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(54) **Slicing machine with knife sharpening assembly**

(57) A slicing machine with knife sharpening assembly (1), comprising a frame (2) that supports a rotating knife (3) and forms a guard (15) that affects a portion of the peripheral region of the knife, a carriage (10) for sup-

porting the product to be sliced being provided at the knife, a sharpening assembly (20), being associated with the frame and supporting a sharpening grinder (23), acting at a single face of the knife.

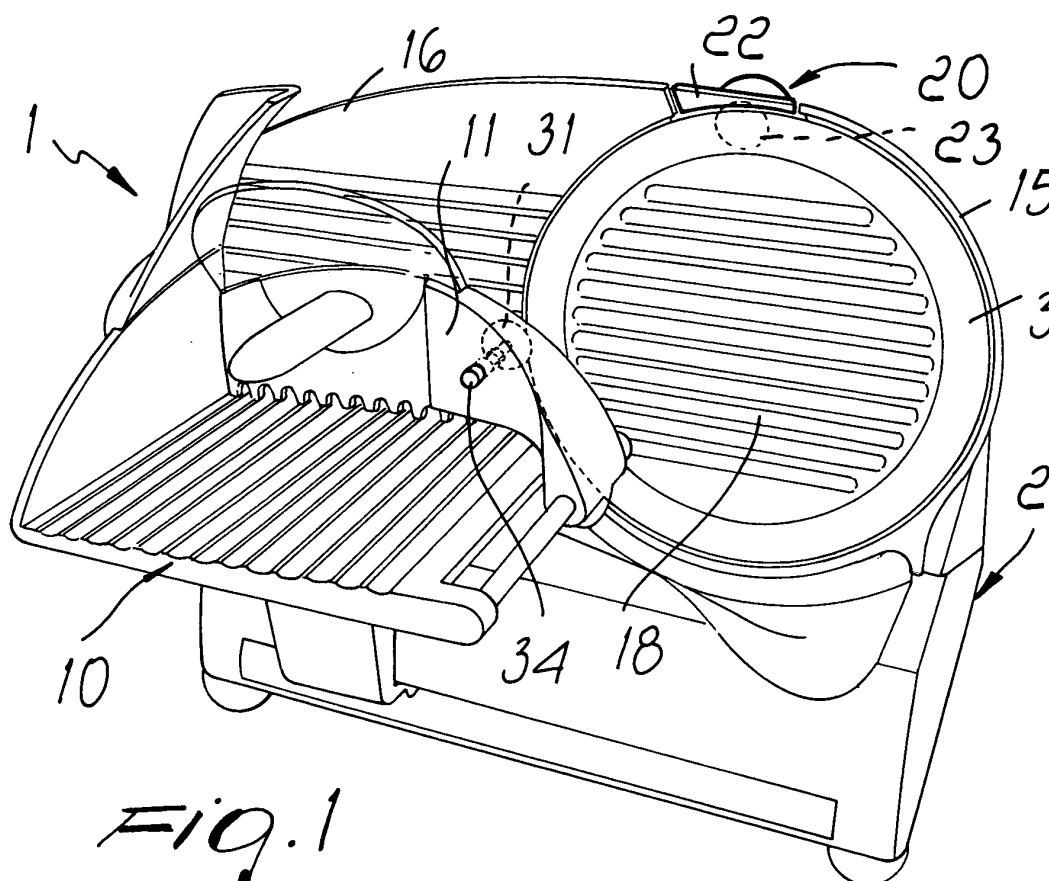


Fig. 1

Description

[0001] The present invention relates to a slicing machine with knife sharpening assembly.

[0002] As is known, slicing machines for domestic use and for small communities are already commercially available which are provided with an assembly for sharpening the cutting knife.

[0003] Among the known solutions, the most convenient ones have a sharpening assembly that must be mounted on the product supporting carriage and is provided with a sharpening grinder that acts on the face of the knife provided with the cutting edge and a deburring grinder that is used to remove the complementary cutting edge by arranging it on the other face of the knife.

[0004] With this embodiment, in order to be able to access the edge of the knife with the grinders the guard wing of the slicing machine must be able to considerably move away from the knife, thus producing a condition of considerable danger, since the knife that is turned is particularly exposed.

