March 19, 1963 H. FLEISSNER ET AL 3,081,556

SIEVE DRUM DRIERS

Filed Sept. 4, 1959 2 Sheets-Sheet 1

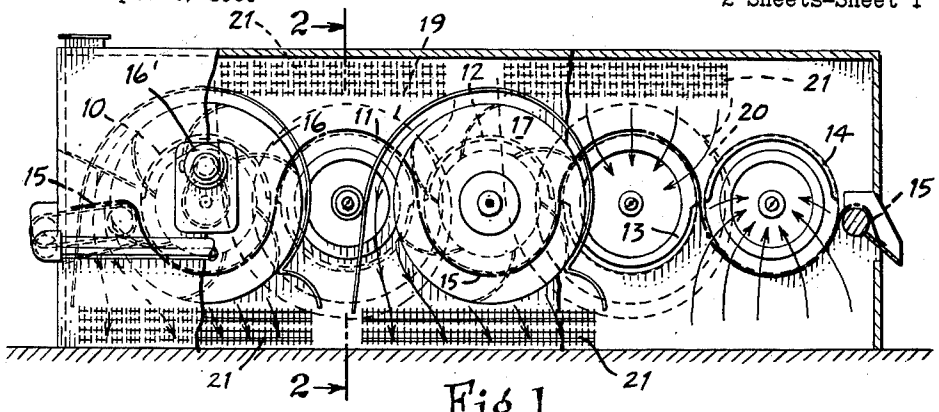


Fig. 1

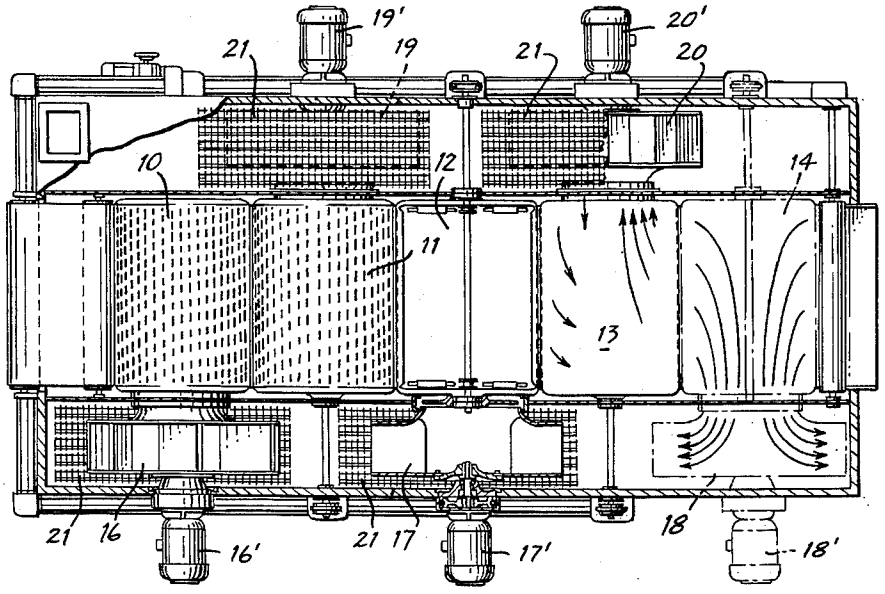


Fig. 3

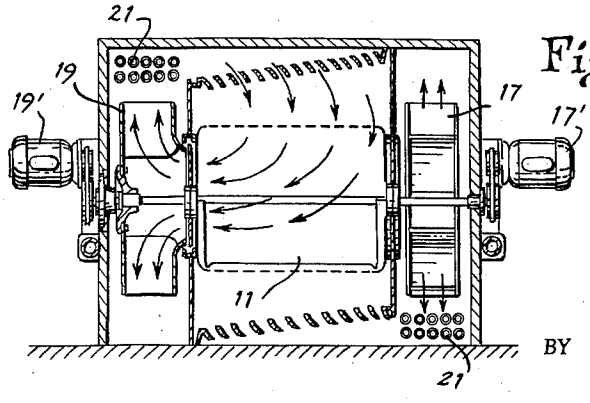


Fig. 2

INVENTORS
Hans Fleissner and
Gerold Fleissner,

BY Bailey, Stephens & Huettig

ATTORNEYS

March 19, 1963 H. FLEISSNER ET AL 3,081,556

SIEVE DRUM DRIERS

Filed Sept. 4, 1959 2 Sheets-Sheet 2

Fig. 4

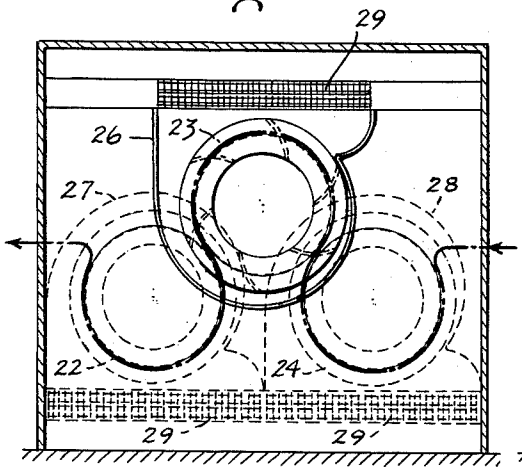


Fig. 5

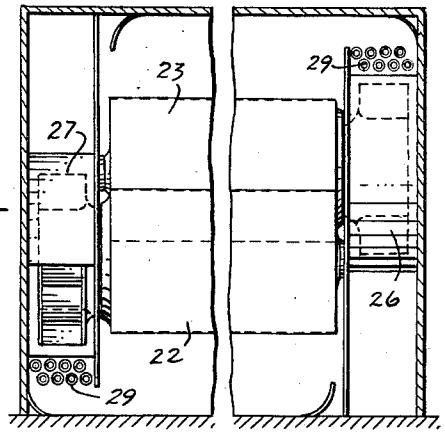


Fig. 6

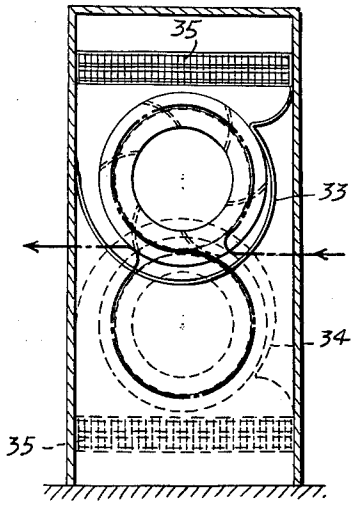
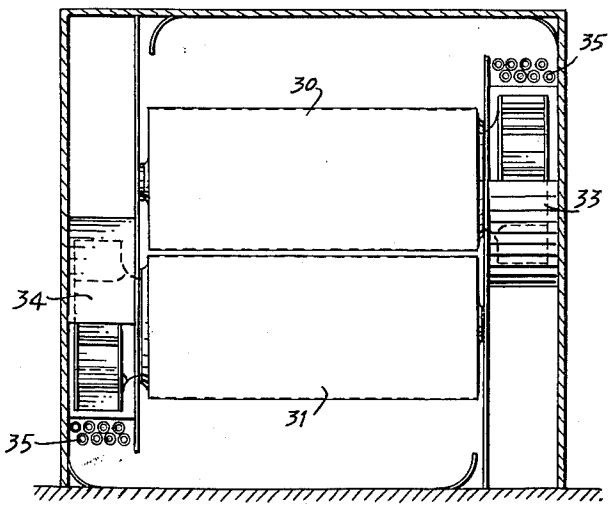


Fig. 7



INVENTORS
Hans Fleissner and
Gerold Fleissner,

BY *Bailey, Stephens & Huettig*

ATTORNEYS.

United States Patent Office 3,081,556 Patented Mar. 19, 1963

3,081,556

SIEVE DRUM DRIERS

Hans Fleissner and Gerold Fleissner, Egelsbach, Hesse, Germany, assignors to Fleissner G.m.b.H., a corporation of Germany

Filed Sept. 4, 1959, Ser. No. 838,264
2 Claims. (Cl. 34—115)

The present invention relates to improvements in sieve drum driers for fibrous matter, textiles, fiber bats or laps, loose ribbons, fabrics and the like.

This application is a continuation-in-part of our application Serial No. 561,322, filed January 25, 1956, now abandoned.

Prior to this invention, the exhaust fans of sieve drum driers with sieve drums arranged next to each other for textiles for producing the required suction of drying air were generally mounted laterally of the drums and on one side thereof. If such fans were of sufficient size to produce a powerful suction, such arrangement always entailed considerable difficulties insofar as the location and mounting of the fans was concerned, and the rate of air flow per square foot of drum surface was thus limited by the dimensions of the fans which could be fitted in the available space. Due to the arrangement of these exhaust fans relative to the sieve drum and the fact that the suction was stronger at the side of the drum where the fan was mounted than at the other side, such suction was also unevenly distributed over the drum surface and resulted in an uneven drying of the goods.

It is an object of the present invention to provide a sieve drum drier, wherein the material to be processed will be dried more evenly and uniformly along the way through the drier than this was previously possible.

