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— *of inventorship (Rule 4.17(iv))*

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(54) **Title:** FERMENTER MAKING WINE WITH THE CLASSICAL METHOD FOR WINE VINIFICATION AND FOR THE CARBONIC MACERATION OF GRAPES FOR THE PREPARATION OF " NOUVEAU" WINE

(57) **Abstract:** A rotary fermenter for vinification that comprises (see fig.1): a container substantially cylindrical (1)shaped with horizontal axis revolving on rotary support (4) activated by an engine (5) one or more opening (6) for loading the material-a inner shovel (14) eccentrically positioned in respect to the rotation axis of the fermenter and capable to rotate using a pushing mechanism (15). A tilted inner draining floor (11) for the passage of the liquid part of the fermenting product- a screw conveyor (12) to unload the solid part of the material after fermentation, an engine (13) provide to activate the conveyor-a valve (9) to close the out of the screw conveyor-an hole with a valve (10) for unload the liquid part of the fermented material collected under the draining floor one or more automatic or manual valves (17) to unload the gas produced by the fermentation-a valve (18) provide for loading any gases that we would need to put in the fermenter-an axially positioned rotary distributor (16) supplies all necessary fluids, gas, electrical energy, and oil for power transmission and compressed air to the mechanism-a man passage (8) that allow the access into the machine.

DESCRIPTION

Fermenter making wine with the classical method for wine vinification and for the Carbonic Maceration of grapes for the preparation of "nouveau" wine

Technical field.

My invention is a new type of fermenter for wine vinification and for the Carbonic Maceration of grapes for the preparation of "nouveau" wine. This fermenter can be use in the enological field and in agricultural field in general.

It is used to ferment grapes or other types of agricultural products from which we want to produce wine.

Background of Art.

For wine making are used some equipments that are commonly named: wine-maker or fermenter. They exist in two great categories classifiable in: with vertical axis or with horizontal axis. The fermenters adopt various methods to push the floating solids (skins and bits of stem), 'the pomace', down into the fermenting liquid. This action is called 'punch down'. One of the methods consists in bathing the pomace with the same must that allows in such a way the diffusion of the tannins responsible of the colour in the new wine.

The fermenter with horizontal axis could be: static and equipped with an inner rotating shovel for mixing and to push down the pomace, or of the other type, rotary on rolls of support. The rotary fermenter induces the

mixing and the 'punch down' of the pomace with the rotation, but this action doesn't reach very well and in a short time the scope of the diffusion of the tannins responsible of the colour in the new wine.

A particular rotary fermenter is also used for the preparation of 'nouveau' wine, that needs a carbonic maceration.

Moreover the horizontal rotary fermenter, currently used, for the classical wine vinification, is not qualified to be used for the carbonic maceration in the preparation of the 'nouveau' wines because of an unsuitable system of remixing of the grapes.

Disclosure of invention

The equipment that we will go to describe, object of the present application, is a rotary fermenter that can be used with success in the wine-making with the classical method always with a perfect 'punch down', and even in the carbonic fermentation for the preparation of the "nouveau" wine.

In accordance with the present invention, The machine is composed by cylindrical body (1-fig.1) having an horizontal axis, closed with ends at both sides (2-fig.1).

The machine has two circular tracks (3-fig.1) these revolve on rolls (4-fig.1) activated by an engine (5-fig.1-2). The cylindrical body is equipped with: watertight hatch (6-fig.1) used for loading grapes; an interstice (7-fig.1-2) for warming/cooling the fermenting must.

The front end is equipped with: a man passage (8-fig.1) that allow the access into the machine; a sluice gate (9-fig.1) used for the extraction of the pomace; a valve (10-fig.1) used for the extraction of the must.

Internally to the wine maker is positioned a tilted draining floor (11-fig.1-3), under which the must is collected and by the valve extracted out (10-fig.1).

On the same tilted draining floor are delicately collected the skin-grape, to drain itself from the detained must .

A screw conveyor (12-fig.1-3) is positioned in the middle lower part of the draining floor (11-fig.1-3) to unload the pomace laying on the same floor. The screw conveyor is activated from a motorized equipment (13-fig.2).

A rotation capable shovel(14-fig.1-3) is supported on ends of the cylindrical body, it is positioned eccentrically from the axis of the same body. The shovel is actuated by a pushing mechanism (15-fig.1-2), it can rotate of some angles.

A rotary distributor (16-fig.1-2) is assembled axially respect to the cylindrical body, it supplies all necessary fluids, gas, electrical energy, and oil for power transmission and compressed air to the body.