[0005] Other known solutions use a sharpening assembly that is arranged at the upper peripheral region of the knife and is contained in a body that is integrated, somehow, with the guard of the knife, when the slicer is in use; when sharpening is to be performed, it is instead necessary to extract the body and turn it over to arrange it so as to allow the two grinders, i.e., the sharpening grinder and the deburring grinder, to access both faces of the knife.

[0006] This solution is rather complicated from a constructive standpoint and also causes the problem of having to overturn the sharpening assembly, which is located in the upper part of the slicing machine.

[0007] On the other hand, arranging the sharpening assembly so that it is always available to perform sharpening would cause, with current solutions, a considerable space occupation in the upper part and also in the front part of the slicing machine, which in some cases can cause undoubted inconvenience.

[0008] The aim of the invention is to solve the problems cited above by providing a slicing machine with a knife sharpening assembly that allows to have the sharpening and deburring grinders always available and in the position for use without however having awkward bulks.

[0009] Within this aim, an object of the invention is to provide a slicing machine in which it is possible to operate the sharpening and deburring grinders without requiring movements or changes of components.

[0010] Another object of the present invention is to provide a slicing machine that is particularly safe and protected, since use of the grinders does not entail the need to expose parts of the knife that would normally be protected.

[0011] Another object of the present invention is to provide a slicing machine that thanks to its particular constructive characteristics is capable of giving the

greatest assurances of reliability and safety in use and is also competitive from a merely economical standpoint.

[0012] This aim and these and other objects that will become better apparent hereinafter are achieved by a slicing machine with knife sharpening assembly, comprising a frame that supports a rotating knife and forms a guard that affects a portion of the peripheral region of said knife, a carriage for supporting the product to be sliced being provided at said knife, characterized in that it comprises a sharpening assembly that is associated with said frame and supports a sharpening grinder and acts at a single face of said knife.

[0013] Further characteristics and advantages of the invention will become better apparent from the description of a preferred but not exclusive embodiment of a slicing machine with knife sharpening assembly, illustrated by way of nonlimiting example in the accompanying drawings, wherein:

Figure 1 is a perspective view of the slicing machine, taken from one side;

Figure 2 is a perspective view of the slicing machine, taken from the other side;

Figure 3 is a sectional view of the sharpening assembly with the sharpening grinder;

Figure 4 is a schematic view of the deburring assembly with the deburring grinder connected to the carriage.

[0014] With reference to the figures, the slicing machine with knife sharpening assembly, according to the invention, generally designated by the reference numeral 1, comprises a supporting frame which, in a manner known per se, supports a rotating knife 3 actuated by a motor that is associated with said frame.

[0015] On the frame there are also guiding means for the sliding of a carriage 10 on which the product to be sliced is positioned; the product can be held in position by a presser 11, which can slide along the carriage substantially at right angles to the direction of sliding of the carriage.

[0016] To complete the assembly, the frame 2 forms a guard that is constituted by a raised edge 15 that extends along a circumferential portion of the peripheral region and is interrupted at the region that accommodates a wing 16 against which the product to be sliced is pushed, said wing being arrangeable so as to obtain, in a per se known manner, the intended thickness of the slice.

[0017] There is also a fixed covering plate 18 that affects the central portion of the knife and is fixed on the frame 2.

[0018] The particularity of the invention consists in that a sharpening assembly is provided, generally designated by the reference numeral 20, which is supported by the frame 2 and has an enclosure 21 with a front edge 22 that advantageously arranges itself on the continua-

tion of the guard 15 at the upper part.

[0019] The enclosure 21 supports internally a sharpening grinder 23, which is rotatably associated with a shaft 24 that can slide with respect to a supporting element 25 that is associated with the enclosure 21.

[0020] The shaft 24 is associated with a pushbutton 26, which can be accessed outside the body 21 and is preset to perform, in contrast with a spring 27, the translational motion of the sharpening grinder 23 so as to make it sharpen the cutting edge of the knife.

[0021] The sharpening assembly 20 acts at a single face of the knife, and in particular on the face where the cutting edge is provided, while burr is removed by means of a deburring assembly 30 that is supported by the carriage 10 and more specifically by the presser 11.

[0022] As shown in Figure 4, on the presser 11 there is a grinder for removing a complementary cutting edge 31, which is supported by a deburring shaft 32 that can slide with respect to a deburring support 33 that is accommodated inside the presser 11.

