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SIEVE DRUM DRYING MACHINE

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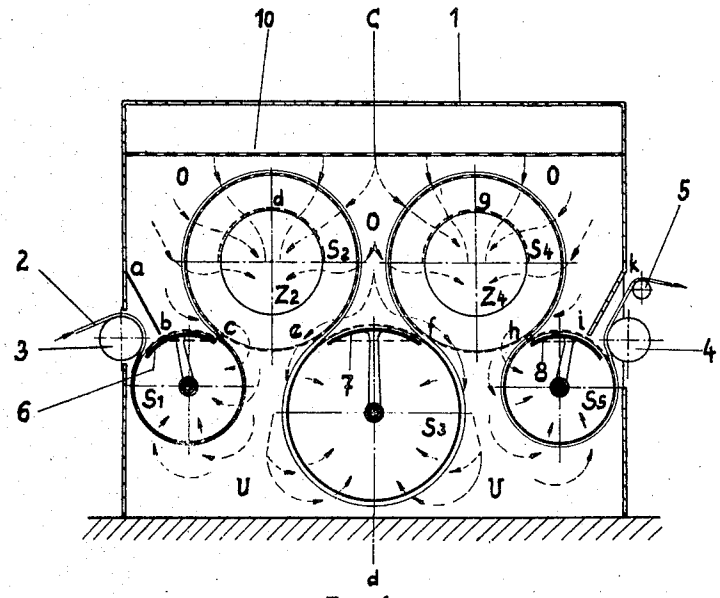


Fig. 1

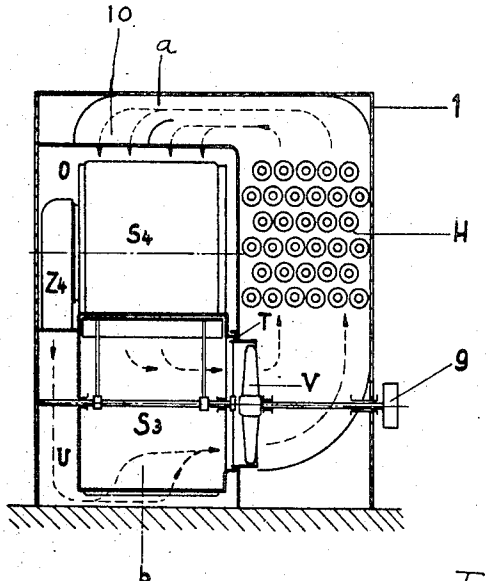


Fig. 2

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SIEVE DRUM DRYING MACHINE

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3 Claims. (Cl. 34—115)

The invention relates to an apparatus adapted to dry slubs or rovings, especially card bands, combed material, loose fibre material, fabrics, knit goods, or the like.

Drying machines provided with sieve drums are known consisting essentially of a drying chamber in the interior of which two groups of drums are arranged above one another the cylindrical surfaces of which are sieve-like perforated and arranged in a small distance from each other. The one front face of the drums is impervious to air and to the other front face a suction duct is connected conducting to an air preheating device and to a ventilator. Covering sheets are arranged at suitable places in the interior of the drum. The spinning materials are guided in the form of a band over a guide roller at the one end of the driving chamber to a first sieve drum, then the materials are accepted by a second drum of the other group, said drum being staggered relatively to the first one, and so on until they leave the drying device over guide rollers at the end of the drying chamber. The vacuum in the interior of the drum causes the drying goods to tightly contact the drums. The covering sheets provided in the interior of the drum have the function to prevent the passage of air at places of the drums not covered by the drying goods and to facilitate the transition of the drying goods from the one drum to another. All sieve drums are uniformly driven and the drying goods thereby move alternately over a drum of the upper group and a drum of the lower group. Each sieve drum is provided with a suction duct and two suction ducts lead to a preheating device and to a ventilator. The air thus heated again passes into the drying chamber through the drying goods of a following pair of sieve drums and from there over a second heating device and a second ventilator to a following section of the drying chamber in a counter current to the drying goods passing through the drying device. The drying air therefore passes the drying goods only once after being reheated. For this reason the efficiency of the apparatus is not a very good one, especially as by the great number of ventilators a high consumption of current arises.

According to the invention a drying machine provided with sieve drums is suggested in which means are provided causing the drying air to pass through at least two layers of the drying goods before being reheated.

