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(54) **Dispensing device for bulk material such as confectionery.**

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Description

The invention relates to a device for dispensing bulk material such as confectionery, said device comprising an inclining tube with lower outflow opening and means closing this outflow opening, said closing means being a cylindrical body mounted rotatably about a horizontal axis in the outflow opening, and having a recess in the cylindrical surface located in the tube mouth, wherein said recess is defined by two wall surfaces enclosing an angle, the intersecting line of which lies to the side of the axis of rotation.

Such a device is known from FR-A-2 427 965.

The invention has for its object to provide a device of the type described in the preamble with which randomly shaped bulk material such as confectionery, which is commercially available in diverse dimensions and shapes, can be efficiently dispensed, that is, the correct quantity of confectionery is delivered from a stock at each dispensing, also to the purchasing consumer.

The device according to the invention is distinguished in that the cylindrical body is provided with a series of recesses evenly distributed over its circumference, such that by rotating of said body the recesses will be moved facing toward the tube to a position wherein the recess is facing outward, and vice versa.

Due to the volume of the recesses the bulk material for dispensing is determined in simple manner and by rotating the recesses the bulk material located substantially in the recesses can be carried outward and therefore dispensed.

Due to the use of the two wall surfaces enclosing an angle which lie eccentrically of the centre line of the cylindrical body, it has been found during experiment that the bulk material is sufficiently agitated whereby the bulk material situated in the inclining tube shows no tendency to bridge-forming.

The invention further relates to a machine provided with at least one supply container for the bulk material, which machine is characterized by a device as described above associated with the supply container.

In a particularly effective embodiment the machine is provided with a number of supply containers which are disposed at different levels in a circular pattern.

Particular embodiment of the invention are set out in dependent claims 2 to 8 and 10.

The invention is further elucidated in the figure description hereinbelow of an embodiment. In the drawing:

Figure 1 shows a perspective view of a machine provided with devices according to the invention,

figure 2 is a perspective top view of the outflow opening with dispensing and closing means according to the invention, as shown in figure 1,

figure 3 is an upright section of the inclining tube with closing means from figure 2,

figure 4 is a perspective top view, as in figure 2, of a second embodiment of the outflow opening according to the invention.

Designated in the figures with the numeral 1 is a table which is arranged on a cylindrical base 2. This table serves as carrier for a large number of supply containers 3 of transparent material in which the bulk material is stored. This bulk material can be of a similar or differing type and be formed for example by confectionery of diverse kinds. Arranged at the bottom of each supply container 3 is an outflow opening 4 onto which connects a tube 5 which continues as an inclining tube 6. Each inclining tube is disposed such that the centre line thereof lies at an angle to the horizontal corresponding with the mean natural pouring angle of the bulk material present in the supply container 3.

The inclining tube 6 is closed at the bottom by a closing means 7 which is further elucidated hereinbelow with reference to figures 2 and 3.

The closing means 7 according to the invention consists of a cylindrical body 10 received rotatably about a lying axis of rotation A-A in a bearing housing 11 arranged at the bottom of the tube 6.

The body 10 is embodied in the central portion thereof with four recesses 12, each of which in the embodiment shown is formed substantially by two plates 13 and 14 such that the walls enclose an angle, wherein the line of intersection 15 of the walls lies eccentrically relative to the rotational axis A-A and runs parallel thereto. The plates 13 and 14, four of which can be discerned in the figure, are received between two cylindrical discs 16 and 17 respectively which form the end pieces of the cylindrical body 10. These discs are rotatably mounted in the wall of the bearing housing 11 and join precisely onto the tube-shaped inner wall 18 of this housing 11. The cylindrical discs are provided on the side facing toward the recesses with inward slanting surfaces 19, this such that the straight boundary line 20 extends between the plates 13 and 14 and the arcuate boundary line touches the inner surface of the supporting bore of the tube-shaped portion 18. The function of this slanting surface 19 is to exert a centering action on the bulk material in the material situated above the closure body 10. Due to the flat surface 19 an agitating action is also exerted on the bulk material when the cylindrical body 10 is rotated.

It is further noted that the outer edges 22 of the plates 13, 14 virtually coincide with the cylindrical surface of the discs 16, 17 so that this edge 22 does not of course join onto the inner wall 18 of the

tube-shaped inner portion of bearing housing 11. It has been found however that the remaining opening is too small for the bulk material to pass therethrough in the closing position as according to figure 3 but contributes to an undisturbed turning of the cylindrical body 10.

