United States Patent

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[54] DRUM MACHINE

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[52] **U.S. Cl.** **68/20,** 34/139

[51] **Int. Cl.** **F26b 11/04,** F26b 21/00, D06f 35/00

[58] **Field of Search** 68/20, 19.1, 4; 34/133, 139

[56] **References Cited**

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[57] **ABSTRACT**

A perforated drum for receiving textile webs to be treated, is rotatably mounted in a fixed drum housing having air inlet and outlet apertures which extend over substantially the full length of the drum and are angularly offset from one another at the periphery of the drum. Partition elements extend across the gap between the drum and the drum housing to separate the air inlet and outlet apertures.

3 Claims, 2 Drawing Figures

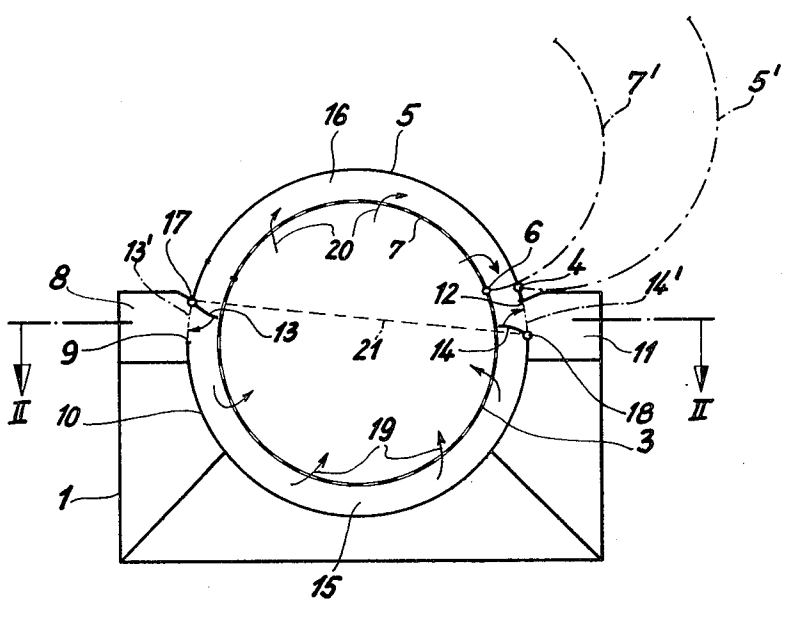


Fig. 1

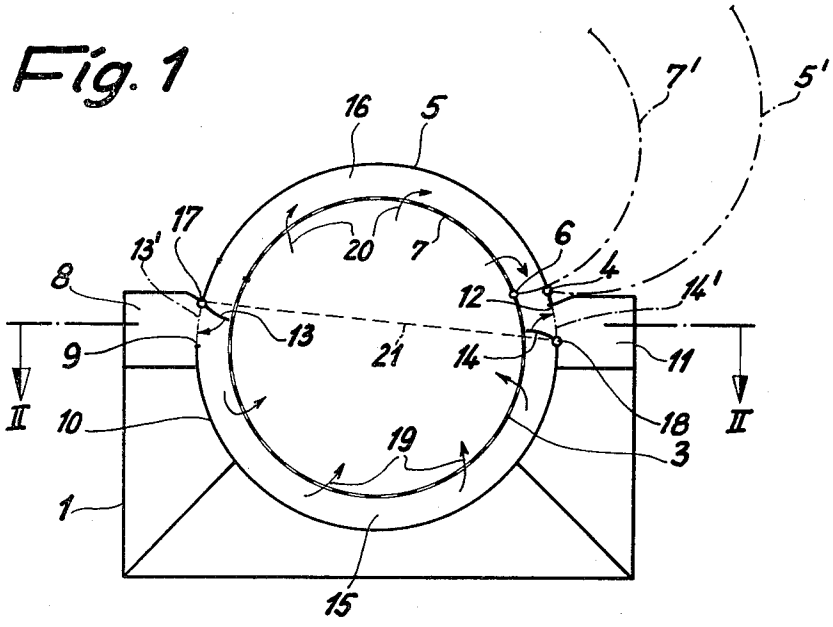
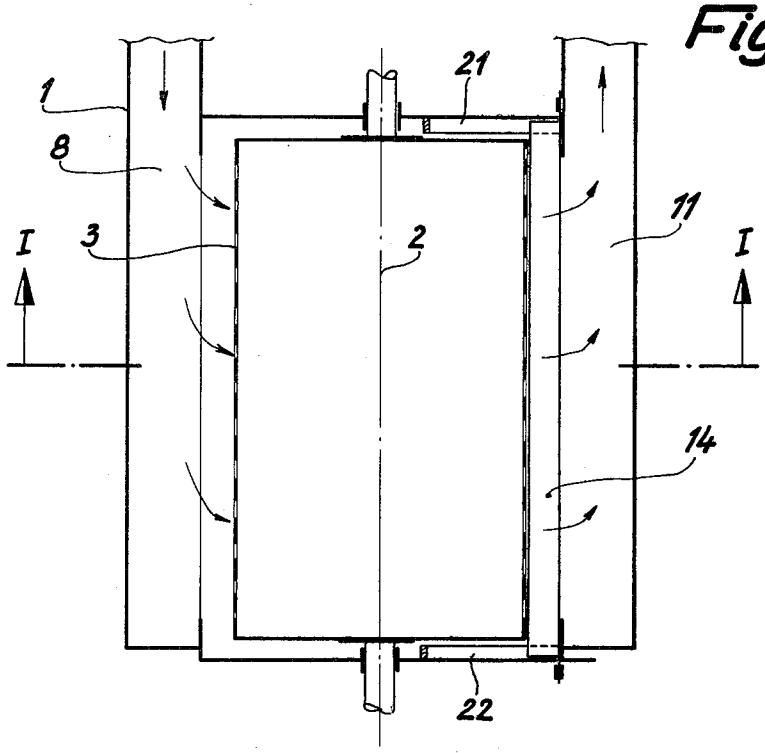

