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(54) **Machine for making packs of spaghetti or other type of multicolour string pasta**

Maschine zum Herstellen von Spaghettiverpackungen oder anderer Arten von mehrfarbiger Stangenpasta

Machine de fabrication de paquets de spaghettis ou autres type de pâtes à ficelle multicolores

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(56) References cited:
FR-A1- 2 186 411 **US-A- 5 108 012**

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Description

[0001] The present invention concerns a machine which allows the random mixing of groups of spaghetti or other type of multicolour string pasta in order to obtain a single pack of multicolour spaghetti.

[0002] It is clear that here and in the course of this description, the term "spaghetti" not only means the known types of full circular section spaghetti, but also any other type of differently sectioned string pasta, such as, for example, linguine, bucatini, etc.

[0003] As known, in addition to traditional spaghetti, other types of consumer-popular spaghetti are now available, which are variously coloured according to the ingredients used, for example red if containing carrots, green if containing spinach or other vegetables, and so on.

[0004] A further variation is the insertion, in a single pack, of spaghetti of various colours, still better if randomly mixed rather than in side-by-side groups.

[0005] Obviously, this mixing is not easy, especially if one wishes to do it automatically and mechanically.

[0006] US-A-5108012 discloses a dispenser for pasta including the features of the preamble of claim 1.

[0007] The object of the present invention is precisely to provide a machine which allows the random mixing of spaghetti belonging to initial groups of spaghetti of different colours.

[0008] In accordance with the present invention, this object has been achieved with a machine as defined in claim 1.

[0009] In this way, while the drum has the charge mouth open and facing upwards, the various groups of spaghetti of different colours previously introduced into the hopper are made to fall from said hopper into the hollow drum, the charge mouth thereof being closed straight afterwards in order to allow the rotation of the drum for the mixing of the spaghetti. After several rotations, the drum stops with the charge mouth facing downwards and the closing door thereof is opened. The mixed spaghetti thus fall into a gathering assembly in order to be subsequently sent to dosing, weighing and packaging assemblies.

[0010] The operation is then repeated for subsequent groups of spaghetti which give rise to packs of spaghetti formed by spaghetti of various colours which are randomly mixed.

[0011] The features of the present invention will become more apparent from the following detailed description of a practical embodiment thereof, shown by way of a non-limiting example in the accompanying drawings, wherein:

figure 1 shows an elevation view of a machine according to the present invention;
figure 2 shows the mixing part of said machine with the charging hopper in the open position;
figure 3 shows the same mixing part with hopper in the closed position;
figure 4 shows a frontal view of the same mixing part with hopper closed;
figure 5 shows the enlarged detail of the mixer sectioned perpendicular to the axis of rotation thereof;
figure 6 shows the separate detail of two closing doors of the charge mouth of the mixer;
figure 7 shows the mixer sectioned along the line VII-VII of figure 5;
figure 8 shows the mixer during the step of loading the spaghetti by means of the charge and discharge mouth;
figure 9 shows the mixer with the doors closed, ready to begin the rotation about the axis thereof;
figure 10 shows the mixer during the step of rotation for mixing the spaghetti;
figure 11 shows the mixer in the stop position in the discharge position;
figure 12 shows the mixer during the step of discharging the mixed spaghetti.

[0012] With reference to figure 1, which shows the machine as a whole, a feeder 1 is provided which has two uprights 2, between which a conveyor belt 3 develops and is supported, which provides for conveying separate groups of spaghetti of different colours (indicated as A, B, C, each group being formed by pieces of spaghetti which are parallel to each other and perpendicular to the feeding direction) toward a mixing part 4.

[0013] Conveyor belt 3 is preferably constituted by two or more side-by-side sections, each of which provides for transporting the respective groups A, B, C, the spaghetti of which are cut at the ends along lines parallel to the direction of feeding of the aforementioned groups. In the case shown, for ease of representation and description, an embodiment with a single section of conveyor is examined, by way of example.

[0014] Mixing part 4, better illustrated in figures 2, 3 and 4, comprises a charging hopper 5 placed at the outlet of conveyor belt 3 in order to receive, one after the other, the three groups of spaghetti A, B, C and keep them in a stacked position thanks to an arched gate 6, which can be made to rotate about a fixed axis 7 by means of a hydraulic or pneumatic cylinder 8. Gate 6 can thus adopt the opening position of the bottom of hopper 5, as shown in figure 2, or a closing position of the bottom of the hopper, as shown in figure 3. In this last position, as shown, gate 6 keeps the groups of spaghetti A, B, C of different colours one on top of the other.

[0015] Below hopper 5, a mixer 9 is arranged, which comprises a hollow cylinder-shaped fixed frame 10 with diametrically opposed charge and discharge mouths 17 and 18, the first of which immediately below hopper 5 (figures 2 and 3), a hollow cylindrical drum 11 rotatably arranged within frame 10 about an axis 12 parallel to the longitudinal axis of the spaghetti and equipped with a charge and discharge mouth 13, and a plurality of pairs of integral doors 14 and 15, linked by diametral arms 16

(figures 4-7) in turn rotatable about axis 12, for the opening and closing of the charge and discharge mouths 17 and 18 of hollow cylindrical frame 10 (figures 5-12).

[0016] Finally, below mixer 9, a vertical slide 19 is arranged, equipped with oblique internal protuberances 20, which leads to a gathering assembly 21 which provides for sending to subsequent assemblies for dosing, weighing and packaging packets of spaghetti.

[0017] Mixing part 4 works as follows for the random mixing of the spaghetti of groups A, B, C of different colours.

