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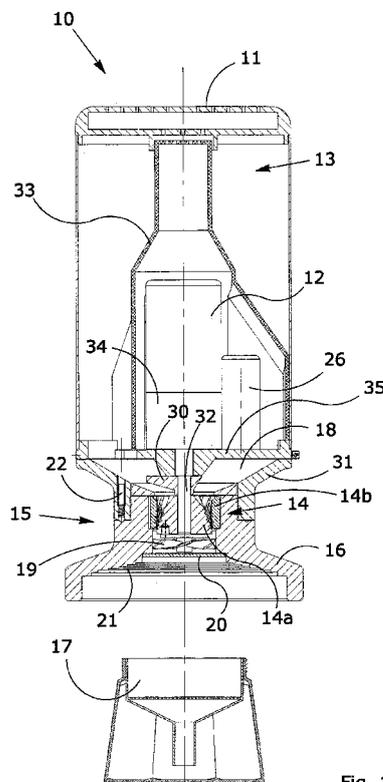


Fig. 1

(57) Abstract: A portable coffee mill-closer device for moka coffee makers or coffee machines or similar, comprising an upper container (10) of a substantially cylindrical shape, closed by a cover (11), while the internal part comprises a compartment enclosed in the cylinder (13) which is designed to contain the coffee beans to be ground and adequately separate them from the mechanical and electrical part, and where the inside of the container houses an electric motor (12) with a vertical axis, which actuates a mill (14) or similar, in the lower part of the container, where there is a hopper (18) which funnels the beans towards the mills (14) and where at the base of the mill (14) there is a butterfly paddle (19) actuated by the shaft of the motor (12), designed to spread the single doses of ground coffee uniformly in the filter (17) of the moka coffee maker, the coffee machine or similar and further characterised in that below the support (31) there is a further support comprising a support base (16), which has a series of annular grooves (21) which allow the doser to be adapted to the filter of moka coffee makers, coffee machines or similar of various types and sizes.

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**"PORTABLE COFFEE MILL-DOSER FOR MOKA COFFEE MAKERS OR  
COFFEE MACHINES OR SIMILAR"**

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**TECHNICAL FIELD**

5           The present invention relates to a coffee mill and doser enclosed in a single domestic appliance of the portable type, for moka coffee makers or coffee machines or similar.

10           The coffee mill-doser according to the present invention is designed to make it possible for any user working alone and without the need for a power supply socket to prepare a freshly ground coffee and thus enjoy the full fragrance and aroma which comes from freshly ground coffee beans. The coffee mill-doser is portable  
15 and comprises both the container for storing the coffee beans and the mill for grinding the beans on demand in a single domestic appliance.

20           The present invention is advantageously designed for use in the sector of coffee mills and in particular in the vast range of products used primarily for grinding and dosing coffee; with a few small modifications it could also be used for all spices requiring grinding.

25           The mill-doser is fitted with an electric motor powered principally by rechargeable batteries but which can, where required, also be powered from the mains electricity supply. It does not therefore necessarily require a fixed power supply and can therefore be moved to wherever it is required for coffee grinding; this is a characteristic which no other electrical appliance of  
30 this type currently on the market can offer.

          The present invention relates to the field of electrical appliances for use in the kitchen and in particular to electrical appliances for the grinding and

making of hot cups of coffee.

### BACKGROUND ART

It is well known that what constitutes a good cup of  
5 coffee depends on the ability to achieve the right degree  
of finess; the ground grains must not be too fine or too  
coarse because in both cases this would negatively affect  
the extraction of the coffee during making.

The invention of the coffee mill or grinder is not  
10 as old as the discovery of coffee but the date and place  
of the first appearance of this small and indispensable  
tool remains unknown.

It is known that the development of the mill was not  
originally linked to the need to grind coffee but was  
15 rather linked to the need to reduce to a very fine powder  
some of the spices arriving in Europe from the Orient.

To produce optimum ground coffee it was necessary  
that the mill produce a grain of a medium and uniform  
size. The mill also needed a more capacious hopper, the  
20 mills had to be more stable, the container to hold the  
ground coffee had to be larger and the base of the mill  
itself had to be more solid.

The original spice mills were gradually adapted to  
the needs of the new coffee grains which were more  
25 friable, larger and needed to be ground in larger  
quantities. These modifications, most of them regarding  
the mechanics of the mill, have remained unchanged up  
until the latest manual mills of the 20th Century.

If the mechanics of the mill remained virtually  
30 unchanged for several centuries, practically up until the  
arrival of electric mills, the same cannot be said for  
the shape and appearance of the mill. Mills have  
undergone numerous redesigns, embellishments and changes

to their appearance thanks to enterprising manufacturers and the craft skills of makers.

Modern electric coffee mills make it possible to adjust the degree of grinding and comprise an upper  
5 container where the coffee beans are put and a lower container where the ground coffee is collected.

