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Device for aerating and sprinkling laden liquids

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(56) Related Art
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ABSTRACT

DEVICE FOR AERATING AND SPRINKLING LADEN LIQUIDS

This device for aerating and sprinkling laden liquids comprises a hollow tube (1) intended to take a turbine (4) rotated by means of a central shaft (4a) itself operated by a motor (3), the said lower part of the tube having through-openings in the form of apertures so as to allow the liquids to be displaced, which are laden with materials in suspension, to pass through them in one direction or the other depending on the direction of rotation of the motor, the turbine (4) being constructed in such a way that it imparts to the said liquids an upwards or downwards helical path in order to disperse the material at the point of arrival of the liquids.

AUSTRALIA

Patents Act 1990

JOSEPH FERRANDEZ

ORIGINAL

COMPLETE SPECIFICATION
STANDARD PATENT

Invention Title:

Device for aerating and sprinkling laden liquids

The following statement is a full description of this invention including the best method of performing it known to me:-

The present invention relates to a device for aerating and sprinkling laden liquids which can lead to the solid part being immersed. More specifically, as regards winemaking, the device in accordance with the invention is intended to push the cap of marc under.

In winemaking, fermentation causes a build-up of the solid parts of the vintage, known as the "cap of marc" which needs, for oenological reasons, to be immersed in the liquid element underneath.

This operation is generally carried out by pumping the said liquid from the lower part of the vat and sprinkling it over the cap of marc. An operation of this kind requires the use of pumps, pipework and a whole range of items that are time-consuming to clean. It also leads to the risk of the pipework bursting and the product being lost.

There is a method known as unloading, which consists in extracting all of the juices from one vat so that they can be reincorporated on top of the cap of marc after they have passed via a second vat. This technique has the same drawbacks as the previous one but in addition requires the use of an extra vat, and correspondingly, the cleaning of this vat.

The action of certain known items of equipment employed for carrying out this task, such as jacks for example, which pass through the chute used for introducing the vintage into the vat, or membranes which inflate inside the vat, is moreover generally restricted to just one vat, which means that the cost of equipping a series of vats with such hardware proves prohibitive.

The object of the invention is to propose a device for aerating and sprinkling laden liquids, more specifically dedicated to treading the cap of marc under, which gets around the various aforementioned drawbacks, is easy to produce, and is also easy to use.

According to a first aspect of the invention, there is provided a device for aerating and sprinkling laden liquids, characterized in that it comprises a hollow tube intended to take a turbine rotated by means of a central shaft itself operated by a motor, housed in the lower part of said hollow tube, said lower

part of the tube having through-openings in the form of apertures extending between the housing of the motor and the upper part of said hollow tube so as to allow the liquids to be displaced, said liquids being laden with materials in suspension, to pass through them in one direction or the other depending on the direction of rotation of the motor, the turbine being constructed in such a way that it imparts to said liquids an upwards or downwards helical path in order to disperse the material at the point of arrival of the liquids.

According to a second aspect of the invention there is provided a device for aerating and sprinkling laden liquids intended for treading under the cap of marc of a winemaking vat, characterized:

- in that it comprises a hollow tube, the length of which slightly exceeding the height of the cap of marc to be treated, and the lower end of which having apertures intended to allow the laden liquids to pass in one direction or the other, said tube having inside it a turbine rotated by means of a central shaft itself driven by an electric or pneumatic motor which is coaxial with the tube, said motor being secured to the lower part of the tube via its housing, said apertures extending between the housing of the motor and the upper part of the hollow tube;

- in that the turbine consists of a helical spiral forming one or more turns with respect to the rotary shaft, and of a ring in the shape of a serpentine coil which externally matches the shape of the spiral, the assembly thus formed just slipping inside the hollow tube.

The device for aerating and sprinkling laden liquids according to the invention comprises a hollow

tube intended to take a turbine rotated by means of a central shaft, itself operated by a motor, the said lower part of the tube being perforated in such a way as to allow the liquids laden with material to be displaced to pass in one direction or the other depending on the direction of rotation of the motor.

