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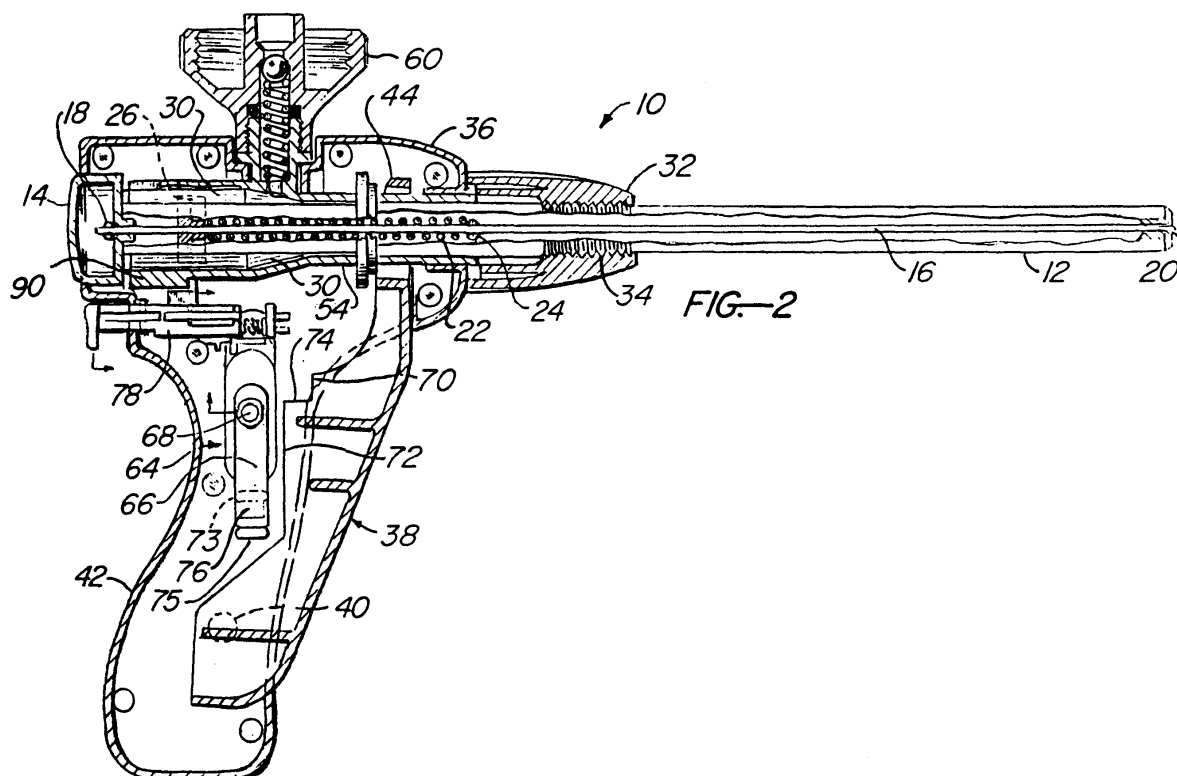
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(54) **Gun for urethane foam and the like**

(57) A gun for dispensing plastic foam material, such as urethane foam, in applying the foam in mounting panels or other components. The gun includes a removable and replaceable assembly including the nozzle (12)

and further components thereby avoiding the problem of clogged nozzles and other components. Further the gun includes a manually operable indexing system for positioning a container (60) in any of three orientations relative to the gun body (36) (Fig. 2).



Description

BACKGROUND AND SUMMARY OF THE INVENTION

[0001] Foam dispensing guns are widely used in construction and repair work for the application of foam material, such as urethane foam, in applying the foam in mounting panels or other components. Utilization of such foam guns involves the problem of foam material hardening in the nozzle and other components, thus presenting difficulties in removing the hardened foam, and problems are encountered in the positioning of a gun nozzle to apply foam at specific locations because a foam supply container extending from a gun often encounters obstructions such as structural members, which impede or prevent access to locations at which foam is to be applied.

[0002] The present invention addresses the problem of clogged nozzles and other components by providing a readily removable and replaceable assembly including the nozzle and certain other components, as claimed in claim 1.

[0003] The problem of positioning a gun nozzle for applications of plastic foam, while avoiding obstruction of a foam container on the gun is resolved by providing a manually operable indexing system for positioning a container carrier and container thereon in any of three orientations relative to a gun body axis, and retaining the container carrier in selected orientation.