According to another feature of the invention it is suggested to provide covering sheets in the interior of the drying chamber substantially in the plane between the two superimposed groups of sieve drums by which covering sheets the drying chamber is subdivided into two sections, means being provided by which the drying air is fed to the one section of the chamber and then conducted from the interior of the drums positioned in this section to the second section of the chamber and is then sucked from the interior of the drum in this second section of the chamber for the purpose of being reheated.

According to a further feature of the invention the device may be constructed in such a way that preferably the sieve drums of the lower group are provided with

air suction and the portion of these sieve drums neighbouring the other section of the chamber are provided in the interior with covering sheets, while the sieve drums of the second, preferably the upper group, are connected by means of connecting pieces with the other section of the chamber, preferably the lower section. Hereby the covering sheets in the interior of these upper group of drums may be dispensed with.

Of course it is also possible to provide the drums of the upper group with the air suction and to feed the reheated drying air to the lower section of the chamber. Then the upper drums must be provided with inner covering sheets, while, in the lower sieve drums, these sheets may be dispensed with.

The drawing shows by way of example an embodiment of the invention.

Fig. 1 is a longitudinal section through a drying device according to the invention along the line *a—b* of Fig. 2, and

Fig. 2 is a cross section through Fig. 1 according to the line *c—d*.

In the interior of the drying chamber 1 an upper group of sieve drums S_2, S_4, and a lower group S_1, S_3, S_5 are provided. The distance between the drums S_1 and S_2 or S_2, S_3, S_5 respectively corresponds to the thickness of the drying goods and all drums are provided with a sieve-like cylindrical jacket. The drying goods 2 pass over the guide roller 3 to the lower sieve drum S_1, from there to the upper sieve drum S_2 and so on and leave the drying chamber over the guide rollers 4 and 5. The lower sieve drums S_1, S_3, S_5 are provided with covering sheets 6, 7, 8, the angular position of which may be adjusted. The lateral interval between the lower and the upper group of drums substantially in their middle plane, as well as the whole width of the chamber at its front and rear end are provided with covering sheets extending from *a* to *b*, *c* and so on up to the end of the drying chamber *k*. At the other side there is a straight covering sheet T. By these covering sheets the space of the drying chamber outside the sieve drums is sub-divided into an upper section O and a lower section U. These portions of the covering sheets *c, d, e* or *f, g, h* respectively are parts of the suction duct Z_2 and Z_4 by which the interior of the drums S_2 and S_4 are connected with the lower section U of the drum chamber. The portions of the upper drums S_2 and S_4 neighbouring the lower section U of the chamber are without covering sheets. As shown in Fig. 2 the lower drums are provided at the one front face with openings with which ventilators V are connected driven for instance by pulleys 9. The air sucked on by the ventilator flows upwardly through a heating device H and returns over a sieve 10 into the upper section O of the drying chamber.

The flowing direction of the air is indicated in the drawing by arrows. The drying air passes first the drying goods lying on the two upper drums, then it enters through the suction ducts Z_2 and Z_4 into the lower section U of the chamber and passes again the drying goods lying on the drum S_1, S_3, S_5. One portion of the drying air may enter the lower section of the chamber U directly over the respective lower segments of the upper drums. The covering sheets 6, 7, 8 arranged in the interior of the drums S_1, S_3, S_5 prevent the drying air to pass from the upper section O of the chamber directly into the interior of the lower drums. Besides, these covering sheets serve to facilitate the loosening of the drying goods. From the lower drums the drying air is sucked off by the ventilators V and conducted to the heating device H for being reheated.

What I claim is:

1. A drying machine for drying fibre material, fabrics and the like, comprising a drying chamber, two groups

of sieve drums arranged the one above the other and within said drying chamber to cause a layer of the material to be dried to pass from a drum of one group to a drum of the other group, an air heating device arranged within said drying chamber, means to conduct drying air through said heating device for heating the air, and means to cause the drying air to pass from the heating device through the said layer of the material to be dried on the one group of drums peripherally into the drums of the one group through the jackets of said drums of the one group into their interior and from there peripherally outwardly through the jackets of said drum of the one group and thence through the layer of the material to be dried on the other group of drums into their interior and finally from there axially to the heating device to be reheated.

2. A drying machine according to claim 1, in which

means are provided to subdivide said drying chamber into two sections each of which contains one group of said sieve drums.

3. A drying machine according to claim 1, in which covering sheets are provided subdividing said drying chamber into two sections each of which contains one group of said sieve drums.

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