This device is fitted with a motor unit which may be electrical or pneumatic, placed vertically with the shaft pointing upwards. Advantageously, the motor housing is secured to the lower part of the tube.

Furthermore, the length of the tube slightly exceeds the height of the cap of marc to be treated, the said tube being fixed to the static part of the motor, the turbine being placed in the lower part of the tube, which part is dipped in the liquid.

In addition, the device also comprises a collar, the diameter of which is slightly smaller than that of the chute of the vat, and which is fixed adjustably to the upper part of the tube.

The present invention may be better understood with the aid of the detailed description which follows, which relates to a preferred embodiment given by way of example with reference to the appended drawings in which:

- Figure 1 depicts a diagrammatic sectional view of the device according to the invention, installed in a winemaking vat;

- Figure 2 depicts a diagrammatic detail view of the turbine used in this device.

Although more specifically described in conjunction with a winemaking vat, it is clearly understood that the invention is not restricted to this single application.

As can be seen from the drawings, the device consists of a hollow tube (1), the lower part of which is connected to the housing of a motor (3), the shaft (3a) of this motor extending into the tube (1) and driving the central shaft (4a) of a turbine (4).

The unit thus formed is installed inside a winemaking vat (8) and introduced into this vat via the chute (9). The cap of marc (10) which needs to be pushed under, as well as the juices (11) laden with materials in suspension, such as stalks, pips, etc. can thus be seen in this vat.

In a preferred assembly, the tube (1) is perforated at its lower part with several apertures (2), especially three apertures, that is to say through-openings of a large enough size that they allow the material-laden juices to be displaced to pass, in one direction or the other, i.e. from the inside outwards, and vice versa, depending on the direction of rotation of the motor.

The solid regions between the apertures (2), and which consist of part of the wall of the tube (1) serve as connections to the housing of the motor (3) positioned coaxially with respect to the tube (1).

By way of example, the agitating turbine (4) is formed of a helical spiral (4b), more specifically depicted in Figure 2, forming one or more turns around the shaft (4a). A ring (4c), in the shape of a serpentine coil, externally matches the shape of the spiral, the assembly just slipping inside the tube (1).

The turbine (4) is therefore capable of imparting to the laden liquids an upwards or downwards helical path able to disperse the said liquids on arrival, that is to say at the end of the tube, and separating out the suspended materials they contain.

In the embodiment described the tube is immersed in the vintage. In this case, a solid fraction remains floating on top of the vintage, so as to keep the device in place. The tube (1) therefore has a height-adjustable collar (6) at its upper part, this collar being held on the tube by appropriate clamping means.

If it is necessary to include a gas in the product to be treated, an injector (7) is fitted beneath the turbine (4) which, by a depression effect,

draws up the gases or air conveyed by the tube (7a) which, if necessary, is stopped off by a manually-operated valve.

For use in the making of red wine, the entire device is placed vertically in the vat (8) passing through the upper chute (9). The motorizing unit, turbine and lower part of the tube pass through the cap of marc until they are immersed in the liquid part (11). The collar rests on the cap of marc (10) and keeps the upper part of the tube above the surface of the cap.

With the device installed in the way explained above, rotating the turbine causes the liquid to rise in a helical path and it is quickly spread out in the form of a corolla above the cap of marc (11). The cap thus submerged sinks down of its own accord under the charge generated by the liquid thus dispersed.

For making white wine, and more particularly for getting the lees into suspension, the device, immersed in the liquid, is rotated in the opposite direction to the direction in which it was rotated in the previous instance, thus causing liquid to be drawn from the upper part of the tube (1) and forced downwards, thus creating currents which "blow" and in particular disperse the solid particles, especially the lees.