16
5
7'
5'
17
13'
20
7
6
4
8
12
14'
13
21
14
11
9
II
II
10
18
19
3
1
15

Fig. 2


21
1
8
11
I
3
2
I
14
22

DRUM MACHINE

BACKGROUND OF THE INVENTION

This invention relates to a drum machine with a perforated drum used to receive web-shaped textile material to be treated, rotatably mounted in a fixed drum housing, said housing being provided with an aperture for feeding treatment air in and an aperture for conducting the air out, the apertures extending over the full length of the drum and being offset from each other on the periphery.

In the treatment of textile webs in drum machines, the problem arises of distributing the air to the textile webs as uniformly as possible over the full length of the drum. If this requirement is not met, the air impinging irregularly on the textile material causes entanglement and snarling of the material in the drum, which results in the quality of the material being affected, and awkward and time consuming subsequent operations.

In order to achieve uniform air feed over the entire length of the drum, drum machines have therefore been previously developed wherein the drum housing is provided with apertures extending over the full length of the drum for inlet and exit of the air. The inlet and outlet apertures are offset from each other on the periphery, e.g. by about 180°. Here, however, a further difficulty arises: in view of the considerable flow resistance encountered by the air during entry into the perforated drum and on flowing through the textile material, the air has a tendency to flow around the outside of the drum in the gap between the drum and the drum housing, so passing directly from the air inlet apertures to the outlet apertures and bypassing the drum interior. In this way the efficiency of the treatment is considerably reduced.

SUMMARY OF THE INVENTION

The object of the invention is therefore to provide a drum machine of the type described which avoids the disadvantage referred to.

According to the invention this object is achieved in that the gap between the drum and the drum housing is provided with partition elements between the air inlet apertures and the air outlet apertures.

These partition elements divide the gap present between the drum and the drum housing into a pressure area adjacent the air inlet apertures and a suction area connected with the air outlet apertures. The air flowing through the pressure area is thus forced to pass through the perforated drum casing into the drum interior and to flow completely through the drum and the textile fabric contained therein, before it reaches the suction area via the perforated drum casing and can leave the drum housing through the air outlet apertures. The undesired by-pass effect referred to above is avoided in this manner.

It will be understood that the said partition elements are in no way required to provide complete separation of the two areas mentioned. From the design aspect this type of complete separation would also be hard to achieve in view of the rotary movement of the drum relative to the fixed partition elements. For the purpose of the invention it is quite sufficient for the partition elements to increase the resistance to air flow in the gap between drum and drum housing at least to the extent that most of the air flows through the drum interior.

