United States Patent

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[33] **Denmark**
[31] **292/69**

[54] **GRINDING DEVICE**
6 Claims, 3 Drawing Figs.

[52] **U.S. Cl.** **241/168,** 241/245, 241/258
[51] **Int. Cl.** **A47j 42/04**
[50] **Field of Search** ..... 241/168, 169, 244, 245, 257 R, 258, 259; 146/203; 222/196.1

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ABSTRACT: The present invention relates to a grinding device for or in a pepper mill to be used on a table and comprising a receptacle for peppercorns being at its bottom provided with a stator and a rotor having cooperating grinding surfaces of a frustoconical shape converging upwardly, said rotor being secured to a shaft carried through the receptacle and rotatably mounted in a bearing in the top of the receptacle. According to the invention an aperture for supplying peppercorns to the receptacle is provided in the rotor and the grinding surfaces of the stator and rotor are urged against each other in working relationship by spring means acting directly or indirectly upon the shaft and the receptacle.

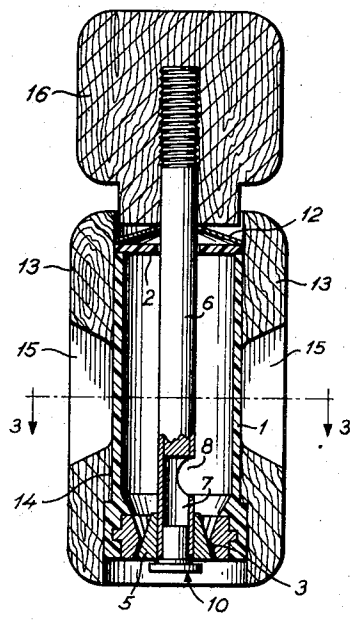
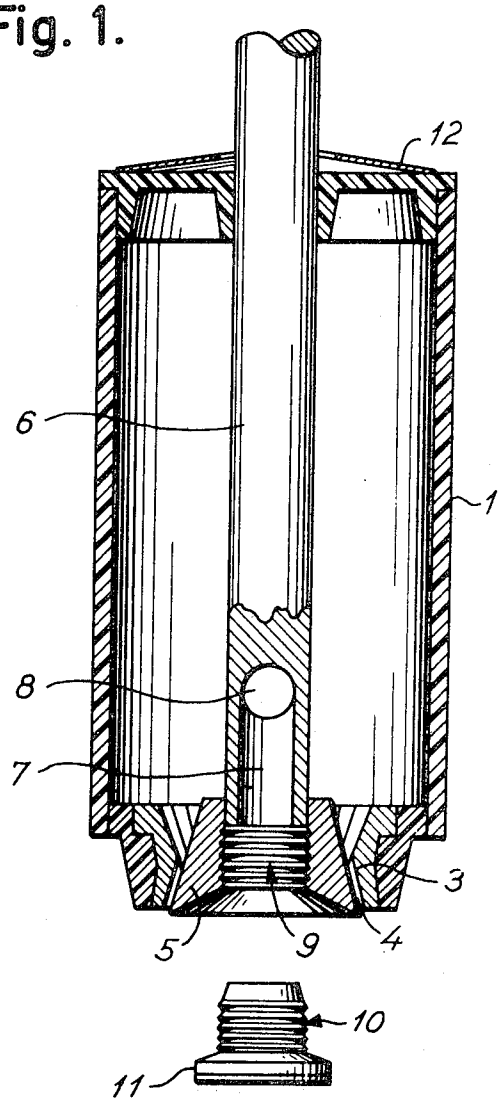


Fig. 1.



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Fig. 2.

