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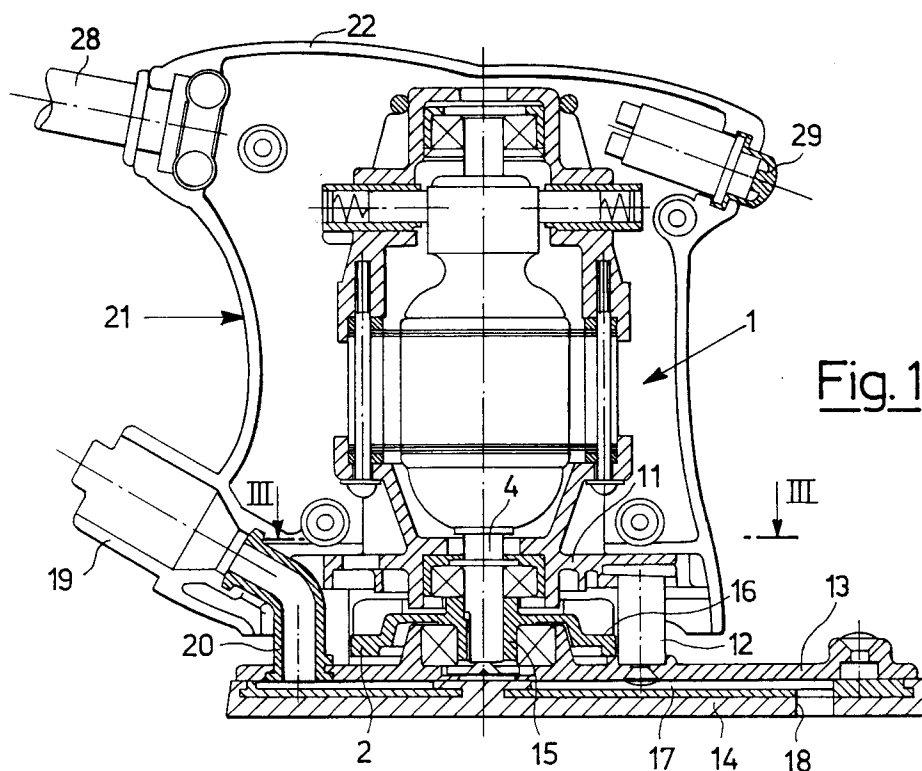
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27.12.95 Bulletin 95/52**Via S. Senatore, 5
I-20100 Milano (IT)**(84) Designated Contracting States:
AT BE CH DE ES FR GB GR IT LI NL PT SE(74) Representative: **Mittler, Enrico et al**
c/o Marchi & Mittler s.r.l.
Viale Lombardia, 20
I-20131 Milano (IT)(71) Applicant: **Valentini, Guido**
Via S. Senatore, 5
I-20100 Milano (IT)(54) **Portable sanding machine with a self-supporting electric motor**

(57) The sanding machine comprises a sanding plate (13) operated through an eccentric mechanism (15) by an electric motor (1) of the self-supporting type

housed inside a covering casing (21), made in the form of two half-shells (22, 23) fitted over said motor (1) without any function of supporting the same.

**Fig. 1****EP 0 688 632 A2**

The present invention relates to a portable sanding machine with a self-supporting electric motor.

The usual portable electric sanding machines comprise an outer casing with one of several conformations, that supports inside it the stator parts of an electric motor with the rotor shaft connected through an eccentric mechanism to a sanding plate.

Naturally this type of construction has the disadvantage of requiring the design and manufacture of a fairly strong and complicated casing, that has to act both as a containment element and as a support element for the motor.

The object of the present invention is to release the outer casing from the current functions of support so as to simplify and lighten its construction and reduce its cost.

According to the present invention such object is attained with a portable sanding machine provided with a sanding plate, with an electric motor for operating said plate and with an outer casing for covering said motor, characterized in that said motor is of the self-supporting type with the rotor shaft connected to said sanding plate through an eccentric mechanism and said casing is made in the form of two half-shells fitted over said motor without any function of supporting the same.

