bottom side of the barrel portion which contains the cap receiving seat **50** is a chisel-shaped metallic blade or cleaver **54** which is secured to the plastic material of the barrel portion as by recessed setscrews **56** therein. The cleaver is so placed that its front surface lies in and constitutes a continuation of the planar surface of the metal cap **30** as will be apparent from FIGURES 1–5. The cleaver is utilized by grasping the hand-grip of the gun and using the cleaver as a chisel edge to thus break or cut bricks or other masonry blocks in order to fit them into the masonry course as desired. When mounted in this manner, the cleaver is somewhat cushioned by virtue of the plastic material of the barrel portion of the body which is interposed between it and the metal cap **30**, the solid material of the latter service to reinforce and strengthen the plastic barrel portion against breakage when the device is employed in this manner.

Also received within the body of the gun is the valve assembly and the valve actuating mechanism therefor.

Referring now primarily to FIGURE 8 it will be seen that the valve assembly includes a flat plate-like valve **60** of sheet metal or other flexible material having the requisite resiliency and strength, and which terminates in a shank portion **62** of reduced width which is secured in any suitable manner such as by welding or the like or by detachable fastening means if desired to the forward portion **64** of a valve actuating rod **66**. The latter has a diametrically enlarged rear portion **68** from which depends an integral finger-grip in the form of a trigger **70**. Upon the top surface of the actuating rod **66** are a pair of recesses **72** which cooperate with a detent ball **74** received in a housing **76** containing detent spring **78** which thereby yieldingly urges the ball into either of the detent recesses **72** when the latter are properly aligned with the detent ball during movement of the actuating rod by the trigger **70**.

The rear end portion **68** of the actuator rod is slidably

received in the outer end of a tube **80** which thus constitutes a retainer and a guide for the actuating rod. This tube has therein a coil spring **82** which resiliently urges the actuator rod outwardly of the tube or toward the left as viewed in FIGURES 2 and 4. The spring is retained by a screw threaded plug **84** in the other end of the tube so as to adjustably regulate resilient force applied to the actuator rod. The tube **80** itself is embedded or received within the hand-grip portion of the gun as shown in FIGURES 2 and 4, with the trigger **70** being slidable in aligned slots **86** in the lower side of the barrel portion of the body and **88** in the lower side of the tube portion **80**.

As previously mentioned, the valve member **60** is of a pliable resilient nature, and since the valve actuating rod **66** operates or slides in a guided manner in a line of travel which is angulated with respect to the plane of the orifice assembly, the valve member must bend or flex during its reciprocatory movement. It will be observed that the rearward portion of the valve member rests upon and is guided by the inside surface of the cap member **30** which inside surface is appropriately contoured to perform this function. Further, the valve member **60** passes through a slot **90** forming the orifice assembly **22** which thus serves to partially and to initiate the guiding action of the valve member during its movement for closing or uncovering the orifice of the gun.

As a convenient means for providing the necessary rigidity in the guiding action of the valve in order to enable the flexed material of the same to withstand the various pressures applied thereto by the mastic material, the valve seating assembly of the orifice may be of the construction disclosed in greater detail in FIGURES 6, 7 and 9. Thus, the orifice assembly **22** is provided with a rectangular shouldered portion **92** therein upon which the rectangular valve member **60** is slidably received. The valve member is slidably retained against this shoulder by any suitable guide means such as the rectangular spacer plate **94** which in turn is secured as by a rectangular retaining plate **96** through the agency of fastening screws **98** extending through the apertured lugs **100** on this plate. This means for slidably retaining and guiding the valve in its seat is illustrative of a variety of guiding and retaining means which could be employed for this valve. It is important to note, however, that as shown in FIGURE 6, the marginal sides and end portions indicated in dotted lines at **102** and **104** respectively of the valve plate thus lie between the parallel guide surfaces of the shoulder surfaces **92** and the spacer plate **94**. These guiding surfaces together with the guiding slot **90** assure that the valve will remain in proper position as it closes or uncovers either in whole or in part the discharge orifice of the device.

As previously mentioned, there is provided a spacer plate **94**. This plate can be replaced by different types of valve seat plates such as that shown at **106** in FIGURE 10 and which is provided with a discharge orifice **108** of any desired cross sectional shape or configuration. This plate likewise has the apertured lugs **110** by which it is secured in place with the retainer **96** by the fasteners **98** in the manner shown in FIGURE 7.

FIGURE 12 illustrates the modified construction for this plate while FIGURE 11 indicates a modified form of valve member which may be utilized therewith to assist in effecting discharge orifices and streams of discharged mastic material of various cross sectional shapes and sizes. The valve plate **120** is secured to the valve actuating rod **66** in the same manner previously described but preferably at one end thereof has an appropriately shaped recess or cutaway portion **122** which cooperates with the opening **108** upon actuation of the valve to reflect a discharge orifice of a predetermined size and shape.