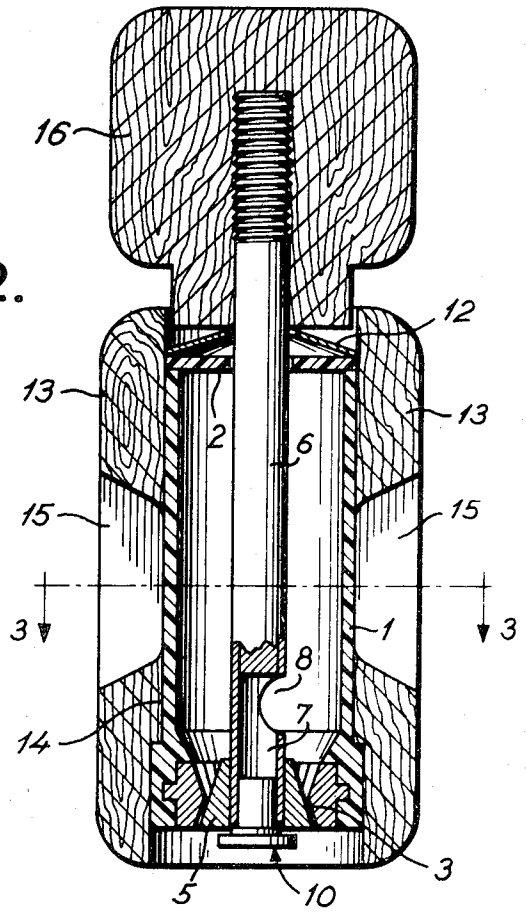
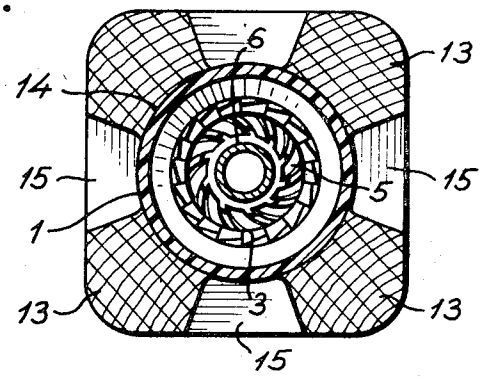


Fig. 3.



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GRINDING DEVICE

SPECIFICATION

The present invention relates to a grinding device for or in a pepper mill to be used on a table and comprising a receptacle for peppercorns being at its bottom provided with a stator and a rotor having cooperating grinding surfaces of a frustoconical shape converging upwardly, said rotor being secured to a shaft carried through the receptacle and rotatably mounted in a bearing in the top of the receptacle.

Such grinding devices are commonly used for table pepper mills which besides grinding the pepper also serve a decorative purpose. Generally, such grinding devices are delivered from a special manufacture to the more artistic manufacturer of the table pepper mills.

To enable the peppercorns to be supplied to the receptacle of the device, the receptacle is generally provided with a closable aperture in its top or sidewalls which, however, will complicate the insertion of the grinding device in the pepper mill housing and often adversely interfere with the artist concept of the housing. It is also known to place this aperture in the bottom of the receptacle besides the stator of the grinding means, whereby however the cross section dimension of the grinding device will be undesireably enlarged.

It is the primary object of the present invention to provide an improved grinding device of the kind referred to, which is of a simple construction and which may easily be mounted in a pepper mill housing without interference with the artist design of the housing.

It is also an object of the invention to provide a grinding device or pepper mill of the kind referred to by which it will be possible by simple means and without special manipulations to grind the peppercorns more or less coarsely as desired.

It is further an object of the invention to provide a pepper mill which enables a visual observation of the amount of peppercorns held in the receptacle of the grinding device.

According to the present invention this is obtained by providing a closeable aperture for the supplying of peppercorns to the receptacle in the rotor of the grinding device, whereby this aperture will be invisible when the pepper mill is standing on the table and which will not imply any undesired enlargement of the cross section of the grinding device. By a preferred embodiment of the invention the rotor may be urged against the stator by spring means acting between the receptacle and the rotor shaft so that when grinding the peppercorns by grasping the main body of the pepper mill with one hand and turning the rotor by means of a knob or head fastened to the upper end of the rotor shaft with the other hand, it will be possible to achieve more coarse-grinded pepper simply by pressing the knob or head downward against the main body during its turning.

According to a further embodiment of the invention the receptacle of the grinding device may be of a transparent material, for instance transparent plastic, and the housing of the pepper mill being provided with one or more openings in its sidewalls, whereby an observation of the amount of peppercorns held in the receptacle will be possible.

This and further features and objects of the invention will be more apparent from the following description with reference to the accompanying drawings, in which:

FIG. 1 is a side elevation in section of an embodiment of the grinding device according to the invention;

FIG. 2 is a side elevation in section of an embodiment of the pepper mill according to the invention; and

FIG. 3 a section on the line 3—3 of FIG. 2.

The grinding device shown in FIG. 1 consists of a receptacle 1 which at its top is closed by a cover 2 and at its bottom is provided with a stator 3 having a frustoconical working surface 4 provided with notches or grooves of an appropriate configuration, and which is cooperating with a similar working surface on a rotor 5 secured to a shaft 6 carried through the receptacle 1 and through a bearing in the cover 2.

The receptacle 1 can be made of any suitable material preferably of a transparent plastic and may be of any suitable configuration, for instances a cylinder as shown. If desired, it may be provided with protrusions, not shown, to ensure a nonrotatable securing in the main housing of a pepper mill.

