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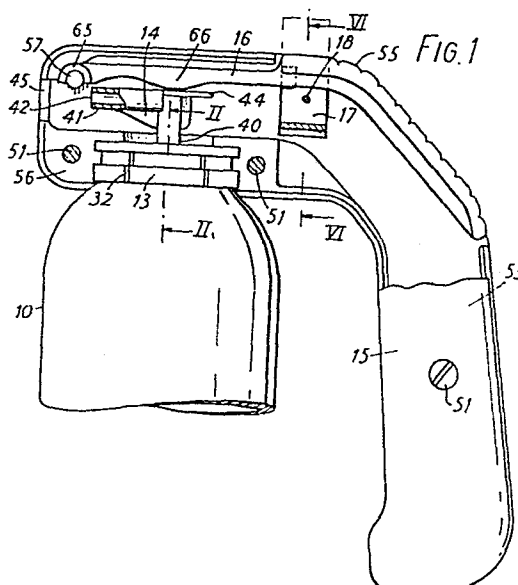
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54 Handle for fire extinguisher or other containers.

57 A handle assembly for a pressurized container (10) of a fire extinguisher. The mouth of the container is closed by an end cap fitted with a valve for release of fluid from the container. The handle assembly comprises an annular collet (13) of resilient material mounted on the container around the mouth thereof, a handle (15) having jaws which are clamped around the collet, and a valve actuating lever (16) on the handle. The collet is a snap fit on a lip on the container, or is screwed onto the container, and is locked onto the container by the jaws. When the valve is operable by the lever, a flag (17) on the handle is moved by the lever into an exposed position to indicate that the fire extinguisher has been used. A detachable safety pin (18) prevents operation of the lever when the pin is in place. When the extinguisher is used after removal of the pin, the flat prevents the safety pin being replaced.



HANDLE FOR FIRE EXTINGUISHER OR OTHER CONTAINERS

This invention relates to hand-held containers for pressurised fluid, and is concerned more particularly but not exclusively to fire extinguishers.

Conventional constructions of hand-held fire extinguishers are usually provided with a handle detachably mounted on the container for the pressurised fluid. The container has a mouth closed by an end cap which is a press fit on an annular lip surrounding the mouth of the container, the end cap being fitted with a valve for release of fluid from the container. The handle is clamped around the outer surface of the annular lip on the container and is fitted with an operating lever for actuating the valve. It is however difficult to obtain a firm grip of the handle on the lip, and the handle is prone to separate from the container on impact, in transit, or even with rough usage. Separation of the handle from the container when the extinguisher is in use in an outbreak of fire can have serious consequences.

One object of the invention is to provide an improved construction of handle assembly which can be clamped securely on a pressurised container.

According to the present invention there is provided a handle assembly on a container for pressurised fluid, the container having

a mouth closed by an end cap, wherein the handle assembly comprises a collet of resilient material mounted on the container around the mouth thereof, a handle having different parts thereof defining jaws engaged against the exterior of the collet, and means clamping the parts of the handle together so that the jaws compress the collet radially inwards against the external surface of the container and lock the collet securely on the container.

In the handle assembly of the invention, the collet provides a firm anchorage for the handle, since the collet cannot be removed or dislodged from the container until the pressure of the jaws on the collet has been released.

The container may be formed with a lip around the mouth thereof, and the collet mounted as a snap fit on the lip so that at least part of the collet expands outwards and then contracts inwards when the collet is fitted on the lip, the jaws preventing expansion of the collet so as thereby to lock the collet securely on the lip. The collet can conveniently comprise an annular body formed with a skirt engaged as a snap fit on the outer surface of the lip, the jaws being engaged around the skirt and preventing expansion thereof. The annular body can also conveniently be formed with an inner skirt which is a snap fit on the inner surface of the lip.

In a construction in which the end cap on the container has a rim which is a press fit on a lip surrounding the mouth of the container, the collet is a snap fit on the rim and the jaws which prevent expansion of the collet serve to lock the collet securely on the rim and also lock the rim on the lip of the container.

A container fitted with a handle assembly according to the invention may be provided with a screw thread on the outside of the container around the mouth thereof, instead of a lip as described above, and the inside surface of the collet formed with a screw thread engaged with the screw thread on the container, and the jaws causing a compressive deformation of the collet so as to lock the collet securely on the container. Any deformation of the collet would of course distort its screw thread and prevent the collet being unscrewed from the container. In this construction one end of the collet is preferably formed with an inwardly projecting annular flange, and the end cap formed with a rim which projects between the flange and the outer end of the mouth of the container, the collet being screwed onto the container so as to clamp the rim between the flange and the end of the mouth of the container. A sealing ring is preferably interposed between the flange and the outer end of the mouth of the container.

In order to provide a firm anchorage of the handle on the collet, each of the jaws is preferably formed with a rib which is engaged as a close fit in a recess in the external

surface of the collet. In addition the ends of the collet preferably define abutment surfaces, and each of the jaws is formed with a recess which receives part of the collet as a close fit, each of the recesses in the jaws defining abutment surfaces engaged against the abutment surfaces on the collet.

