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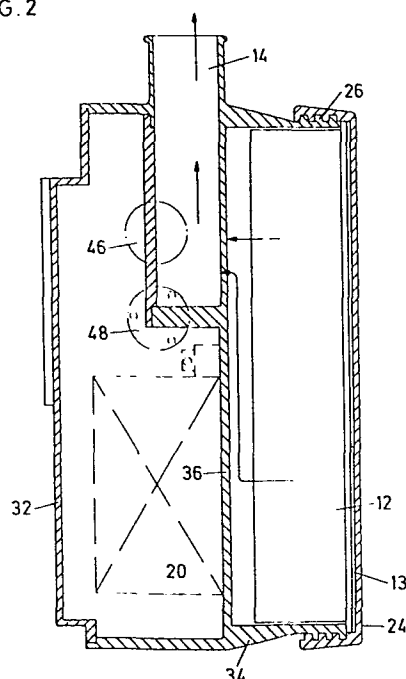
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54 Air supply units.

57 A main casing (34) contains a centrifugal fan, a filter unit (12) upstream, and a duct (14) downstream for guiding air to a face mask. There is a centre plate (36) to which a motor, the fan, a battery (20) etc. are secured. A back plate (32) is removable to provide access to the electrical components. The filter unit (12) is held in position by an apertured cap (24).

FIG. 2



TITLE: Air Supply Units

DESCRIPTION:

The invention relates to an air supply unit suitable for blowing air to a face mask for the respiratory protection of a person working in a noxious or unpleasant industrial atmosphere. Examples of environments in which such a unit is useful include work-places where there is dust or fumes.

Previous proposals include Patent Specifications UK 732248 and 1212821. The former is inconveniently shaped, having a filter 19 projecting to the rear, and a motor 17 in direct communication with a chamber through which induced air is drawn to a blower 18. The latter gives almost no detail of the air supply unit, but is fairly similar as to the arrangement of the components.

According to the invention, the unit comprises a casing, a central plate forming an integral part of the casing, the electrical components being secured to the centre plate, a centrifugal fan, and the filter unit being held in position by an apertured cap.

A centrifugal fan has been found necessary to produce sufficient pressure at reasonable power consumption and with a reasonable filter area.

The filter unit upstream of the fan reduces any tendency for the unit to become clogged with dust or other foreign matter. The filter unit may comprise a pre-filter or glass fibre mat, followed by a folded-paper unit to remove dust or

an activated carbon unit to absorb organic vapours.

5           The casing containing all the operative  
components makes the unit easy to handle and  
maintain.       Preferably, the casing is a plastics  
moulding and includes a back plate removable to  
provide access to the motor, battery, and other  
electrical components such as switches.   The casing  
also preferably includes a centre plate to which the  
motor, fan, battery and other electrical components  
10   are releasably secured, for example by screws, so  
that each can readily be removed for replacement or  
maintenance.   The casing may be provided with  
loops for a belt for the user, but may be free-standing  
for example for use on a work bench or in a tractor  
15   cab.

          The filter unit is preferably across the front  
of the casing, and the filter itself preferably held  
in position by an apertured cap, and secured to the  
casing by screw-threads.   A central part of the  
20   apertured cap may be removable, leaving a rim for  
supporting a supplementary filter unit projecting  
out of the casing through the cap.   The fan draws  
in-coming air through the apertured cap and filter,  
and impels filtered air to the downstream duct.

25           The battery is preferably below the motor

and duct so as fully to utilize the space available. The battery may be rechargeable through a connection on the side of the casing, and preferably comprises sealed lead/acid or nickel cadmium cells. The motor is preferably of low inductance which is intrinsically safe in an explosive atmosphere. The unit can be made so light that its weight on the belt is not noticable.

DRAWINGS:

Figure 1 is a front elevation of a unit according to the invention with components shown in broken lines;

Figure 2 is a section along A-A of Figure 1;

Figure 3 is a side view corresponding to Figure 1; and

Figure 4 is an outside plan corresponding to Figure 1.