To unload the gas, produced from the fermentation, the fermenter is equipped with one or more automatic or manual valves (17-fig.1-2). Another valve (18-fig.1) provide for loading any gases that we would need to put in the fermenter.

The machine works as traditional fermenter in this way: The material to be fermented is loaded by the hatch,

while the shovel (14-fig.3-4) rotates alternatively from left to right to uniformly distribute the material in the fermenter. After the load has been done, the watertight doors have been closed, and the shovel (14) has been positioned at its position, as showed in the drawing fig.5. At this point the pomace (19-fig.5) will be floating on the must (20-fig.5-6) and will position itself on the right and on the left of the shovel

To push solids floating (skins and bits of stem), 'the pomace', down into the fermenting liquid to wet them and so facilitate colour and flavour extraction, it will be sufficient to start the fermenter rotation, for the desired time. In this way the shovel, after the fermenter has completed a turn, will drag all pomace (fig.13-14) floating into the liquid and then gradually will release it (fig.15) while slowly resumes the perpendicular position. In such a way the pomace (19-fig.15) guided from the hydrostatic push will cross the entire liquid mass of the must (20-fig.15) and it will come back floating again on the summit of the fermenter ready for a new cycle of 'punch down'.

In the drawing 6 are respectively indicated the phases of job :' Loading' (fig.6) 'Punch down' from fig.7 to fig.16 and 'Unloading' from fig.17 to fig.19

It's evident that the pomace can be retained completely submerged , obtaining a fermentation with 'submerged hat'. To do this the fermenter must stop the rotation in the most convenient position as for example illustrated in the fig.10 "submerged hat" or in fig.14 "lateral hat".

For the Carbonic Maceration to obtain 'nouveau wine' they have to proceed to the load of the whole grape in the fermenter. Then proceeding with the same operations before described. In this case, however the traditional operation of 'punch down' is not necessary because fermentation happens in the whole berry, but it is necessary a light movement of the mass in fermentation for the control of its temperature, these light movements can be obtained by softly oscillating the internal shovel and the fermenter (fig.20-21), with limited angles of rotation.

Modes for carrying out the invention

The construction of the fermeter may carry out from a common mechanical tooling.

It doesn't need particular working.

Claims

1- A rotary fermenter for any fermenting substance and in particular for vinification consisting in a container ('body' in the next) substantially cylindrical shaped with horizontal axis, this container can rotate around to his horizontal axis on rotary supports, it comprises one or more openings for loading the material to be fermented, characterized in that in the inner of the cylindrical body a shovel is positioned eccentrically (14 fig.1) respect to the rotation axis of the body, also in the inner of the body is positioned a tilting draining floor to drain the liquid and to collect the solid part, a screw conveyor to unload the collected solid part is positioned into the body too, a valve to close the exit of the screw conveyor, a valve for unload the liquid part of the fermented material collected under the draining floor, a valve to unload the gas produced by the fermentation.

2- A rotary fermenter as claimed in claim 1, characterized in that the shovel is perforated to permit the liquid pass through and capture only the solid parts during its movements.

3- A rotary fermenter as claimed in claim 1, characterized in that the shovel can rotate of any angles actuated by an angular actuator.

4- A rotary fermenter as claimed in claim 1, characterized in that the screw conveyor is positioned in the lower part of the draining floor

to allow the collecting of the material lying on the same floor.

5- A rotary fermenter as claimed in claim 1, characterized in that the screw conveyor is set in action from an engine.

6- A rotary fermenter according to claim 1 characterized in that the draining floor divide completely the body into two volumes (11 fig.3).

7- A rotary fermenter as claimed in claim 1, characterized in that it is equipped with a rotary distributor to provide all necessary fluids, cold/hot fluid, gases, compressed air, oil in pressure, transmission fluids and electrical energy and signals to and from the body.

8- A rotary fermenter as claimed in claim 1, characterized in that the body is provided with one or more valves to unload the gas produced by the fermentation.

9- A rotary fermenter as claimed in claim 8, characterized in that any valves are acted automatically with an external command.

10- A rotary fermenter as claimed in claim 8, characterized in that any valves are acted automatically based on the angular position of the body.