As already noted above, four plates 13, 14 and 13', 14' are received, whereby four recesses are formed in the cylindrical body. Other configurations are of course possible, whereby more or fewer recesses can be created.

The cylindrical body 10 is embodied with a handle 25 which extends outward adjacently of the cylindrical body 10 in radial direction.

The bulk material is held back by the cylindrical body 10, particularly the plates 13, 14.

By operating the handle 25 in the direction of the arrow P1 the body 10 can be turned such that the plates 13 and 14 move counter-clockwise from the position in figure 3. A portion of the bulk material is carried along in the space formed by the plates 13, 14, wherein it is lifted out of the mass in the bottom part of the tube 6 and is separated therefrom, whereafter with further turning it can flow away over the plate edge 22 out of the outlet opening of tube 6 into a packaging means such as a bag Z arranged thereunder. Through further turning of the handle 25 and therefore of the cylindrical body 10 bulk material is again carried along each time in the recess, wherein it is noted that owing to the slanting surfaces 19 the bulk material is centered in the tube 6, whereby the quantity or number of bulk material articles will be virtually the same each time the body 10 is rotated.

Figure 4 shows a second embodiment of the outflow opening, wherein the same reference numerals are used for the same elements and means as depicted in figure 2.

In this embodiment a cylindrical body 10 is received rotatably about a lying axis of rotation A-A in a bearing housing 11 arranged at the bottom of tube 6. The body 10 is provided with four recesses 12 formed by two plates 13 and 14 similar to the embodiment in figure 2. Turning the cylindrical body with the plates 13 and 14 can be carried out by means of a handle 25, not depicted in figure 4.

The difference of the embodiment in figure 4 versus figure 2 is the retaining means 26, here in the form of a plate-like member, which blocks the cross-section of tube 6. The plate 26 is located in the entrance of the bearing house 11 and the lower extremity of tube 6. The plate-like element 26 is generally circular, a part of it is cut away at 27 to form a through-hole communicating the interior of tube 6 with the interior of bearing house 11.

The retaining means 26 contributes to a undisturbed feeding of the material from tube 6 into the bearing house 11, so providing a correct quantity of dispensed bulk material.

The function and working of the closing means 10 in the bearing house 11 is the same as described for the embodiment according to figure 2.

The invention is not limited to the above described embodiment. For instance the plates 13, 14 do not have to be flat or enclose an angle of 90 ° C, the recess 12 can be realized in suitable manner by any other means, this being dependent on the material from which the cylindrical body 10 is made.

Claims

1. A device for dispensing bulk material such as confectionery, said device comprising an inclining tube (6) with lower outflow opening (4) and means closing this outflow opening, said closing means (7) being a cylindrical body (10) mounted rotatably about a horizontal axis (A-A) in the outflow opening (4), and having a recess (12) in the cylindrical surface located in the tube mouth, wherein said recess is defined by two wall surfaces (13, 14) enclosing an angle, the intersecting line (15) of which lies to the side of the axis of rotation (A-A), **characterized in that** the cylindrical body (10) is provided with a series of recesses evenly distributed over its circumference, such that by rotating of said body the recesses will be moved facing toward the tube to a position wherein the recess is facing outward, and vice versa.

2. A device as claimed in claim 1, **characterized in that** the angle-enclosing wall surfaces (13, 14) are formed by two plates lying at an angle which are enclosed between circular discs (16, 17).

3. A device as claimed in claim 2, **characterized in that** the edge portion of the side of the discs facing toward the plates is provided with a slanting surface (19).

4. A device as claimed in claim 3, **characterized in that** the slanting edge takes a flat form (19).

5. A device as claimed in claim 4, **characterized in that**
the arcuate boundary of the flat surface (19) touches the inner boundary of the tubular mouth portion (18) in the closing position of the cylindrical body.

6. A device as claimed in any of the foregoing claims, **characterized in that** the centre line of the tube (6) lies at an angle to the horizontal which is equal to the pouring angle of the bulk

material for dispensing.

7. A device as claimed in any of the foregoing claims, **characterized in that** the cylindrical body has a handle (25) outside the tube (6).

