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(54) Sharpening device, particularly for slicing machines

(57) A sharpening device (4), particularly for slicing machines (1) having a circular blade (3), comprising a supporting frame (5) for a first grinding wheel (6a) and a second grinding wheel (6b) which are mutually opposite and lie on two planes which are not parallel to each other. The frame (5) has an element (12) for permanently covering the adjacent blade (3) and an arm (15) provided with means (19a,19b) for the guided tilting and guided positioning of the first and second grinding wheels (6a,6b) at the sides of the blade (3).

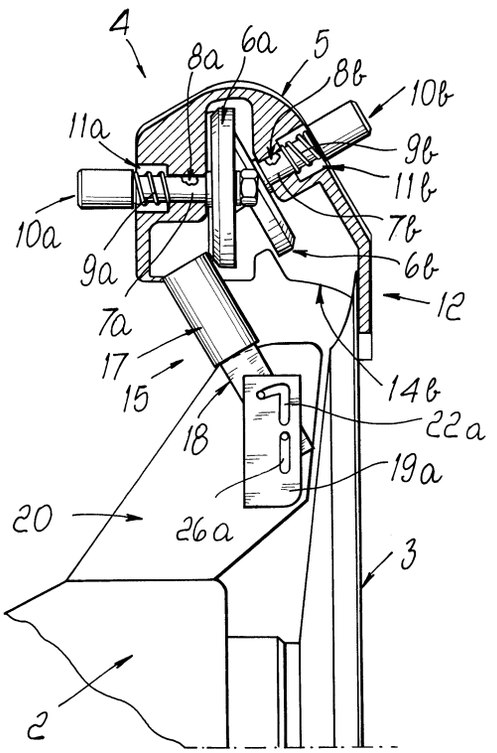

Fig. 4

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Description

[0001] The present invention relates to a sharpening device particularly for slicing machines.

[0002] Electric machines are currently in use which can be employed to slice food products, such as for example pork meat, ham, delicatessen and other stuffed-meat products, and are substantially constituted by a footing which supports a circular blade which is turned by means of a conventional electric motor.

[0003] The blade is usually arranged on a plane which is inclined with respect to a vertical plane, so as to facilitate the resting of the food product to be sliced on the blade.

[0004] Laterally to the blade there is a carriage which can slide on guides associated with the footing and supports a tray which is arranged approximately at right angles to the plane of arrangement of the blade in order to support the product to be sliced.

[0005] The carriage can slide laterally with respect to the plane formed by the blade.

[0006] As a consequence of use, it is necessary to perform periodic sharpening of the blade; this sharpening is performed by using devices which are usually arranged proximate to the blade, often above it.

[0007] One known type of sharpening device is constituted by two mutually opposite grinding wheels which lie on non-parallel planes and are associated with a support for connection to said slicing machine.

[0008] The support can be detachably coupled, for example by means of a locking screw, proximate to the blade, so that during use of the slicing machine it can be installed so that the two grinding wheels are spaced from said blade.

[0009] In order to perform sharpening, while the blade is not moving the locking screw is loosened, extracting the support from its seat and repositioning it therein after turning it through approximately 180°, so as to arrange the two grinding wheels proximate to the blade.

[0010] In this manner, once the locking screw is tightened, sharpening is performed by pressing a first button, so as to move a first grinding wheel toward the blade and hone its edge, and by then releasing the first button and pressing a second button, so as to move the second grinding wheel toward the blade, thus removing any residues.

[0011] The main drawback of this conventional device is the fact that the sharpening operation is quite troublesome, since it requires the disassembly and subsequent reassembly, in rotated position, of the entire device, and the complementary operations.

[0012] Worse still, these operations are slow and troublesome, if one considers that they entail the need to act by loosening and then tightening a screw several times.

[0013] A second drawback of this described conventional device is the fact that it is not fully safe for the user, both because it does not eliminate the possibility of human error in positioning the device and because during the disassembly of the device part of the blade is made dangerously accessible to contact with the fingers.

[0014] Another drawback resides in the fact that contact between the grinding wheels and the blade is possible even during the rotation of the device.

[0015] Another conventional sharpening device is constituted by a support which is rigidly coupled proximate to the blade, usually above it, and with which two grinding wheels which can be covered by a removable protective hood are associated.

[0016] During use of the slicing machine, the grinding wheels are locked in a position which is spaced from the blade and are covered by the hood.

[0017] In order to perform sharpening, it is necessary to turn the hood in order to be able to act on an appropriately provided lever which is adapted to release the two grinding wheels and thus allow them to turn about a hinge to which they are rigidly coupled, thus being arranged proximate to said blade.

[0018] Once the sharpening position has been reached, it is possible to release the lever, allowing the device to descend proximate to the blade and lock thereat.

[0019] Once sharpening has been performed, one proceeds by repeating in reverse the previous operations and by then actuating the lever, spacing the blades to an inactive position, releasing the lever and concealing the device inside the protective hood.

[0020] The first drawback of this conventional device is the fact that safety in performing the sharpening operation is still partly dependent on correct use on the part of the user.

[0021] Since the device is in fact free to oscillate, it may happen for example that by releasing the lever before reaching the sharpening position the grinding wheels are lowered early onto the edge of the blade, with consequent possible damage to the edge.