A handle assembly according to the invention is preferably provided with a lever or other control mechanism for operating a valve on the container to regulate release of fluid from the container. However, in a case in which a handle assembly of this kind is fitted to a fire extinguisher container, it is desirable to know from an inspection of the extinguisher whether or not it has previously been used.

Thus, according to the invention there is also provided a handle assembly on a container for pressurised fluid, the container having a mouth closed by an end cap fitted with a valve for release of fluid from the container, wherein the handle assembly comprises valve control means operable to open the valve upon movement of the mechanism from an inoperative setting position to an operative setting position, and indicator means responsive to movement of the valve control mechanism between said setting positions to indicate that the valve control mechanism has been operated.

The indicator means are preferably provided with a ratchet engageable with an operating member of the valve control mechanism,

the operating member riding over the ratchet during movement in one direction between said setting positions and being engageable with the ratchet during movement in the opposite direction between said setting positions so as to entrain the indicator means. Alternatively, the valve operating member may be provided with a ratchet arranged to engage and entrain the indicator means. The indicator means can conveniently be in the form of a flag formed with one or more ratchet teeth.

Embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:-

Figure 1 is a side elevation of a handle assembly fitted on a fire extinguisher in accordance with the invention, part of one side of the handle being cut away, and the mouth of the nozzle being shown in section,

Figure 2 is a sectional view along the line II-II in Figure 1, with the right-hand portion shown with only the handle in cross section,

Figure 3 is a view of the underside of the collet on which the handle is mounted,

Figure 4 is a sectional view of the collet along the lines IV-IV in Figure 3,

Figure 5 is an exploded view of the handle and operating lever,

Figure 6 is a cross sectional view along the line VI-VI in Figure 1 showing a flag and a safety pin in position in the handle, the flag being shown in full lines in the "unused" position and the upper end of the flag being shown in broken lines in the "used" position,

Figure 7 is a perspective view of the flag shown in Figure 6, and

Figure 8 is a cross sectional side elevation view of the upper portion of a fire extinguisher fitted with a hand assembly having another construction of collet to that shown in Figures 1-7.

The fire extinguisher shown in Figures 1-7 comprises a barrel type container 10 fitted with an end cap 11 closing the mouth 12 of the container, an annular collet 13 mounted on the container around the mouth thereof, a valve member 14 supported on the end cap, a handle 15 mounted on the collet 13, a valve operating lever 16 pivotally mounted on the handle, a flag 17, and a safety pin 18. The container 10 is filled with a fire extinguishing fluid under pressure.

The container 10 and end cap 11 are of conventional construction. As shown in Figures 1 and 2, the mouth 12 of the container is at the centre of a domed end thereof and the wall of the container surrounding the mouth is turned over outwardly to form an annular lip 20 of bulbous cross-section. The end cap 11 comprises a circular disc 21 having a rim 22 of inverted channel-shaped section mounted on the lip 20 on the container, the disc 21 being fitted with a valve comprising an upright tube 23 sealed in a central aperture in the disc 21, and a valve head 24 urged by a spring 25 against the bottom of the tube 23. The valve is of conventional construction in common use in fire extinguishers, and the parts 23, 24, 25 have been shown in a simplified form to illustrate more clearly the manner of operation. The rim 22 of the end cap is press-fitted around the lip 20 in order to provide a fluid-tight seal.

The collet 13 comprises an annular body made of resilient plastics material and formed with an inner skirts 28 and an outer skirt 29, the two skirts co-operating to form an annular recess 30 in the collet which opens downwardly and which corresponds substantially in shape and size to the exterior of the rim 22 of the end cap. The mouth 31 of the recess 30 has a width which is smaller than the cross sectional width of the rim 22 and the arrangement is such that the inner skirt 28 is deflected radially inwards and the outer skirt 29 is deflected radially outwards upon fitting of the collet onto the rim 22, the two skirts moving back towards their original relative positions when the rim 22 is located

wholly within the recess 30, so that the collet is a snap fit on the rim 22. The outer skirt 29 is longer than the inner skirt 28 and extends downwardly along the outer surface of the container, the outer skirt being formed with longitudinal slits 32 which facilitate outward deflection of the skirt when the collet is being fitted on the rim 22 of the end cap. The top surface 33 of the collet is substantially flat, the bottom edge of the outer skirt 29 forms a flat annular surface 34, and the outer side wall of the collet is formed with an annular slot 35 of rectangular cross section.

The valve member 14 comprises an upright tubular stem 40 and a substantially horizontal nozzle 41 having one end thereof mounted on the top of the stem 40, the passageway 42 in the nozzle being closed at the end adjacent the stem and communicating with the interior of the stem 40. The wall of the stem is formed with apertures 43 adjacent the lower end thereof. The nozzle has a width which is substantially greater than its depth, the top surface 44 of the nozzle being substantially flat for a purpose described hereinafter. The valve member 14 is arranged with the lower end of the stem located as a sliding fit within the tube 23 on the end cap 11, and the open end of the nozzle directed towards an opening 45 in an end of the handle 15, the weight of the valve member being supported on the valve head 24 on the end cap. The valve member 14 can conveniently be made as a moulding in plastics material.