8. A device as claimed in any of the foregoing claims, **characterized in that** a retaining means (26) is placed in the tube mouth leading to the closing means.

9. A machine provided with at least one supply container (3) for the bulk material, **characterized by** a device as claimed in any of the foregoing claims associated with the supply container (3).

10. A machine as claimed in claim 9, **characterized in that** the or each supply container (3) is manufactured from transparent material.

11. A machine as claimed in claims 9 and 10, **characterized in that** the supply containers (3) are disposed at different levels in a circular pattern.

Patentansprüche

1. Vorrichtung zur Abgabe von Schüttgut, wie beispielsweise Süßwaren bzw. Konfekt, wobei die Vorrichtung ein geneigt verlaufendes Schrägrohr (6) mit einer unteren Austrittsöffnung (4) und Mittel zum Verschluß dieser Austrittsöffnung umfaßt, wobei die Verschlußvorrichtung (7) ein in der Austrittsöffnung (4) um eine horizontale Achse (A-A) drehbar angeordneter Zylinderkörper (10) ist und eine Ausnehmung bzw. Aussparung (12) in der in der Rohrmündung angeordneten Zylinderfläche besitzt, und wobei die genannte Ausnehmung bzw. Aussparung durch zwei einen Winkel miteinander einschließende Wandflächen (13,14) gebildet wird, deren Schnittlinie (15) seitlich der Rotationsachse (A-A) liegt,
dadurch **gekennzeichnet,** daß
der Zylinderkörper (10) mit einer Reihe von gleichmäßig um seinen Umfang angeordneten Ausnehmungen bzw. Aussparungen versehen ist, derart daß durch Drehen des genannten Körpers die Ausnehmungen bzw. Aussparungen in Richtung auf das Rohr zu gewandt in eine Stellung verstellt werden, in welcher die Ausnehmung bzw. die Aussparung nach außen gewandt ist, und umgekehrt.

2. Vorrichtung nach Anspruch 1,
dadurch **gekennzeichnet,** daß
die einen Winkel miteinander einschließenden Wandungsflächen (13,14) durch zwei unter einem Winkel angeordnete Platten gebildet werden, die zwischen Kreisscheiben (16,17) eingeschlossen sind.

3. Vorrichtung nach Anspruch 2,
dadurch **gekennzeichnet,** daß
der Randbereich der den Platten zugewandten Seite der Scheiben mit einer Schrägfläche (19) versehen ist.

4. Vorrichtung nach Anspruch 3,
dadurch **gekennzeichnet,** daß
der schräge Randbereich eine flach-ebene Form einnimmt (19).

5. Vorrichtung nach Anspruch 4,
dadurch **gekennzeichnet,** daß
die gebogene Begrenzung der ebenen Fläche (19) die innere Begrenzung des rohrförmigen Mündungsteils (18) in der Schließstellung des Zylinderkörpers berührt.

6. Vorrichtung nach einem der vorhergehenden Ansprüche,
dadurch **gekennzeichnet,** daß
die Mittellinie des Rohrs (6) unter einem Winkel bezüglich der Horizontalen verläuft, der gleich dem Schüttwinkel des Schüttguts für die Abgabe ist.

7. Vorrichtung nach einem der vorhergehenden Ansprüche,
dadurch **gekennzeichnet,** daß
der Zylinderkörper einen Betätigungsgriff (25) außerhalb des Rohrs (6) aufweist.

8. Vorrichtung nach einem der vorhergehenden Ansprüche,
dadurch **gekennzeichnet,** daß
in der zu der Verschlußvorrichtung führenden Rohrmündung eine Zurückhalte- bzw. Sperrvorrichtung (26) angeordnet ist.

9. Mit wenigstens einem Vorratsbehälter (3) für das Schüttgut versehene Maschine,
gekennzeichnet durch
eine dem Vorratsbehälter (3) zugeordnete Vorrichtung gemäß einem der vorhergehenden Ansprüche.

10. Maschine nach Anspruch 9,
dadurch **gekennzeichnet,**
daß der oder jeder Vorratsbehälter (3) aus durchsichtigem Material hergestellt ist.

11. Maschine nach den Ansprüchen 9 und 10,
dadurch **gekennzeichnet,**

daß die Vorratsbehälter (3) auf unterschiedlichen Niveaus in einer kreisförmigen Konfiguration angeordnet sind.