In the drawings, a main casing 34 (Figure 2) contains a centrifugal fan 10, a filter unit 12 upstream, and a duct 14 downstream for guiding blown air to a tube (not shown) incorporating a non-return valve for transmission to a face mask (not shown). The unit is self-contained with an electric motor 18 for driving the fan 10, a rechargeable battery 20 mounted on a central plate 36 (Figure 2),

and belt loops 22 on the outside.

5           An apertured cap 24, with a pre-filter mat  
13 trapped therein, secures the filter unit 12 in  
position and is retained by screw threads 26 covering  
four segments of the circumference for quick mounting  
and release. By breaking out the central part  
of the cap 24, including ribs 40 (Figure 1), a  
circumferential rim 42 can be left for securing a  
second filter unit 44 in front of the unit 12 as  
10 in Figure 3.

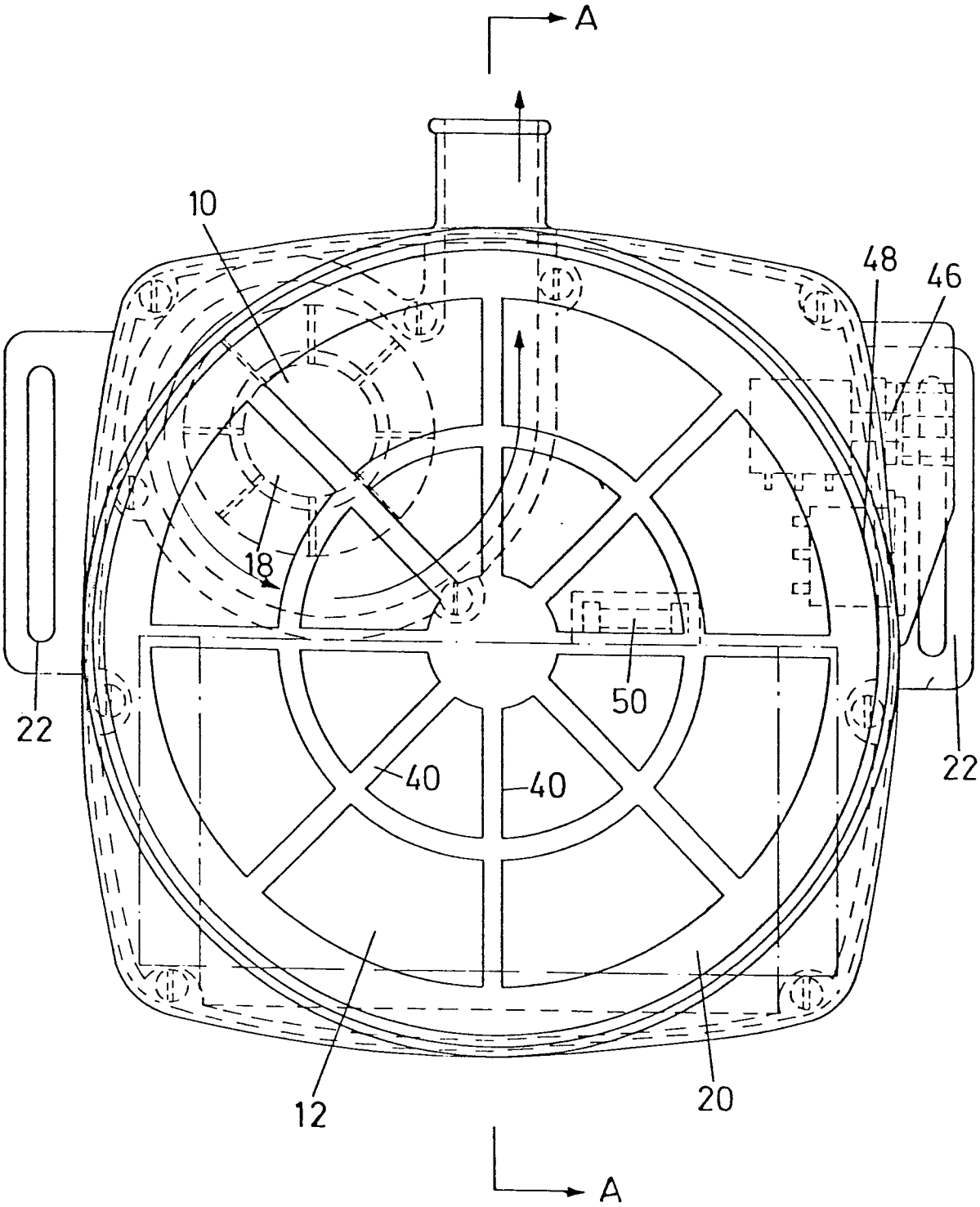
          A back plate 32 is screwed onto the main  
casing 34, and can be removed to expose the motor  
18 backing onto the fan 10, the battery 20, and a  
15 centre plate 36, an on-off switch or control  
knob 46, and a battery re-charge socket 48. A  
safety fuse 50 is provided in the electrical  
circuit adjacent the motor 18.