The handle 15 comprises a hollow casing split longitudinally into two similar side parts 50 (Figure 5) which, at one end of the handle, fit around the collet on the container, the two side parts 50 being secured together by three bolts 51 fitted with nuts 52. The other end of the handle is shaped to form a hand grip 53, and the centre portion of the handle has an opening 54 providing access to a thumb rest 55 on an end of the operating lever 16. Each side part 50 is moulded in plastics material and comprises an outer shell formed on the inside thereof with a jaw portion 56 and a stub axle 57. The jaw portion 56 has a semi-cylindrical recess which conforms to the outside surface of one half of the collet and defines an arcuate rib 58, (figure 2) of rectangular cross section adapted to engage as a close fit within the annular slot 35 in the collet, an upper abutment surface 59 adapted to engage flat against the top surface 33 of the collet, and a lower abutment surface 60 adapted to engage flat against the annular surface 34 on the bottom of the outer skirt 29. The stub axles 57 on the two side parts 50 are aligned and co-operate to form a pivot axle for the operating lever 16, and the shells of the two side parts adjacent the pivot axle are cut away to form in the assembled handle the opening 45 for escape of flame extinguishing fluid discharging from the nozzle 41 when the extinguisher is in operation. Each side part 50 is also formed with a shallow rectangular recess 61 (Figure 6) on the inside surface of the portion of the side part defining one side

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of the opening 54 in the handle which provides access to the thumb rest 55 on the operating lever 16, the opposing two recesses 61 on the two side parts 50 forming tracks for the flag 17, and the lower ends of the recesses 61 forming ledges 62 for support of the flag 17 as described hereinafter. The walls of the side parts 50 formed with the recesses 61 are also formed with aligned apertures 63 for reception of the safety pin 18.

The operating lever 16 is formed at one end thereof with a semi-cylindrical hub 65 which is pivotally mounted on the aligned stub axles 57 within the handle, the thumb rest 55 being formed on the end of the lever remote from the hub. The centre portion of the lever extends across the top of the valve member 14 and is formed with a cam 66 which engages against the top surface 44 of the valve member.

The flag 17 is made of resilient plastics material and comprises a channel shaped member having a flat base 70 and two upright side walls 71. The junctions between the base 70 and the side walls 71 are enlarged to form feet 72 which project laterally outwards beyond the side walls 71 and downwards below the base 70. Each side wall 71 of the flag is formed with a central aperture 73 for the safety pin 18, and the inside surface of each side wall 71 is formed with a horizontal ratchet tooth 74, the lower flank 75 of which is substantially horizontal and the upper flank 76 of which is inclined at a small angle to the vertical as shown in Figure 6. The flag is of a size such that

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the feet 72 are a sliding fit in the tracks formed by the shallow recesses 61 in the two side parts 50 of the handle, the distance between the teeth 74 is slightly less than the width of the thumb rest 55 on the operating lever 16, and when the feet 72 are resting on the ledges 62 formed by the lower ends of the recesses 61, the side walls 71 project upwards on each side of the thumb rest 55 and terminate flush with the top surfaces of the thumb rest and the side parts 50 of the handle. In this position of the flag, referred to hereinafter as the "unused" position, the teeth 74 are below the thumb rest as shown in Figure 6.

When the flag is in the "unused" position, that is resting on the ledges 62, the apertures 73 in the flag are aligned with the apertures 63 in the side parts 50 of the handle. The safety pin 18 is located in the aligned apertures 63, 73, the pin extending below the lever 16 and preventing downward movement thereof until the pin is withdrawn from the handle. One end of the safety pin is formed with a loop 80 to facilitate grasping of the pin by an operator.

The arrangement of the handle is such that, when the safety pin 18 has been withdrawn from the handle, an operator grasping the hand grip 53 with one hand can readily exert a downward thrust by his thumb against the thumb rest 55 and thereby cause the lever 16 to pivot downwards about the stub axles 57 and force the cam 66 downwards against

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the valve member 14. When the downward thrust on the valve member 14 exceeds the upward thrust exerted on the valve head 24 by the spring 25 and the pressure of the fluid in the container, the valve head together with the valve member 14 move downwards and permit the fluid in the container to flow through the apertures 43 in the stem 40 of the valve member, through the passageway 42 of the nozzle and discharge through the opening 45 in the handle. Upon release of the operating lever, the spring 25 and the pressure of the fluid in the container will cause the valve head to move upwards into sealing contact with the end of the tube 23 and thereby close the valve. The operating lever, which is supported on the valve member 14, will of course also move upwards upon closure of the valve.