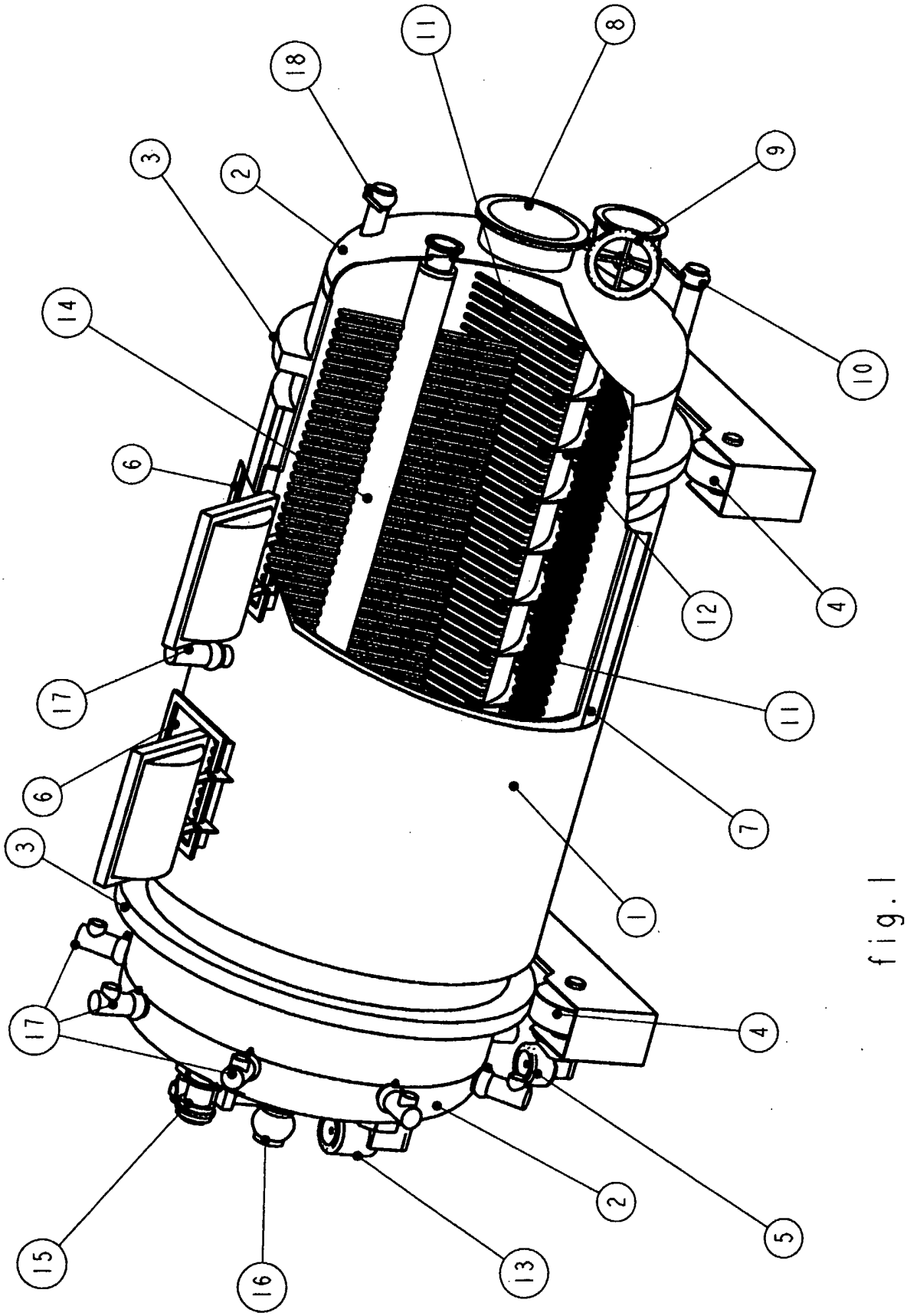