[0004] The indexing system includes a rotor with an outwardly extending positioning lug positionable in a slot between yoke members on a manually operable slide component. With the positioning lug disposed in the slot between the yoke members, the foam container is disposed in generally vertical relation to the rotor axis and the gun nozzle. With the rotor positioning lug disposed 90° in either direction from the vertical orientation, the container is disposed 90° in either selected direction from the vertical. The rotor and container are maintained in selected horizontal position by engagement of the positioning lug on the end of one of the yokes, with the container mount supported at one of opposite end portions of a slot extending across the upper portion of the gun body.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005]

Fig. 1 is an elevational view of a preferred embodiment of the foam gun of the invention;

Fig. 2 is an elevational sectional view of a foam gun of Fig. 1;

Fig. 3 is an elevational view, partially in section, of the gun of Figs. 1 and 2;

Fig. 4 is a partial sectional view of a portion of Fig. 3;

Fig. 5 is an exploded perspective view of certain components of the foam gun of Figs. 1-4;

Fig. 6 is a perspective view of certain components of the embodiment of Figs. 1-4 which relate to selected positioning of a container mount; and

Fig. 7 is an end view of the foam gun of Fig. 3, showing different orientations of a container mount.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0006] The present invention provides two important functions and advantages. One is the convenient removability of an assembly including an outlet nozzle and other components for replacement thereof after the nozzle and assembly become clogged by hardened eurothane foam. The second is a mechanism operable to position a container mount in different orientations relative to the axis of the gun, to give better access in different situations to areas to which foam is to be applied.

[0007] A preferred embodiment 10 of the invention is shown (Figs. 1 and 2) as comprising a removable assembly, best shown in Fig. 2, including a nozzle 12, a cap member 14, a valve rod 16, and a helical spring 22 disposed about valve rod 16 and retained, as by annular knob 24.

[0008] A locking member 32 is disposed on the nozzle 12 and threadedly engages a threaded portion 34 of the nozzle for rotation to secure the nozzle relative to body 36 of the gun. Counter-rotation of the locking member disengages it from the nozzle. The assembly is then removable from the gun housing 36 by urging the assembly leftward by exertion of force on the nozzle 12 and/or by pulling on cap 14. The assembly is thus readily replaceable, as when it becomes caked with hardened urethane foam, the replacement assembly being inserted through the gun body 36 and nozzle 12 secured relative to the gun body by the locking member.

[0009] A relatively large trigger structure 38 is pivotable about a pivot 40 mounted on a lower interior wall of gun handle 42 (Fig. 2).

[0010] In the operation of the gun to discharge eurothane foam, the handle 42 and trigger 38 are grasped to urge upper annular trigger portion 44 (Figs. 2 and 5) leftward to engage the annular portion 46 of actuator member 49 to move it and its elongated arms 48 of arcuate cross-section to positions wherein they occupy slots 50, 52 defined in rotor 30 to cooperate with the cylindrical configuration of the rotor to define a combined cylindrical surface, and to urge the annular portion of actuator 49 against reduced portion 54 of rotor 30, thus to urge the arms 48 and rotor 30 against cap 14 to move rod 16 out of outlet opening 20 at the outer end of the nozzle, whereupon urethane foam passes from a container 62 to the nozzle and outwardly via the outlet opening 20.

[0011] A trigger lock mechanism 64 is operable to prevent operation of the trigger 38, and includes a slide member 66, typically actuable by thumb action on its tab portion disposed exteriorly of the handle wall in a groove in the wall of the handle, and is connected by a rod 68 to slide member 66. The slide member 66 is operable to engage or disengage from shoulder 70. Engagement of the slide member with the shoulder prevents trigger movement, and with the slide member 66 in its upward position, as viewed (Fig. 2), it is above the shoulder 70 so that the trigger may be manually operated. The shoulder 70 is defined by vertical surface 72 and horizontal surface 74 which extend across the interior of handle 42. Spaced parallel ridges 73, 75 on the handle wall, shown in broken lines, and a cooperating ridge 76 on the slide member enable the slide member ridge to be snapped into position between wall ridges 73, 75 to retain the slide member in position.

[0012] An indexing system, best shown in Figs. 6 and 7, enables an operator to position the container carrier 60 and container 62 thereon (Figs. 1 and 3) to any of three positions or orientations, and to retain them in selected position. A slide member 78 is movable by manual pressure on its pad portion 80 against the urging of spring 82 on a retainer member on the handle interior wall.