[0018] Feeder 1 introduces in succession a prearranged number of groups of spaghetti (the three groups A, B, C in the example shown) into hopper 5, where gate 6 in the closed position (figure 2) stores them and keeps them in a stacked condition.

[0019] With drum 11 of mixer 9 arranged in the angular position in figure 5, i.e. with charge and discharge mouth 13 facing upwards in a position immediately below hopper 5, upper door 14 is opened for the consequent opening of charge mouth 17 and closing gate 6 of hopper 5 is in turn carried to an opening position in order to let the spaghetti A, B, C stored therein fall into hollow drum 11 (fig. 8)

[0020] Upper door 14, together with lower door 15, is then closed again and the hollow drum is set into rotation in order to carry out the mixing of the spaghetti A, B, C (fig. 10).

[0021] After several rotations, hollow drum 11 is stopped in a position with mouth 13 facing downwards (fig. 11) and doors 14 and 15 are reopened (fig. 12)

[0022] Spaghetti A, B, C, now completely randomly mixed, exit from the hollow drum by means of mouths 13 and 18 and fall into vertical slide 19 (fig. 12), where they follow a zig-zag path defined by the oblique internal protuberances 20 until they reach gathering group 21, which then sends them to subsequent dosing, weighing and packaging groups.

[0023] In the meantime, gate 6 of hopper 5 has been closed again and new groups of spaghetti A, B, C have been stored one above the other within the hopper. Mixer 9 is brought back to the starting position (fig. 5), doors 14 and 15 are opened again, the bulkhead is brought back to the open position (fig. 8) and the mixing cycle begins again as described above.

Claims

1. Machine for making packs of spaghetti or other type of multicolour string pasta, comprising a spaghetti feeder (1) suitable to feed in succession groups (A, B, C) of spaghetti disposed perpendicularly to the direction of advancement of the groups of spaghetti, where every group (A, B, C) comprises parallel spaghetti of a single colour, different from that of the spaghetti of the preceding and following group, a charging hopper (5) with an openable and closable inferior gate (6) arranged at the outlet of the feeder (1) to receive and keep in superposed position several groups of spaghetti of different colour, and a mixer (9) arranged in a position lower than said hopper (5) and comprising a hollow drum (11) rotatable around an axis (12) parallel to the longitudinal axis of said spaghetti, said hollow drum (11) having a charge and discharge mouth (13) for the spaghetti and being provided with at least one door (14, 15) to open and close said charge and discharge mouth (13) in such a way to allow said hollow drum (11) to receive in succession from the hopper (5) several groups of spaghetti to be mixed, mix them by means of a closed drum (11) rotation and finally discharge the mixed spaghetti into a lower gathering assembly (19), **characterized in that** said hollow drum (11) is rotatable inside a fixed frame (10) having a charge mouth (17) in a position lower than said hopper (5) and a discharge mouth (18) in diametrically opposite position, said at least one door (14, 15) being formed of diametrically opposed doors (14, 15) connected with one another by diametral arms (16) turnable coaxially to the axis of rotation (12) of the hollow drum (11) between a position in which said doors (14, 15) close said charge and discharge mouths (17, 18) of the fixed frame (10) and a position in which said doors (14, 15) open said charge and discharge mouths (17, 18) of the fixed frame (10).

Patentansprüche

1. Maschine zum Herstellen von Packungen mit Spaghetti oder anderen mehrfarbigen strangähnlichen Teigwaren, welche eine Spaghettiaufgabeeinrichtung (1) aufweist, welche geeignet ist, in Aufeinanderfolge Gruppen (A, B, C) mit Spagetti zuzuführen, welche senkrecht zur Vorlaufbewegungsrichtung der Gruppen mit Spaghetti angeordnet ist, wobei jede Gruppe (A, B, C) parallele Spaghetti einer einzigen Farbe aufweist, die sich von jener der Spaghetti der vorausgehenden oder der nachfolgenden Gruppe unterscheidet, welche einen Aufgabetrichter (5) mit einer offen und schließbaren unteren Türe (6) aufweist, welche an dem Auslass der Aufgabeeinrichtung (1) angeordnet ist, um in übereinanderliegende Position einige Gruppen von Spaghetti unterschiedlicher Farbe aufzunehmen und bereitzuhalten, und einen Mischer (9) aufweist, welcher in einer Position angeordnet ist, welche niedriger als der Trichter (5) ist und eine hohle Trommel (11) aufweist, welche um eine Achse (12) parallel zur Längsachse der Spaghetti drehbar ist, wobei die hohle Trommel (11) eine Aufgabe- und Ausgabeöffnung (13) für Spaghetti hat und mit wenigstens einer Türe (14, 15) versehen ist, um die Aufgabe- und Ausgabeöffnung in einer solchen Weise zu öffnen und zu schließen, dass die hohle Trommel (11) in Aufeinanderfolge von

dem Trichter (5) mehrere Gruppen von zu vermischenden Spaghetti aufnimmt, diese mit Hilfe einer geschlossenen Drehung der Trommel (11) mischt und schließlich die gemischten Spaghetti in eine untere Sammelanordnung (19) ausgibt, **dadurch gekennzeichnet, dass** die hohle Trommel (11) im Inneren eines festen Rahmens drehbar ist, welche eine Aufgabeöffnung (17) in einer Position niedriger als der Trichter (5) und eine Ausgabeöffnung (18) in einer diametral gegenüberliegenden Position hat, die wenigstens eine Türe (14, 15) von diametral gegenüberliegenden Türen (14, 15) gebildet ist, welche miteinander über diametrale Arme (16) verbunden sind, welche koaxial zu der Drehachse (12) der hohlen Trommel (11) zwischen einer Position drehbar sind, in welcher die Türen (14, 15) die Aufgabe- und Ausgabeöffnungen (17, 18) des festen Rahmens (10) verschließen und in eine Position drehbar sind, an welcher die Türen (14, 15) die Aufgabe- und Ausgabeöffnungen (17, 18) des festen Rahmens (10) öffnen.

