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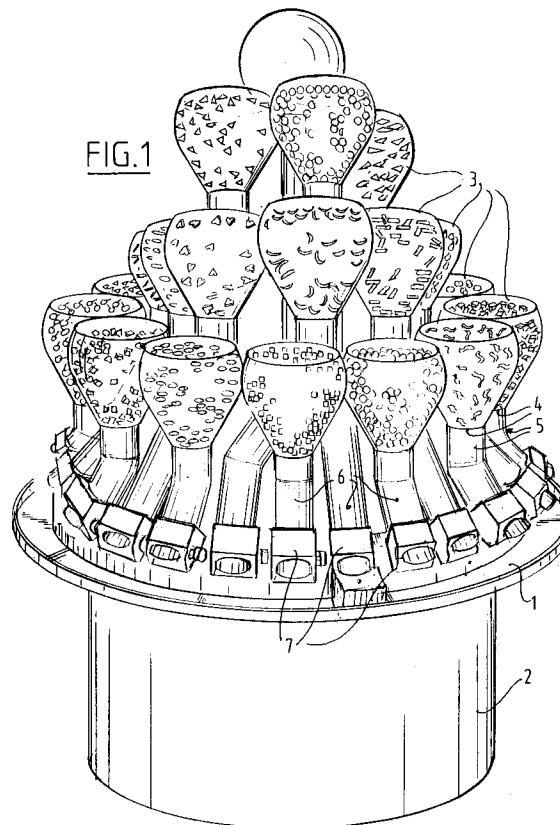
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NL-2517 GK The Hague(NL)(54) **Dispensing device for bulk material such as confectionery.**

(57) A device for dispensing bulk material such as confectionery, which device comprises an inclining tube (6) with low-lying outflow opening and means closing this outflow opening, wherein the closing means (7) is a cylindrical body (10) mounted rotatably about a lying axis (A-A) in the outflow opening, which body has at least one recess (12) in the cylindrical surface located in the tube mouth, which recess has two wall surfaces (13, 14) enclosing an angle, the intersection line of which lies to the side of the axis (A-A) of rotation, and which can be carried by rotating of the body from a position wherein the recess faces the tube to a position wherein the recess faces outward, and vice versa, so dispensing said bulk material in a correct quantity irrespective of its size and shape.

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The invention relates to a device for dispensing bulk material such as confectionery, which device comprises an inclining tube with low-lying outflow opening and means closing this outflow opening.

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 closing means is a cylindrical body mounted rotatably about a lying axis in the outflow opening, which body has at least one recess in the cylindrical surface located in the tube mouth, which recess has two wall surfaces enclosing an angle, the intersection line of which lies to the side of the axis of rotation, and which can be carried by rotating of the body from a position wherein the recess faces the tube to a position wherein the recess faces outward, and vice versa.

Due to the volume of the recess the bulk material for dispensing is determined in simple manner and by rotating the recess the bulk material located substantially in the recess 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.

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. Device for dispensing bulk material such as confectionery, which device comprises an inclining tube with low-lying outflow opening and means closing this outflow opening, **characterized in that** the closing means is a cylindrical body mounted rotatably about a lying axis in the outflow opening, which body has at least one recess in the cylindrical surface located in the tube mouth, which recess has two wall surfaces enclosing an angle, the intersecting line of which lies to the side of the axis of rotation, and which can be carried by rotating of the body from a position wherein the recess faces toward the tube to a position wherein the recess is facing outward, and vice versa.
2. Device as claimed in claim 1, **characterized in that** the angle-enclosing wall surfaces are formed by two plates lying at an angle which are enclosed between circular discs.
3. 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. Device as claimed in claim 3, **characterized in that** the slanting edge takes a flat form.
5. 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 in the closing position of the cylindrical body.
6. Device as claimed in any of the foregoing claims, **characterized in that** the centre line of the tube lies at an angle to the horizontal which is equal to the pouring angle of the bulk material for dispensing.
7. Device as claimed in any of the foregoing claims, **characterized in that** the cylindrical body has a handle outside the tube.
8. Device as claimed in any of the foregoing claims, **characterized in that** a retaining means is placed in the tube mouth leading to the closing means.
9. Machine provided with at least one supply container for the bulk material, **characterized**

by a device as claimed in any of the foregoing claims associated with the supply container.