[0013] Disposed on slide member 78, and typically formed integrally therewith, are yoke arms 84, 86 which define a slot 88 therebetween adapted to receive a positioning lug 90 which extends radially outwardly from an end portion of rotor 30, as shown. Referring to Figs 6 and 7, when lug 90 is disposed in slot 88 (Fig. 7), container mount 60 is oriented vertically in which position it is retained by engagement of lug 90 in the slot 88 with slide member 78 in its withdrawn, retracted position (phantom outline in Fig. 6). Moving the slide member 78 inwardly moves yoke members 84, 86 out of engagement with lug 90, thus permitting rotation of barrel 30 and the container thereon to the leftward counter-clockwise or rightward clockwise positions shown in Fig 7. With container mount 60 in the counter-clockwise position, it is in seated in an arcuate end portion 92 of a wide arcuate slot 94 (Fig. 1) extending across the upper portion of gun body 36, and lug 90 on rotor 30 is disposed atop end edge 98 of yoke member 84, thus to prevent clockwise rotation of the container holder.

[0014] With the container mount 60 in the clockwise position shown in phantom lines in Fig. 7, it rests in an arcuate end portion 92 of the slot 94, and lug 90 on rotor 30 engages the upper end portion 92 (Fig. 1) of yoke member 86 and is thus prevented from counter-clockwise rotation out of position.

Claims

1. A gun for dispensing foam plastic and the like, comprising:

a body (36) and handle structure (42),

a removable assembly including a nozzle (12) with an outlet opening (20) a valve rod (16) with a cap (14) thereon opposite from the outlet opening, and a spring (22) disposed about and retained on the valve rod,

a securement member (32) for removably securing said assembly to said body and handle structure for removal and replacement of said assembly,

a rotor (30) rotatable about its axis in the body and handle structure, said rotor having thereon a container (60) mount extending outwardly of the body and handle structure through a slot therein, and

a trigger device (38) having an upper portion (44) to engage said rotor to move the rotor against said valve rod cap (14) to move the valve rod from said outlet opening to dispense foam plastic.

2. A gun according to Claim 1, wherein:

said assembly is removable from the body and handle structure by disengagement of the securement member to enable removal of said assembly by exertion of force to urge the nozzle toward the body and handle structure and outwardly from said structure.

3. A gun according to Claim 1, wherein said securement member is threadedly mounted on the nozzle adjacent the body structure for rotation to secure or release the assembly.

4. A gun according to Claim 1, wherein:

said trigger device includes a trigger member pivotally mounted in the handle structure and having an upper end portion to urge the actuator member and elongated arms thereon against said cap to move the valve rod from said outlet opening.

5. A gun according to Claim 4, wherein:

said rotor has elongated slots defined therein, and the actuator member has elongated arms to engage in the slots to form with the rotor a cylindrical rotor surface.

6. A gun according to Claim 1, and further including:

an indexing mechanism for positioning and retaining said rotor in selected orientations relative to said body and handle structure, said indexing mechanism including a lug on the rotor adjacent the rotor end opposite from the nozzle outlet opening.

7. A gun according to Claim 1, and further comprising an indexing mechanism comprising:

an indexing lug extending radially outwardly from an end portion of said rotor remote from the nozzle outlet opening, 5

a slot in said body and handle structure extending across the upper portion and into side portions of said body and handle structure to accommodate positioning of the container mount in various orientations relative to rotor axis, 10

a slide member having yoke members thereon and spaced apart to define a slot therebetween, said slide member being normally positioned with said rotor lug disposed in said slot between yoke members to retain the rotor oriented to position the container member to extend vertically of said body and handle structure, and 20

said slide member being movable inwardly of the body and handle structure to move said rotor lug from said slot to allow rotation of the container mount to either a clockwise or a counter-clockwise orientation wherein the container mount is positioned normal to said vertical orientation of the container mount, said container mount being supported in respective end portions of said body slot and is retained against counter rotation by engagement of said rotor lug on the end portions of respective yoke members. 25 30