Revendications

1. Dispositif de distribution de matière en vrac, telle que des sucreries, le dispositif comprenant un tube incliné (6) avec une ouverture de sortie inférieure (4) et des moyens fermant cette ouverture de sortie, lesdits moyens de fermeture (7) étant constitués d'un corps cylindrique (10) monté à rotation autour d'un axe horizontal (A-A) dans l'ouverture de sortie (4), et ayant un évidement (12) dans la surface cylindrique situé dans l'embouchure du tube, ledit évidement étant défini par deux surfaces de paroi (13, 14) enserrant un angle, dont la ligne d'intersection (15) se situe sur le côté de l'axe de rotation (A-A), caractérisé en ce que le corps cylindrique (10) est pourvu d'une série d'évidements uniformément distribués sur sa circonférence de telle sorte que, par rotation dudit corps, les évidements soient déplacés en regard du tube dans une position dans laquelle l'évidement est tourné vers l'extérieur, et vice versa.

2. Dispositif selon la revendication 1, caractérisé en ce que les surfaces de paroi (13, 14) enserrant un angle sont formées par deux plaques qui font un angle et qui sont enserrés entre des disques circulaires (16, 17).

3. Dispositif selon la revendication 2, caractérisé en ce que la partie du bord du côté des disques en regard des plaques est pourvue d'une surface inclinée (19).

4. Dispositif selon la revendication 3, caractérisé en ce que le bord incliné a une forme plate (19).

5. Dispositif selon la revendication 4, caractérisé en ce que la limite arquée de la surface plate (19) touche la limite interne de la partie d'embouchure tubulaire (18) dans la position de fermeture du corps cylindrique.

6. Dispositif selon l'une quelconque des revendications précédentes, caractérisé en ce que l'axe central du tube (6) fait un angle avec l'horizontale qui est égal à l'angle de versement de la matière en vrac pour assurer la distribution.

7. Dispositif selon l'une quelconque des revendications précédentes, caractérisé en ce que le corps cylindrique a une manette (25) disposée à l'extérieur du tube (6).

8. Dispositif selon l'une quelconque des revendications précédentes, caractérisé en ce qu'un moyen de retenue (26) est placé dans l'embouchure du tube menant aux moyens de fermeture.

9. Machine équipée d'au moins un récipient d'alimentation (3) pour la matière en vrac, caractérisée par un dispositif selon l'une quelconque des revendications précédentes associé au réservoir d'alimentation (3).

10. Machine selon la revendication 9, caractérisée en ce que le réservoir d'alimentation ou chaque réservoir d'alimentation (3) est constitué d'une matière transparente.

11. Machine selon les revendications 9 et 10, caractérisée en ce que les récipients d'alimentation (3) sont disposés à différents niveaux selon un schéma circulaire.