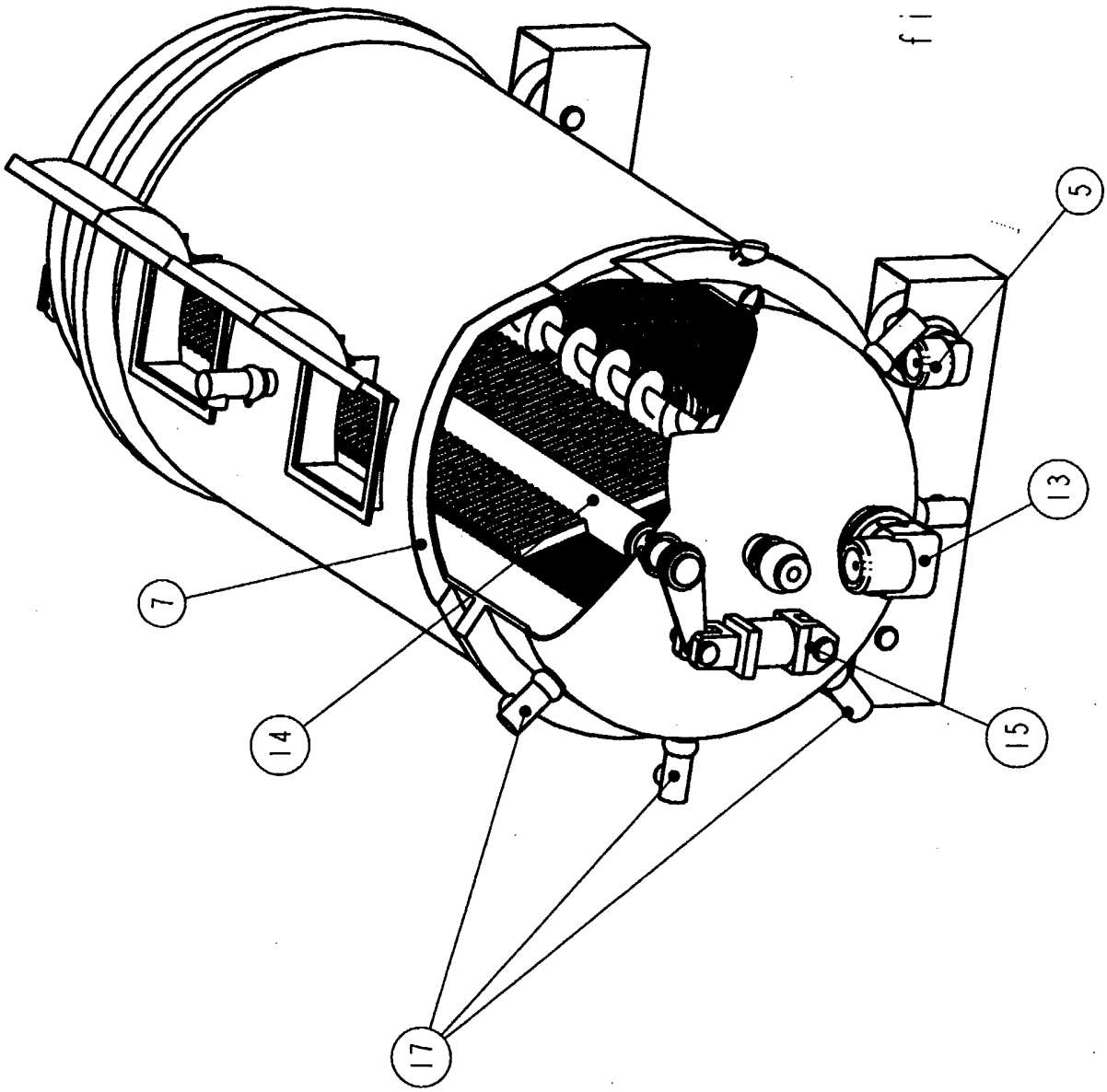