The outer casing is thus of a far easier construction, it can be dimensioned far more lightly and in the end it is less costly.

The features of the present invention will be made more evident by the embodiments thereof illustrated as a non-limiting example in the enclosed drawings, wherein:

Fig. 1 shows an axial cross-section of an orbital portable electric sanding machine with a triangular plate according to the present invention;

Fig. 2 shows the enlarged detail of only the self-supporting electric motor included in the abovementioned sanding machine;

Fig. 3 shows said sanding machine in a transversal cross-section taken along the line III-III of Fig. 1;

Fig. 4 again shows in a transversal cross-section a similar sanding machine with a rectangular plate;

Fig. 5 shows in an axial cross-section the lower part of a rotary orbital portable electric sanding machine with a round plate according to the present invention;

Fig. 6 shows said rotary orbital sanding machine in a transversal cross-section taken along the line VI-VI of Fig. 5.

There is shown in Figs. 1-3 a portable electric sanding machine of the orbital type, that is with the sanding plate provided with orbital motion.

The sanding machine comprises a self-supporting electric motor, that is including in a single casing all the parts it needs for its operations, which motor is indicated as a whole with the numeric reference 1 and is shown in part in Fig. 2.

With reference to the latter, the motor 1 comprises a rotor 3 with an output shaft 4 and a stator 5 made in two axially superimposed parts 6 and 7 fastened together by means of tie rods 8. The upper part 6 supports a pair of electric brushes 9 connected to respective cables of electrical supply 10 and the lower part 7 is integral with a rigid base 11.

Going back to Fig. 1, to the base 11 there is constrained through elastic columns 12 a sanding plate 13 provided with a rubber sole 14. The plate 13 is also rotatably mounted on an eccentric hub 15 keyed on the output shaft 4 of the electric motor 1 and made integral with a fan 16 with a counterweight 2.

The plate 13, that by virtue of the abovementioned connections with the eccentric hub 15 and with the elastic columns 12 is driven by the motor 1 to execute an orbital motion on the surface to be treated, includes an intermediate space 17, in communication with the outside, under the rubber sole 14, through a plurality of holes 18 (only one shown in Fig. 1) and it is also in communication with a dust collection duct 19 through a rubber hose 20.

The sanding machine is completed by an outer casing 21 with mere functions of cover up, protection and aesthetic enhancement (as well as of support for an electrical cable 28 and an electric switch 29), that is made with two half-shells 22 and 23 constrained together and to the base 11 along a vertical axial center plane.

The sanding plate 13 can have a triangular shape, as in Fig. 3, or a rectangular shape, as in Fig. 4.

As an alternative, the sanding machine can be of the rotary orbital type and in that case, as shown in Figs. 5 and 6, the sanding plate can have a round shape 24 with a rubber sole 25, rotatably mounted on the eccentric hub 15 and not further constrained to the base 11 of the motor 1 by means of elastic columns. In that case the round plate 24 is free to rotate together with the output shaft 4 of the motor 1 up to the time when a pressure contact is established between the sole 25 and the surface to be sanded, which transforms the previous rotary movement into an orbital movement.

A protective rubber cowling 26 closes the space above the plate 24, putting it in communication with a dust collector (not shown) through the rubber hose 20.