[0022] Another drawback consists of the fact that during the positioning operation the blade of the sliding machine remains exposed for a certain period of time, with danger for the user.

[0023] The aim of the present invention is to solve the above-noted problems, eliminating the drawbacks of the cited prior art, by providing a sharpening device for slicing machines which ensures maximum safety for the operator, eliminating the possibility of accidental errors for its activation.

[0024] Within the scope of this aim, an object of the present invention is to provide a sharpening device which allows optimum, simple and fast activation.

[0025] Another object is to provide a sharpening device which can be activated while the blade is not accessible, so as to fully avoid the possibility of any accidental contact.

[0026] Another object is to provide a sharpening device which is structurally simple and has low manufacturing costs.

[0027] This aim, these and other objects which will become better apparent hereinafter are achieved by a sharpening device, particularly for slicing machines having a circular blade, which comprises a supporting frame for a first grinding wheel and a second grinding wheel which are mutually opposite and lie on two planes which are not parallel to each other, characterized in that said frame has an element for permanently covering said adjacent blade and an arm provided with means for the guided tilting and guided positioning of said first and second grinding wheels at the sides of said blade.

[0028] Further characteristics and advantages of the invention will become better apparent from the following detailed description of a particular embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a partially sectional front view of a slicing machine with which the sharpening device is associated;

Figures 2 and 3 are partially sectional front views of the intermediate position at the end of rotation and of the active position of the sharpening device according to the invention;

Figure 4 is a partially sectional front view of the device in the inactive position;

Figures 5, 6 and 7 are side views of the device respectively in the inactive position, at the end of rotation, and in the active position;

Figures 8, 9 and 10 are plan views of the device respectively in the inactive position, at the end of rotation, and in the active position;

Figures 11, 12 and 13 are respectively a bottom view, a front view and a plan view of the arm for tilting the device of the invention;

Figure 14 is a side view of said arm of the device;

Figures 15 and 16 are respectively a front view and a side view of one of the plates for connection to said arm.

[0029] With reference to the figures, the reference numeral 1 designates an electric slicing machine, usable for food products, such as for example pork meat, ham, delicatessen and other stuffed-meat products.

[0030] The slicing machine 1 is constituted by a footing 2 for supporting a circular blade, designated by the reference numeral 3, which can be actuated by means of a conventional electric motor, not shown in the figure.

[0031] The blade 3 is usually arranged on a plane which is inclined with respect to a plane which lies vertically to the surface on which the machine rests, so as to facilitate the adhesion of the food product to be sliced against the blade 3.

[0032] The periodic sharpening of the blade 3 is performed by using a sharpening device, designated by the reference numeral 4, which is advantageously located proximate to the blade; in this illustrated embodiment, the device is arranged in a vertical position, above the blade.

[0033] The sharpening device 4 comprises a supporting frame 5 which is arranged proximate to the blade and has a box-like shape, with a cross-section shaped approximately like an inverted letter U, with which a first grinding wheel and a second grinding wheel, designated by the reference numerals 6a and 6b, are slidingly associated. The grinding wheels have a stem 7a and 7b which can slide axially respectively within a first through seat 8a and a second through seat 8b which are formed inside the frame 5 along two mutually inclined planes.

[0034] The first and second grinding wheels 6a and 6b are advantageously made of abrasive material and are arranged opposite one another.

[0035] The first and second stems 7a and 7b slide axially within the seats 8a and 8b in contrast with a first spring and a second spring which are arranged coaxially to each one of the stems and are designated by the reference numerals 9a and 9b.

[0036] The first and second springs 9a and 9b are interposed between first and second buttons 10a and 10b, which lie outside the supporting frame 5, and a step-like abutment formed on the frame by providing third and fourth seats 11a and 11b which are formed axially with respect to the first and second seats and have a larger diameter than the first and second seats.

[0037] A permanent covering element, designated by the reference numeral 12, protrudes from only one side of said frame 5, so as to protrude, when not in use, beyond the plane of arrangement of the adjacent blade 3, partially covering it.

[0038] The covering element 12 is advantageously constituted by a first wing, which is accordingly arranged so as to straddle the blade 3 in any condition of use or non-use of the device and with which a first wall 14a and a second wall 14b are laterally rigidly coupled; both walls are preferably perpendicular to the first wing, so as to prevent in any condition the accidental contact of the fingers of the user with the blade 3.

[0039] Below the frame 5, and on the opposite side with respect to the first wing, there protrudes, along an axis which is inclined with respect to the first wing, an arm 15 (see Figures 13-14) which is longitudinally elongated; the arm 15 comprises, at one end, a head 16 which is advantageously cylindrical for connection to an appropriately provided seat formed in the frame 5.

[0040] A body 17 protrudes below the head and is conveniently also cylindrical or prism-shaped; a second wing, designated by the reference numeral 18, is rigidly coupled to the body in a downward region, is advantageously shaped like a parallelepiped and has means for the guided tilting and guided positioning of the first and second grinding wheels 6a and 6b at the sides of the blade 3.

[0041] The means for guided tilting and positioning are constituted by a first plate and a second plate, designated by the reference numerals 19a and 19b, which are conveniently made of metal, are flat and have an

advantageously rectangular or trapezoidal plan shape.