In the middle part between the two compartments there is the mill proper which comprises flat-disc or conical-disc mills driven by an electric motor powerful  
10 enough to drive the mill.

Generally the current models of coffee mills have an upper recipient holding the beans and a funnel of suitable capacity, for grinding and extracting the  
15 essence of the coffee. Generally these models use a low speed rotary system which reduces friction and static charges and provides several degrees of fineness of the blend in order to meet all tastes.

The principal problem encountered with coffee mills of the known type concerns the fact that at the present  
20 time there are no portable models which combine both the coffee mill and the coffee doser for distributing the ground coffee directly onto the filters of moka coffee makers or home 'espresso' coffee makers.

At present, conventional coffee mills simply combine  
25 the coffee bean holder with the recipient for receiving the ground coffee coming from the electric mill in the centre section. In some cases the coffee mill is combined with a dosing device which directly doses the ground coffee onto the filter of the coffee making machine. The  
30 result, however, is a machine which is fixed, rather complex, very bulky and consequently is only suitable for use in bars, coffee houses and similar commercial premises.

This type of coffee mill with a dosing device has a complex construction and is very bulky. It cannot therefore be used in the home or in domestic settings in general and is only suitable for use in bars, restaurants  
5 and similar public premises.

The document US 6966507 discloses a known type of coffee mill which comprises an electric motor powered by batteries and a reduction unit which actuates a spindle driving a mill to grind the coffee.

10 This solution represents the classic coffee mill which does not include means for dosing and distributing ground coffee directly onto the moka filter but simply grinds the coffee so it can then be collected in a container.

15

#### DESCRIPTION OF THE INVENTION

The present invention provides a portable coffee doser for moka coffee makers, coffee machines or similar which also comprises a coffee mill and which makes it  
20 possible to eliminate or at least reduce the drawbacks described above.

The invention also provides a portable coffee doser for moka coffee makers, coffee machines or similar which is very easy to manufacture and which comprises a  
25 conventional coffee doser combined with a coffee mill for immediately producing the doses needed for the immediate use of moka coffee makers or 'espresso' coffee machines primarily for use in domestic settings.

This is achieved by a portable coffee mill-doser for  
30 moka coffee makers or coffee machines or similar whose characteristics are described in the main claim.

The dependent claims of the solution in question describe advantageous embodiments of the invention.

The main advantages of this solution, in addition to all those which derive from its simple, easy to manufacture design, principally concern the fact that the mill-doser according to the present invention is made  
5 using a single container where the upper part contains the coffee beans and the lower part of the container houses the coffee mill which produces the ground coffee in the single doses required for the filter.

The device according to the present invention  
10 comprises a container of a substantially cylindrical shape which inside has two compartments separated from each other by a motor-driven mill unit.

In particular, the upper part of the structure has a container for storing the coffee beans to be ground, the  
15 central part has a hopper where the beans are passed to the mills and a lower part shaped to adapt to the various types and sizes of coffee makers or machines currently on the market; the lower part has adaptors making it suitable any other uses.

The unit can be fitted with a selector and a digital  
20 timer for selecting the type of cup required and for grinding only the amount of coffee currently required without leaving any remains of ground coffee surplus to requirements.

The mill itself is powered by an electric motor  
25 located inside the central part of the container and comprises flat and/or conical mills designed to grind the coffee beans to the size required.

The coffee mill-doser according to the present  
30 invention makes it possible to produce the single doses of ground coffee to be fed into the filter and thereby provide a freshly ground, full-flavour coffee.

The principal advantage of the coffee mill-doser

according to the present invention is that it provides the user with a portable coffee mill-doser for moka coffee makers, coffee machines or similar in a single electrical appliance incorporating all those currently in  
5 circulation; it can also be used for milling spices.

#### DESCRIPTION OF THE DRAWINGS

Other features and advantages of the invention will become clear on reading the description given below of  
10 one embodiment, provided as a non-binding example, with the help of the accompanying drawings, in which:

- Figure 1 is a cross section of the coffee mill-doser according to the present invention in its entirety and located above the filter holder base of a moka  
15 coffee maker;
- Figure 2 is a perspective view of the coffee mill-doser according to the present invention in its entirety;
- Figure 3 is a perspective view of the coffee mill-doser according to the present invention in its  
20 entirety and in another position;
- Figure 4 is a diagram of a possible type of power supply adaptor;
- Figure 5 is a front view of the coffee mill-doser  
25 showing the display.
- Figures 6 and 7 show a further embodiment of the coffee mill-doser according to the present invention;
- Figures 8 and 9 show respectively a plan view and a  
30 view from below of the doser body to be rested on the coffee maker;
- Figure 10 shows a vertical cross section of the

doser body;

- Figure 11 shows a cross section of the upper body;
- Figure 12 shows a cross-section of the two bodies screwed to each other and held together by a stop button.