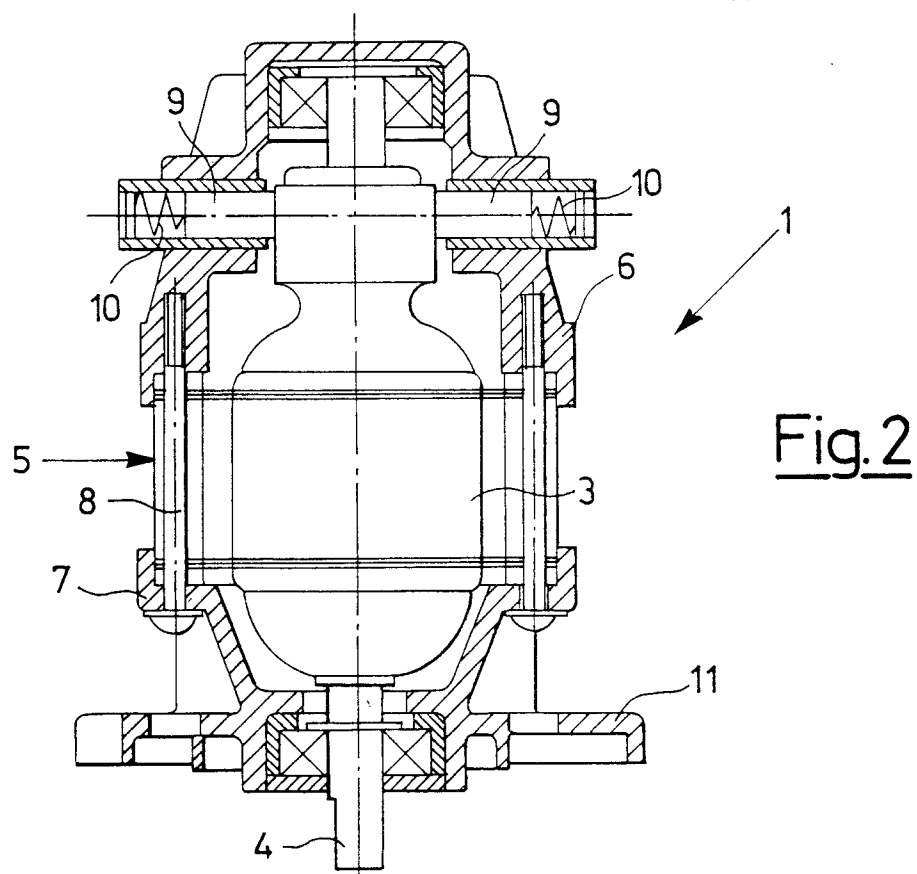
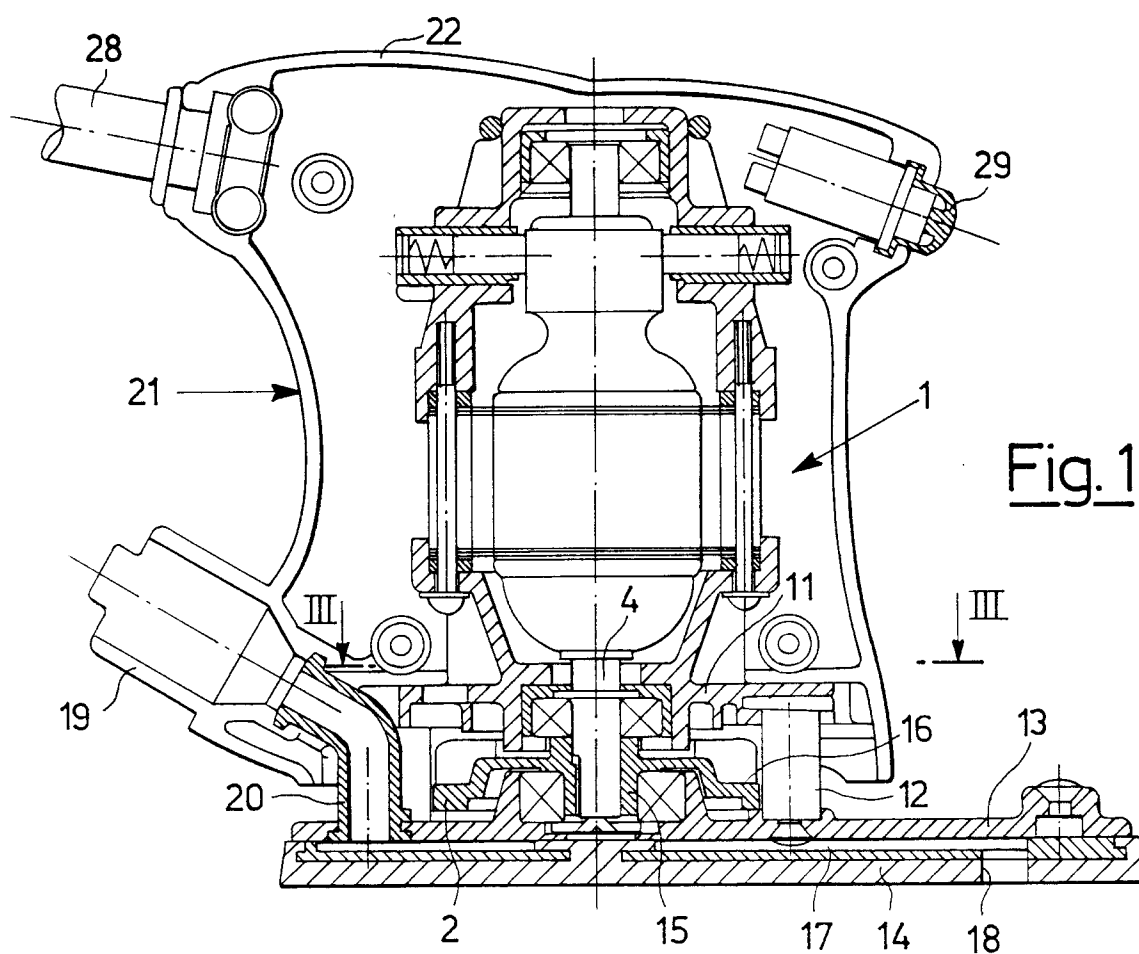
Claims