When the lever 16 is forced downwards to open the valve, the thumb rest 55, which is wider than the distance between the teeth 74 on the flag, slides down the sloping upper flanks 76 of the teeth and forces the teeth apart by causing the side walls 71 of the flag to flex outwardly into the recesses 61 in the two side parts 50 of the handle. The flag is of course stationary during downward movement of the lever 16 since it is supported on the ledges 62. When the thumb rest has passed below the teeth 74, the side walls of the flag snap back into their unflexed position. Upon release of the operating lever 16, the thumb rest 55 moves upwards under the action of the return spring 25 in the valve and engages the lower flanks 75 of the teeth on the flag,

so as to entrain the flag. The flag is thereby forced upwards from the "unused" position to a "used" position in which the upper ends of its side walls 71 project above the handle and the thumb rest as shown in broken lines in Figure 6. The clearance between the thumb rest and the handle is smaller than the thickness of each side wall of the flag across the tooth 74, so as to prevent return of the flag to its lower "unused" position by a downward thrust.

When the flag is in its "used" position, the safety pin 18 cannot be refitted in the handle since the apertures 73 in the flag are out of alignment with the aperture 63 in the side parts 50 of the handle. The upper ends of the side walls of the flag which are exposed when the flag is in its "used" position are preferably coloured red as a warning that the fire extinguisher has been used.

In the fire extinguisher shown in Figures 1-7, the outer skirt 29 of the collet 13 is a snap fit on the rim 22 of the end cap, so that the collet cannot be removed without the outer skirt expanding radially outwards. Such expansion is however prevented by the bolts 51 which clamp the two side parts 50 of the handle around the collet and compress the collet against the outside of the container. The snap fit of the inner skirt 28 of the collet on the inside of the rim 22 of the end cap ensures that the collet remains in position during fitting of the side parts of the handle onto the collet. The handle is firmly secured on the collet due to the engagement of the ribs 58 in the slot 35 in the collet and due to the engagement of the abutment surfaces

59, 60 against the end surfaces 33, 34 on the collet. The handle assembly consisting of the handle 15 and collet 13 are thus firmly secured to the container 10 and cannot be removed or dislodged without unscrewing the bolts 51.

The collet 13 and handle 15 also serve to lock the end cap 11 securely on the lip of the container, and prevent the end cap being forced off the container, for example in the event of the container being filled with fluid at an excessive pressure. As shown in Figure 2, the rim 22 of the end cap is press-fitted around the lip 20 to an extent such that the rim 22 is turned radially outwards and then inwards through an angle exceeding 180° so as to form a recess which accommodates the lip 20, the mouth of the recess having a width which is smaller than the cross sectional width of the lip 20. The end cap can thus only be removed by expansion of the rim 22. Such expansion is however prevented by the collet, which is in turn prevented from expansion by the jaw members.

Figure 8 shows part of another construction of fire extinguisher fitted with a handle assembly according to the invention. In this construction the fire extinguisher comprises a barrel-type container 90 having a cylindrical mouth 91 formed with a screw thread 92 on its external surface, and the handle assembly has an annular collet 93 formed internally with a screw thread

screwed onto the screw thread 92 on the container. The upper end of the collet has an inwardly projecting annular flange 94 which extends partly across the mouth of the container. The collet is made of resilient plastics material. The mouth of the container is closed by an end cap 95 having a narrow peripheral rim 96 which projects between the flange 94 on the collet and the outer end of the mouth of the container. A sealing ring 97 of rubber or other elastomeric material is interposed between the rim 96 and the outer end of the mouth of the container. The end cap is fitted with a valve (not shown) similar to the valve in the fire extinguisher of Figures 1-7. The remainder of the handle assembly is the same as that on the fire extinguisher of Figures 1-7 and comprises a hollow casing split into two similar side parts defining jaw portions 56 which embrace the collet.

The collet 93 is screwed down to its fullest extent on the mouth of the container so as to clamp the rim 96 of the end cap and the annular seal 97 between the flange 94 and the end of the mouth of the container. The upper end of the collet is formed with recesses 98 for reception of pins on a specially designed spanner for use in screwing the collet onto the mouth of the container. The jaw portions 56 of the casing are clamped together, as described previously in connection with the fire extinguisher of Figures 1-7 so as to compress the collet radially inwards. This compression

causes a deformation of the screw thread on the collet and thereby locks the collet securely on the container.

The components of the handle assembly are preferably made of a plastics material which is fire resistant and adapted to withstand low temperatures of at least -20°C without substantial loss of strength.

While the fire extinguishers shown and disclosed in detail are fully capable of attaining the objects and providing the advantages hereinbefore stated, it is to be understood that they are merely illustrative of the presently preferred embodiments of the invention and that no limitations are intended to the detail of construction or design herein shown.