Revendications

1. Machine de fabrication de paquets de spaghettis ou d'une autre sorte de pâtes de type allongé multicolores, comprenant un distributeur de spaghettis (1) apte à distribuer successivement des groupes (A, B, C) de spaghettis disposés perpendiculairement à la direction d'avancée des groupes de spaghettis, chaque groupe (A, B, C) comprenant des spaghettis parallèles d'une seule couleur, différente de la couleur des spaghettis du groupe précédent et du groupe suivant, une trémie de chargement (5) comportant une vanne inférieure (6) pouvant être ouverte et fermée, située à la sortie du distributeur (1) pour recevoir, et garder superposés, plusieurs groupes de spaghettis de couleur différente, et un mélangeur (9) situé dans une position plus basse que celle de ladite trémie (5) et comprenant un tambour creux (11) apte à tourner autour d'un axe (12) parallèle à l'axe longitudinal desdits spaghettis, ledit tambour creux (11) comportant une ouverture de chargement et de déchargement (13) pour les spaghettis et étant doté d'au moins une porte (14, 15) pour ouvrir et fermer ladite ouverture de chargement et de déchargement (13) de manière à permettre audit tambour creux (11) de recevoir, successivement de la trémie (5), plusieurs groupes de spaghettis devant être mélangés, de les mélanger au moyen d'une rotation du tambour (11) fermé et, enfin, de décharger les spaghettis mélangés dans un agencement collecteur inférieur (19), **caractérisée en ce que** ledit tambour creux (11) est apte à tourner à l'intérieur d'un bâti fixe (10) comportant une ouverture de chargement (17) dans une position plus basse que celle de ladite trémie (5) et une ouverture de décharge (18) dans une position diamétralement opposée, ladite au moins une porte (14, 15) étant constituée de portes diamétralement opposées raccordées par des bras diamétraux (16) aptes à tourner coaxialement à l'axe de rotation (12) du tambour creux (11) entre une position dans laquelle lesdites portes (14, 15) ferment lesdites ouvertures de chargement et de déchargement (17, 18) du bâti fixe (10) et une position dans laquelle lesdites portes (14, 15) ouvrent lesdites ouvertures de chargement et de déchargement (17, 18) du bâti fixe (10).