FIG.1

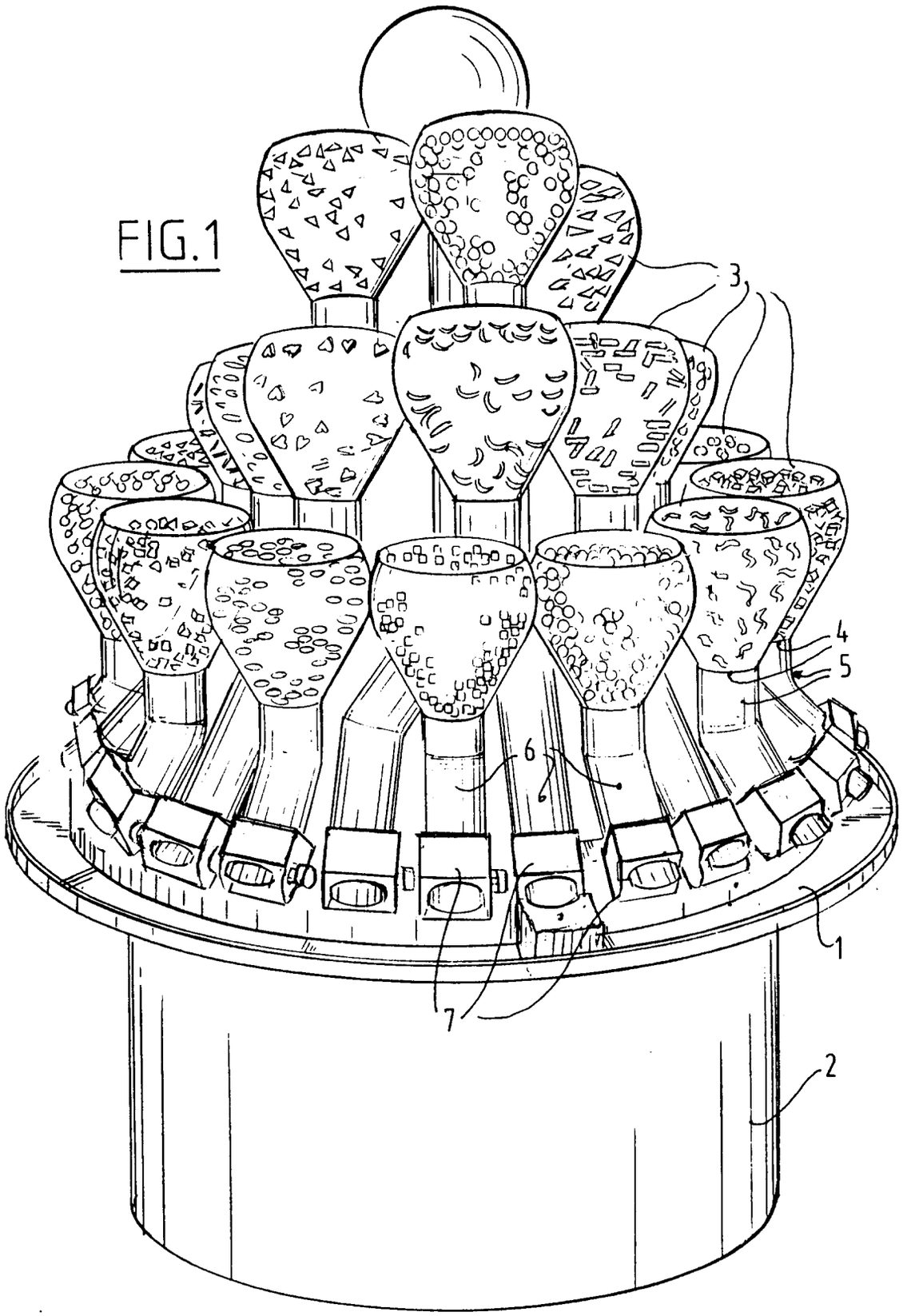


FIG.2