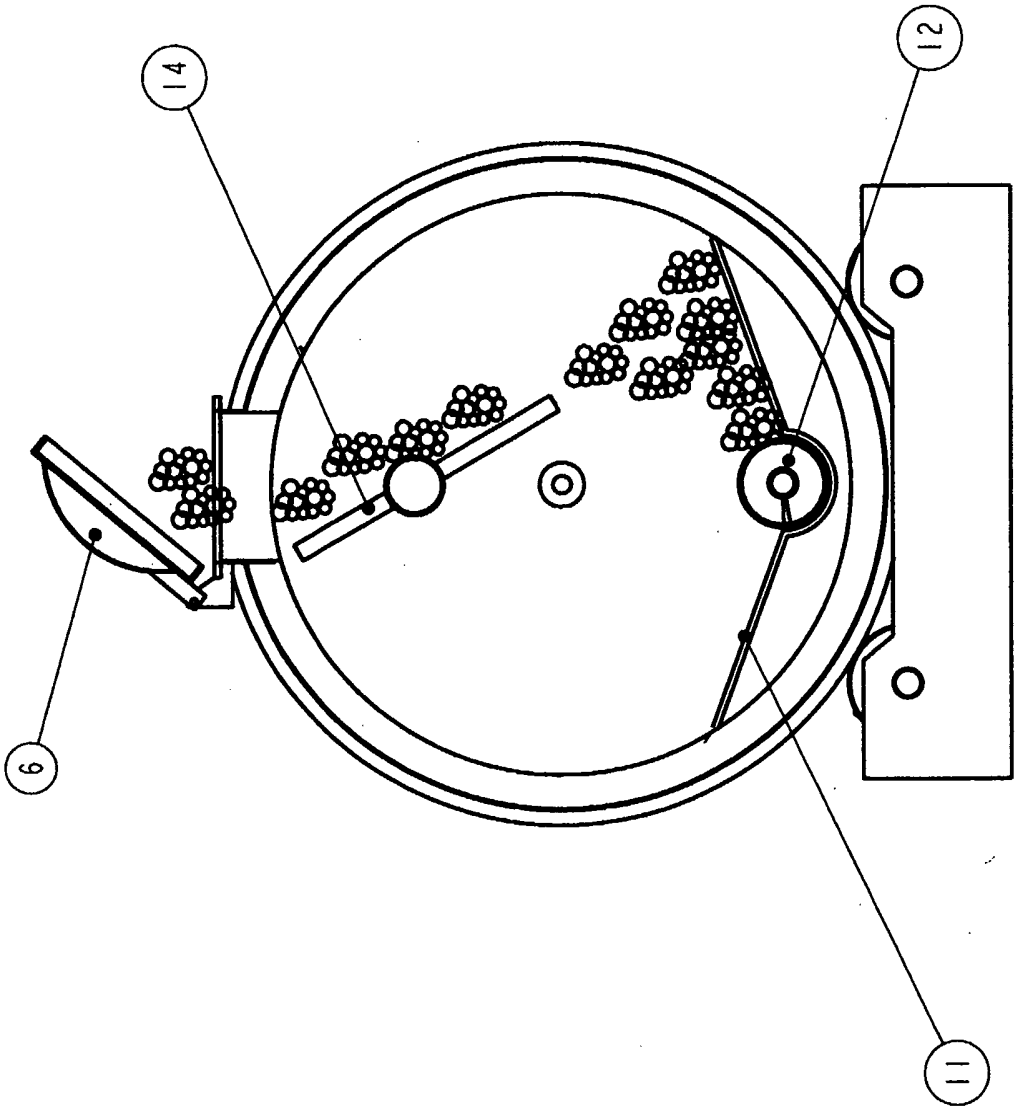