FIG.1

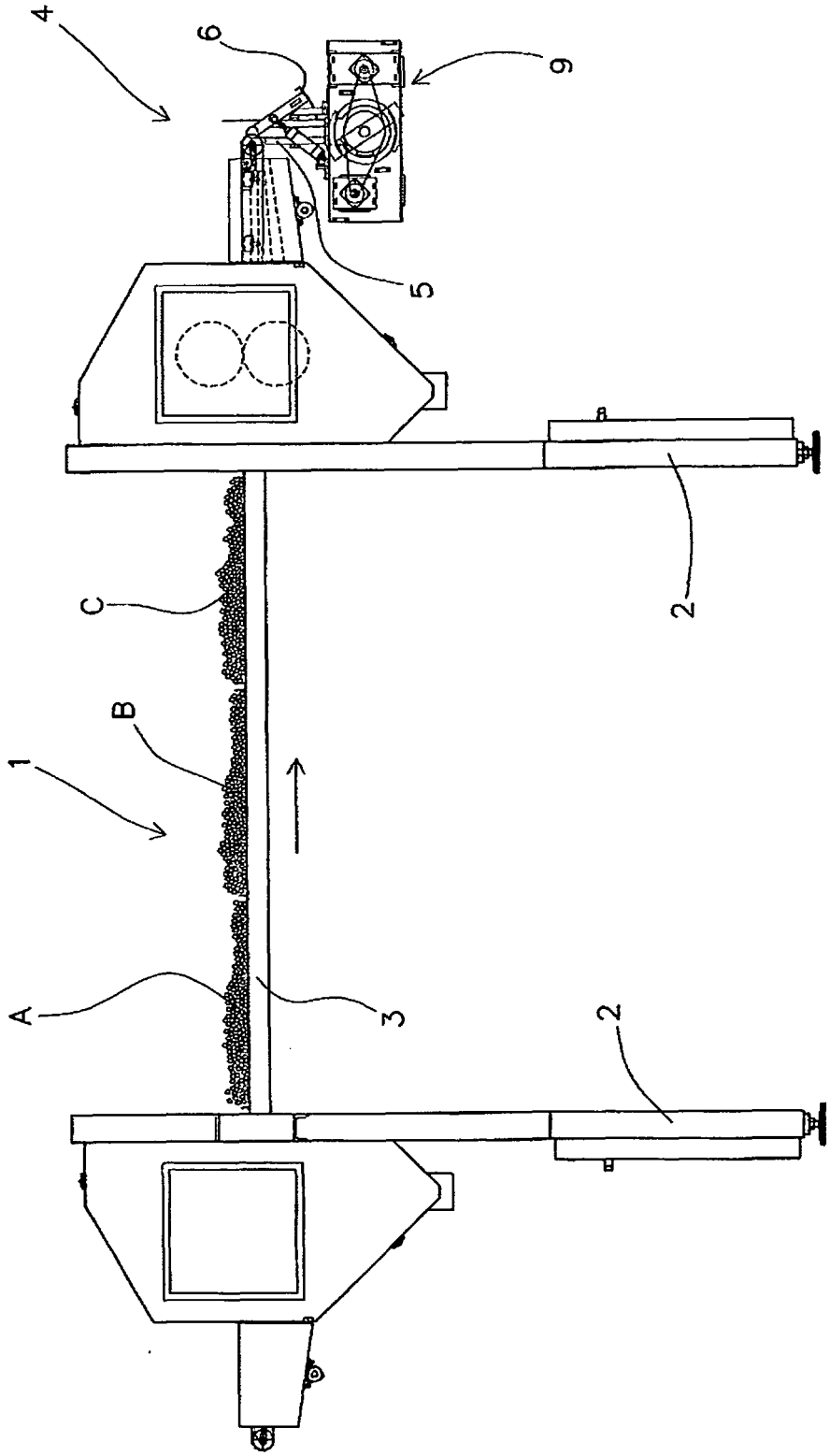


FIG.2

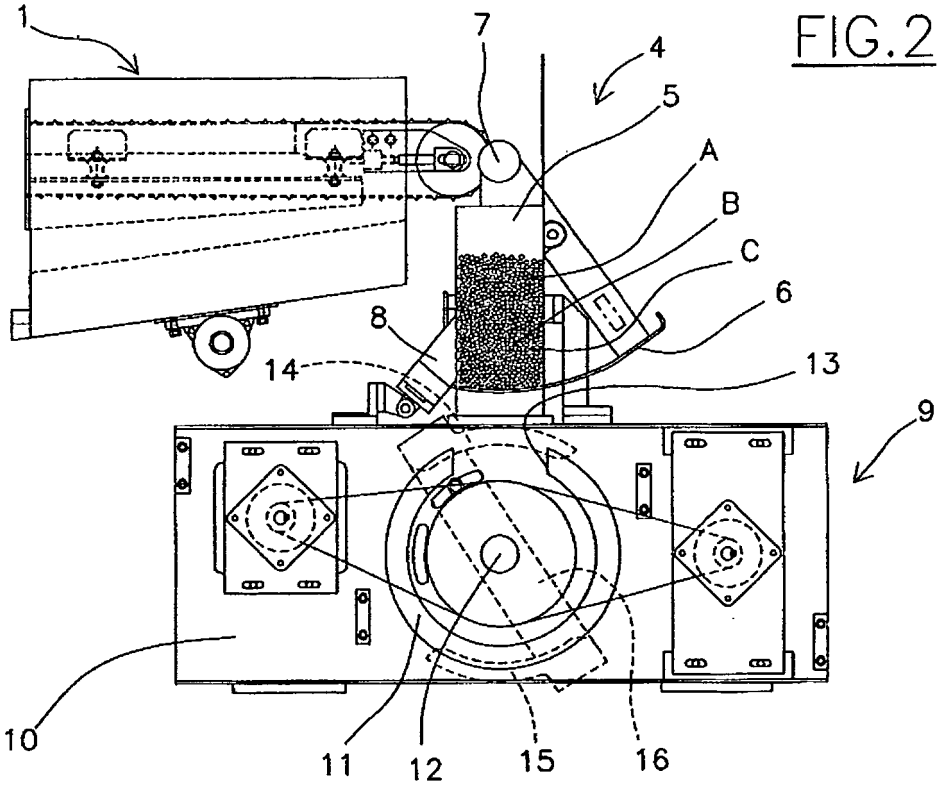
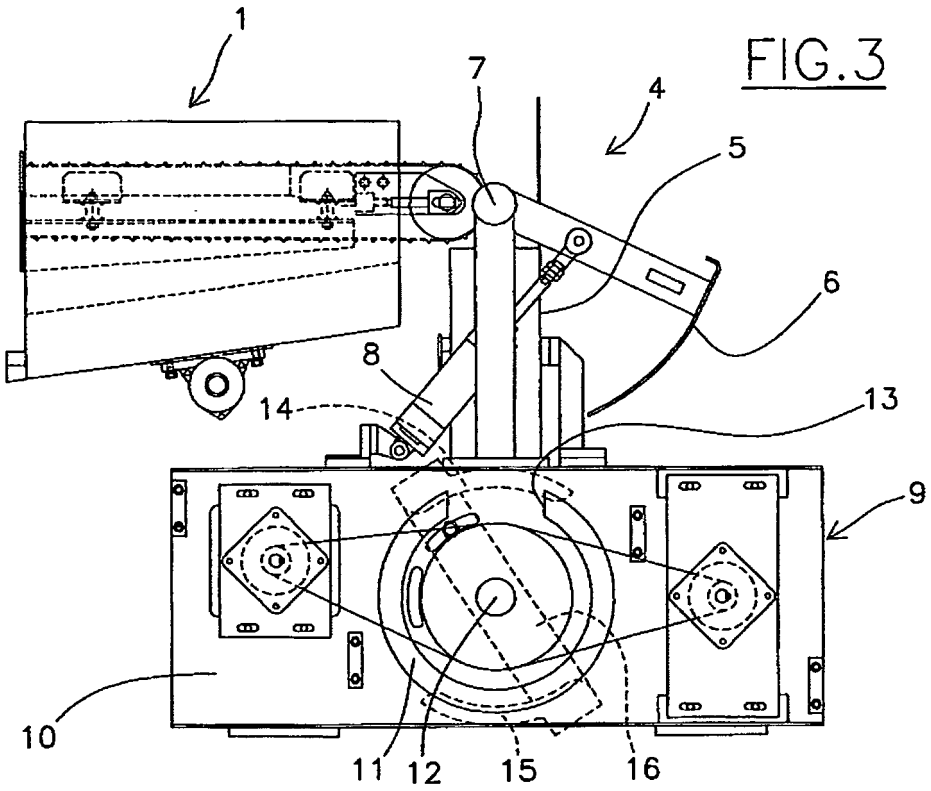