[0042] The first and second plates 19a and 19b are rigidly coupled to a third wing, designated by the reference numeral 20, which protrudes above the supporting footing 2, at a region 21 that lies behind the blade 3, and lie on a plane which is perpendicular to the plane of arrangement of the blade 3, with a peripheral edge which is parallel to the plane of arrangement of the blade 3, so that the first and second plates 19a and 19b face each other at a distance which is equal to, or slightly greater than, the width of the second wing 18.

[0043] The first and second plates 19a and 19b have appropriate symmetrical and corresponding first guides, designated by the reference numerals 22a and 22b respectively, which are L-shaped; as such, each guide is constituted by a first straight path 23, which is parallel to the longitudinal axis of the plate and is connected to a second path 24 which is shaped like a circular arc which covers approximately 30°, whose center is located at the upper end of second guides 26a and 26b which are straight and arranged below the respective first guides 22a and 22b, along the same longitudinal axis as said first path 23.

[0044] The second wing 18 can be detachably accommodated between the first and second plates 19a and 19b, since it has, for connection to the first guides 22a and 22b and the second guides 26a and 26b, respectively two first pins 27a and 27b and two second pins 28a and 28b, which protrude at right angles to said first and second plates 19a and 19b along axes which are parallel and diametrical with respect to said second wing 18.

[0045] The first pins 27a and 27b and second pins 28a and 28b are advantageously cylindrical and are shaped and sized so that they can slide within the first guides 22a and 22b and the second guides 26a and 26b with a first rotary motion toward the blade 3 and a second downward translatory motion.

[0046] Operation is thus as follows: with reference to Figure 1, when not in use, the sharpening device 4 is arranged so that the first and second grinding wheels 19a and 19b are spaced from the blade 3, with the arm 15 inclined by approximately 30° with respect to the plane of arrangement of the blade 3.

[0047] In this condition, the first pins 27a and 27b are arranged at the closed end of the second path 24 of the first guides 23a and 23b and the second pins 28a and 28b are arranged at the upper end of the second guides 26a and 26b.

[0048] In order to use the sharpening device 4 it is sufficient to arrange it in the sharpening position by means of a rotation about the second pins 28a and 28b, in the direction of the blade 3, and a subsequent downward translatory motion until the first and second pins reach the closed lower ends of the respective first and second guides.

[0049] The path traced by the device along its rotation and subsequent translatory motion is a forced path, since it is controlled by appropriate means for tilting and guided positioning: the downward translatory motion in fact begins only after the end of the rotation, thus making it impossible for the grinding wheels to make contact with the edge of the blade.

[0050] Once the sharpening device 4 has been positioned, the rotation of the blade is started, initially sharpening it by pressing the first button 10a, which moves the first grinding wheel 6a into contact with the blade.

[0051] Then, after releasing the first button, the second button 10b is pressed, thus moving the second grinding wheel 6b into contact with the blade.

[0052] Once sharpening has been completed, the device can be returned to the inactive condition simply by repeating in reverse the operations performed earlier and thus performing an upward translatory motion and a rotation in the opposite direction with respect to the previous one.

[0053] In any position in which the device can be arranged, the upper part of the blade is always covered by the covering element 12, thus ensuring maximum safety in use.

[0054] It has thus been observed that the invention has achieved the intended aim and objects, a sharpening device for slicing machines having been devised which ensures maximum safety for the operator, eliminating the possibility of accidental errors for its activation, which is optimum, simple and fast.

[0055] The invention is of course susceptible of numerous modifications and variations, all of which are within the scope of the same inventive concept.

[0056] The materials used, as well as the dimensions of the individual components of the invention, may of course be more pertinent according to specific requirements.

[0057] The disclosures in Italian Patent Application No. TV99A000129 from which this application claims priority are incorporated herein by reference.

[0058] 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 sharpening device, particularly for slicing machines having a circular blade, which comprises a supporting frame for a first grinding wheel and a second grinding wheel which are mutually opposite and lie on two planes which are not parallel to each other, characterized in that said frame has an element for permanently covering said adjacent blade and an arm provided with means for the guided tilting and guided positioning of said first and second

grinding wheels at the sides of said blade.

2. The device according to claim 1, characterized in that said supporting frame is box-shaped with a cross-section which is approximately shaped like an inverted U.

3. The device according to claim 1, characterized in that said permanent covering element protrudes on one side of said frame beyond the plane of arrangement of the adjacent blade and partly covers it.

4. The device according to claim 3, characterized in that said covering element is constituted by a first wing which straddles said blade, a first wall and a second wall being laterally rigidly coupled to said wing so as to prevent in any condition an accidental contact of the user's fingers with the blade.

5. The device according to claim 4, characterized in that said arm protrudes below said supporting frame and on the opposite side with respect to said first wing, said arm being longitudinally extended and comprising, at one end, a head which is cylindrical for connection to a seat formed in said frame.

6. The device according to claim 5, characterized in that a cylindrical or prism-shaped body extends below said head and a second wing is rigidly coupled thereto in a downward region, said second wing being shaped like a parallelepiped and having said means for the guided tilting and guided positioning of said first and second grinding wheels at the sides of said blade.

7. The device according to claim 6, characterized in that said means for guided tilting and positioning are constituted by a first plate and a second plate which are flat and have a rectangular or trapezoidal plan shape.