5

#### **DESCRIPTION OF ONE EMBODIMENT OF THE INVENTION**

Figure 1 shows the coffee mill-doser according to the present invention substantially comprising a container 10 of a cylindrical or similar shape with a lower narrowing 15 at the height of the mill body 14/a and 14/b.

The upper part is closed by a double-cavity cover 11 which has openings designed to allow the motor 12 to cool while preventing accidental contact with liquids.

15

The internal part of the container 10 comprises a closed compartment in the cylinder 13 which is designed to contain the coffee beans to be ground and keep them suitably separate from the mechanical and electrical components by means of a motor casing 33.

20

The electric motor 12 is fixed on a base 35 with three spokes at 120° to each other in the shape of a "Y", powered by a rechargeable battery, or where necessary from the mains electricity supply, and where the motor rotates to a limited extent an epicycloid gear 34 at approximately 550 rpm, so as not to overheat the coffee and diminish its aroma or flavour, thereby rotating the mill unit 14 comprising a smaller rotary mill with a truncated cone shape 14/a fixed to the motor shaft 32 and an outer mill 14/b fixed to the upper support 31.

25  
30

At the lower part at the height of the narrowing 15 there are two supports screwed to each other where the upper support 31 is drilled perpendicularly with a hole

through which a screw 22 passes which pushes a spring at whose end there is a steel ball which engages with the lower support 16 which in turn has very small, round, concave incisions around the entire circumference of the base where the ball pushed by the spring engages and prevents the two supports from moving and consequently losing the adjustment setting of the mill.

The upper support 31 forms with the base 35 of the cylinder 10 a hopper 18 which funnels the beans pushed by the paddle feeder 30 towards the mill unit 14/a/b so that the beans are crushed and then ground to the degree of fineness required.

At the base of the truncated conical mill 14/a there is a butterfly paddle 19 actuated by the shaft of the motor 32, designed to spread the ground coffee uniformly in the filter 17 of the moka coffee maker, coffee machine or similar. This butterfly paddle is protected by a very fine grating 20 which allows the passage of the ground coffee and acts as an accident prevention guard and prevents contact between the butterfly and extraneous objects.

The lower support comprises a support base 16, which has a series of annular grooves 21 which allow the doser to be adapted to the filter of moka coffee makers, coffee machines or similar of various types and sizes.

Figure 1 shows that the lower support 16, which is attached to the upper body by a threaded fitting, is integral with the outer mill 14b while the truncated cone mill 14a is integral with the shaft 32.

This particular layout means that by simply screwing or unscrewing the lower support on the upper support moves the outer mill 14b towards or away from the truncated conical mill 14a thereby causing a variation in

the granulometry of the milled product.

Figure 5 shows the outside of the coffee mill-doser with a display 23 comprising a selector switch 36, a start pushbutton 37 and a numeric display 38 and also  
5 comprising a transparent window 39 which makes it possible to visually check the amount of coffee beans remaining.

Figures 2, 3 and 4 show the use of a battery-charger 24 which can be plugged into the socket 25 to recharge  
10 the battery pack 26 connected to the motor; these figures also show the button 27 used to switch on the unit

In the interests of safety, the unit has an ON-OFF button 27 and an START button 37.

As already stated, the principal advantage of the  
15 coffee mill-doser is that it provides the user with a portable coffee mill-doser for moka coffee makers, coffee machines or similar in a single electrical appliance incorporating both the coffee milling and dosing functions; it can also be used for milling spices.

20 It is worth noting that the unit comprises a small number of easy to manufacture components. Some of the components such as the mills and the motor are readily available on the market. These features will make the unit cost-effective to manufacture.

25 The coffee mill-doser can be fitted to meet the needs of all users. It can be fitted with simple lights to select the number of cups required. Alternatively, it can be fitted with a digital display showing the various stages of the process, together with a timer and a number  
30 of cups selector.

Other alternatives include using titanium coated special steel mills in place of the standard metal mills. Nickel-cadmium batteries could be used in place of the

standard Lithium-ion batteries.

It would also be possible to make the structure from food-safe plastic or aluminium alloy. The supports could be adapted to suit a wide range of needs. All these  
5 possible modifications make the invention very versatile and would further enhance its primary, distinctive characteristic which is: portability.

Figures 6 to 12 show a further embodiment of the coffee mill-doser according to the present invention.

10 These figures show that the pin 22 and the spring of Figure 1 can be substituted by the button 40 which acts as a stop for the two bodies, upper and lower, which screw onto each other.

In this case the pin 41 of the button 40 is inserted  
15 in the cavity 42 made in the lower body threading 43 thereby forming a solid structure which can at the same time be used to adjust the granulometry of the milled product because, as already described, screwing and unscrewing the two bodies on each other moves the outer  
20 and inner mills towards and away from each other.

The invention is described above with reference to a preferred embodiment. It is nevertheless clear that the invention is susceptible to numerous variations which lie within the scope of its disclosure, in the framework of  
25 technical equivalents.