CLAIMS:

1. An air supply unit comprising a casing (34), a fan (10), a filter unit (13) upstream of the fan (10), a duct (14) downstream of the fan (10) for guiding blown air to a tube for transmission  
5 to a face mask, an electric motor (18) for driving the fan (10), and a battery (20) for powering the motor (18) characterized by a centre plate (36) forming an integral part of the casing (34), the motor (18), fan (10), battery (20) and other  
10 electrical components being secured to the centre plate (36), the fan (10) being a centrifugal fan, and the filter unit (13) being held in position by an apertured cap (24) secured to the casing (34) by screw threads (26).
- 15 2. A unit according to claim 1 in which the cap (24) has a central part (40) removable leaving a rim for supporting a supplementary filter unit (44).
3. A unit according to claim 1 or claim 2 in which  
20 the casing includes a back plate (32) removable to provide access to the motor (18), battery (20), and other electrical components.
4. A unit according to any preceding claim in which the battery (20) is rechargeable.

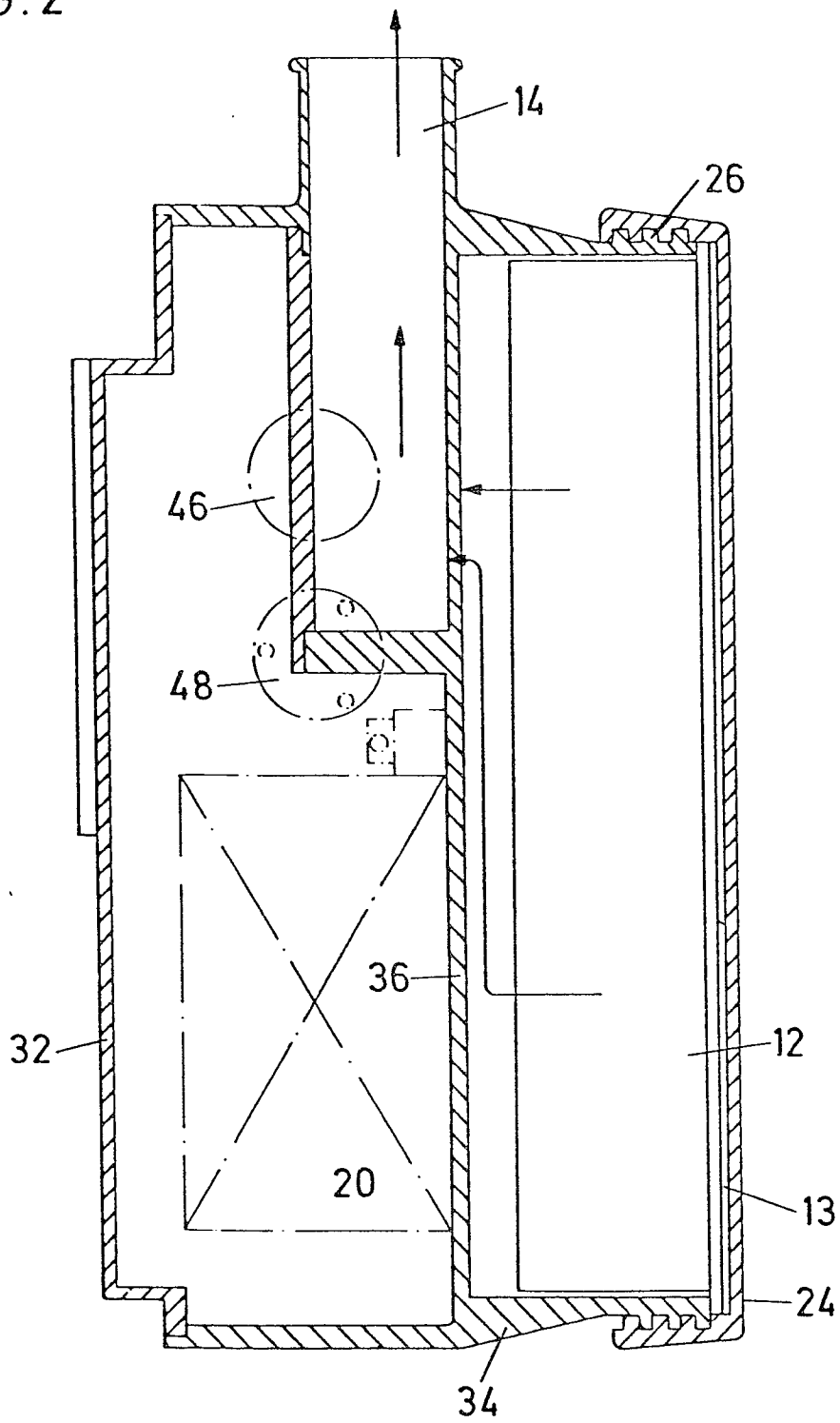
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FIG.1



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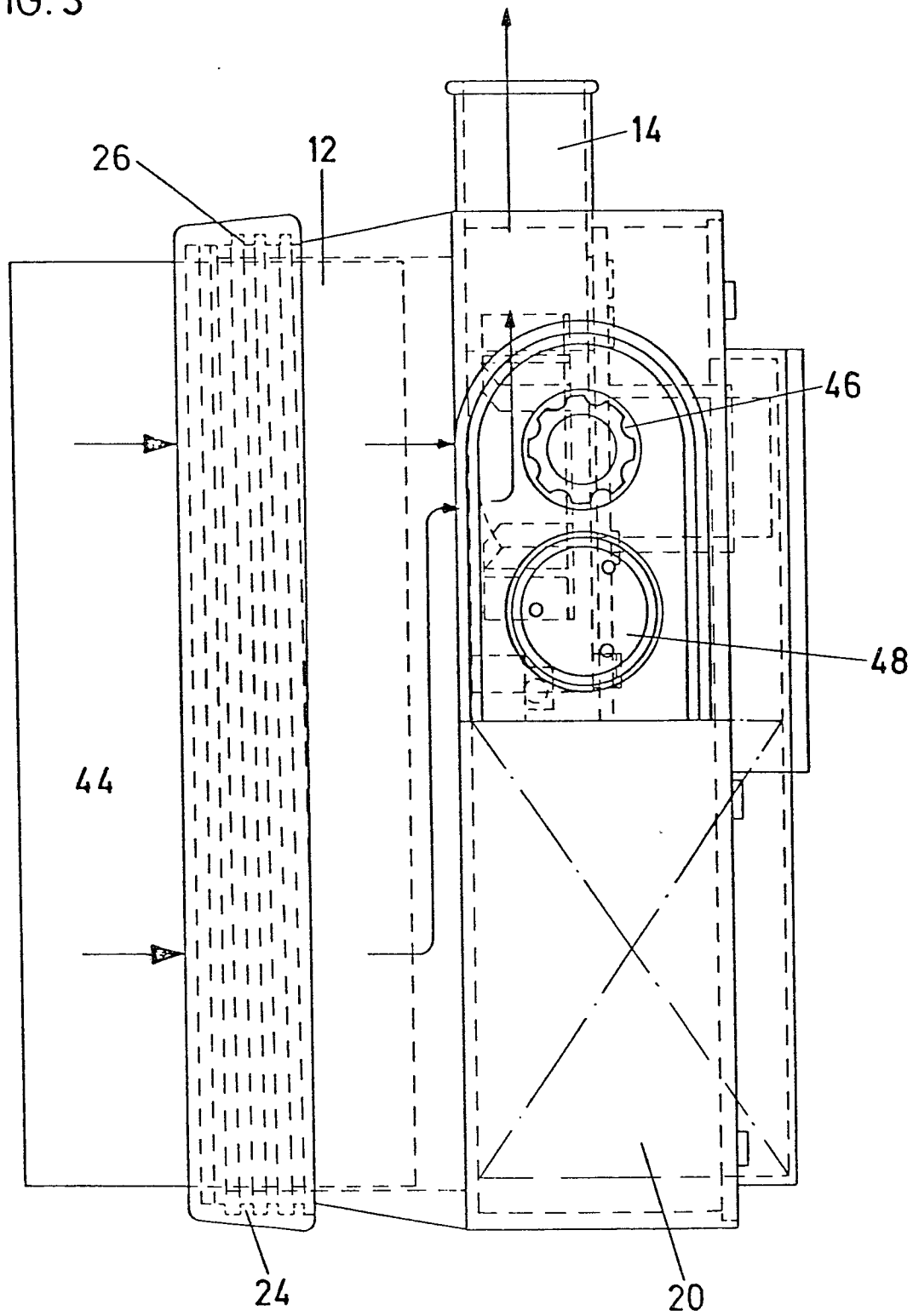
FIG. 2