FIG.3



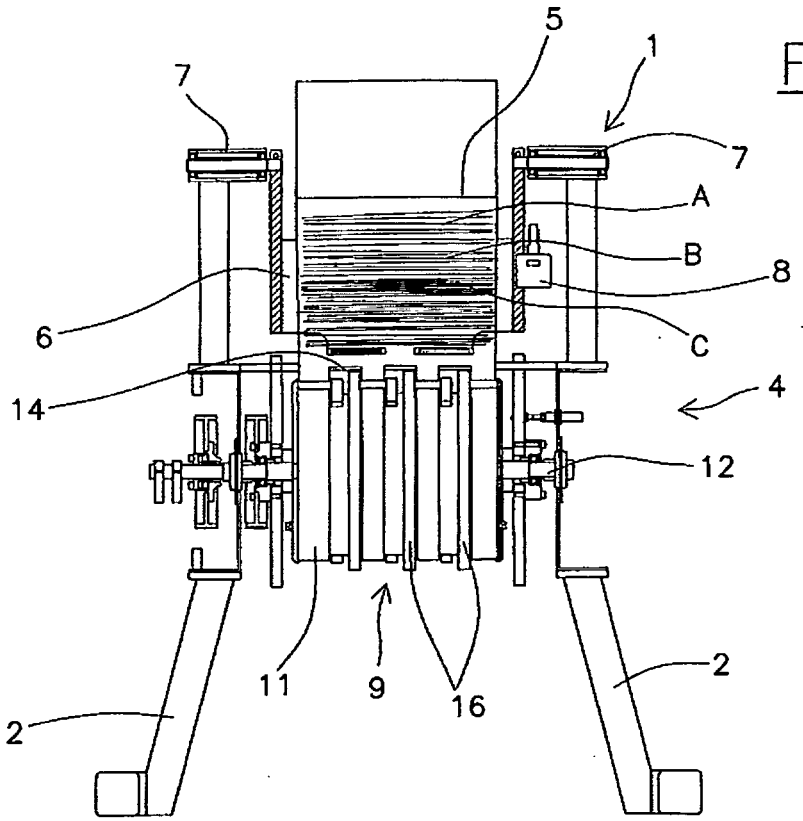


FIG.4

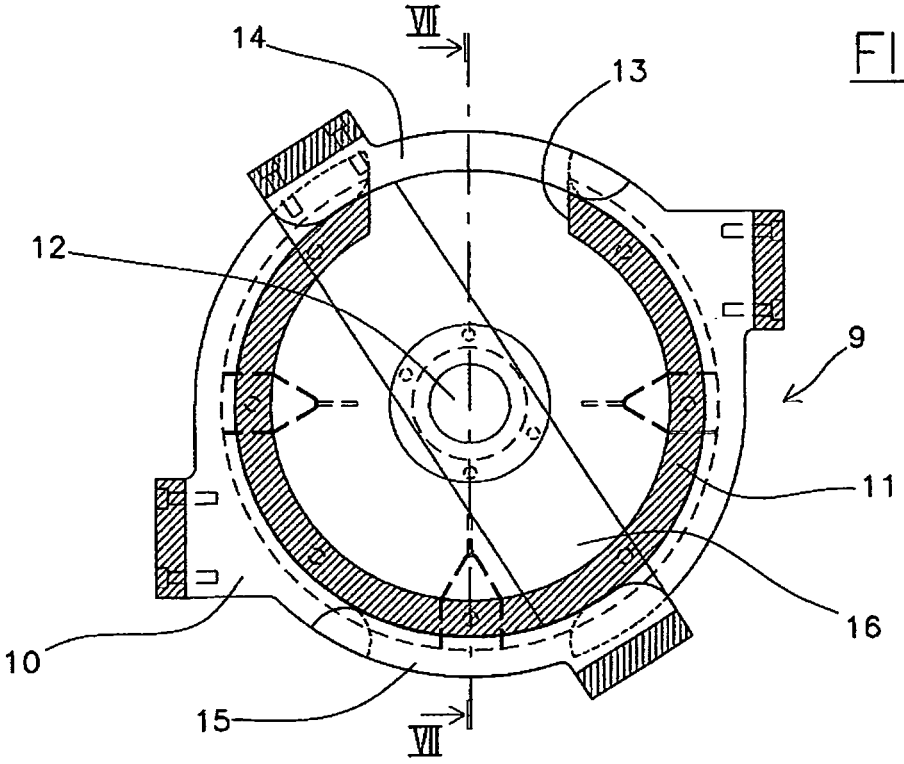


FIG.5

FIG.6