**CLAIMS**

1. Portable coffee mill-doser device for moka coffee makers or coffee machines or similar, comprising an upper  
5 container (10) of a substantially cylindrical shape, closed by a cover (11), while the internal part comprises a compartment enclosed in the cylinder (13) which is designed to contain the coffee beans to be ground and adequately separate them from the mechanical and  
10 electrical part, and where the inside of the container houses an electric motor (12) with a vertical axis, which actuates a conical mill (14) or similar, in the lower part of the container, where there is a hopper (18) which funnels the beans towards the mills (14) by means of a  
15 paddle feeder (30), said portable coffee mill-doser device is characterised in that the coffee mill doser has at the base of the mill (14) a butterfly paddle (19) actuated by the shaft of the motor (12), designed to spread the single doses of ground coffee uniformly in the  
20 filter (17) of the moka coffee maker, the coffee machine or similar, and in that the lower support (31) as already described comprises a support base (16), which has a series of annular grooves (21) which allow the doser to be adapted to the filter of moka coffee makers, coffee  
25 machines or similar of various types and sizes.

2. The portable coffee mill-doser device for moka coffee makers or similar according to one of the foregoing claims characterised in that the butterfly paddle is  
30 protected by a very fine grating (20) which allows the passage of the ground coffee and acts as an accident prevention guard and prevents contact between the butterfly and extraneous objects.

**3.** The portable coffee mill-doser device for moka coffee makers or similar according to one of the foregoing claims, characterised in that the upper part is closed by a cavity cover (11) which has openings designed  
5 to allow the motor (12) to cool while preventing accidental contact with liquids.

**4.** The portable coffee mill-doser device for moka coffee makers or similar according to one of the foregoing claims, characterised in that the internal part  
10 of the container comprises a compartment enclosed in the cylinder (13) which is designed to contain the coffee beans to be ground and keep them suitably separate from the mechanical and electrical components by means of a motor casing (33) or which, as shown in the last  
15 drawings, can comprise two separate and distinct compartments the first of which contains the coffee beans and the second compartment which contains, adequately separated, the motor, the electrical and the electronic parts.

**5.** The portable coffee mill-doser device for moka coffee makers or similar according to one of the foregoing claims, characterised in that the electric motor (12) is fixed on a base of three spokes at  $120^\circ$  to each other in the shape of a "Y", powered by a  
20 rechargeable battery, or where necessary from the mains electricity supply, and where the motor rotates to a limited extent an epicycloid gear (34) thereby rotating the mill unit comprising a smaller rotary mill with a truncated cone shape (14a) fixed to the motor shaft (32)  
25 and an outer mill (14b) fixed to the upper support (31).  
30

**6.** The portable coffee mill-doser device for moka coffee makers or similar according to one of the

foregoing claims, characterised in that at the lower part at the height of the narrowing (15) there are two supports screwed to each other where the upper support (31) is drilled perpendicularly with a hole through which  
5 a screw (22) passes which pushes a spring at whose end there is a steel ball which engages with the lower support (16) which in turn has very small, round, concave incisions around the entire circumference of the base where the ball pushed by the spring engages and prevents  
10 the two supports from moving and consequently losing the adjustment setting of the mill, or where on the last version as shown in Figures 6 and 7 there is a side button which engages with the groove "A" on the lower body.

15 **7.** The portable coffee mill-doser device for moka coffee makers or similar according to one of the foregoing claims, characterised in that the upper support (31) forms with the base (35) of the cylinder (10) a hopper (18) which funnels the beans pushed by the paddle  
20 feeder (30) towards the mill unit (14/a, 14/b) so that the beans are crushed and then ground to the degree of fineness required.

**8.** The portable coffee mill-doser device for moka coffee makers or similar according to one of the  
25 foregoing claims, characterised by the presence of a display (23) comprising an electronic selector switch (36) a start pushbutton (37) and a numeric display (38) and also comprising a transparent window (39) which makes it possible to visually check the amount of coffee beans  
30 remaining.

**9.** The portable coffee mill-doser according to the foregoing claims, characterised in that it has a system

enabling adjustment of milling whereby the lower support (16) is attached to the upper body (31) by means of threading and is integral with the outer mill (14b) and the truncated conical mill (14a) is integral with the shaft (32), so that screwing or unscrewing the lower support moves the outer mill (14b) towards or away from the truncated conical mill (14a) thereby causing a variation in the granulometry of the milled product.