CLAIMS:

1. A handle assembly on a container for pressurized fluid, the container having a mouth closed by an end cap, wherein the handle assembly comprises a collet of resilient material mounted on the container around the mouth thereof, a handle having different parts thereof defining jaws engaged against the exterior of the collet, and means clamping the parts of the handle together so that the jaws compress the collet radially inwards against the external surface of the container and lock the collet securely on the container.
2. A handle assembly as claimed in claim 1, wherein the container is formed with a lip around the mouth thereof, the collet is mounted as a snap fit on said lip so that at least part of the collet expands outwards and then contracts inwards when the collet is fitted on the lip, and the jaws prevent expansion of the collet so as thereby to lock the collet securely on the lip.
3. A handle assembly as claimed in claim 2, wherein the collet comprises an annular body with a skirt engaged as a snap fit on the outer surface of said lip, the skirt being formed with slits to facilitate expansion of the skirt upon fitting of the collet on to the lip, and the jaws being engaged around the skirt and preventing expansion thereof.

4. A handle assembly as claimed in claim 3, wherein said annular body is also formed with an inner skirt which is a snap fit on the inner surface of said lip.

5. A handle assembly as claimed in claim 1, wherein the wall of the container is formed with a lip around the mouth of the container, the end cap is formed with a rim mounted on said lip, and the collet is a snap fit on the rim so that at least part of the collet expands outwards and then contracts inwards when the collet is fitted onto the rim, the jaws preventing expansion of the collet so as to lock the collet securely on the rim and lock the rim on the lip of the container.

6. A handle assembly as claimed in claim 5, wherein the wall of the container around the mouth is turned over outwardly to form a lip of bulbous cross section, the rim of the cap is a press fit around the lip, the rim being turned over outwardly through an angle exceeding 180° so as to define an annular recess which accommodates the lip and has a mouth of a width less than the width of the lip, and the collet comprises an annular body formed with an annular recess which accommodates the said rim as a close fit, the recess in the collet having a mouth of a width less than the width across the rim so that the rim is a snap fit in the recess.

7. A handle assembly as claimed in claim 1, wherein the inside surface of the collet is formed with a screw thread engaged with

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a screw thread on the outside of the container, and the jaws cause a compressive deformation of the collet so as to lock the collet securely on the container.

8. A handle assembly as claimed in claim 7, wherein one end of the collet is formed with an inwardly projecting annular flange, and the end cap is formed with a rim which projects between the flange and the outer end of the mouth of the container, the collet being screwed onto the container so as to clamp the rim between the flange and the end of the mouth of the container.

9. A handle assembly as claimed in claim 8, wherein a sealing ring is interposed between the flange and the outer end of the mouth of the container.

10. A handle assembly as claimed in any of the preceding claims, wherein each of said jaws is formed with a rib which is engaged as a close fit in a recess in the external surface of the collet.

11. A handle assembly as claimed in any of the preceding claims, wherein the ends of the collet define abutment surfaces, and each of the jaws is formed with a recess which receives part of the collet as a close fit, each of said recesses in the jaws defining abutment surfaces engaged against said abutment surfaces on the collet.

12. A handle assembly as claimed in any of the preceding claims, wherein the handle comprises a hollow casing split into two side parts each comprising an outer shell formed on the inside thereof

with a jaw portion, each jaw portion being formed with a recess which conforms to the outside surface of half of the collet, said clamping means clamp the two side parts together with the collet confined within the recesses in said jaw portions, and valve control mechanism is mounted inside the hollow casing and is operable to open a valve in the end cap for release of fluid from the container.

13. A handle assembly on a container for pressurized fluid as claimed in any of the preceding claims, the container having a mouth closed by an end cap fitted with a valve for release of fluid from the container, wherein the handle assembly comprises valve control mechanism operable to open the valve upon movement of an operating member of the mechanism from an inoperative setting position to an operative setting position, and indicator means responsive to movement of the operating member between said setting positions to indicate that the valve control mechanism has been operated.

14. A handle assembly as claimed in claim 13, wherein the indicator means comprises a flag and ratchet means operable to entrain the flag to the valve operating member during movement of the member in one direction between said setting positions so as to move the flag from an "unused" position to a "used" position, the valve operating member riding over the ratchet means during movement in the opposite direction.