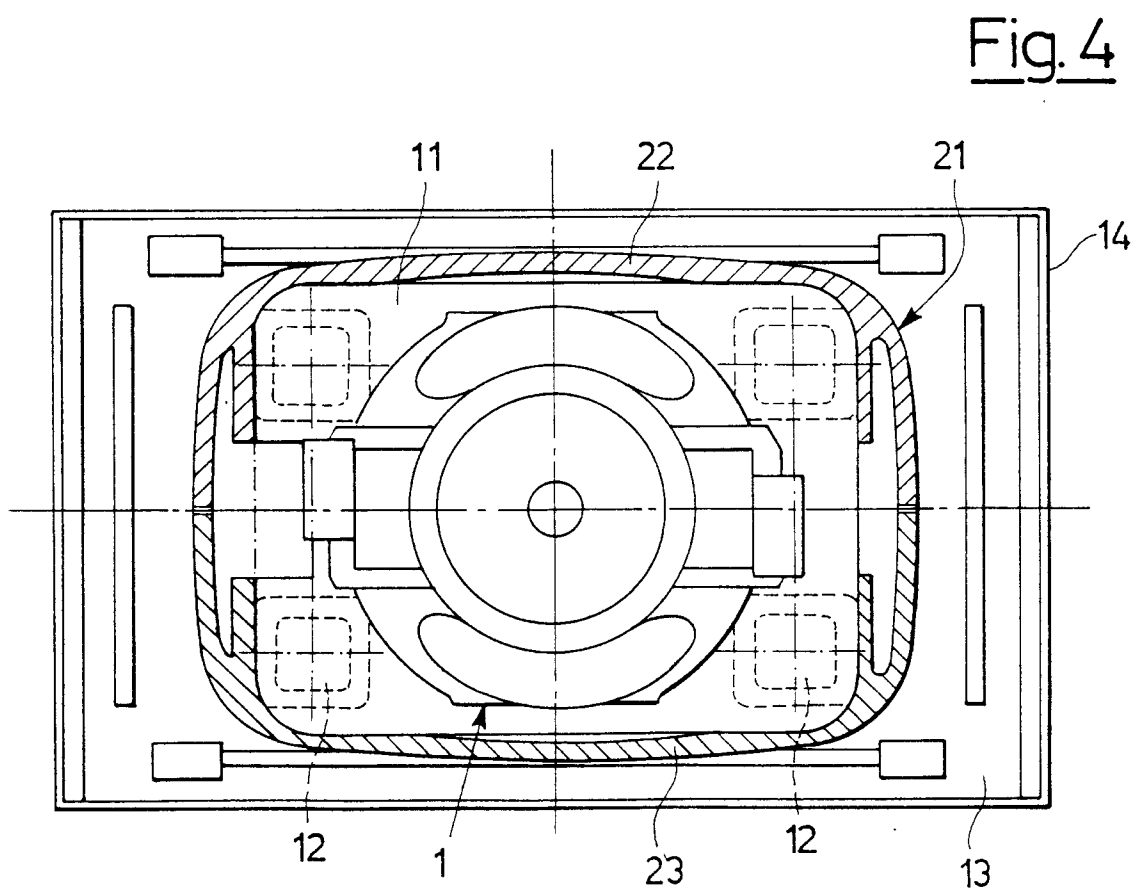
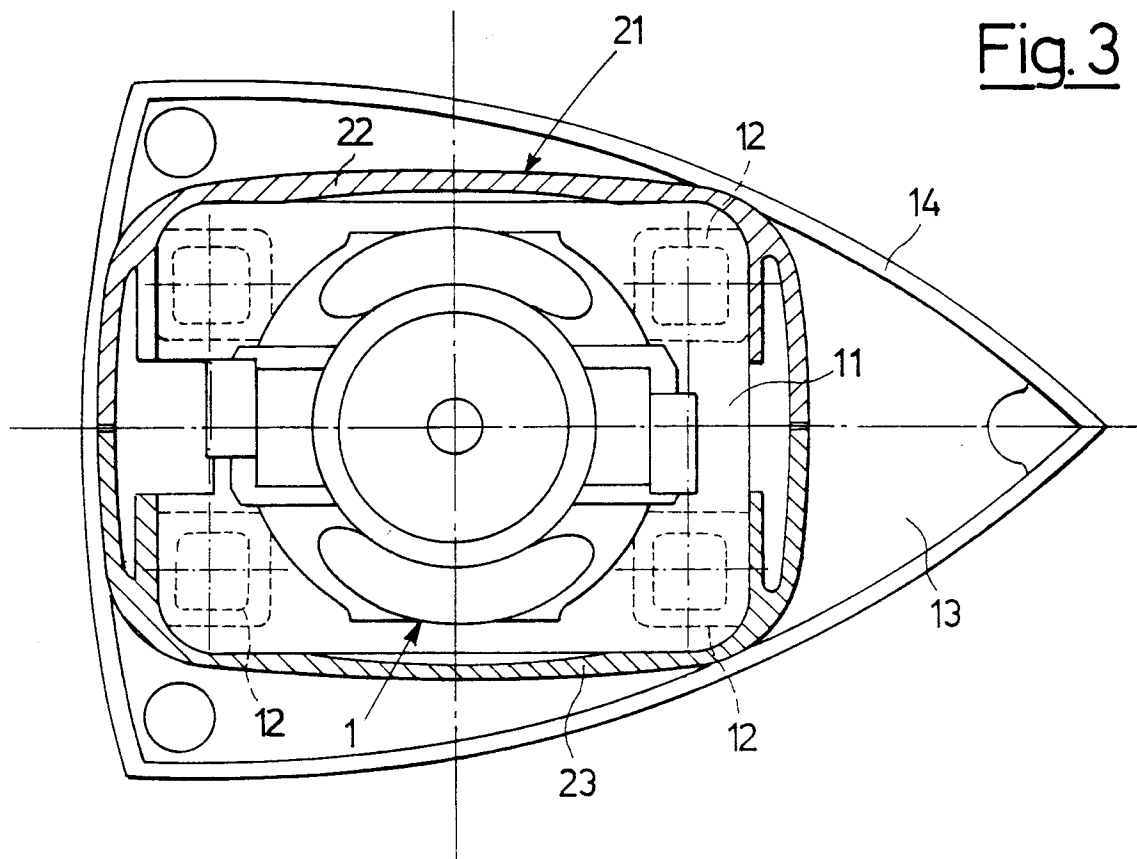
1. Portable sanding machine comprising a sanding plate, an electric motor for operating said plate and an outer casing for covering said motor, characterized in that said motor (1) is of the self-supporting type with the rotor shaft (4) connected to said sanding plate (13, 24) through an eccentric mechanism (15) and said casing (21) is made in the form of two half-shells (22, 23) fitted over said motor (1) without any function of supporting the same. 5 10
2. Portable sanding machine according to claim 1, characterized in that said motor (1) has a stator casing (5) integral with a rigid base (11) that acts as the support for said half-shells (22, 23) of the covering casing (21). 15
3. Portable sanding machine according to claim 2, characterized in that said sanding plate (13) is mounted rotatably on an eccentric hub (15) keyed on the output shaft (4) of said motor (1) and also constrained to said base (11) by elastic columns (12), so as to be operated with an orbital movement. 20 25
4. Portable sanding machine according to claim 3, characterized in that said sanding plate (13) has a triangular shape. 30
5. Portable sanding machine according to claim 3, characterized in that said sanding plate (13) has a rectangular shape. 35
6. Portable sanding machine according to claim 1, characterized in that said sanding plate (13) is mounted rotatably on an eccentric hub (15) keyed on the output shaft (4) of said motor (1). 40