8. The device according to claim 7, characterized in that said slicing machine has, in a downward region, a supporting footing, and in that said first and second plates are rigidly coupled to a third wing which protrudes above said supporting footing at a region located at the rear of said blade and lie on a plane which is perpendicular to the plane of arrangement of said blade, with a perimetric edge which is parallel to said plane of arrangement, so that said first and second plates face each other at a distance which is equal to, or slightly greater than, the width of said second wing.

9. The device according to claim 8, characterized in that said first and second plates, which are mutually identical and symmetrical, have first L-shaped guides, each one of said first guides being constituted by a first straight path which is parallel to the longitudinal axis of the plate and is connected at the upper end to a second path which is shaped like a circular arc and extends in the opposite direction with respect to said blade.

10. The device according to claim 9, characterized in that said second path, which is shaped like a circular arc, is centered at the upper end of two underlying second straight guides which are arranged along the same longitudinal axis as said first path.

11. The device according to claim 10, characterized in that said second wing, which can be removably accommodated between said first and second plates, has two first and second pins which protrude at right angles to said first and second plates along axes which are parallel and diametrical to said second wing and are arranged in said first and second guides.

12. The device according to claim 11, characterized in that said first and second pins are cylindrical and are shaped and sized so that they can slide within said first and second guides, with a first rotary motion toward said blade and a second downward translatory motion.