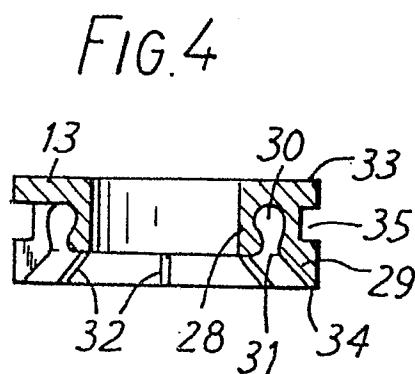
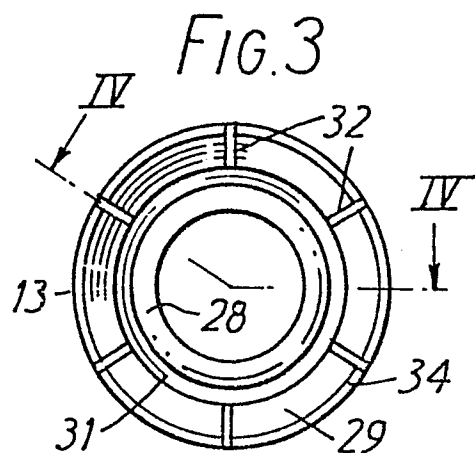
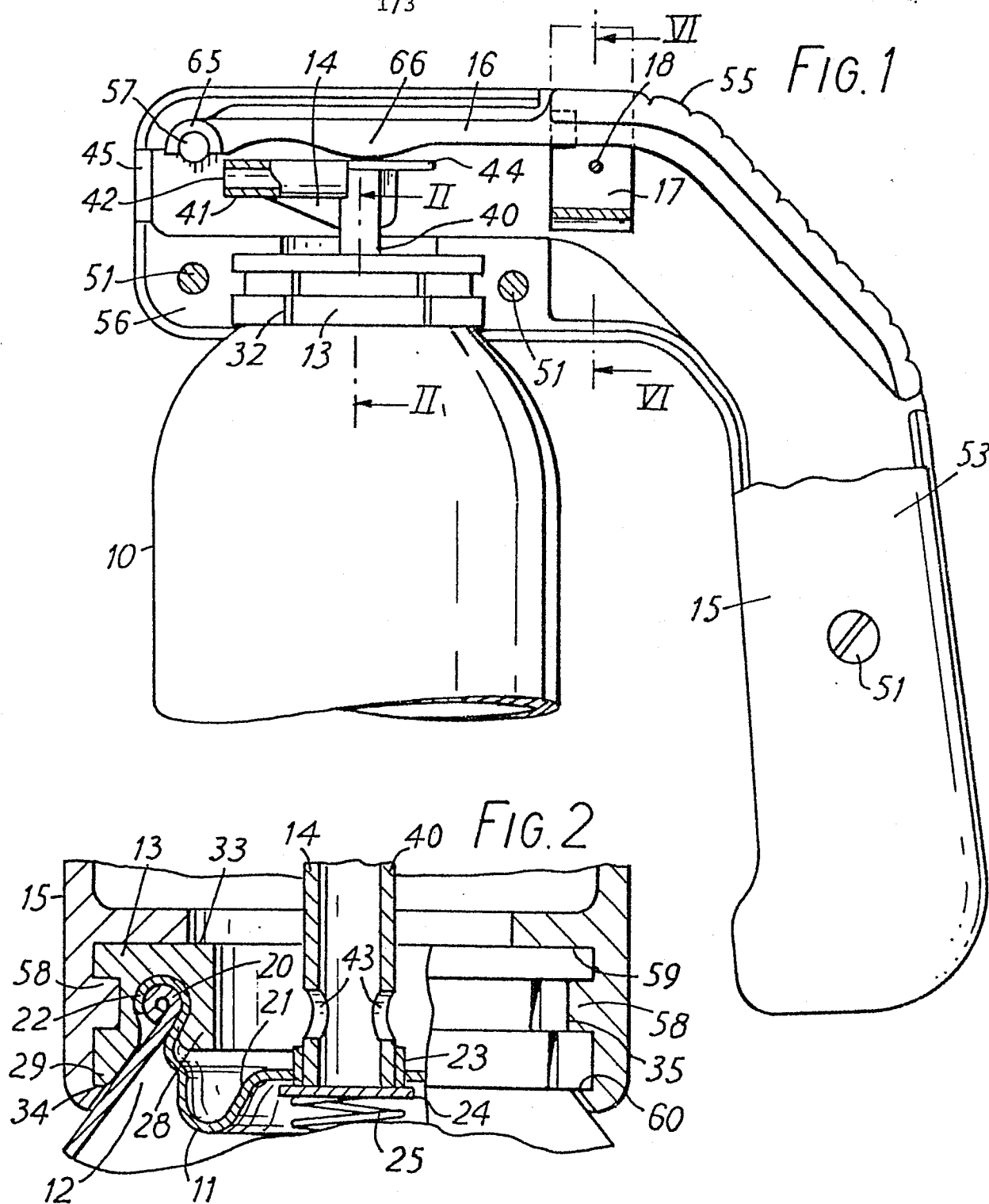
15. A handle assembly as claimed in claim 14, including a hollow casing which encloses the flag when in its "unused" position, the flag projecting from the casing when in its "used" position.

16. A handle assembly as claimed in claim 15, wherein the flag comprises a base and side walls which extend on opposite sides of the valve operating member and are in sliding contact therewith, the casing has an abutment arranged to support the flag during movement of the valve operating member from the inoperative setting position to the operative setting position, and at least one of the side walls of the flag has a ratchet tooth adapted to be engaged by the valve operating member during movement thereof from the operative setting position to the inoperative setting position whereby the flag is entrained by the valve operating member and moved into the "used" position.

17. A handle assembly as claimed in claim 16, wherein the valve operating member when in its inoperative position co-operates with the casing to form two slots which receive the upper ends of the side walls of the flag as a close sliding fit when the flag is in the "unused" position.