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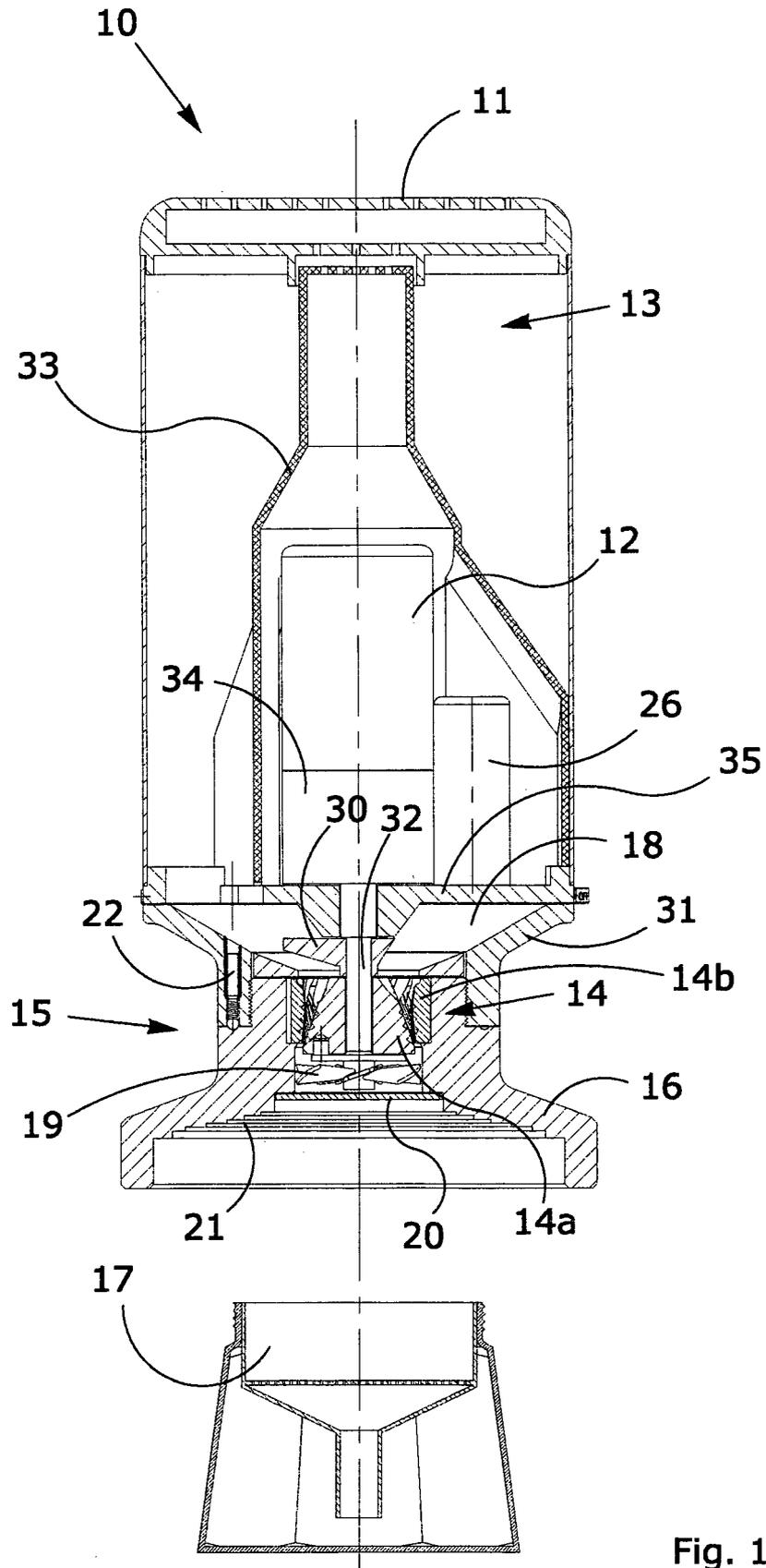