fig. 1

fig.2





SECTION fig.3

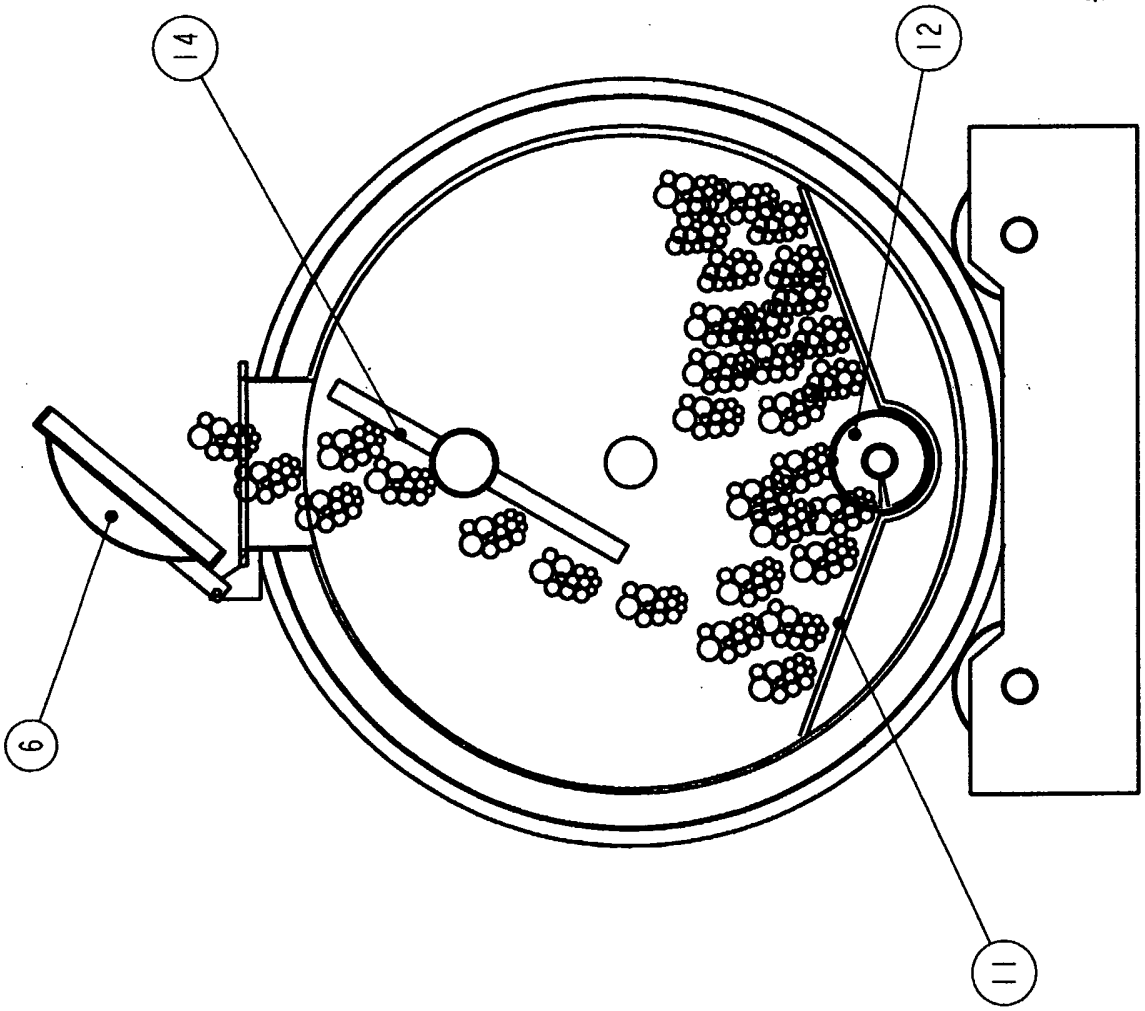