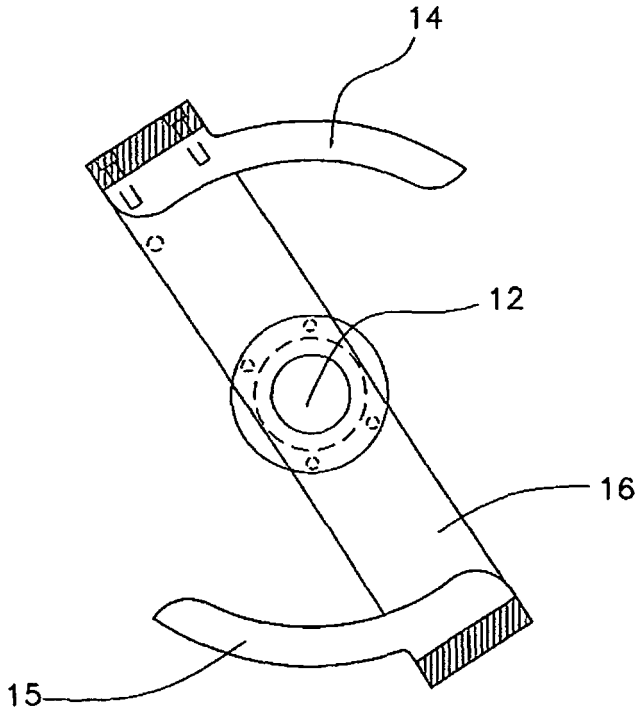


FIG.7

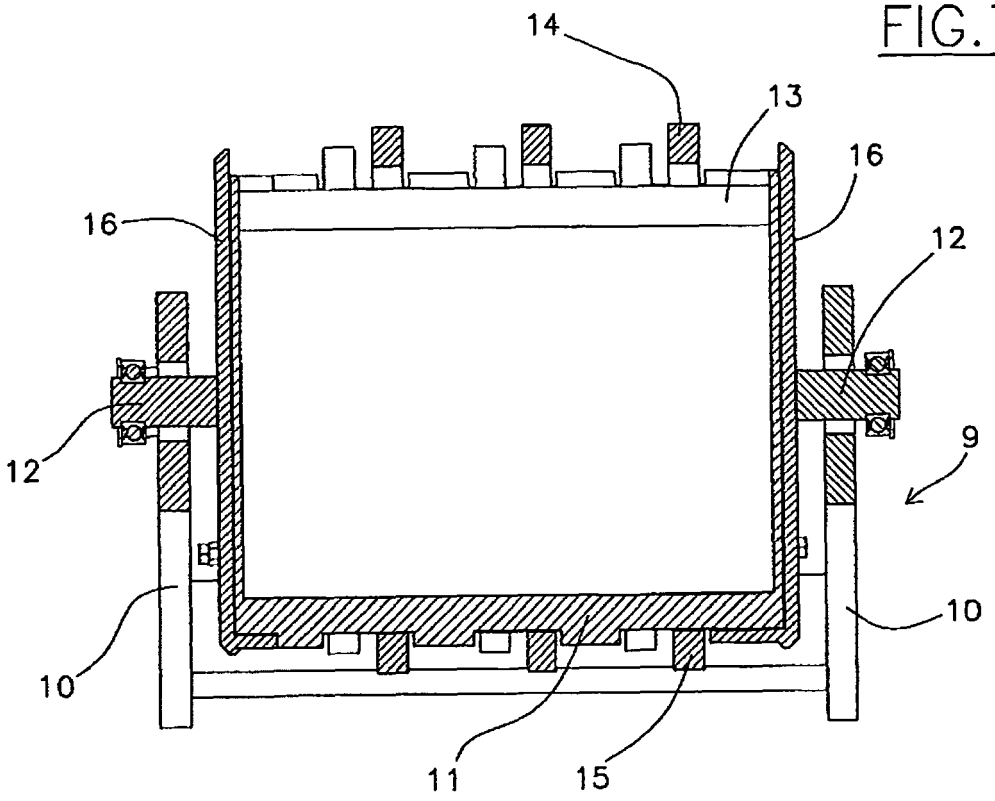


FIG.8

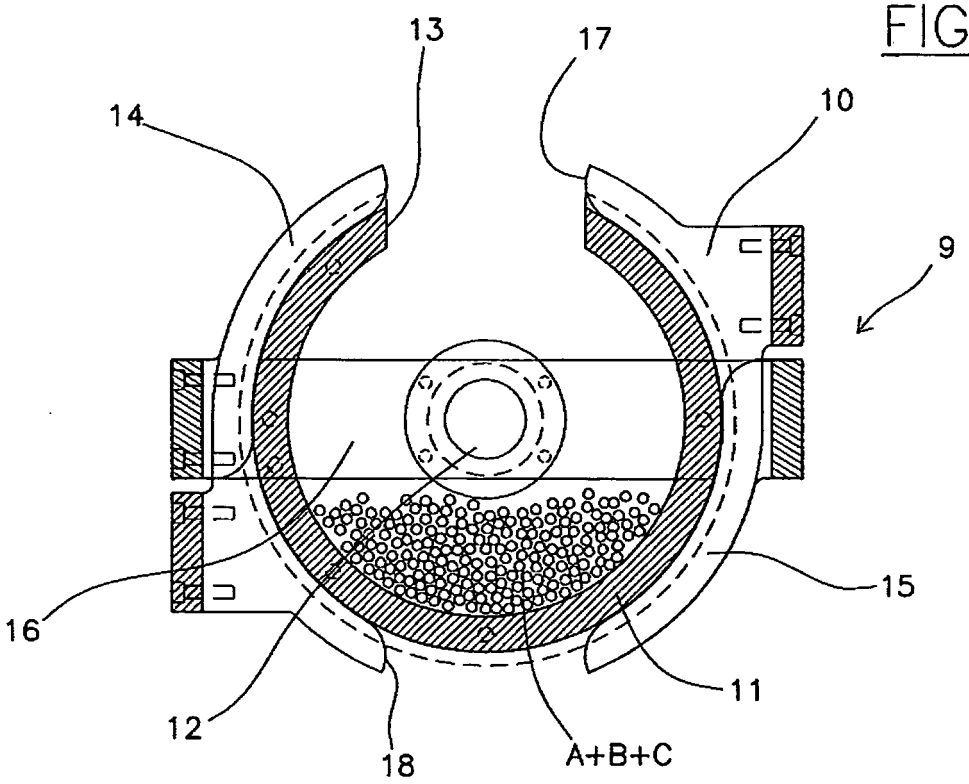


FIG.9