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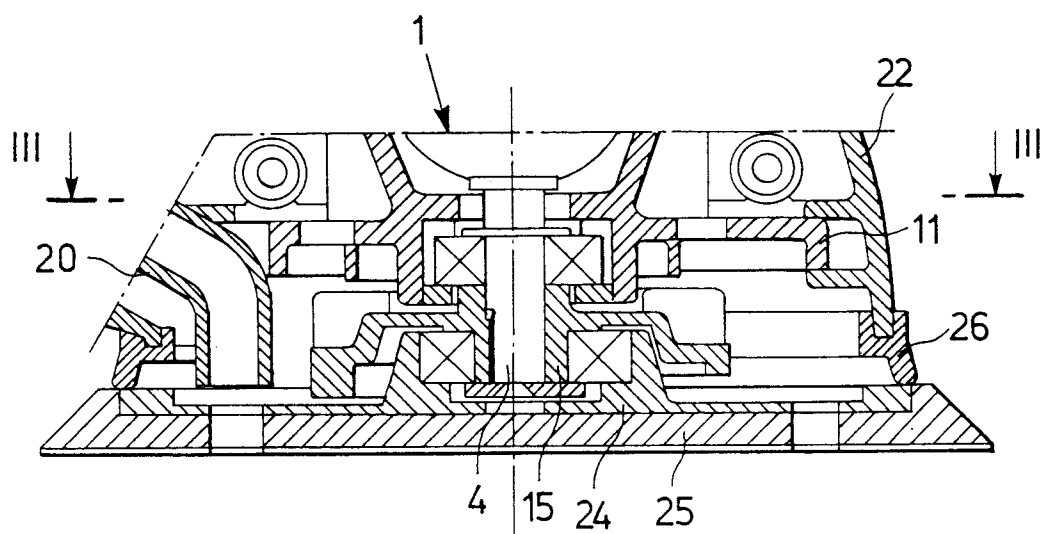