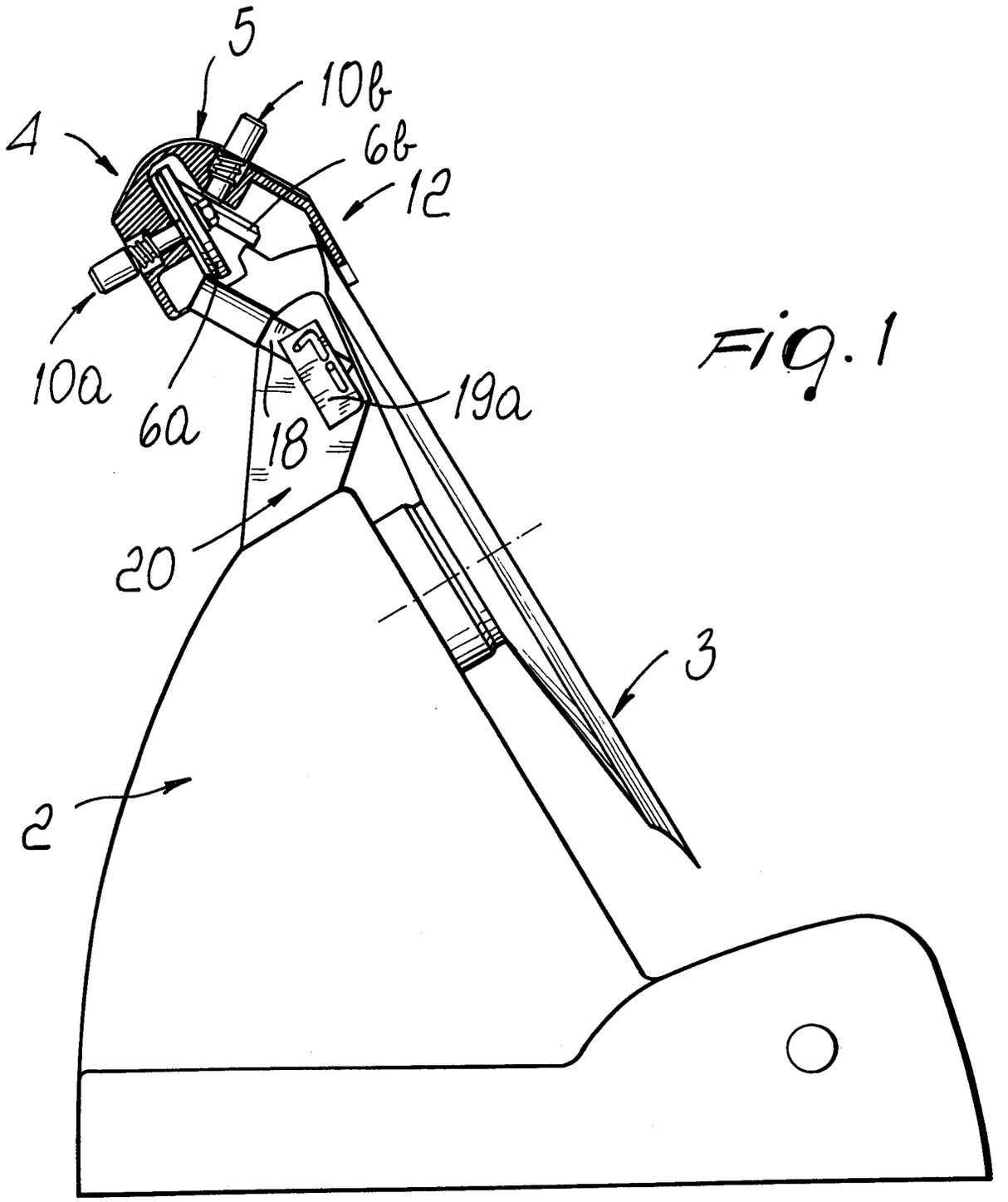

Fig. 1

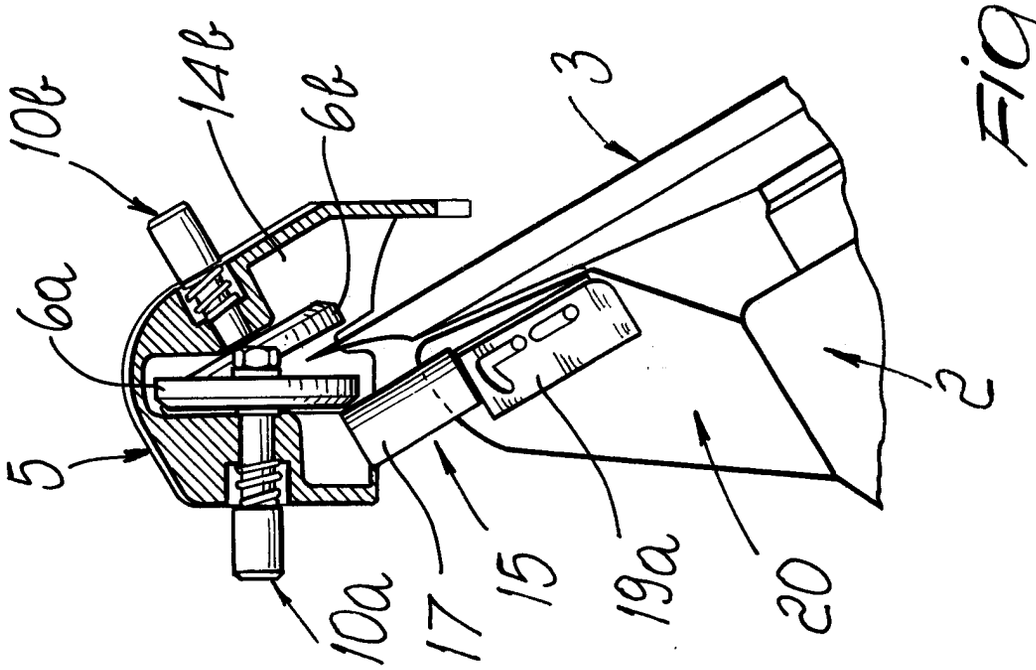

Fig. 3

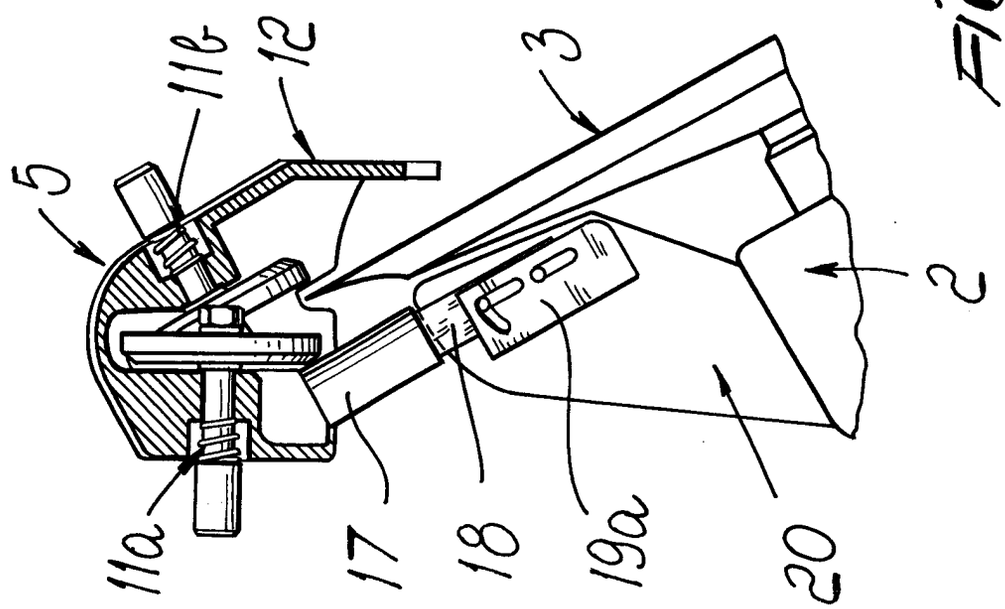