Drum machines of the type described are often used for carrying out different treatments of the textile fabric, for instance dry treatments by means of warm air and wet treatments (washing, dyeing) by means of liquids. In order to make the drum machines provided by the invention universally applicable in this sense, according to a preferred embodiment of the invention the partition elements can be adjusted so that in the position selected for air treatment of the textile fabric they divide the gap between the drum and drum housing, barring the air inlet apertures from the air outlet apertures, while in the position selected for wet treatment of the textile fabric they close the air inlet and outlet apertures. For this purpose the partition elements may for instance be formed as pivotable flaps.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a cross-section through a drum machine in accordance with the invention, on the line I—I of FIG. 2;

FIG. 2 is a longitudinal section through the drum machine on the line II—II of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the fixed drum housing **1** is drum **3**, with a perforated casing, rotatable about its longitudinal axis **2** by drive means (not shown). The drum housing **1** is provided with a cover **5** pivotable at **4**. The drum **3** has a cover **7** pivotable at **6**, which like the cover **5** preferably extends over the complete axial length of the drum. When the two covers **5** and **7** are tilted up into the positions **5'** and **7'** shown in dotted lines, the textile material, for instance a broad web of fabric, can readily be inserted in the drum **3**.

The treatment air is supplied through a channel **8** which by means of a slot **9** extending over the full axial length of the drum is connected to the gap between the inner wall **10** of the drum housing **1** and the drum **3** itself. The removal of the treatment air takes place via a channel **11** which is connected to the said gap by means of a slot **12** also extending over the full axial length of the drum.

According to the invention the gap between the inner wall **10** of the drum housing **1** and the rotating drum **3** is divided by two partition elements **13** and **14** into two areas, i.e. into a pressure area **15** connected with the air inlet channel **8**, and a suction area **16** adjacent the air outlet channel **11**.

The partition elements **13** and **14** are formed as flaps pivotable about the axes **17**, **18**. If these are in the separating positions shown, wherein they are only spaced slightly from the casing of the rotating drum **3**, they force the air entering through the channel **8** to flow through the perforated drum casing into the drum interior, in the direction of the arrows **19**, and after passing through the drum interior to flow away in the direction of arrows **20** through the suction area **16** and the channel **11**.

In order to complete the separation of the pressure area **15** from the suction area **16** in the vicinity of the two end faces of the drum **3**, the two partition elements **13**, **14** are there connected by webs **21**, **22**.

If a wet treatment is to be carried out in the drum, the pivotable partition elements **13**, **14** are moved to their dotted line positions **13'**, **14'**, where they close off the air inlet aperture **9** and the air outlet aperture **12**, so that no liquid can reach the channels **8** and **11**.

I claim:

1. A drum machine comprising a perforated drum for receiving textile webs to be treated, rotatably mounted in a fixed drum housing having air inlet and outlet apertures which extend over substantially the full length of the drum and are angularly offset from one another at the periphery of the drum, there being a gap between the drum and the drum housing, wherein the improvement comprises partition elements extending across the gap between the drum and the drum housing to separate the air inlet and outlet apertures, the partition elements being movable from the positions in which they separate the air inlet and outlet apertures to positions in which they close the air inlet and outlet apertures.

2. A drum machine comprising a perforated drum for receiving textile webs to be treated, rotatably mounted in a fixed drum housing having air inlet and outlet apertures which extend over substantially the full length of the drum and are angularly offset from one another at the periphery of the drum, there being a gap between the drum and the drum housing, wherein the improvement comprises partition elements extending across the gap between the drum and the drum housing to separate the air inlet and outlet apertures, the partition elements being in the form of pivotable flaps and being movable from the positions in which they separate the air inlet and outlet apertures to positions in which they close the air inlet and outlet apertures.

3. A drum machine comprising a perforated drum for receiving textile webs to be treated, rotatably mounted in a fixed drum housing having air inlet and outlet apertures which extend over substantially the full length of the drum and are angularly offset from one another at the periphery of the drum, there being a gap between the drum and the drum housing, wherein the improvement comprises partition elements extending across the gap between the drum and the drum housing to separate the air inlet and outlet apertures, the partition elements being connected by webs extending across the end faces of the drum to complete the separation of the air inlet and outlet apertures.

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