In the light of the foregoing description, it is clear that the device of the invention has a number of advantages, of which the following may be mentioned:

- greater treatment effectiveness, be it in treading under the cap of marc or in getting the lees into suspension;
- improved oenological quality of this treatment;
- greater speed of use;
- great ease of use;
- a quite particularly improved simplicity of cleaning: all that is required is for the tube to be rinsed and the turbine to be cleaned;

- the multi-purpose nature of the device which, on account of its small size, can be fitted to all types of vat.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. Device for aerating and sprinkling laden liquids, characterized in that it comprises a hollow tube intended to take a turbine rotated by means of a central shaft itself operated by a motor, housed in the lower part of said hollow tube, said lower part of the tube having through-openings in the form of apertures extending between the housing of the motor and the upper part of said hollow tube so as to allow the liquids to be displaced, said liquids being laden with materials in suspension, to pass through them in one direction or the other depending on the direction of rotation of the motor, the turbine being constructed in such a way that it imparts to said liquids an upwards or downwards helical path in order to disperse the material at the point of arrival of the liquids.

2. Device according to Claim 1 for aerating and sprinkling laden liquids, characterized in that the turbine consists of a helical spiral forming one or more turns with respect to the rotary shaft, and of a ring in the shape of a serpentine coil which externally matches the shape of the spiral, the assembly thus formed just slipping inside the hollow tube.

3. Device according to either of Claims 1 and 2 for aerating and sprinkling laden liquids, characterized in that there are three of the through openings in the form of apertures in the hollow tube, the solid regions separating the apertures serving as elements for securing the housing of the motor and the lower part of the hollow tube together.

4. Device according to Claim 3 for aerating and sprinkling laden liquids, characterized in that the through-openings in the form of apertures are of a large enough size to allow all the solid bodies in suspension in the laden liquids to be treated to pass towards the inside or towards the outside of the tube.

5. Device according to one of Claims 1 to 4 for aerating and sprinkling laden liquids, characterized in that the motor is positioned coaxially with respect to the tube.

6. Device according to one of Claims 1 to 5 for aerating and sprinkling laden liquids, characterized in that the hollow tube at its upper part has a height-adjustable collar kept level with said tube by appropriate clamping means and which is intended to allow said tube to be positioned within the container that contains the laden liquids to be treated.

7. Device according to one of Claims 1 to 5 for aerating and sprinkling laden liquids, characterized in that an injector intended to add a gas in the region of the apertures of the tube is associated with the tube.

8. Device for aerating and sprinkling laden liquids intended for treading under the cap of marc of a winemaking vat, characterized:

- in that it comprises a hollow tube, the length of which slightly exceeds the height of the cap of marc to be treated, and the lower end of which has apertures intended to allow the laden liquids to pass in one direction or the other, said tube having inside it a turbine rotated by means of a central shaft itself driven by an electric or pneumatic motor which is coaxial with the tube, said motor being secured to the lower part of the tube via its housing, said apertures extending between the housing of the motor and the upper part of the hollow tube;

- in that the turbine consists of a helical spiral forming one or more turns with respect to the rotary shaft, and of a ring in the shape of a serpentine coil which externally matches the shape of the spiral, the assembly thus formed just slipping inside the hollow tube.

9. Device for aerating and sprinkling laden liquids substantially as described herein with reference to the accompany drawings.