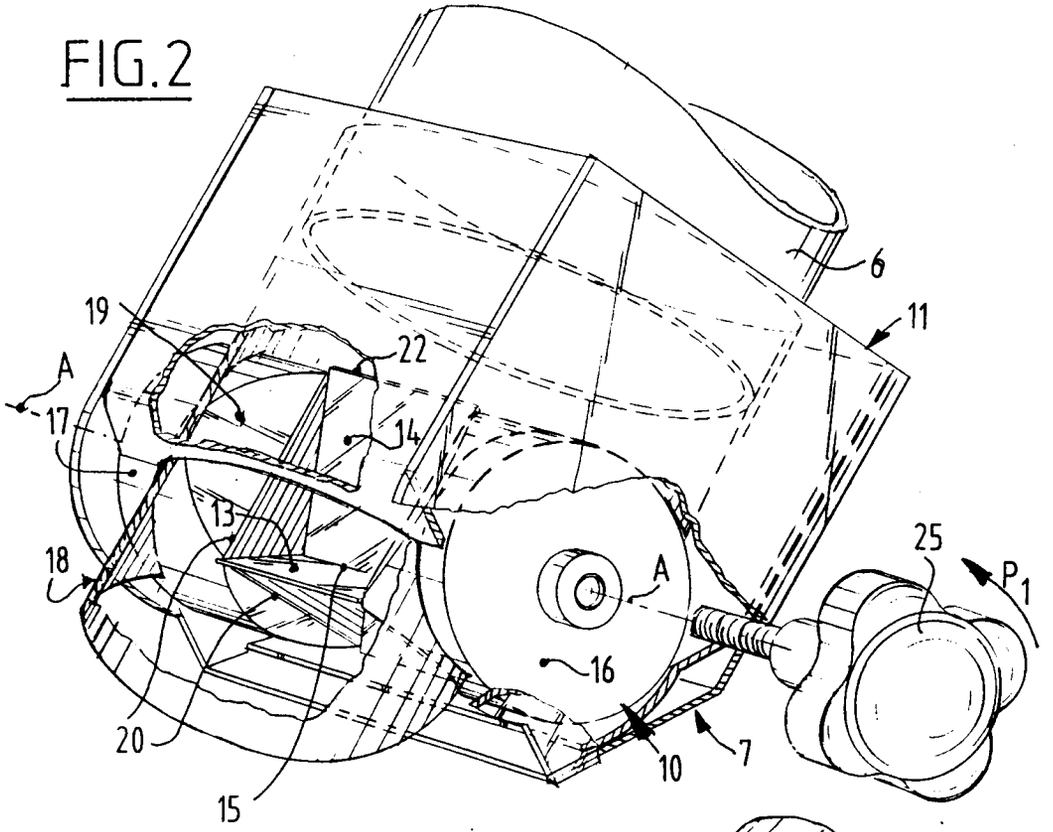
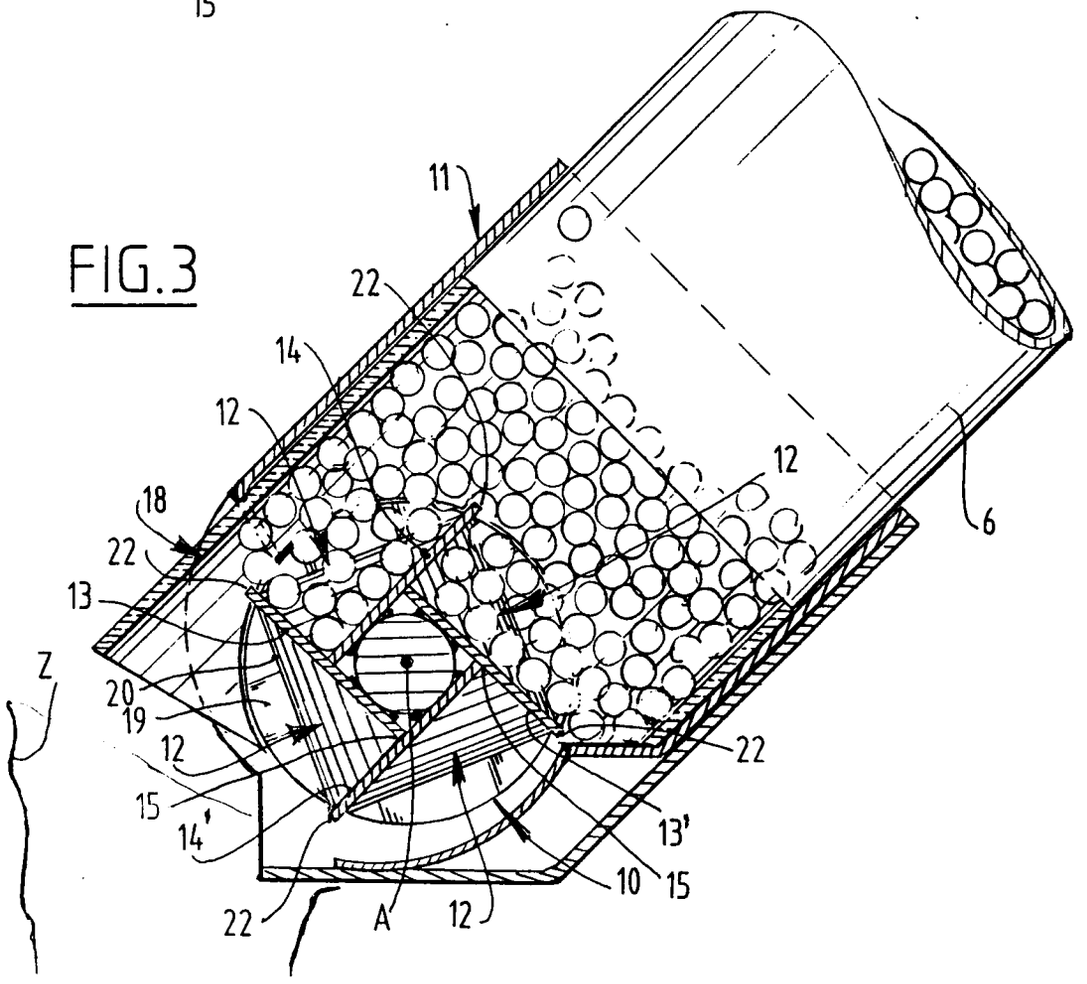