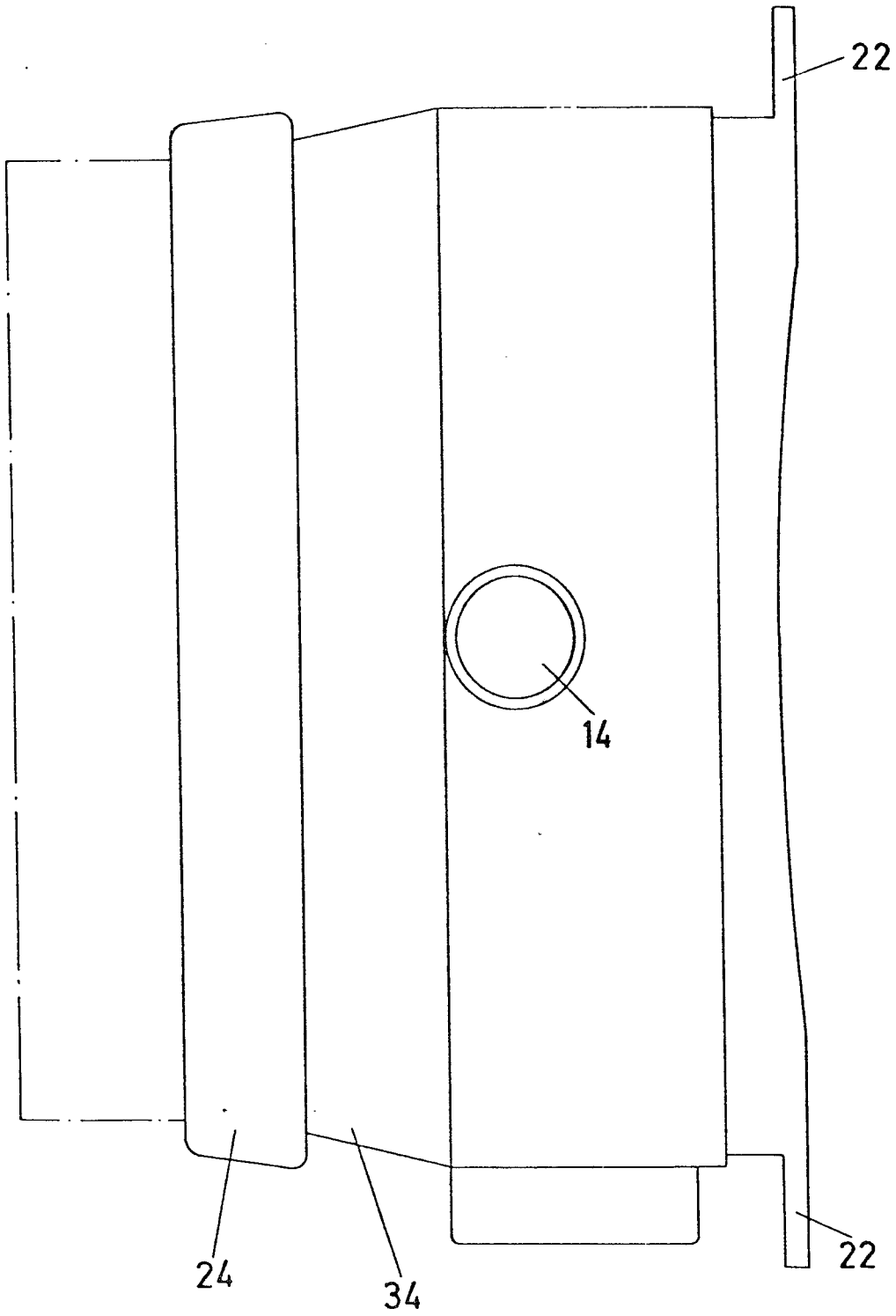
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FIG. 3