10. Machine as claimed in claim 9, **characterized in that** the or each supply container is manufactured from transparent material. 5

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

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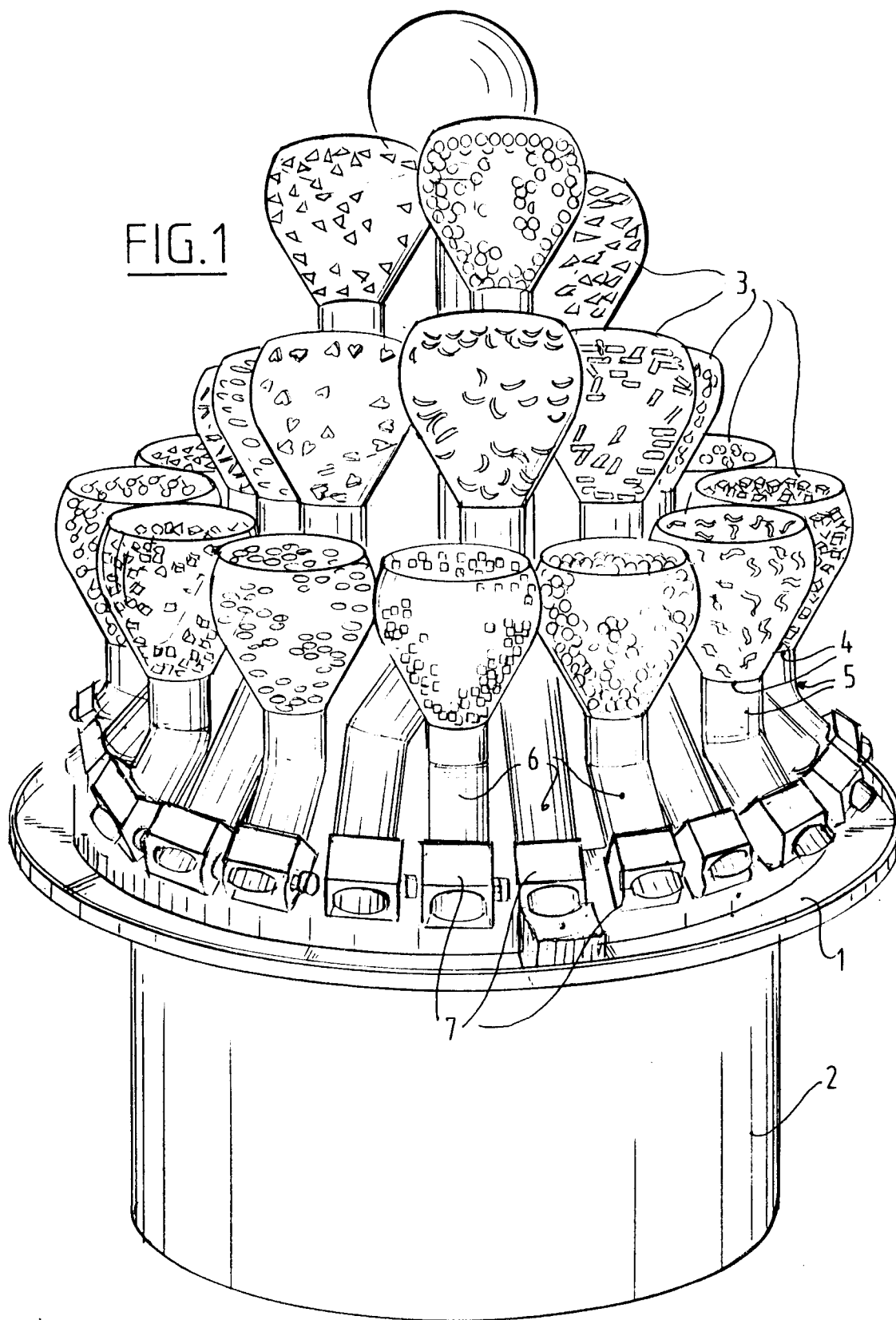