[0023] The shaft ends with a deburring pushbutton 34, which in contrast with a deburring spring 35 allows to cause the translational motion of the deburring grinder so as to arrange it at the peripheral region of the knife in order to remove the cutting edge burr after sharpening has been performed by means of the sharpening assembly.

[0024] It should be added to the above that the sharpening assembly has a profile 40 that protrudes for connection to the frame 2 and provides the so-called slice retention profile, which acts at the rear face of the knife.

[0025] From what has been described above, it is evident that the invention achieves the intended aim and objects, and in particular the fact is stressed that the solution described above uses a sharpening assembly that is arranged in a fixed position at a face of the knife and a deburring assembly which, differently from what is observed in the background art, is spaced and connected to the carriage, so that it is possible to always have the sharpening and deburring grinders in position without having to perform modifications or add parts.

[0026] Furthermore, with the arrangement described above, the knife is always protected and no dangerous access gaps at the regions where the grinders act are produced.

[0027] Another important aspect is further constituted by the fact that no bulk is produced at the peripheral region of the knife, especially the deburring grinder is separated and positioned directly by the carriage, differently from what occurs in the background art.

[0028] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0029] All the details may further be replaced with other technically equivalent elements.

[0030] In practice, the materials used, as well as the contingent shapes and dimensions, may be any according to requirements.

[0031] The disclosures in Italian Patent Application No. MI2003 A 000262 from which this application claims priority are incorporated herein by reference.

[0032] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A slicing machine with knife sharpening assembly (1), comprising a frame (2) that supports a rotating knife (3) and forms a guard (15) that affects a portion of the peripheral region of said knife, a carriage (10) for supporting the product to be sliced being provided at said knife, **characterized in that** it comprises a sharpening assembly (20) that is associated with said frame and supports a sharpening grinder (23) and acts at a single face of said knife (3).
2. The slicing machine according to claim 1, **characterized in that** it comprises a deburring assembly (30) supported by said carriage (10).
3. The slicing machine according to the preceding claims, **characterized in that** said sharpening assembly (20) comprises an enclosure (21) with a front edge (22) that can be arranged on the extension of said guard (15).
4. The slicing machine according to one or more of the preceding claims, **characterized in that** said sharpening assembly (20) supports, inside said enclosure (21), a sharpening grinder (23) that is rotatably connected to a shaft (24) that can slide with respect to a supporting element (25) that is associated with said enclosure (21).
5. The slicing machine according to one or more of the preceding claims, **characterized in that** said shaft (24) has, at the end that can be accessed from outside, a pushbutton (26) for performing, in contrast with a spring (27), the translational motion of said sharpening grinder (23) in order to move it into interference with the cutting edge of said knife.
6. The slicing machine according to one or more of the preceding claims, **characterized in that** said deburring assembly (30) comprises a grinder for removing a complementary cutting edge (31) that is supported by a deburring shaft (32) that can slide with respect to a deburring support (33) that is accommodated on said carriage (10).

7. The slicing machine according to one or more of the preceding claims, **characterized in that** said deburring assembly (30) is supported by a presser (11) that is slidably associated with said carriage (10).

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8. The slicing machine according to one or more of the preceding claims, **characterized in that** said enclosure (21) of said sharpening assembly (20) is extended by means of a profile (40) that is associated with said knife in order to provide the so-called slice retainer at the rear face of the knife.

