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ROTARY ARBOR FOR MAKING SYNTHETIC STONE

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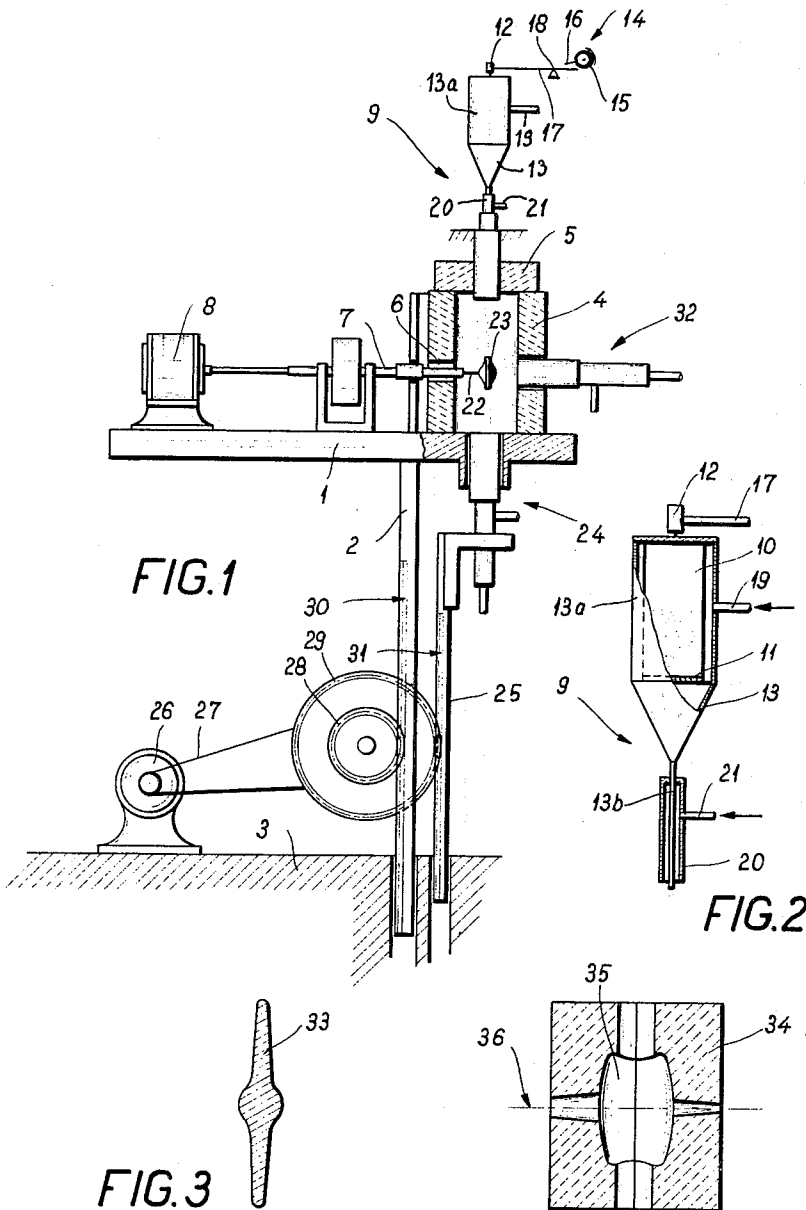


FIG. 4

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ROTARY ARBOR FOR MAKING SYNTHETIC STONE

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4 Claims. (Cl. 23—273)

The present invention relates to a process for manufacturing a rotation body, especially a sheave made of synthetic stone, by melting of powdery material and accumulating said material on a rotatable support.

The invention relates also to an installation for carrying out the above mentioned process, comprising a stove within which is arranged a rotatable support on which is accumulated the melted material intended to constitute the said body of synthetic stone.

The process is characterised by the feature that one uses at least two blow-pipes symmetrically arranged with respect to the axis of rotation of the support; the installation is characterised by the feature that two blow-pipes are arranged in the stove symmetrically with respect to the axis of rotation of the support.

The drawing shows, by way of example, one embodiment of the object of the invention, and a modification thereof.

FIG. 1 is an elevational view, with a partial section, of an installation for the manufacture of sheaves made of synthetic stone.

FIG. 2 is a view of a detail of FIG. 1, with a partial section, at an enlarged scale.

FIG. 3 is an axial sectional view of a sheave obtained when carrying out the process according to the invention, and

FIG. 4 is an axial sectional view of a modification of a stove.

The installation represented in FIG. 1 comprises a table 1 carried by a rod 2 slidingly mounted in a frame 3, partially represented. This table carries a stove constituted by a tubular body 4, made of fire-proof material, on which is arranged a cover 5 likely made of fire-proof material.

The wall of the tubular body 4 of the stove shows a hole 6 through which extends a rotatable shaft 7 driven by a motor 8 mounted on the table 1. As a modification, the motor 8 could not be carried by the table 1, but by the stationary frame 3 of the machine and the shaft 7 could be driven through the intermediary of a flexible cable.

The cover 5 carries a stationary blow-pipe 9, of the so-called verneuil type, shown in detail in FIG. 2. This blow-pipe comprises a cylindrical container 10, enclosing alumina powder, the bottom 11 of which is constituted by a sieve. A hammer 12, striking at a rate of many strikes per second, urges the powder contained in the container 10 to fall into a tundish 13 located under the container 10. A driving device for the hammer 12 has been diagrammatically represented at 14 in FIG. 1, like a rotatable disc 15 provided with a finger 16 acting on the rear end of a rod 17, articulated at 18, carrying the hammer 12.