18. A handle assembly as claimed in any of claims 13-17, wherein the handle assembly is fitted with a safety member preventing operation of the valve control mechanism, the safety member being movable to permit operation of the mechanism, and the indicator means is arranged to prevent replacement of the safety member when in a position to indicate that the valve control mechanism has been operated.

19. A handle assembly as claimed in any of claims 15-17, wherein the casing and the flag are provided with apertures which are aligned for reception of a safety pin when the valve operating member is in the inoperative setting position and the flag is in the "unused" position, the apertures being out of alignment when the valve operating member is in the inoperative setting position and the flag is in the "used" position.



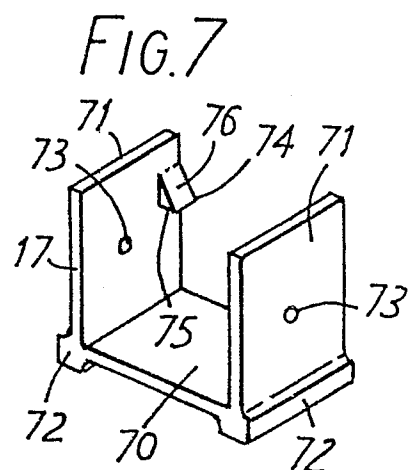
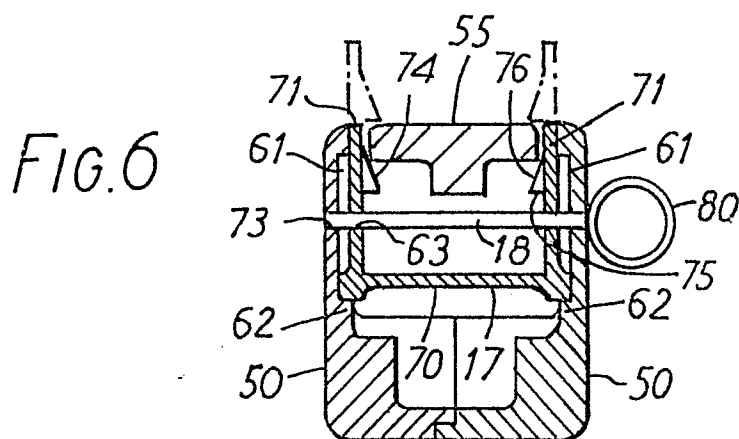
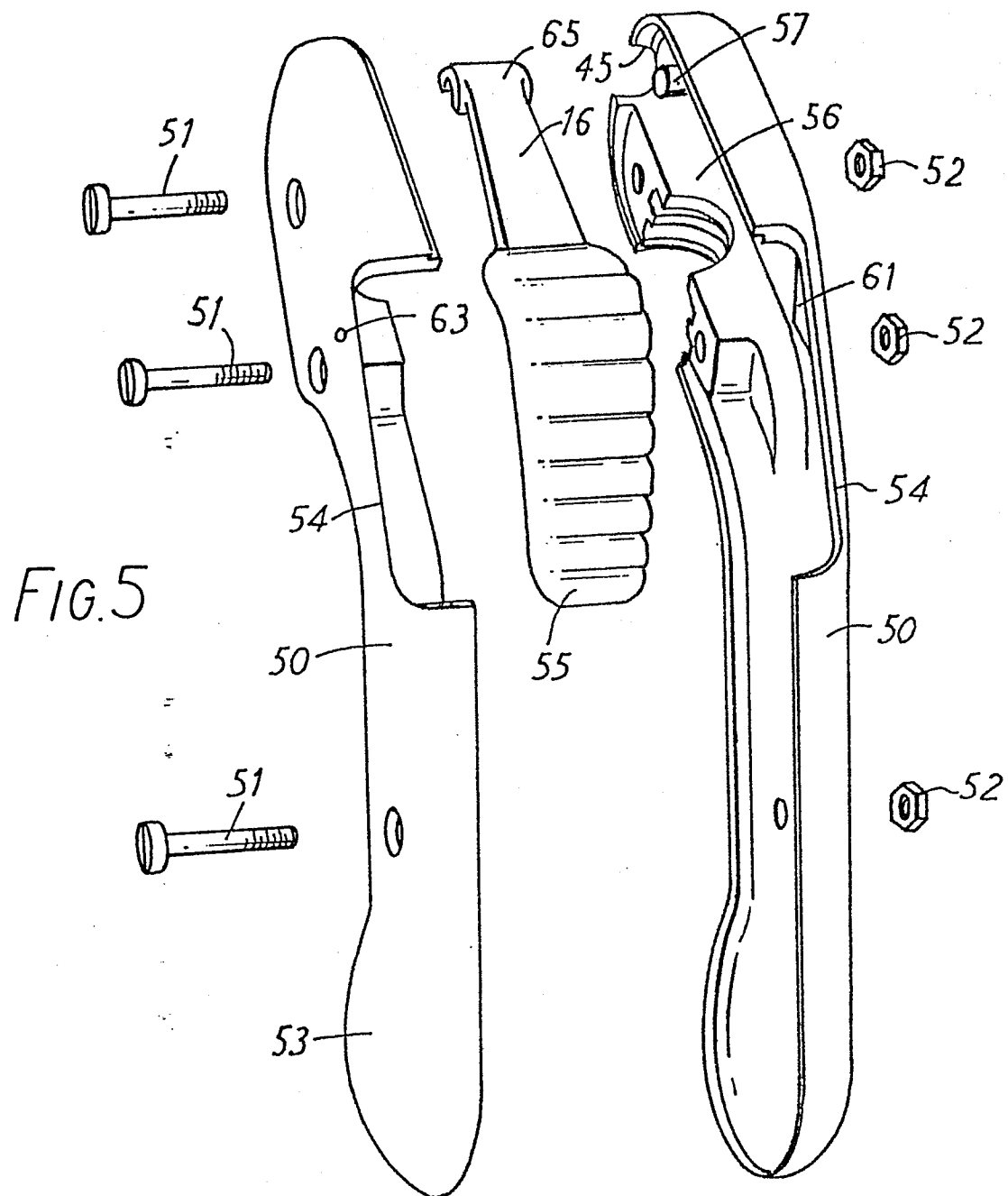
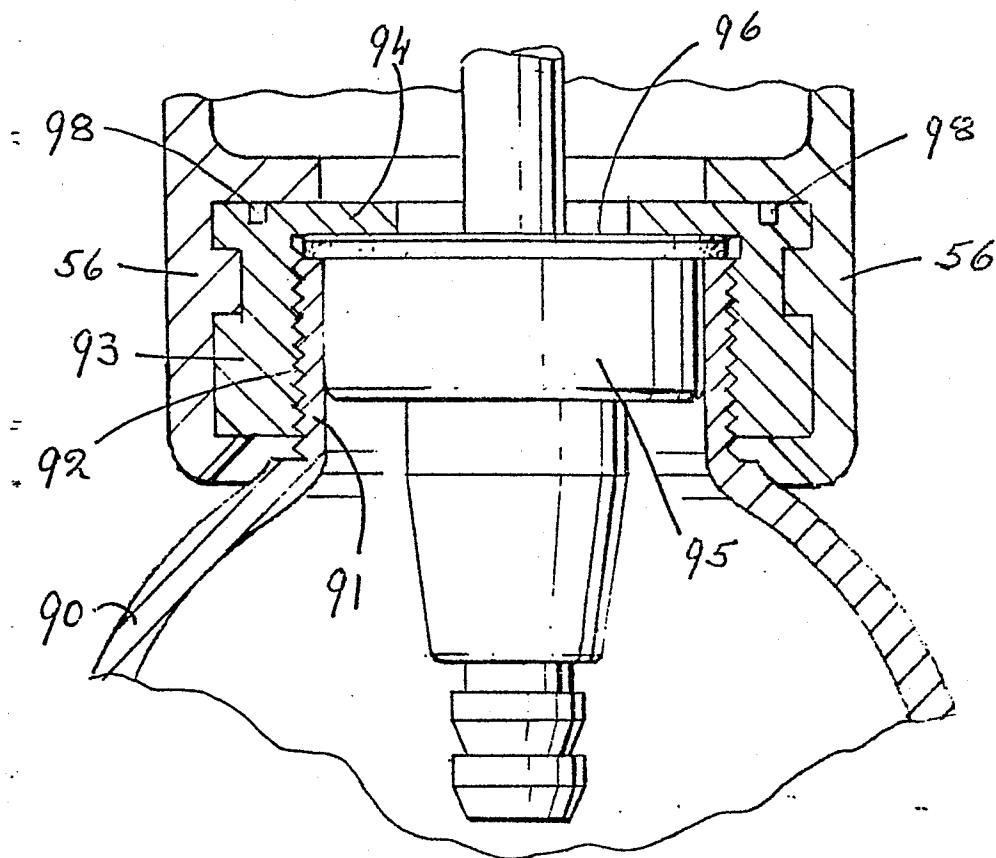


FIG 8



European Patent
Office

EUROPEAN SEARCH REPORT

0089111

Application number

EP 83 30 0585

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
Y,A	US-A-4 089 440 (LEE) * Column 4, lines 45-68 *	1,2	A 62 C 13/24 A 62 C 23/00 B 65 D 83/14 F 17 C 13/00
Y,A	GB-A-1 343 881 (BESPAK INDUSTRIES LTD. et al.) * Claims 1-3 *	1,12	
A	DE-A-1 575 047 (MÜLLER) * Claims 1, 3 *	1	
A	DE-U-6 943 218 (A. WERNER & CO.) * Claim 1 *	1	
A	GB-A-2 050 159 (FIREMASTER EXTINGUISHER LTD.) * Figure 1 *	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 3)
			A 62 C 13/00 A 62 C 23/00 B 65 D 83/00 F 17 C 13/00
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 03-05-1983	Examiner KANAL P K
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	