6
11
19
22
A
17
14
13
18
25
P1
A
16
20
10
7
15

FIG.3


11
22
14
12
12
18
6
22
13
Z
20
19
12
22
15
14'
13'
10
15
22
A
12

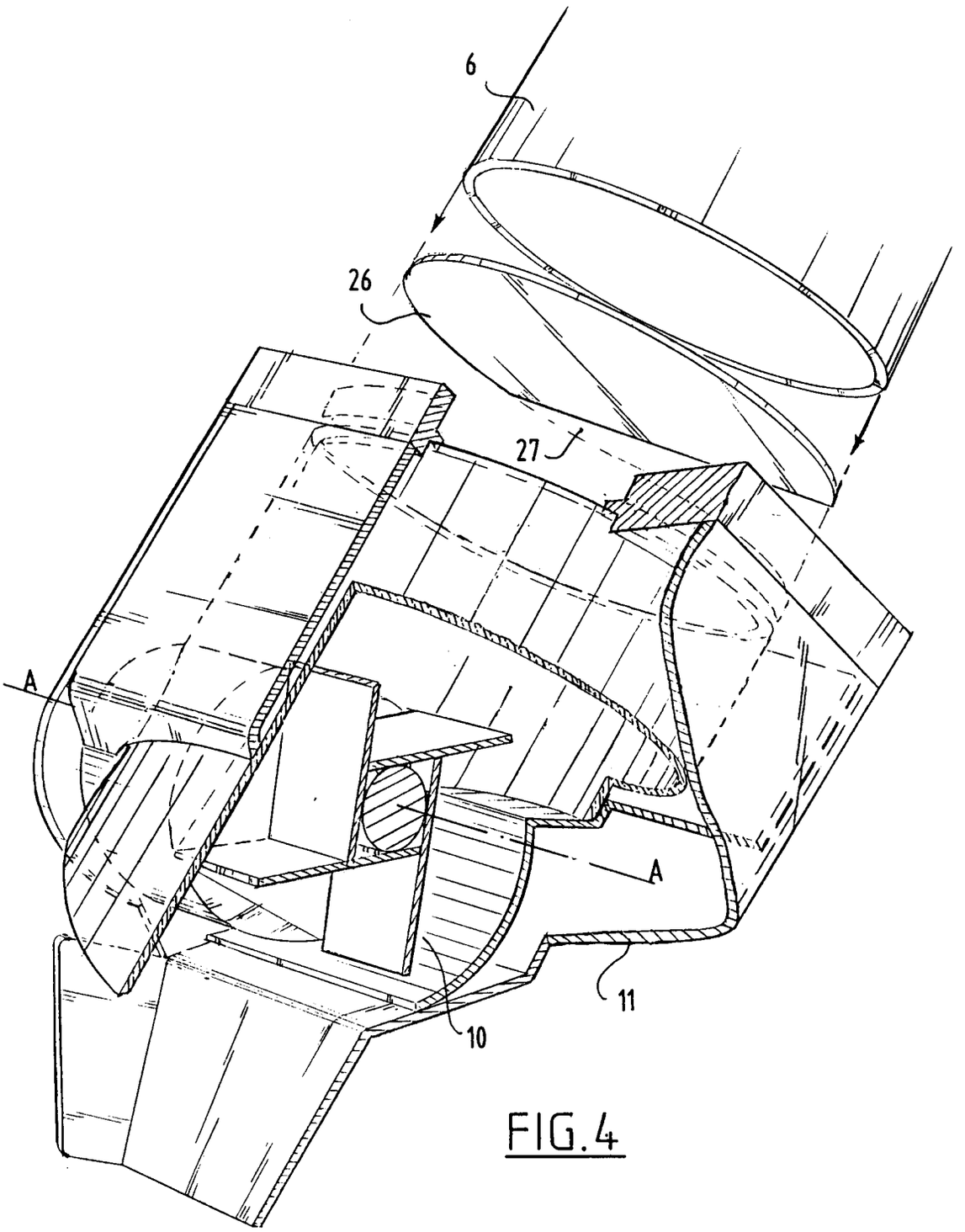


FIG.4