The tundish 13 projects upwards as a cylindrical envelope 13a surrounding the container 10 and in which opens a pipe 19 for the induction of oxygen. Downwards, this tundish projects as a pipe 13b in which passes a mixture of alumina powder and of oxygen. The end of this pipe 13b is situated in a pipe 20 in which opens a pipe 21 for the induction of hydrogen. The blow-pipe thus produces a hydrogen-oxygen flame in which is in-

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corporated the alumina powder. This powder, melted by the blow-pipe, forms a deposit on a support 22 mounted at the end of the shaft 7. This shaft being rotated, the body 23 which is formed by the accumulation of the melted material has the shape of a sheave.

In order that the whole periphery of the body 23 on which the melted material forms a deposit be maintained at the desired temperature, and this without having a too high speed of rotation, the installation comprises a second blow-pipe, generally designated by 24, carried by a rod 25 slidingly mounted in the frame 3. This second blow-pipe, of the same type as the first one, with the difference that it does not comprise means for dispensing powder, is diametrically opposed to the first one, with respect to the body 23, and is located in the prolongation of this first blow-pipe.

In order that the periphery of the sheave 23, during its formation, be continuously located in the warmest part of the flame, even if the diameter of the sheave increases continuously, the distance between the two blow-pipes 9 and 24 and this sheave is changed owing to the following arrangement: A motor 26 carried by the frame 3 drives through a transmission belt 27 two toothed wheels 28 and 29 meshing respectively with two toothed racks 30 and 31 provided on the rods 2 and 25. As the diameter of the wheel 29 is the double of this one of the wheel 28, the rod 25 moves downwards at a double rate than this of the rod 2. As a result, the sheave 23 is continuously at half the distance between the blow-pipes 9 and 24.

The installation comprises moreover a blow-pipe 32 of the same type as the blow-pipe 24, situated opposite the shaft 7 and in the prolongation thereof. This blow-pipe 32 holds the centre of the sheave 23 at the desired temperature.

It is to be noted that, owing to the fact that the shaft 7 moves at the same time as the stove 4, the hole 6 is just large enough for the passage of this shaft, but has not to allow a relative displacement between the shaft and the stove.

The support 22 will be constituted by a germ or a seed, that is to say by a crystal having the same orientation as the crystal it is desired to be obtained, for instance a rod of corundum. The crystal which is formed around this seed then shows the same orientation as the latter.

It is desired that the area of the periphery of the sheave remains constant, even when its diameter increases continuously, so that the successive layers of melted material successively deposited be of constant thickness; to this end, it is watched that the thickness of the sheave decreases from the centre to the periphery, whereby the profile of the sheave is like the sheave 33 of FIG. 3. This particular shape of the sheave is obtained by dosing suitably the quantity of powder dispensed, by modifying the rotation speed of the shaft 7 and by modifying the intensity of the flame. These several measures can be used separately or in combination. In order that the distance between the sheave and the wall of the stove be as small as possible, it will be useful to utilise a stove of the type of the stove 34 in FIG. 4, the inner room 35 of which shows, in vertical section, a width decreasing from the axis of the shaft, diagrammatically represented at 36 in this figure.

As a modification, the shaft 7 can be axially displaced, slowly and continuously, in one direction or in the other, in order to obtain bodies having special shapes, for instance frusto-conical bodies. Likely, the blow-pipes can be arranged not radially with respect to the shaft, but be inclined with respect to this shaft. At last, more than two blow-pipes, for instance three, arranged at 120° one from the others, can be angularly arranged around the shaft.

What I claim is:

1. In an installation for the manufacture of a synthetic body of revolution comprising a stove including a wall defining an inner room, a rotatable support extending into the inner room of the stove, and a blow-pipe for dispensing melted synthetic powdery material on the rotatable support to form, by accumulation of the powdery material on the rotatable support, a synthetic body of revolution, the improvement comprising: a second movable blow-pipe opening into the inner room of said stove in diametrically opposed relationship to the said first blow-pipe with respect to the axis of rotation of said support, the axis of said second blow-pipe being coaxial with respect to the axis of said first blow-pipe, a table carrying said stove movable in a direction parallel to the common axis of the two blow-pipes, first driving means for moving the table with respect to the first blow-pipe at a first rate, and second driving means for moving the movable blow-pipe at a second different rate such that the axis of rotation of the body of revolution during the formation thereof remains constantly at half the distance between the two blow-pipes whereby the periphery of the body of revolution is maintained at a constant distance from the blow-pipes.

2. In an installation for the manufacture of a synthetic body of revolution comprising a stove including a wall defining an inner room, a rotatable support extending into the inner room of the stove, and a blow-pipe for dispensing synthetic melted powdery material on the rotatable support to form, by the accumulation of the powdery material on the rotatable support, a synthetic body of revolution, the improvement comprising: at least a second blow-pipe opening into the inner room of said stove in diametrically opposed symmetrical relationship to the first blow-pipe with respect to the axis of rotation of said rotatable support, a table carrying the stove, said table being movable with respect to said blow-pipes, a shaft carrying and driving said support, said shaft being

carried by and movable with said table, and drive means for moving the table relative to said blow-pipes at a rate which maintains the axis of rotation of the body of revolution during the formation thereof constantly and half the distance between the two blow-pipes whereby the periphery of the body of revolution is maintained at a constant distance from the blow-pipes.

3. The installation for the manufacture of a synthetic body of revolution as defined in claim 2 and further including a third blow-pipe opening into the inner room of said stove in axial alignment with the axis of rotation of said support and being adapted to hold a central part of the body of revolution in formation at a desired temperature.

4. The installation for the manufacture of a synthetic body of revolution as defined in claim 2 in which the width of the inner room of the stove decreases from the axis of rotation of said rotatable support.

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