Fig. 5

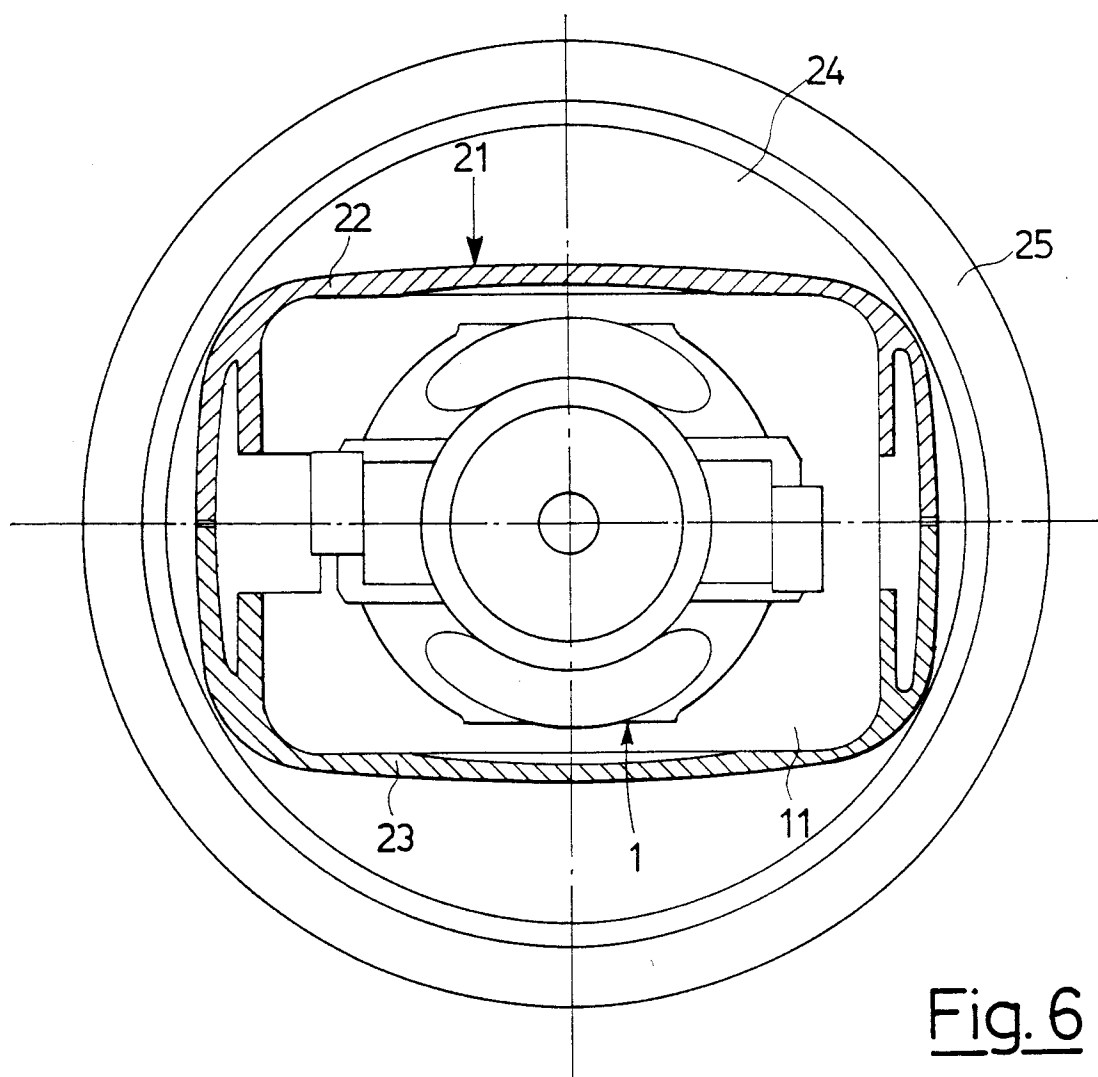


Fig. 6