As set forth hereinbefore, it will now be apparent that the cap **30** of this invention forms a number of very important functions. It not only serves as a scraper or pointing tool and as a clever for the stone mason but also serves as a guide surface to properly position the discharge orifice of the gun with respect to the masonry construction to which the mastic is to be applied. Further, it serves to rigidify and reinforce and strengthen the plastic material of the barrel portion of the gun to thus enable the latter to perform better its various functions. Further, it constitutes a guide for the flexible valve plate during the operation of the latter.

In applying the principles of this invention to a mortar applicator for brick masons, it is found convenient to so position the two detent recesses **72** that when the detent ball **74** is engaged in the rearward recess **74** or the position shown in FIGURE 4, the valve will substantially half close the orifice thereby enabling a layer of mortar of a desired size as for example ¾ inch in thickness to be applied. When the valve is open all the way, by engagement of the ball **74** in the forward recess **72**, which is the fully open position of the valve assembly, a relatively thicker layer of mortar may be laid as for example 1½ inches in thickness. Obviously, by properly proportioning the detents it is possible to lay layers of various thicknesses as may be desired.

In the previously described embodiments of this invention, the valve actuating assembly consisting of the actuator rod **68**, guide **80** and spring **82** extend across the width of the hollow chamber within the handle **14**. In some instances, particularly when relatively viscous materials are being applied by the implement, this arrangement not only partially obstructs flow through the barrel but also causes the flowing material to directly contact and pass across portions of the valve actuating assembly which may detrimentally affect the sensitivity and operation of the latter. It is generally preferred therefore to avoid this possible difficulty by arranging that portion of the valve actuating assembly which is housed within the barrel to lie along one side of the barrel and out of the direct line of flow of the dispensed material, as shown in FIGURE 13.

In this arrangement the same valve, valve trigger and valve detent means of the preceding forms of the invention are utilized with the same reference numerals being applied thereto. However, in place of the rigid actuator rod **68** and straight guide **80**, there is provided a curvilinear guide in the form of the tube **121**. The upper end **124** of this guide tube is curved into alinement with the line of reciprocation of the member **64** while the main and lower portion of the tube **121** lies in the chamber within and along the wall of the handle **14**, opening through an aperture **126** in the bottom wall **128** thereof.

At the junction of its upper curved portion **124** and its lower straight portion, the wall of the tube **121** is slotted or notched at **130** in registration with the corresponding notch **132** in the barrel and handle of the gun to permit movement of the finger-grip **70** therethrough.

Immediately rearwardly of the junction of the finger-grip or trigger **70** with the member **64**, a flexible, elongated valve actuating rod is attached. While illustrated as a helically coiled wire, it will be understood that any construction which has lateral flexibility but is longitudinally rigid for push and pull operation may be satisfactorily employed. The rod **134** is slidably guided in the curved guide tube **121** and a compression coil spring **136** disposed in the tube **121** abuts the rearward end of the rod **134** and thus resiliently actuates the valve with its closed position.

A closure plug **138** threadedly engaged in the open lower end of the guide tube **121** provides ready access to the spring **136** and the interior of the tube **121** for servicing as may be required and also enables adjustment of the spring closing pressure. It will be noted that the seating of the lower end of the guide tube **121** is seated in the aperture **126** thus firmly and fixedly securing the guide tube in place.

The same form of valve plates and valve seats previously described in connection with the other form of the invention may be employed with this modification and the operation of this preferred form of the invention is identical with those previously set forth.

It is important to note that in all forms of the invention the detent spring is not sufficient in strength to retain the trigger in any selected position, since the operating spring 82 is sufficient to override the detent spring and to effect closure of the valve assembly as soon as the trigger is released. However, the function of the detent balls and recesses is to enable the operator to feel or determine when the valve is opened to a predetermined desired extent to thereby facilitate use of the gun in applying the mastic in a layer of a predetermined thickness.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A pressure gun applicator for mastic materials comprising a pistol-like body including a handle and a barrel angularly extending therefrom and having in its outer end a dispensing orifice, a plate comprising a valve slidably mounted in said handle and barrel of said body and controlling flow through said orifice, valve operating means connected to and controlling movement of said valve across said orifice and including an actuating trigger, means connected to said handle for delivering a supply of mastic under pressure into said body and to said orifice.

2. A brick mason's tool for applying mastic materials under pressure comprising a body having a barrel with an orifice for dispensing mastic therethrough, a valve mounted upon said body and controlling flow through said orifice, a metallic cap secured to said barrel and body and having a dispensing opening registering with said orifice, said cap having a top scraping edge extending longitudinally of and projecting above said barrel, a chisel-like blade secured to the underside of said body and barrel.