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FIG. 4





DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
	FR - A - 782 137 (COMPAGNIE GENERALE DES PILES "WONDER") * fig. 2 *	1	A 62 B 7/10 A 62 B 18/00
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	FR - A - 785 223 (CELA HOLDING) * fig. 6 *	1	
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	US - A - 3 078 845 (W.F. KOHLMAYER) * column 2, lines 42 to 51; fig. 3 *	1	TECHNICAL FIELDS SEARCHED (Int. Cl.)
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	US - A - 3 584 314 (W.S. HOBSON) * column 3, lines 5 to 11 *	1,3	A 61 F 9/00 A 62 B 7/00 A 62 B 18/00
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	US - A - 3 657 740 (A.A. CIALONE) * fig. 1, 4, 5 *	1	
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A	DE - A1 - 2 612 877 (GESELLSCHAFT FÜR KERNFORSCHUNG) * * claims 1, 4; fig. 1 *	1,4	
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A	DE - A1 - 2 823 446 (W. HAUFF et al.) * fig. 1, 2 *	1	CATEGORY OF CITED DOCUMENTS
	--		X: particularly relevant A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: conflicting application D: document cited in the application L: citation for other reasons
A	DE - U - 1 979 478 (F. GÖSMANN) * fig. 1 *	1	
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	./...		
<input checked="" type="checkbox"/> The present search report has been drawn up for all claims			&: member of the same patent family, corresponding document
Place of search	Date of completion of the search	Examiner	
Berlin	18-11-1980	KANAL	



DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	<u>BE - A - 555 402</u> (W. GORAY) * fig. *	1,4	
A	<u>US - A - 2 688 962</u> (M.R. SUMMERS) * fig. 1 *	1	
A	<u>US - A - 3 413 972</u> (C.L. DEPPING) * fig. 3 *	1	
A	<u>US - A - 3 649 964</u> (W.A.E. SCHOELZ et al.) * fig. 1 *	1	TECHNICAL FIELDS SEARCHED (Int. Cl.)
A	<u>US - A - 3 736 927</u> (F.L. MISAQI) * fig. 3 *	1	
A	<u>US - A - 3 822 698</u> (R.E. GUY et al.) * fig. 1, 4 *	1	