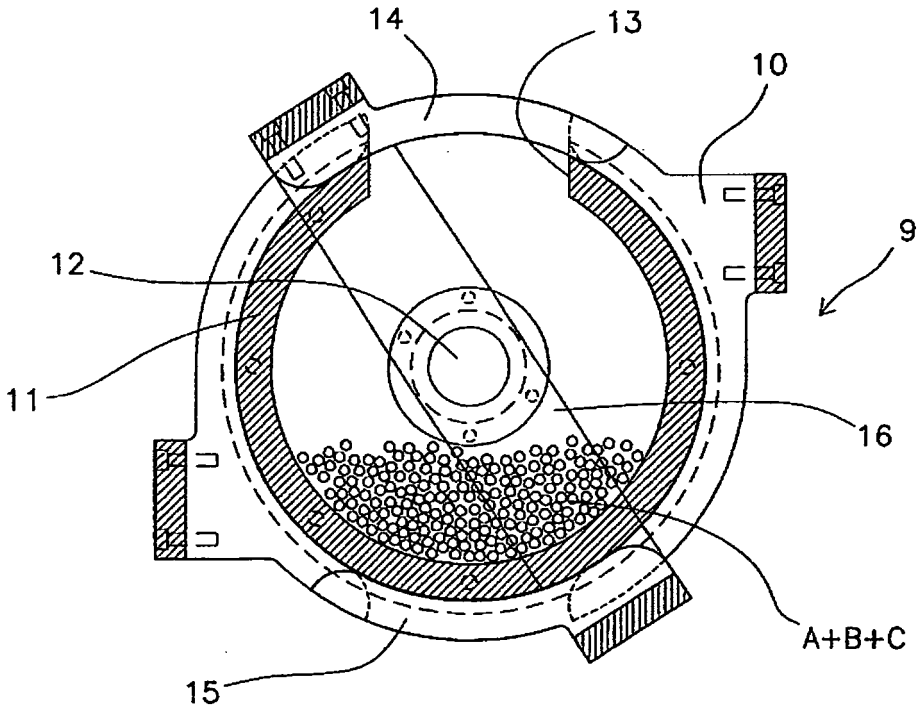


FIG.10

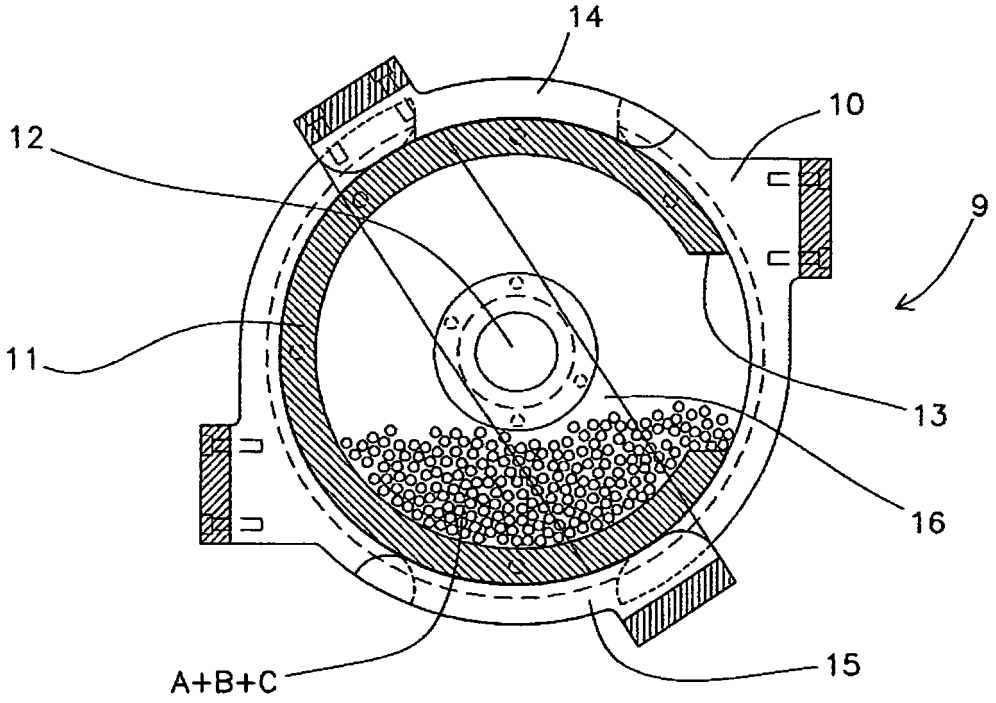


FIG.11

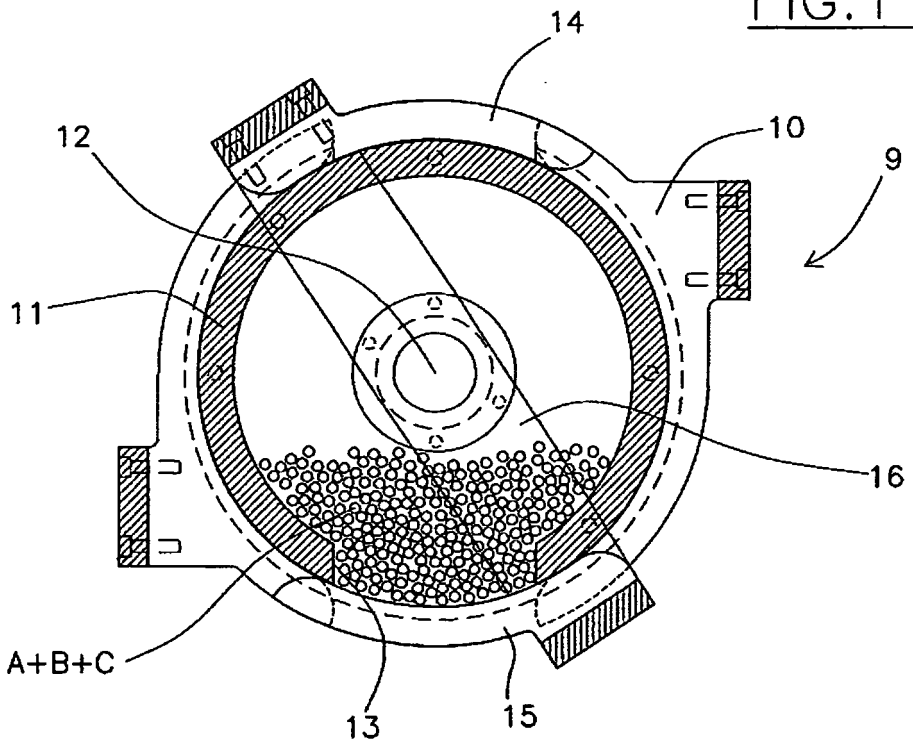