Fig. 1

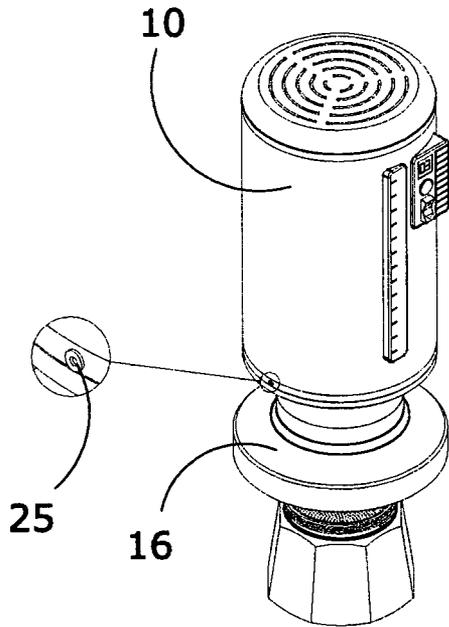


Fig. 2

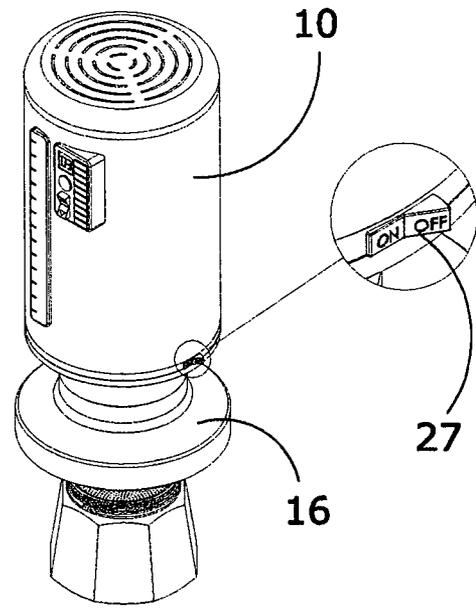


Fig. 3

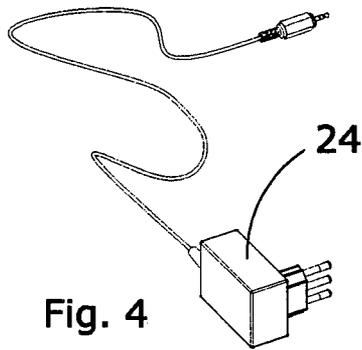


Fig. 4