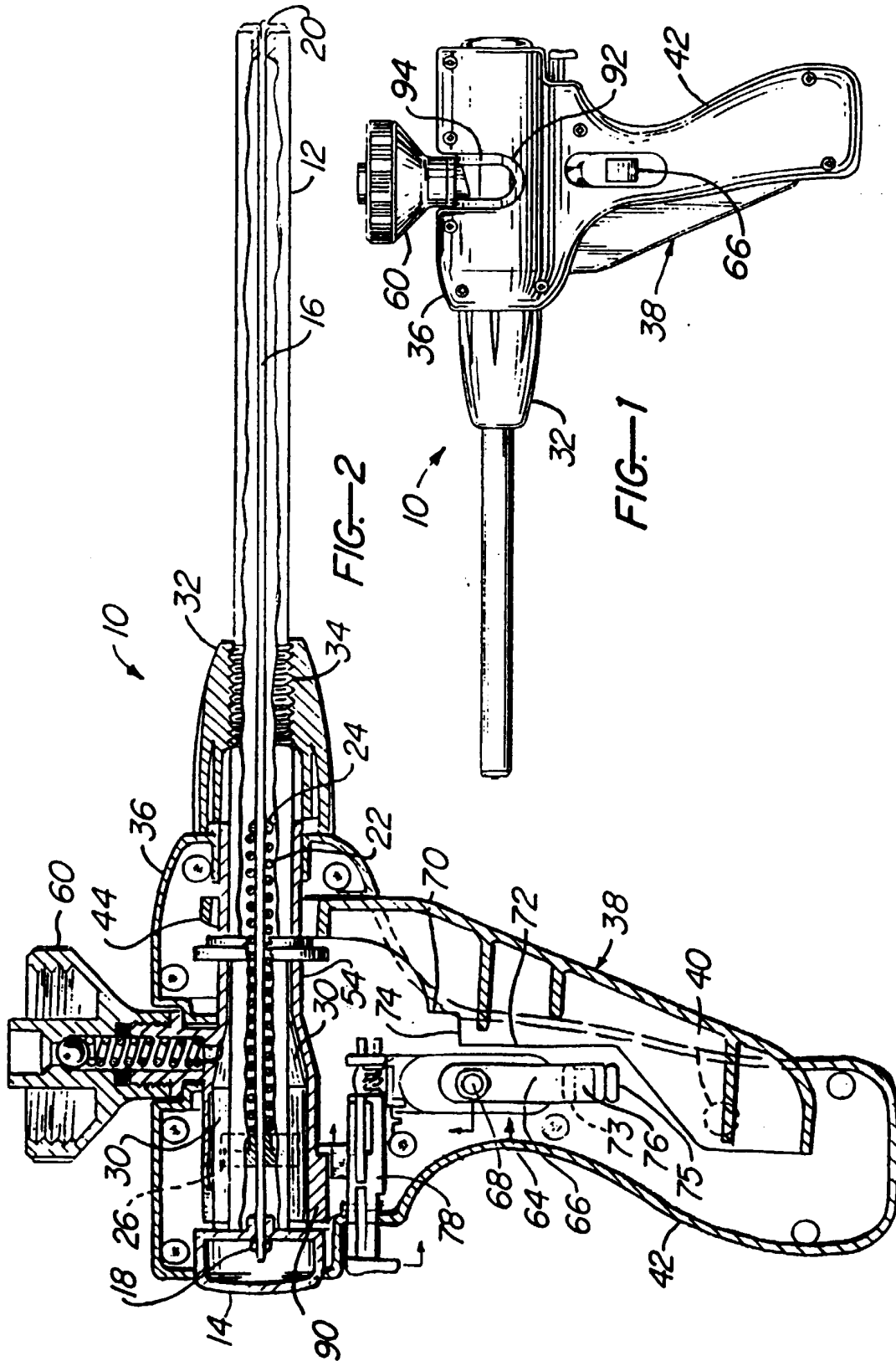
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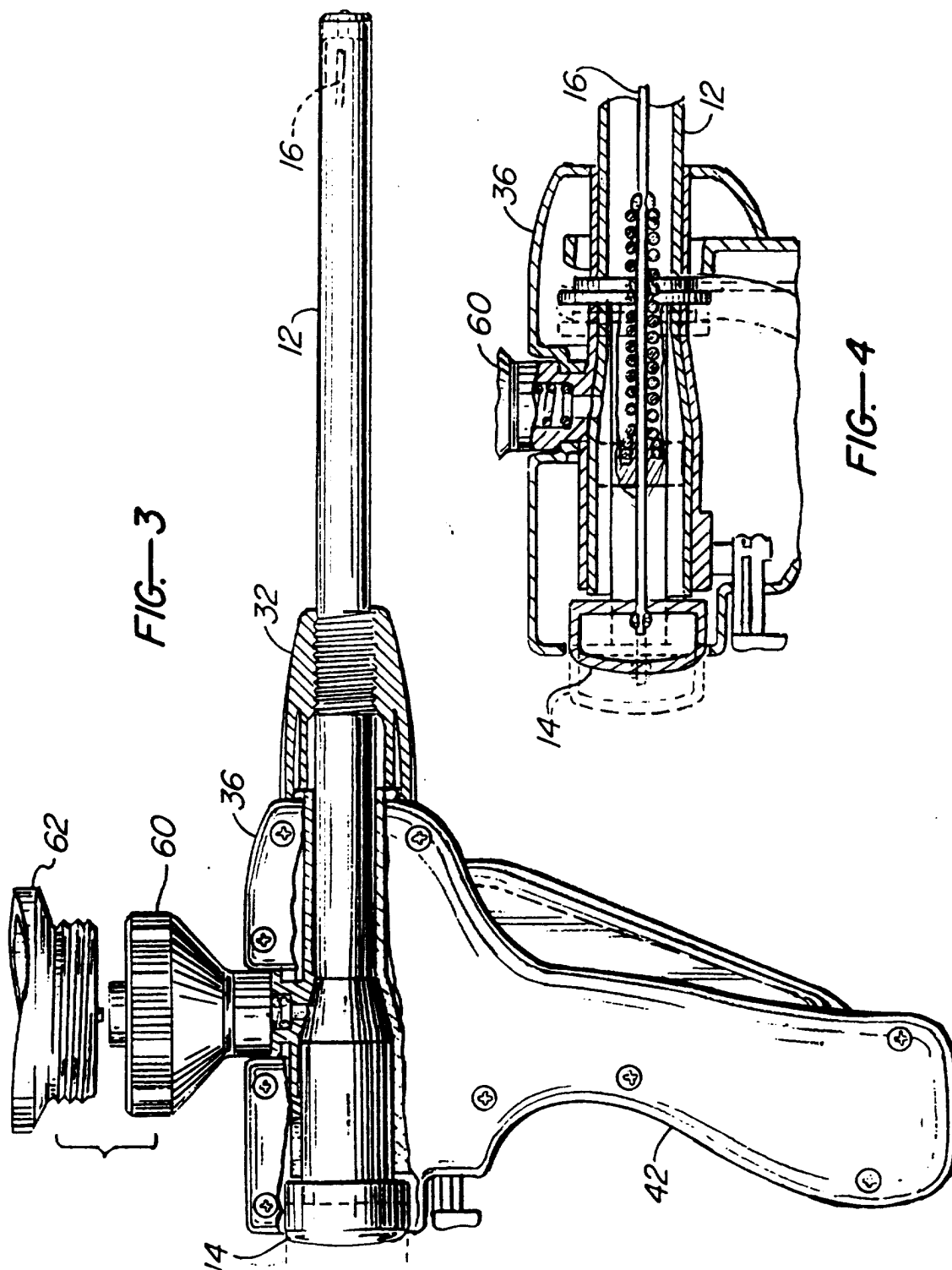
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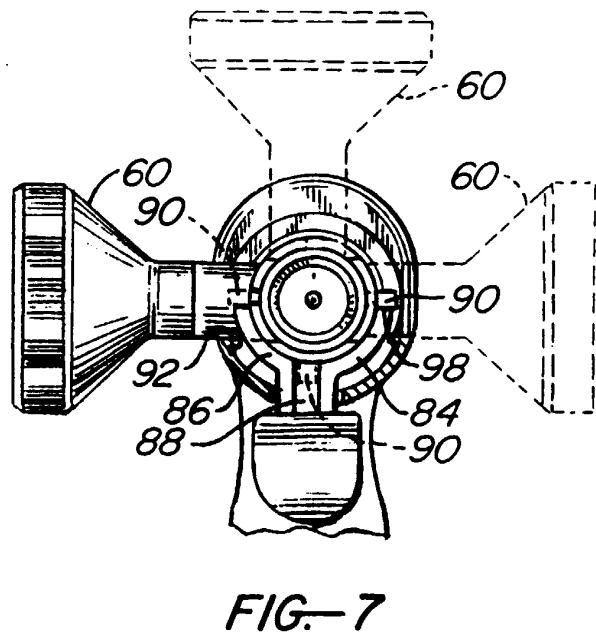
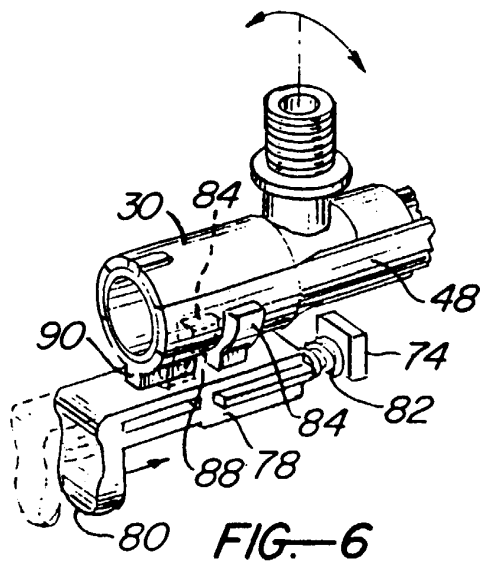