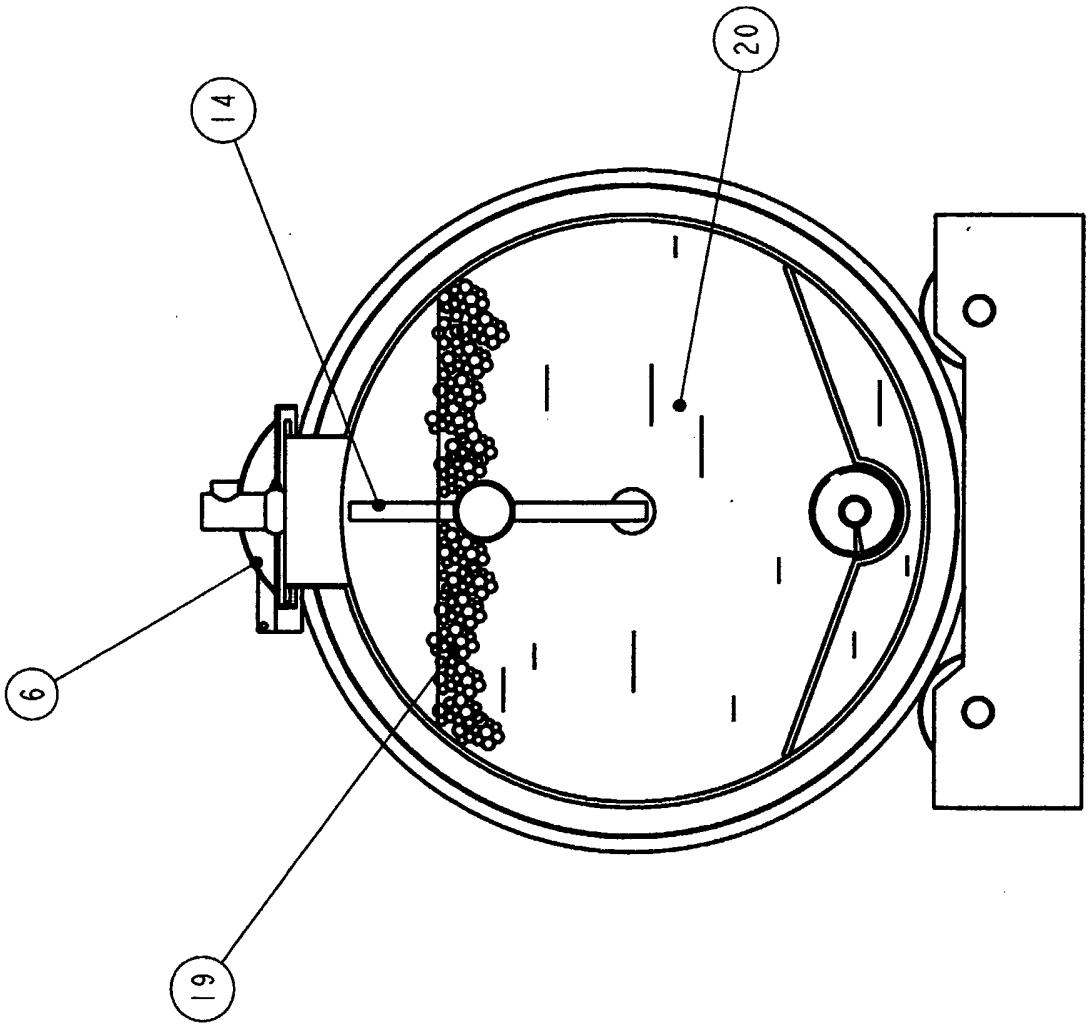
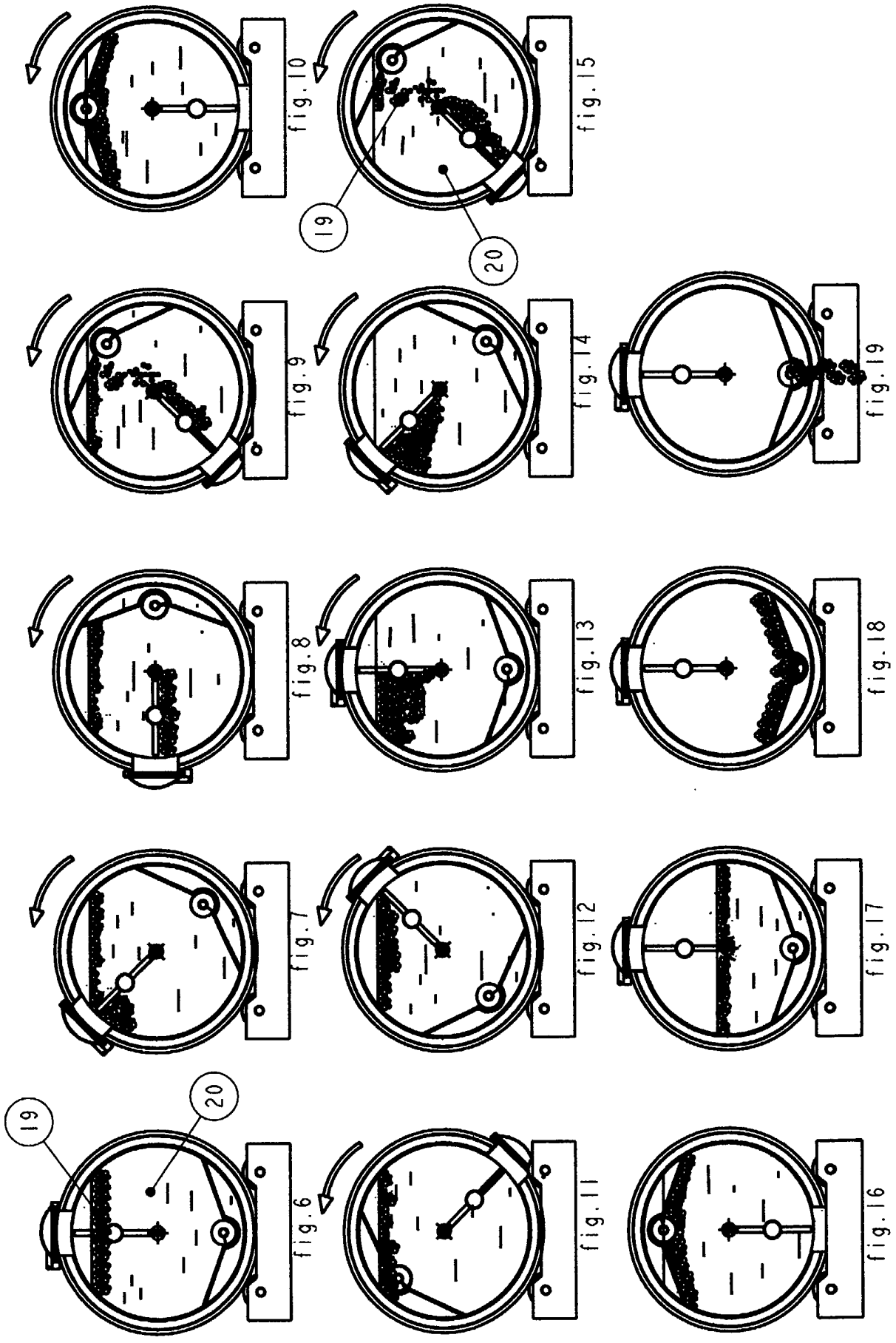