Dated this thirteenth day of April 2000

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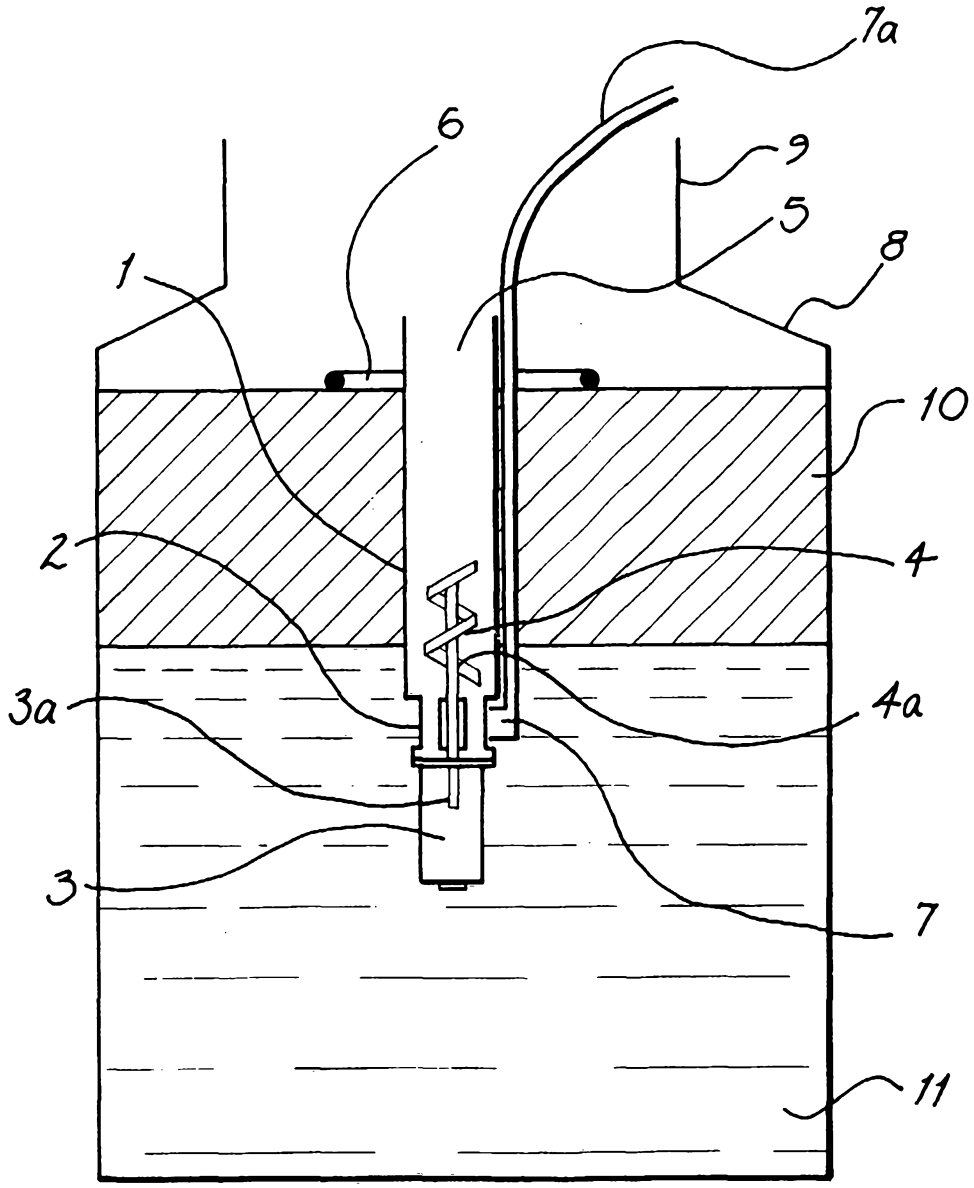

FIG. 1

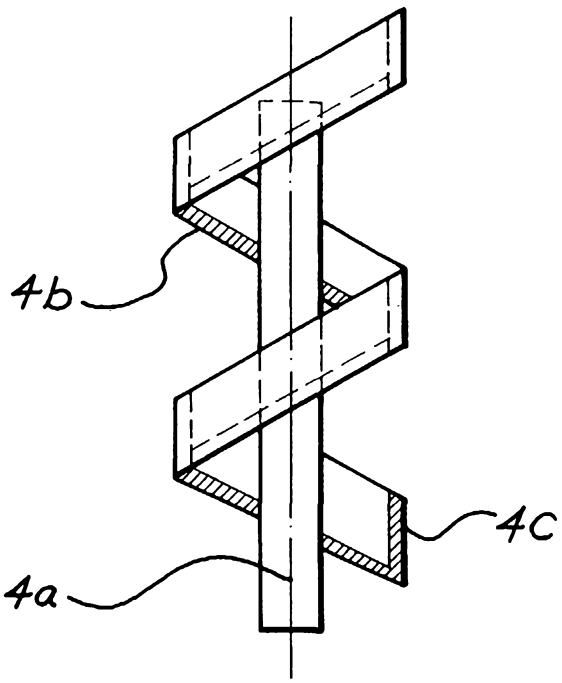

FIG. 2