3. A brick mason's tool for applying mastic materials under pressure comprising a body having a barrel with an orifice for dispensing mastic therethrough, a valve mounted upon said body and controlling flow through said orifice, a metallic cap secured to said barrel and body and having a dispensing opening registering with said orifice, said cap having a top scraping edge extending longitudinally of and projecting above said barrel, said cap including a front edge joining said top edge in a point disposed above and forwardly of said barrel and orifice and sloping from said point downwardly and rearwardly across said orifice and beneath said barrel.

4. The combination of claim 1 wherein said plate is of flexible material, guide means in said body guiding said plate for reciprocation in a curvilinear path of travel between orifice closing and orifice opening positions.

5. A mastic applicator comprising a gun and means for supplying mastic under pressure to said gun, said gun comprising a pistol shaped body including a barrel portion and a hand-grip portion, a mastic delivery tube embedded in said body and having inlet and outlet ends terminating respectively in the opposite ends of said hand-grip and barrel portions, a delivery nozzle on said barrel portion communicating with said outlet end and including an orifice, a valve movably mounted in said body and controlling flow through said orifice, a valve actuating mechanism connected to said valve and disposed in said body, a finger actuated trigger adjacent said hand-grip portion and connected to said valve actuating mechanism.

6. The combination of claim 5 wherein said orifice lies in a plane angularly inclined to the longitudinal axis of the barrel and of the hand-grip portions.

7. The combination of claim 5 wherein said valve actuating mechanism includes a tube in said hand-grip portion and a rod connected to said valve and slidable in said tube, a spring in said tube resiliently engaging said rod and urging said valve into orifice closing position.

8. The combination of claim 7 wherein said trigger is integral with said rod.

9. A mastic applicator comprising a gun and means for supplying mastic under pressure to said gun, said gun comprising a pistol-shaped body including a barrel portion and a hand-grip portion, a mastic delivery tube embedded in said body and having inlet and outlet ends terminating respectively in the opposite ends of said hand-grip and barrel portions, a delivery nozzle on said barrel portion communicating with said outlet end and including an orifice, a valve movably mounted in said body and controlling flow through said orifice, a valve actuating mechanism connected to said valve and disposed in said body, a finger actuated trigger adjacent said hand-grip portion and connected to said valve actuating mechanism, a metal cap mounted in said barrel portion and having a scraper blade with a top portion extending above and longitudinally of said barrel portion and a front portion sloping downwardly and rearwardly across the front of said barrel, said front portion having an opening registering with said orifice.

10. The combination of claim 9 wherein said front portion has a laterally enlarged flat surface provided with said opening.

11. The combination of claim 10 wherein said barrel portion has a seat receiving said cap, said cap underlying and secured to the bottom side of said seat.

12. The combination of claim 9 wherein said barrel portion has a seat receiving said cap and underlying and secured to the bottom side of the latter, a chisel blade secured to said barrel portion seat upon the bottom side of the latter.

13. A mastic applicator comprising a gun and means for supplying mastic under pressure to said gun, said gun comprising a pistol-shaped body including a barrel portion and a hand-grip portion, a mastic delivery tube embedded in said body and having inlet and outlet ends terminating respectively in the opposite ends of said hand-grip and barrel portions, a delivery nozzle on said barrel portion communicating with said outlet end and including an orifice, a valve movably mounted in said body and controlling flow through said orifice, a valve actuating mechanism connected to said valve and disposed in said body, a finger actuated trigger adjacent said hand-grip portion and connected to said valve actuating mechanism, said valve actuating mechanism including a tube in said hand-grip portion and a rod connected to said valve and slidable in said tube, a spring in said tube resiliently engaging said rod and urging said valve into orifice closing position, said tube being positioned along one side of said hand grip portion.

14. A mastic applicator comprising a gun and means for supplying mastic under pressure to said gun, said gun comprising a pistol shaped body including a barrel portion and a hand-grip portion, a mastic delivery tube embedded in said body and having inlet and outlet ends terminating respectively in the opposite ends of said hand-grip and barrel portions, a delivery nozzle on said barrel portion communicating with said outlet end and including an orifice, a valve movably mounted in said body and controlling flow through said orifice, a valve actuating mechanism connected to said valve and disposed in said body, a finger actuated trigger adjacent said hand-grip portion and connected to said valve actuating mechanism, said valve actuating mechanism including a tube in said hand-grip portion and a rod connected to said valve and slidable in said tube, a spring in said tube resiliently en-

gaging said rod and urging said valve into orifice closing position, said tube being positioned along one side of said hand-grip portion, said rod being laterally flexible, said tube including angularly disposed extremities connected by a curvilinear portion.

15. The combination of claim 14 wherein the hand grip portion has a bottom wall with an aperture, said tube having a lower end received and retained in said aperture.

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