Fig. 2

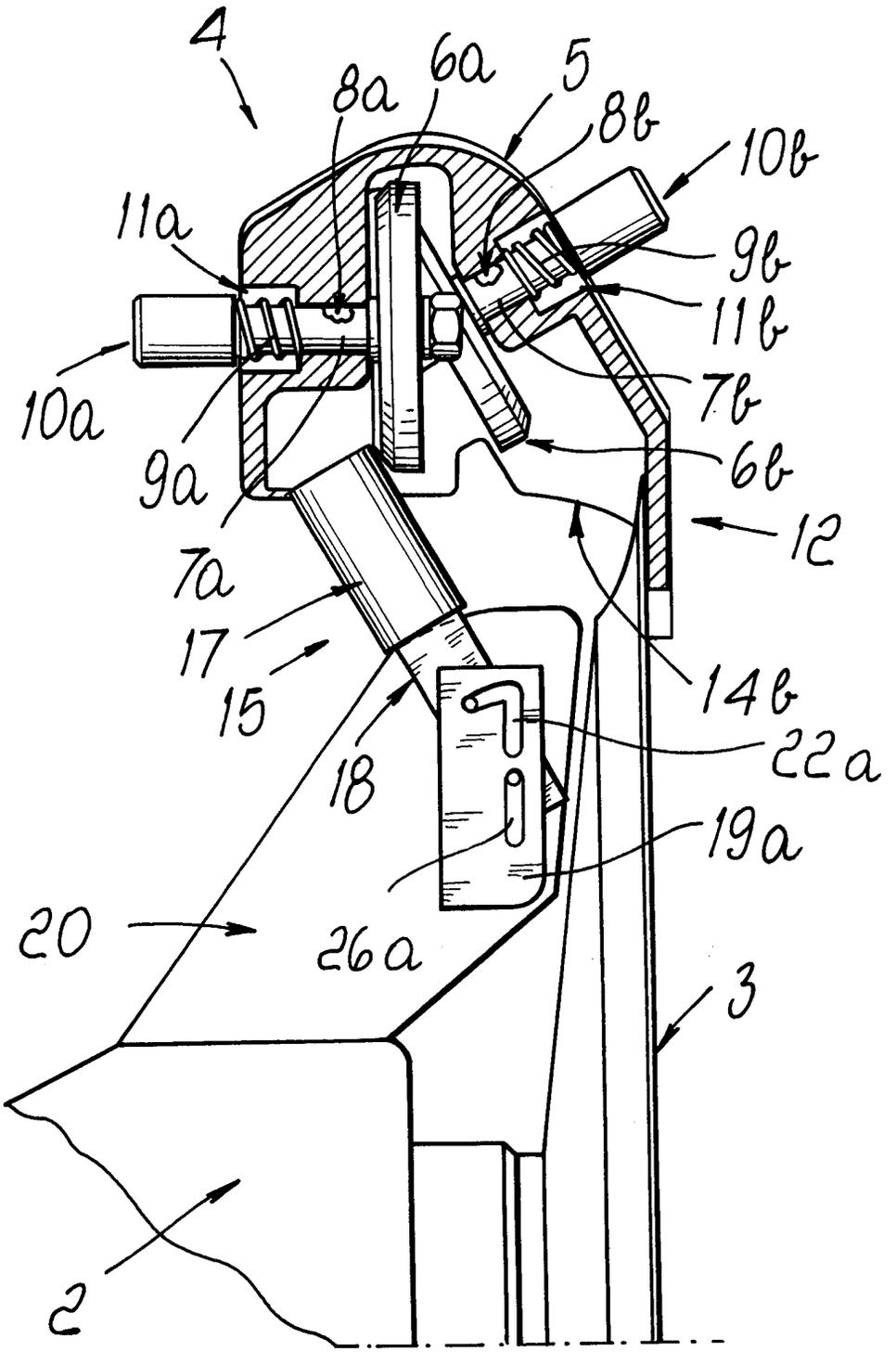
4
8a
6a
5
8b
10b
11a
9b
11b
10a
7b
9a
6b
12
7a
17
15
14b
18
22a
19a
20
26a
3
2