FIG.2

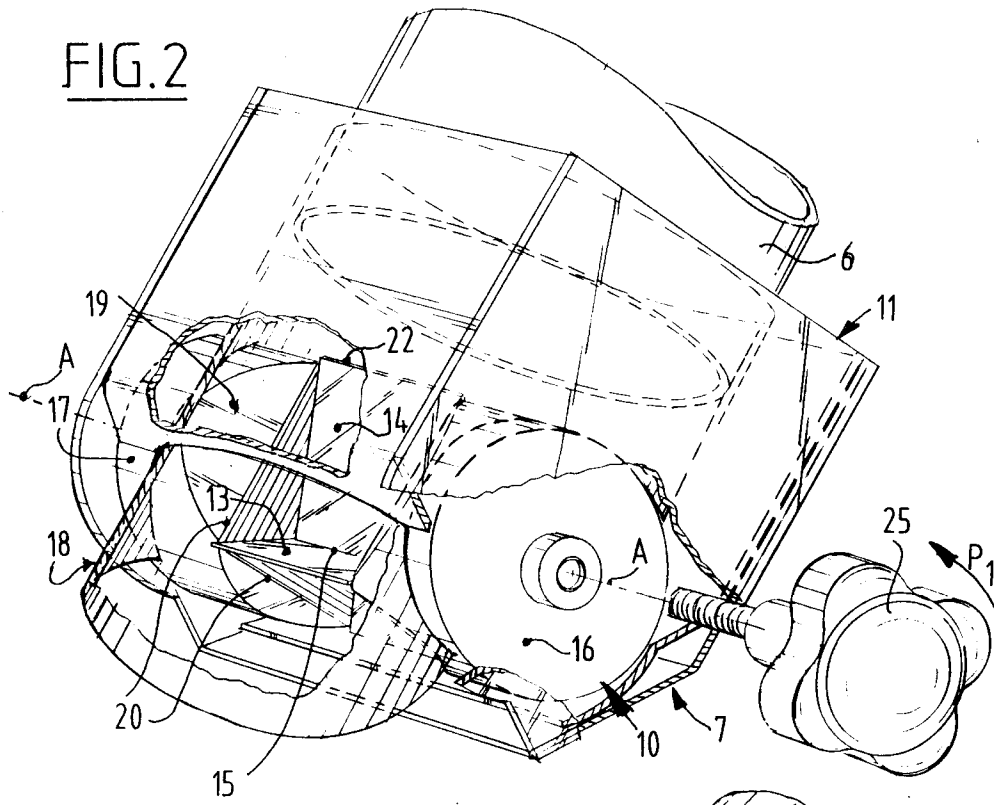
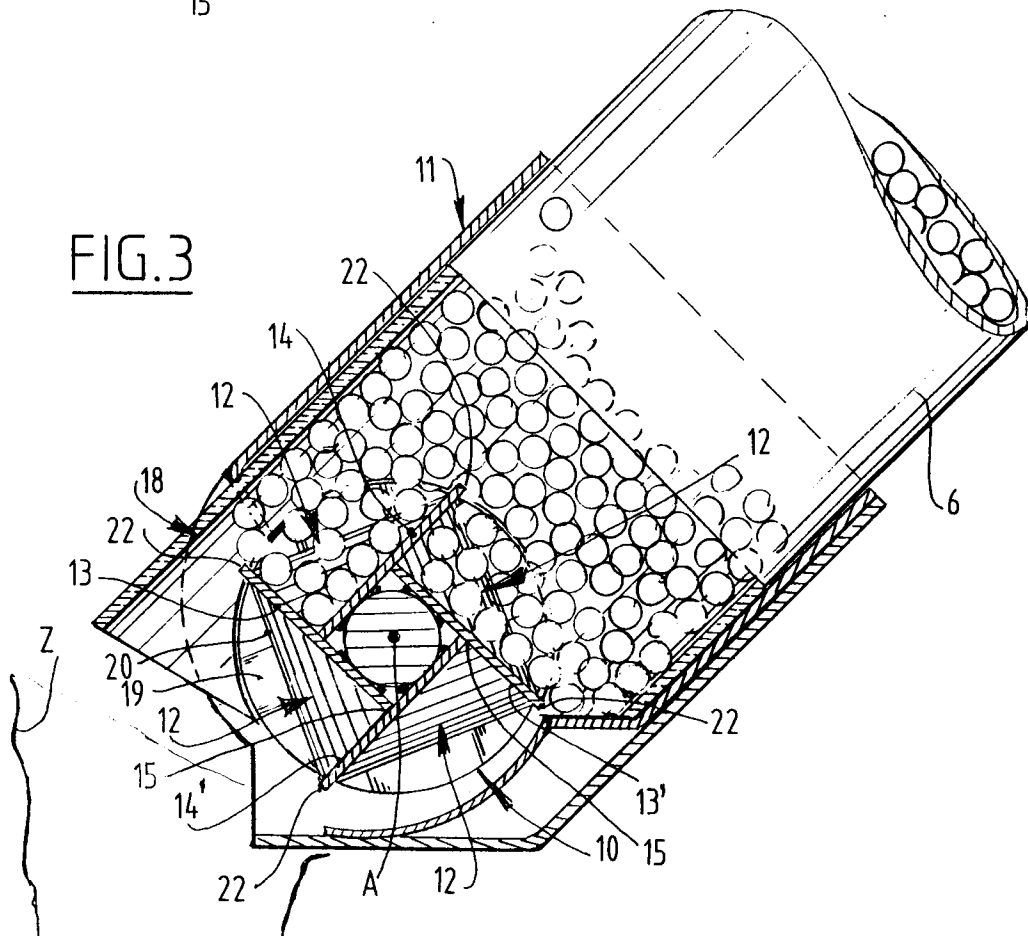
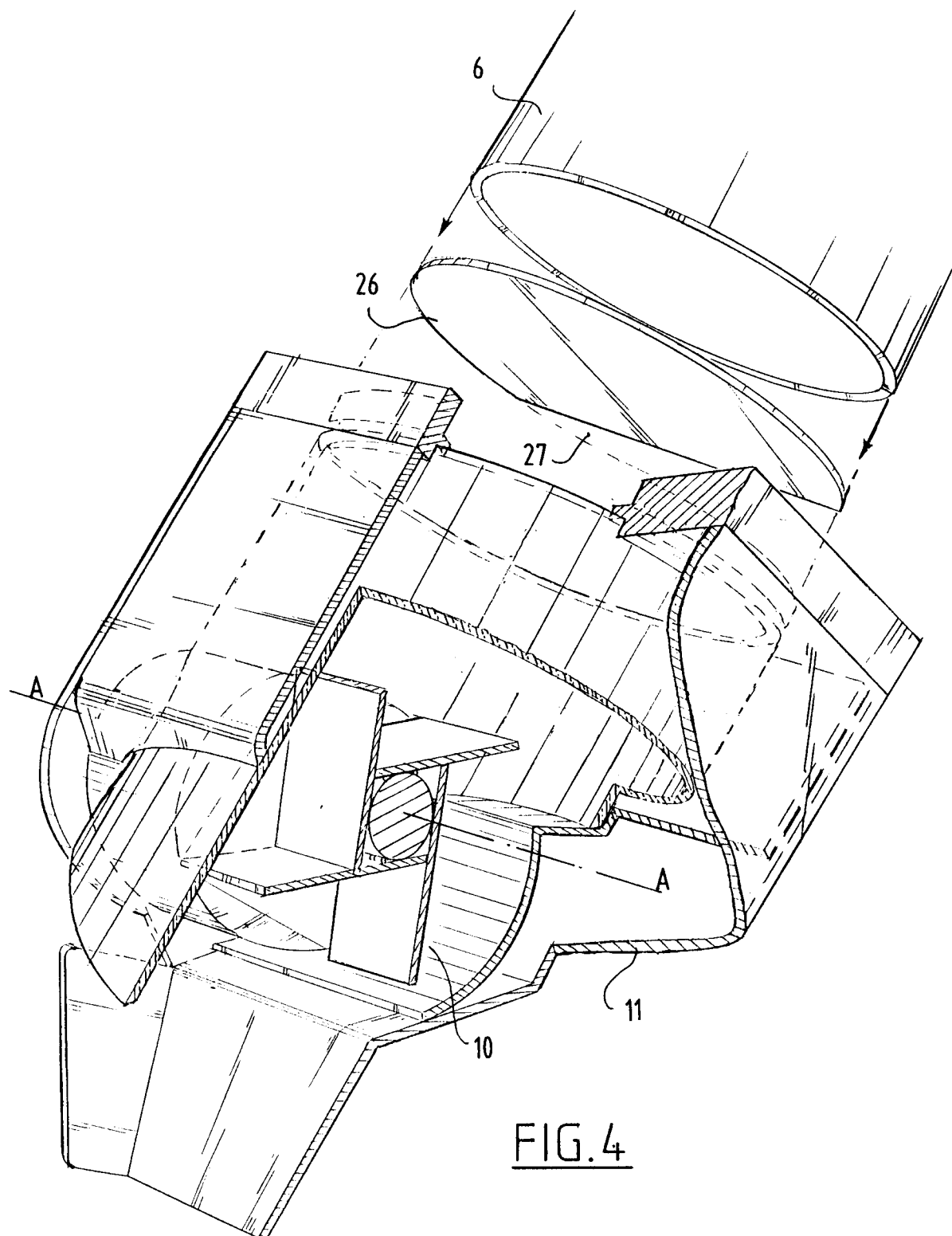


FIG.3







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EUROPEAN SEARCH REPORT

Application Number

EP 91 20 2093

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	US-A-4 349 128 (SANFILIPPO) * column 2, line 6 - line 66; figures 1-3 ** column 3, line 25 - line 30 ** column 3, line 56 - column 4, line 13 ** column 6, line 12 - column 7, line 30 * - - -	1-11	A 47 F 1/035 B 65 D 83/04
A	US-A-3 204 833 (WEITZNER) * column 1, line 47 - column 3, line 5; figures 1-3 * - - -	1-6	
A	FR-A-2 427 965 (STIG RAVN) * figures * - - -	1-6	
A	US-A-4 892 233 (ZELICKSON) * figure 3 * - - -	1,2	
A	NL-A-6 918 721 (MARKUS & WALSH) * figures * - - - - -	11	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A 47 F B 65 D A 47 G G 01 F
Place of search		Date of completion of search	Examiner
The Hague		09 October 91	DE GROOT R.K.
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P : intermediate document		& : member of the same patent family, corresponding document	
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