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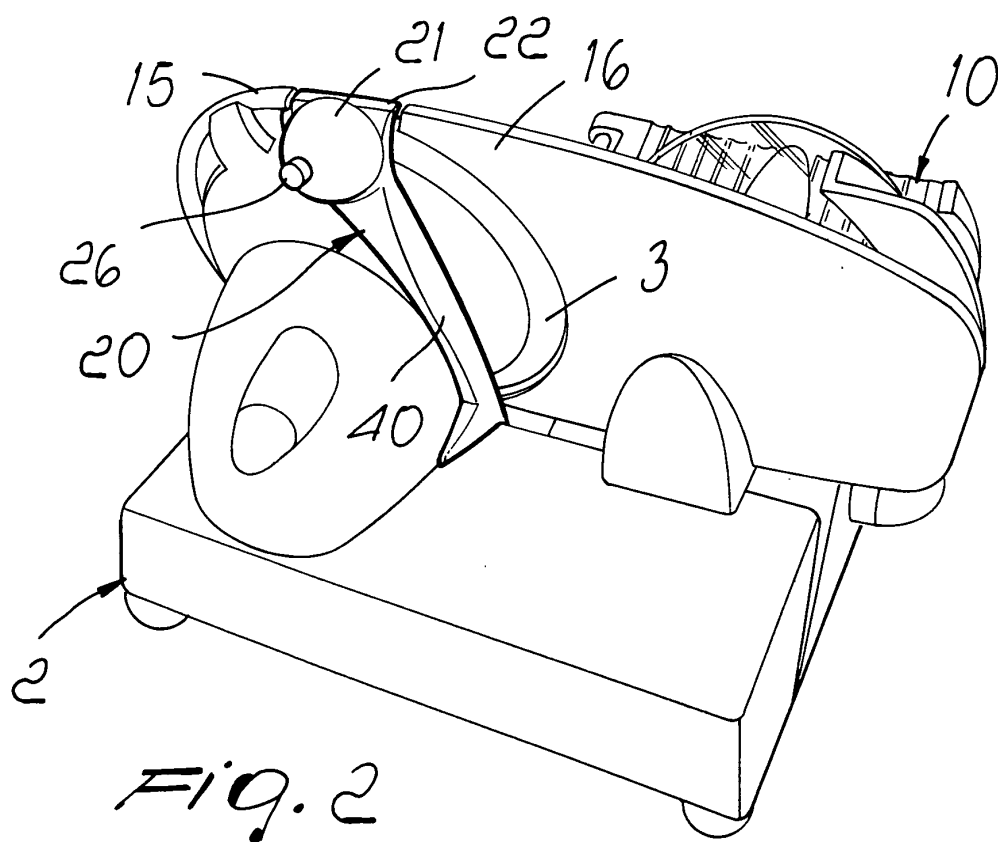
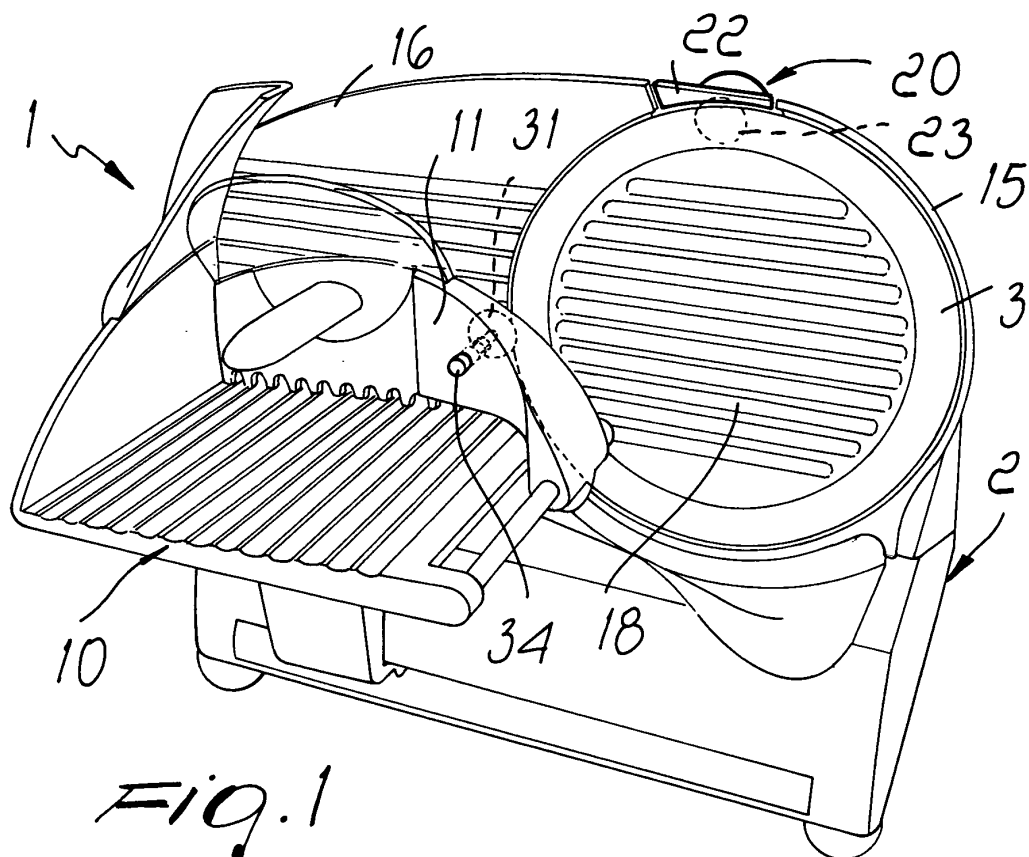
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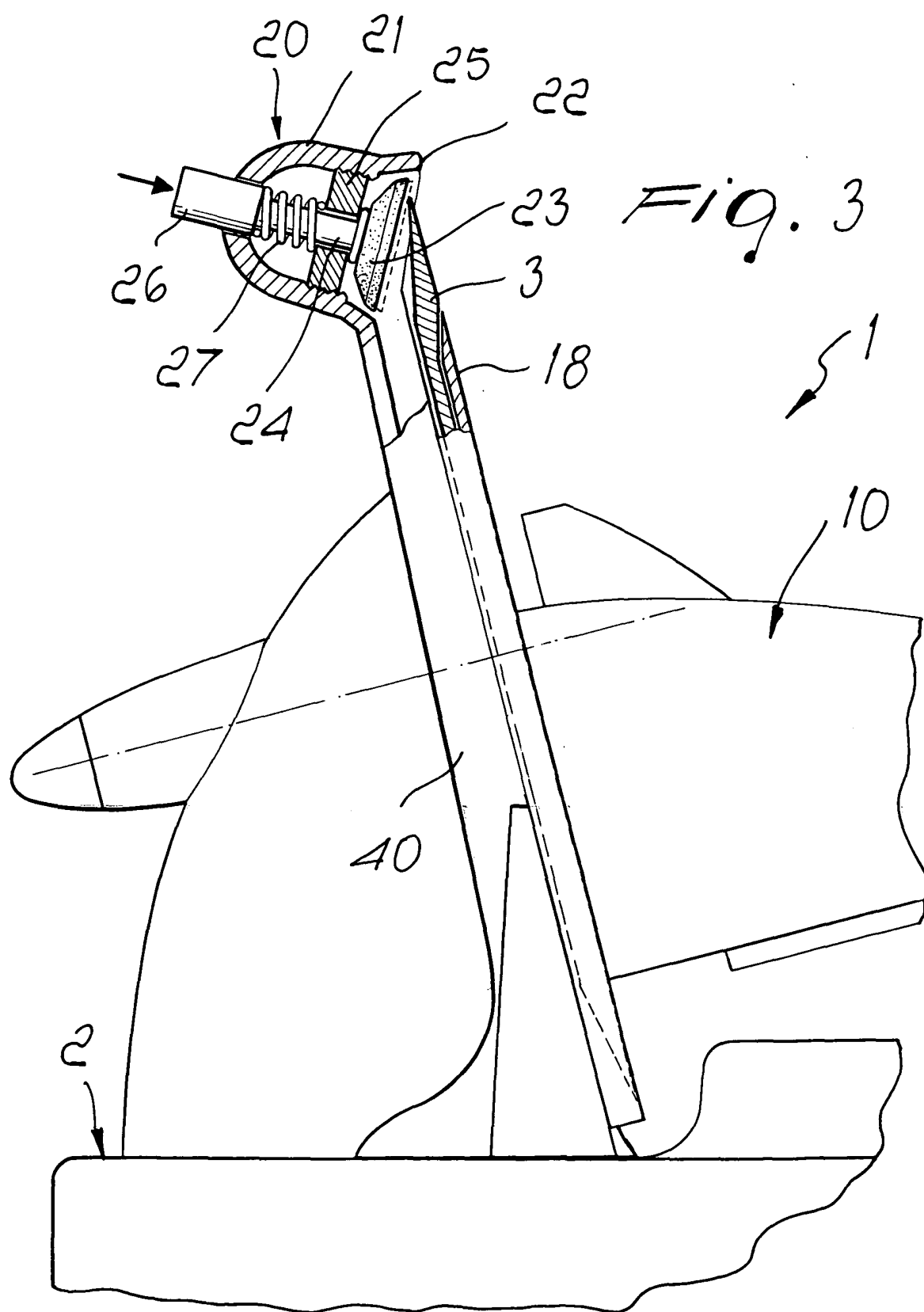
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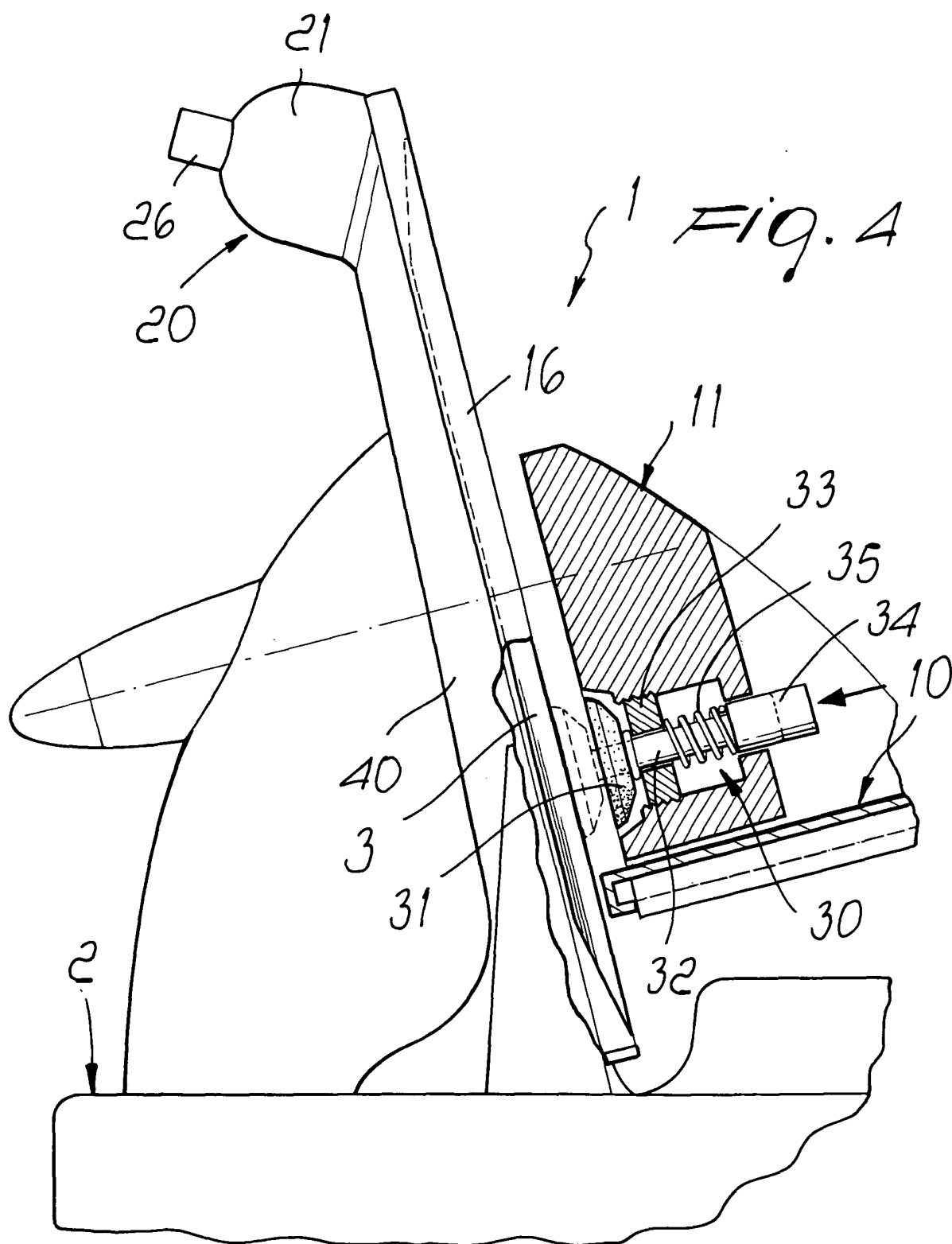
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European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 04 00 2936

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	EP 1 101 578 A (ALA 2000 S P A) 23 May 2001 (2001-05-23)	1	B26D7/12
Y	* figures 1-4 *	2-8	
Y	---		
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A	* column 1, line 1 - line 45; figure 1 *	1	
X	---		
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Y	* figures 5,9 *	2-8	
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A	* page 1 *	1	
	* page 11, paragraph 1; figures 2,3 *		

The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 21 April 2004	Examiner Wimmer, M
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 04 00 2936

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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21-04-2004

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