fig. 4



SECTION fig.5


fig.10
fig.15
19
20
fig.9
fig.14
fig.19
fig.8
fig.13
fig.18
fig.7
fig.12
fig.17
19
20
fig.6
fig.11
fig.16

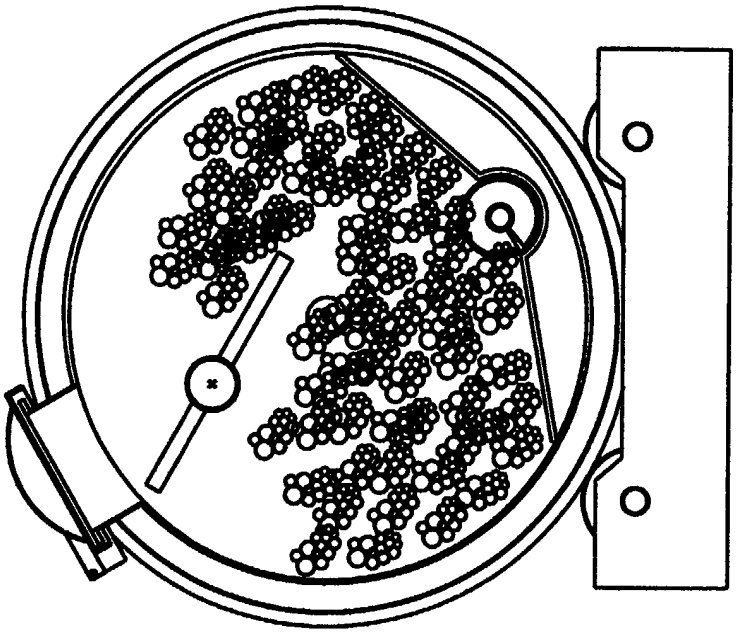


fig.21

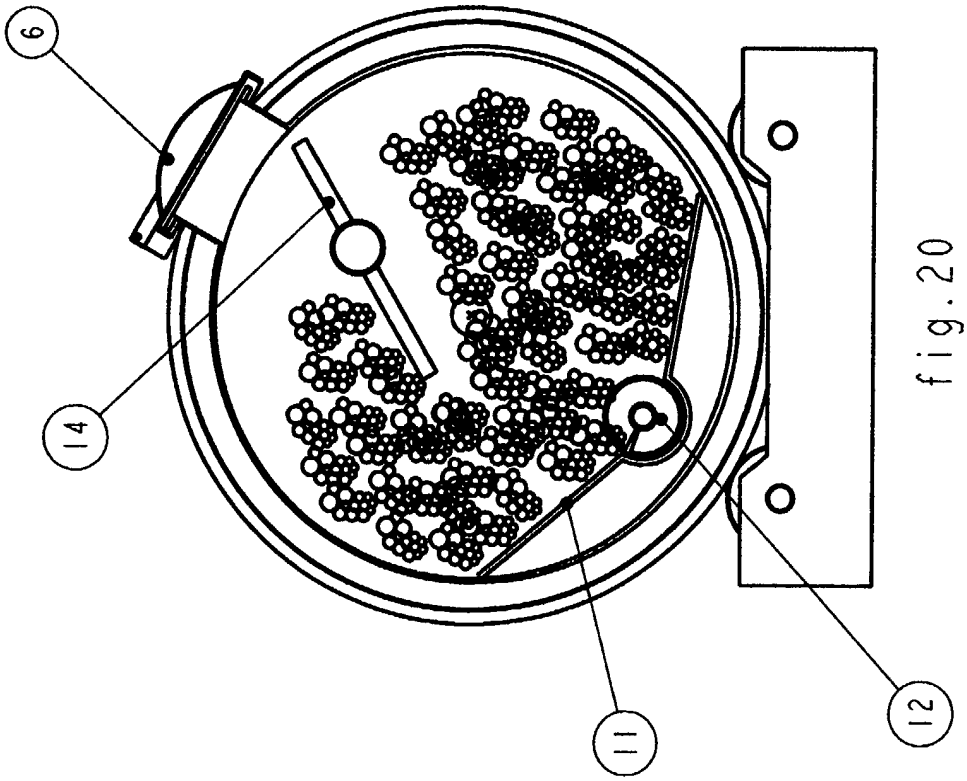


fig.20

INTERNATIONAL SEARCH REPORT

International Application No
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A. CLASSIFICATION OF SUBJECT MATTER
C12M1/10 C12G1/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
C12M C12G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 149 202 A (RIEGER, HERBERT) 24 July 1985 (1985-07-24) claim 1	1
A	EP 0 337 060 A (SPEIDEL, GEORG) 18 October 1989 (1989-10-18) claim 1	1
A	FR 2 494 715 A (BELLOT ROGER) 28 May 1982 (1982-05-28) claim 1	1
A	US 4 474 890 A (RIEGER ET AL) 2 October 1984 (1984-10-02) claim 1	1

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
26 January 2006	06/02/2006

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Clement, J-P

INTERNATIONAL SEARCH REPORT

ormation on patent family members

International Application No
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