The shaft 6 may at its upper end, not shown in the drawing, have a convenient configuration to ensure a nonrotatable fastening of the pepper mill's operating head or knob. Furthermore, the upper end of the shaft 6 is surrounded by a slightly conical disk 12 of resilient material which at its periphery is abutting against cover 2 of the receptacle 1 and at its central part against the operating head or knob so as to resiliently urge the working surface of the rotor 5 against the working surface 4 of the stator 3. The lower end of the shaft 6 carrying the rotor 5 is provided with an axial bore 7 communicating with a through-going bore or preferably as shown only one opening 8 on one side of the shaft. In the embodiment shown the shaft is solid but it will be understood that this shaft may also be a tube provided with a lateral opening 8, which may possibly be closed over the lateral aperture by a stopper.

The channel 7, 8 for supplying the peppercorns to the receptacle is closed at its lower end by insertion of a stopper of an elastic material as, for instance rubber or cork, or it may be provided with an internal thread 9 for insertion of a screw stopper 10 which may be operated by means of a flange 11 with a knurled periphery.

It should be understood that the grinding device shown in FIG. 1 may in itself be used as a table pepper mill, but generally it is intended for mounting within a housing of an appropriate artistic design, for instance as will appear from FIG. 2 and 3. By this embodiment a grinding device as shown in FIG. 1 is inserted in a bore 14 in a pepper mill's main housing 13 manufactured of decorative wood and with a nearly square cross section as shown in FIG. 3. The receptacle of the grinding device is fastened in the bore 14 as by gluing.

An operating head or knob 16 also of wood and with the same cross section is secured to the upper end of the shaft 6 as by gluing. Openings or windows 15 are cut out in the sidewall of the housing 13, and the cylindrical part of the grinding device's receptacle being of a transparent material the contents of same will be visible. Spring means as, for instances, a slightly conical disk of resilient material is inserted between the top of the receptacle 1 and the lower surface of the knob 16 so that a more coarse grinding product may be achieved by pressing down the knob 16 into the main body 13 during operation.

While what hereinbefore has been described is the preferred embodiment of this invention, it is readily apparent that alterations and modifications can be resorted to without departing from the scope of this invention and such alterations and modifications are intended to be included within the scope of the appended claims.

What I claim is:

1. In a grinding device for peppercorns including a substantially enclosed, hollow receptacle having at the bottom thereof a stator defining an internal grinding surface, a shaft rotatably mounted in and extending through said receptacle, and a rotor secured to the lower end of said shaft and defining a grinding surface of a predetermined shape for cooperating with said stator grinding surface to grind peppercorns in said receptacle upon rotation of said shaft and said rotor; the improvement of means for supplying peppercorns to said receptacle of said grinding device characterized by providing easy access to said receptacle without interferring with the design of an external housing in which said grinding device may be inserted, said means comprising channel means extending directly through said rotor from the outside of said receptacle and said grinding device to the inside of said receptacle, and removable means for positioning in the outside end of said channel means for closing said channel means when peppercorns are not being supplied and for removal from said channel means when peppercorns are being supplied.

2. In a grinding device, as set forth in claim 1, in which said channel means comprises an axial bore extending through said rotor and at least partially through said shaft and a lateral opening from said bore through said shaft into said receptacle.

3. In a grinding device, as set forth in claim 1, including means for urging said grinding surface of said rotor into grinding engagement with said grinding surface of said stator.

4. In a grinding device, as set forth in claim 3, in which said means for urging said grinding surface of said rotor into engagement with said grinding surface of said stator comprises a resilient spring means positioned between said receptacle and said shaft for allowing said shaft to be manually moved against the urging of said spring means to move said grinding surface of said rotor further away from the grinding surface of said stator for adjusting the coarseness of the grinding of the peppercorns.

5. A table pepper mill having a main housing a decorative design and material, within said housing a receptacle for peppercorns, said receptacle being at its bottom provided with a stator with an internal grinding surface with grooves or notches and in general of a frustoconical shape converging upwardly, within said stator a rotor provided with a correspondingly shaped grinding surface, said rotor being secured to the lower end of a shaft carried through said receptacle and rotatably mounted in the top of the same, said shaft being at its upper end secured in an operating knob or head, spring means for resiliently urging the rotor against the stator, an aperture for supplying peppercorns to said receptacle provided in said rotor and closing means for closing said aperture.

6. A table pepper mill according to claim 5 wherein at least the sidewalls of the receptacle are of a transparent material and the main housing at its sidewall provided with at least one opening or window.

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