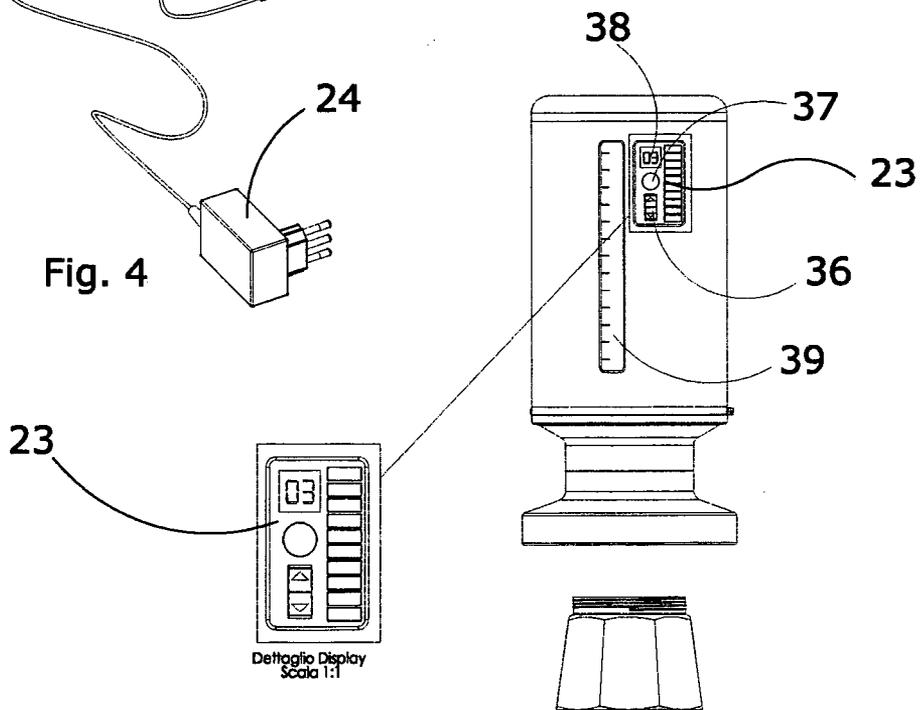


Fig. 5

Dettaglio Display  
Scala 1:1

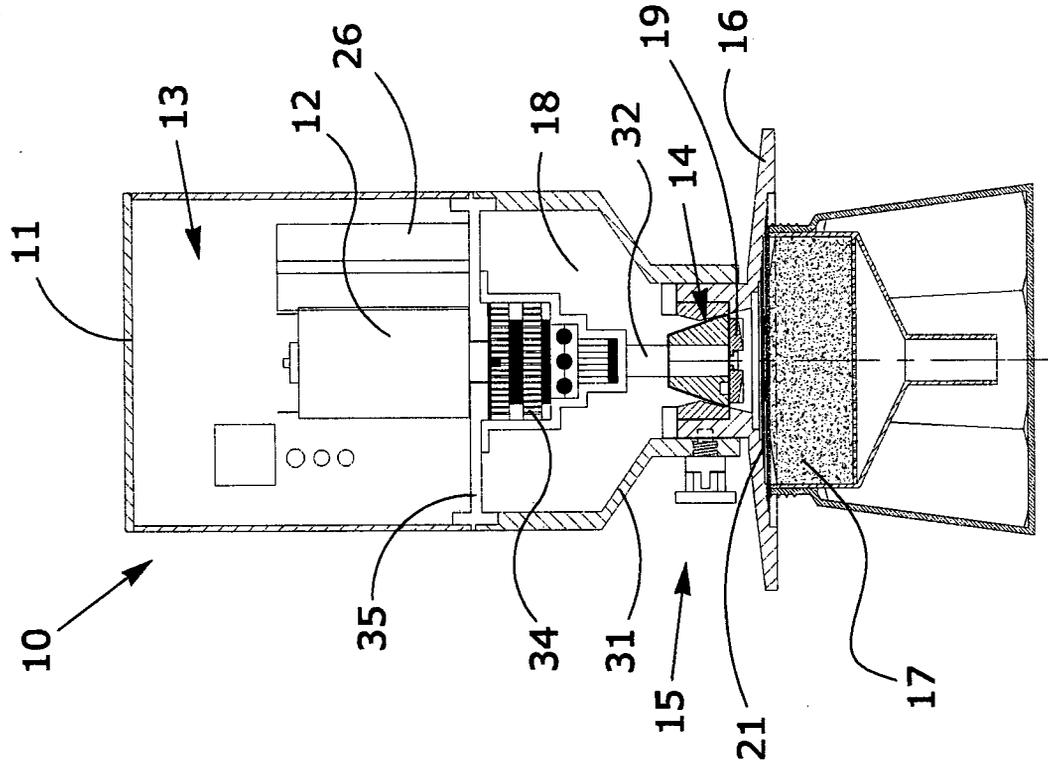


Fig. 7

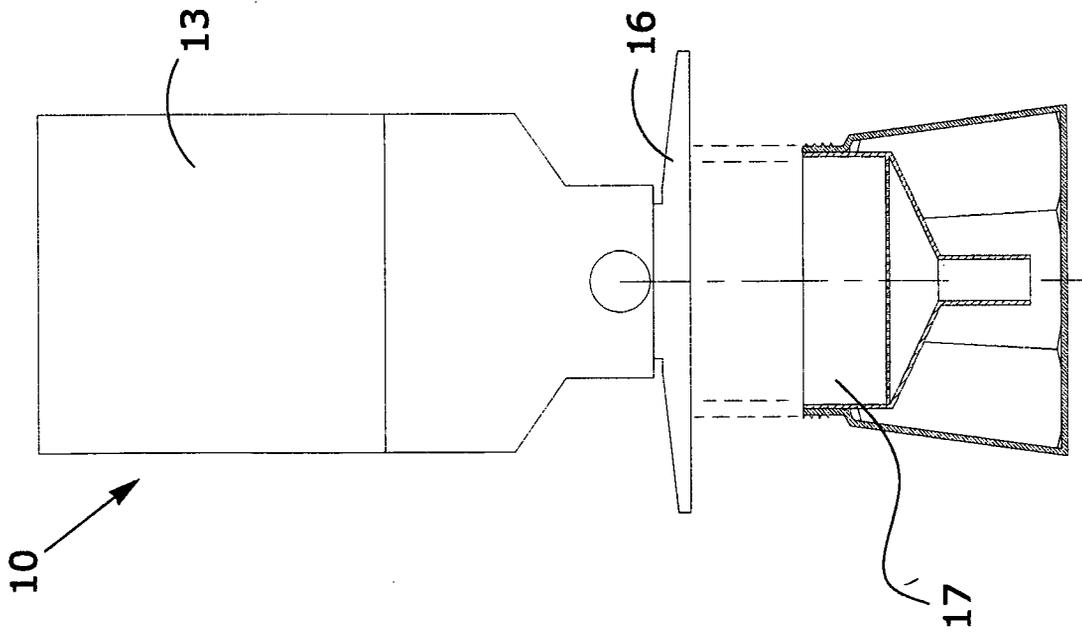


Fig. 6