Fig. 4

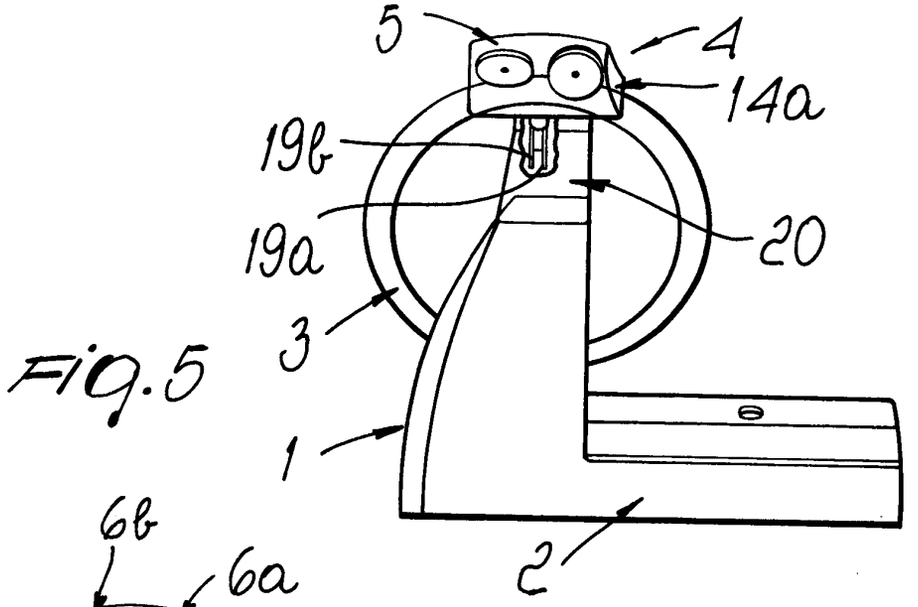

Fig. 5

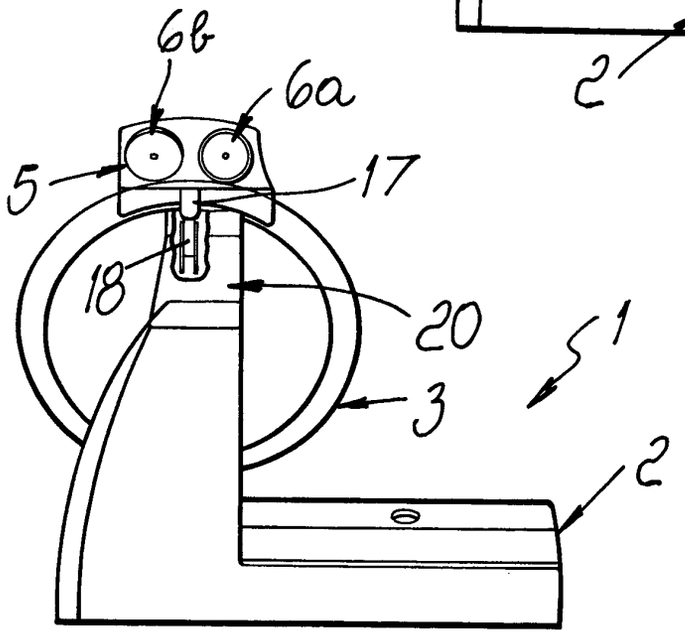

Fig. 6

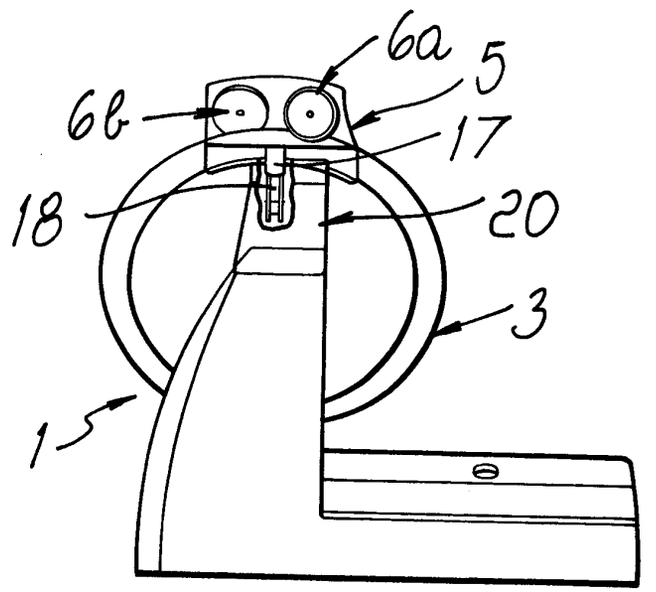

Fig. 7

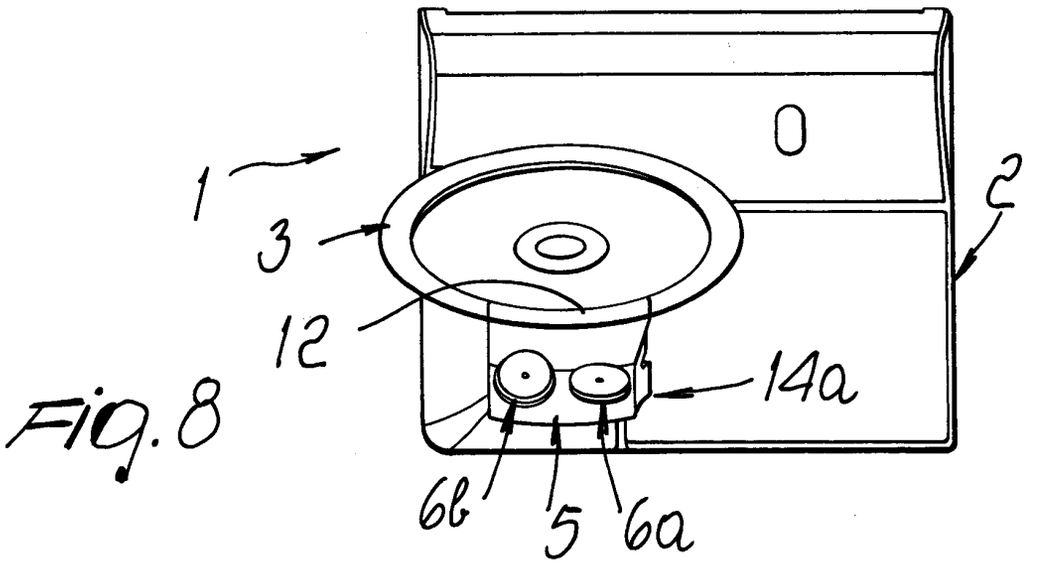

Fig. 8

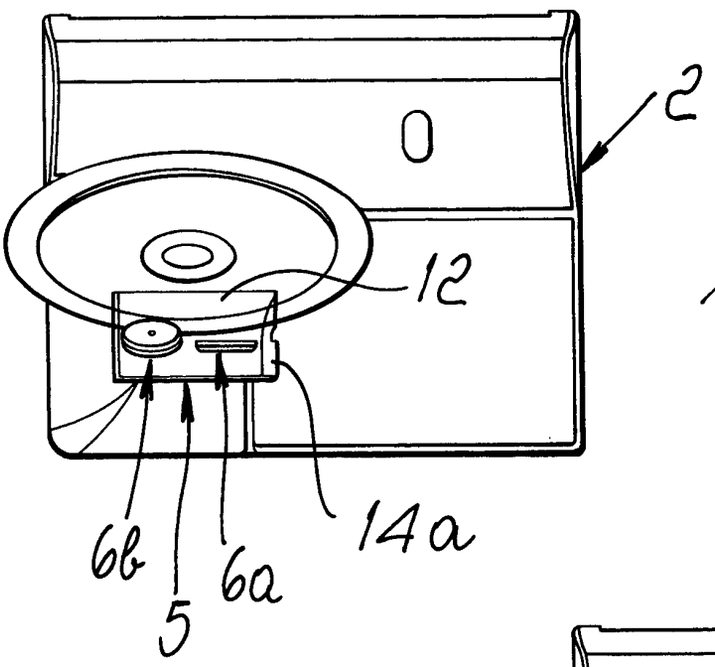

Fig. 9

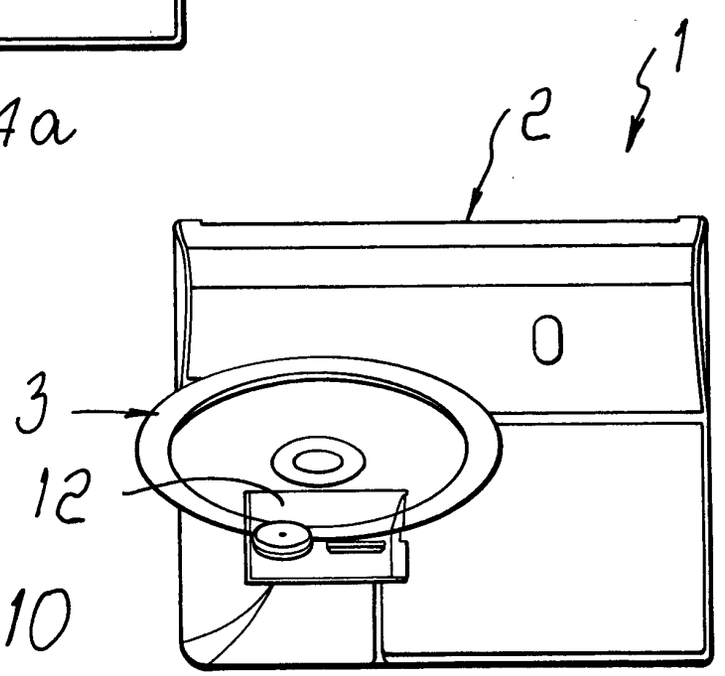

Fig. 10