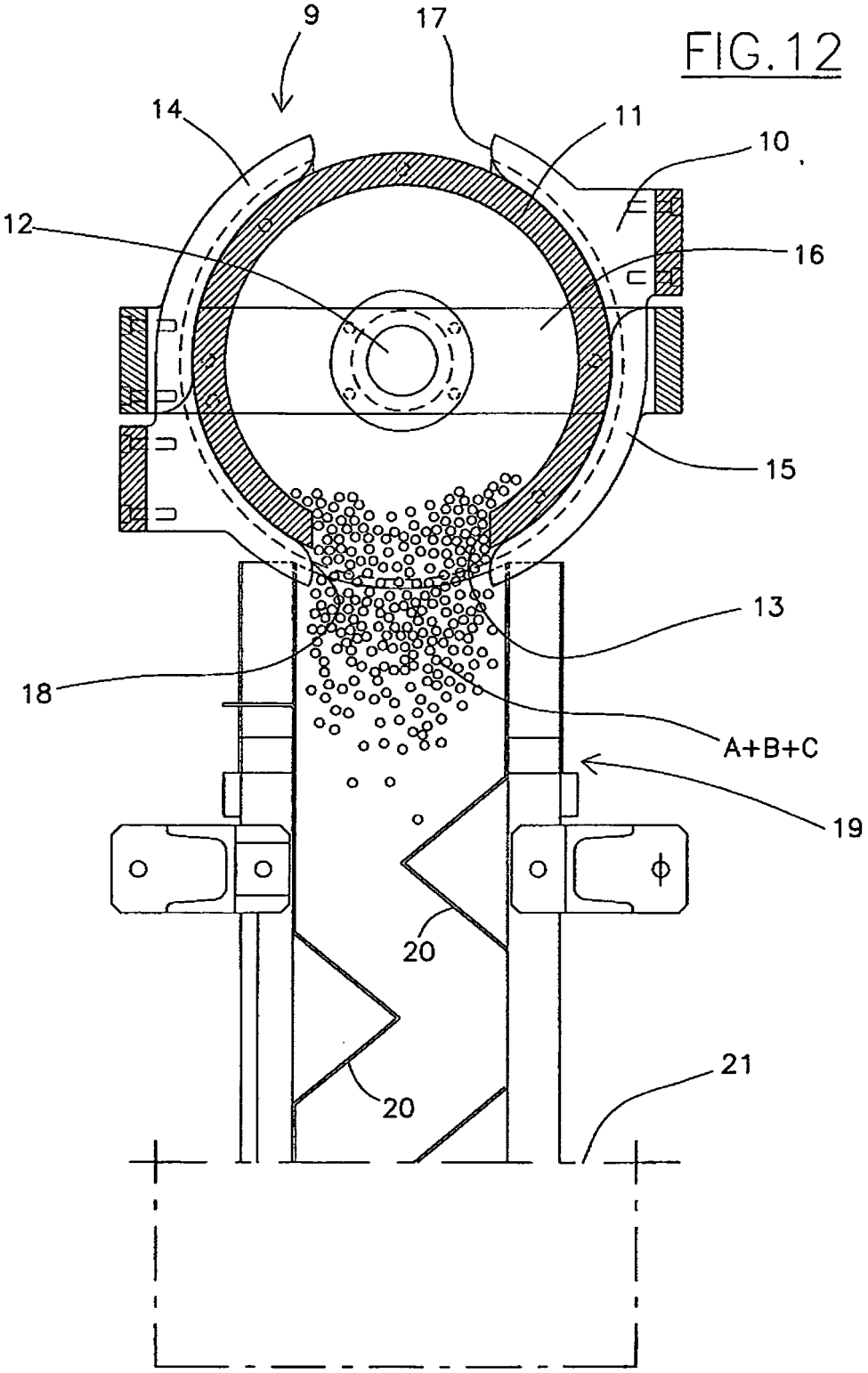


FIG.12



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 5108012 A **[0006]**