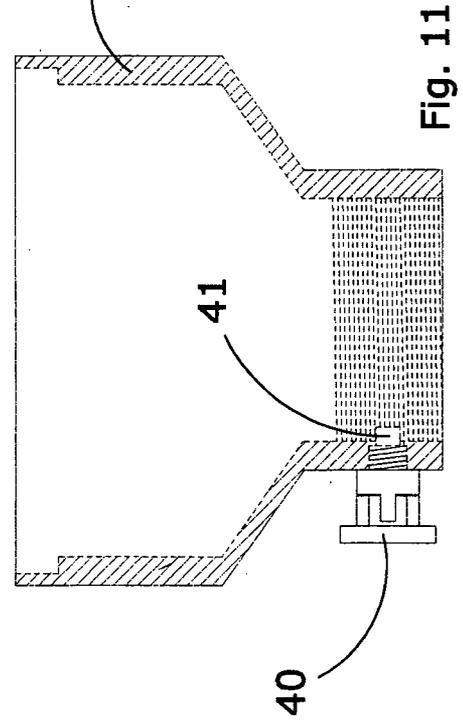
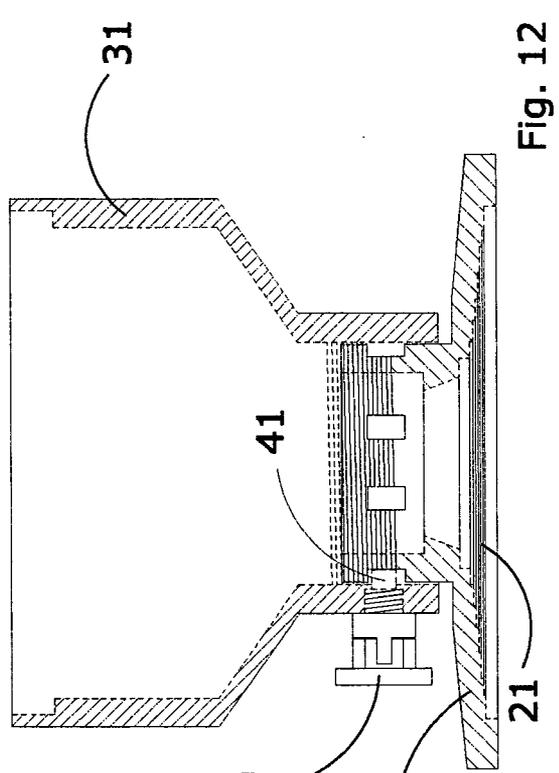
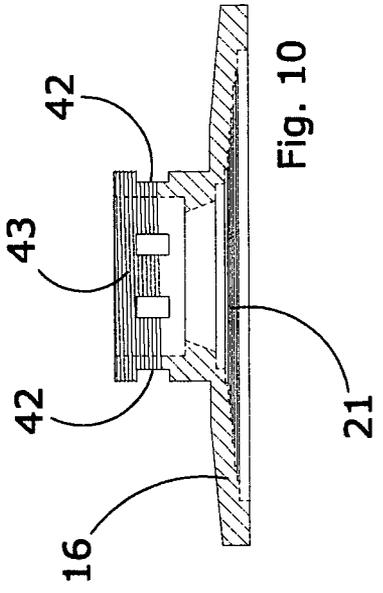
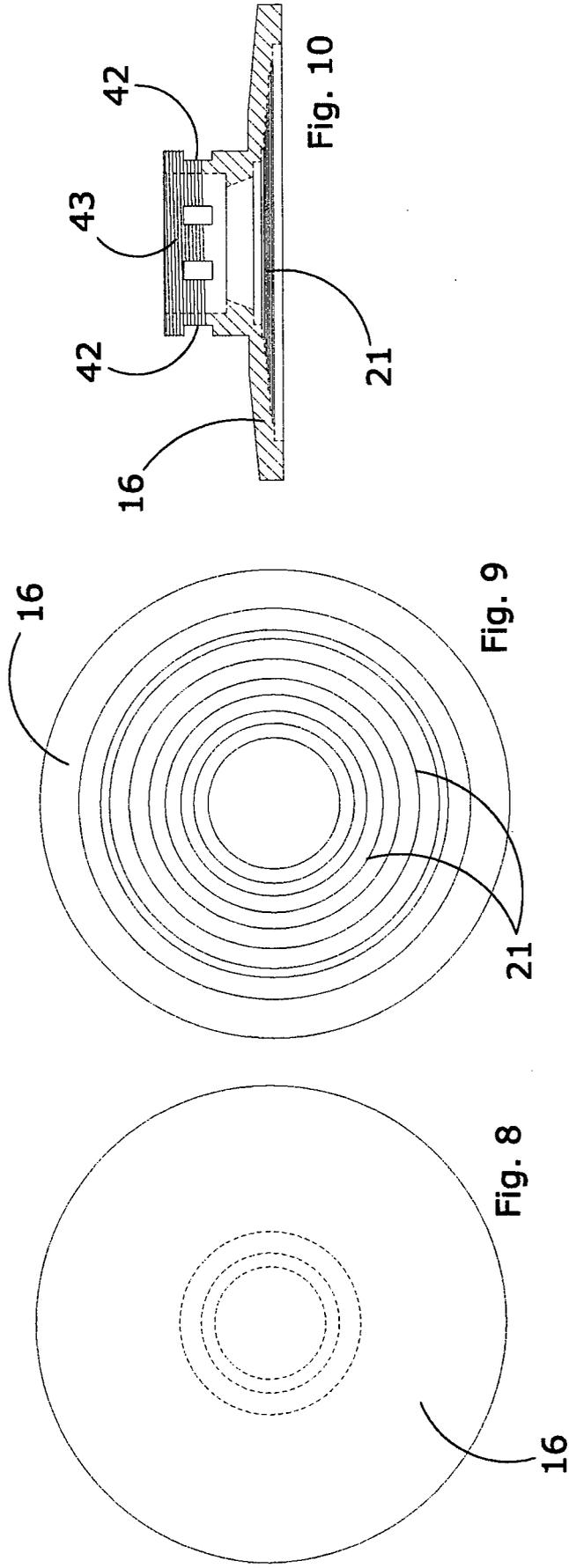


Fig. 12

Fig. 11