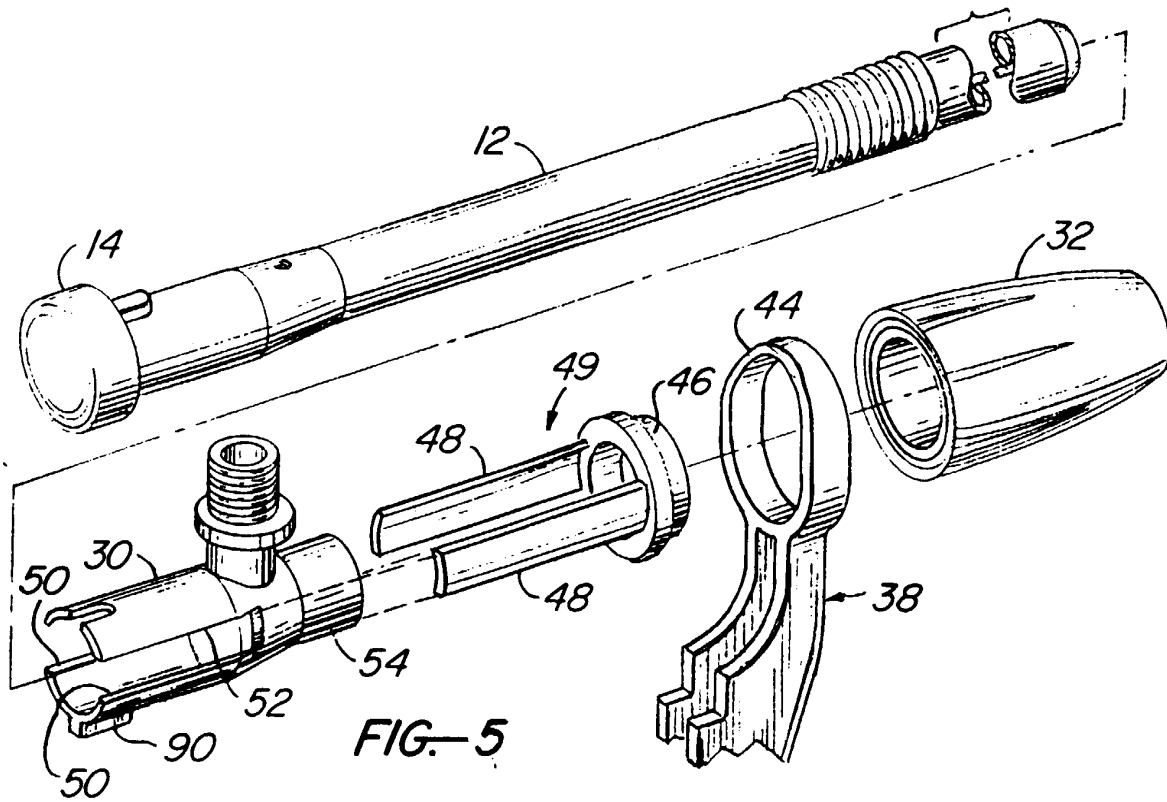
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European Patent
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Application Number
EP 99 10 8050

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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		21 September 1999	Brévier, F
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 99 10 8050

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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