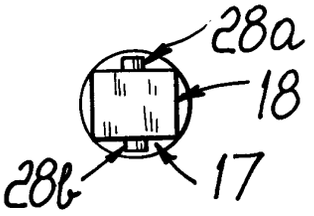

Fig. 11

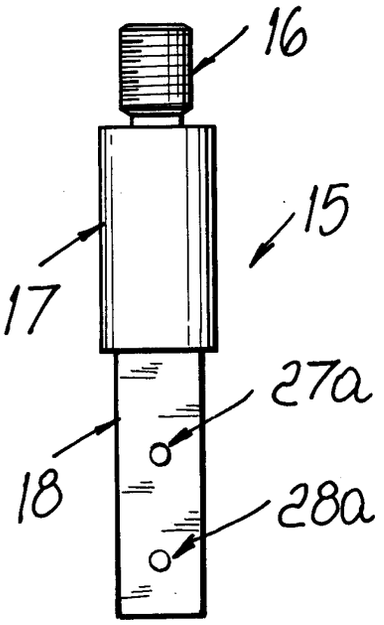

Fig. 12

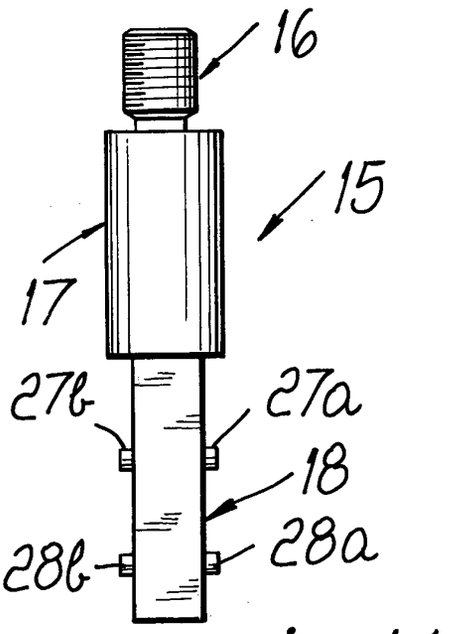

Fig. 14

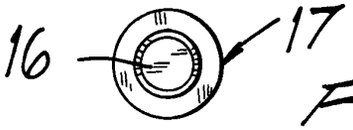

Fig. 13

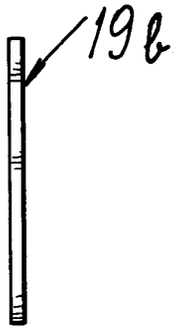

Fig. 15

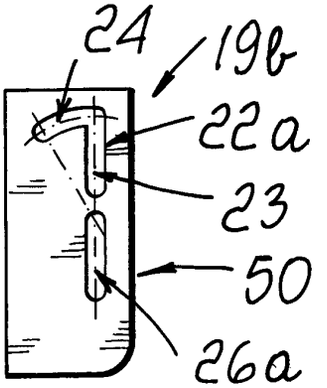

Fig. 16