Another object of the invention is to provide a sieve drum drier with a uniform and powerful air suction by means of suction fans of very large size.

A further object of the invention is to provide a succession of sieve drums of the type described, the insides of which are accessible at any time at least from one side so as to permit proper cleaning of the drums.

A feature of the invention for attaining the above objects resides in mounting the exhaust fans of the successive drums arranged next to each other alternately at one or the other side of the drums. This permits the use of much larger fans, and thus a more powerful suction than was previously possible. Such alternate arrangement of the suction fans also permits laps, webs or other materials to be dried to be subjected to such powerful suction not only at one side but also at the other, thus resulting in a more uniform drying effect over the entire width of the materials. Another important advantage is that each individual drum will always be easily accessible for cleaning at least from the side opposite to that where the respective fan is mounted.

For sieve drums which are staggered at different levels relative to each other, it is another object of the invention to mount the exhaust fans directly adjacent to the drums and alternately at a lower point at one side of one drum and at a higher point at the other side of the other drum. For sieve drums which are superimposed upon each other, one exhaust fan may be similarly mounted next to one sieve drum at one lower side thereof, while the other fan may be mounted next to the other sieve drum at the other upper side thereof.

Further objects, features, and advantages of the present invention will appear from the following detailed description thereof, as well as from the accompanying drawings, in which—

FIG. 1 shows a side-view of a sieve drum drier in

which according to the invention the sieve drums are disposed in one row next to each other;

FIG. 2 shows a cross-section along line 2—2 of FIG. 1;

FIG. 3 shows a top view of the same drier;

FIGS. 4 and 5 show side and front views, respectively, of a sieve drum drier, wherein the sieve drums are vertically offset relative to each other;

FIGS. 6 and 7 show side and front views, respectively, of a sieve drum drier with the sieve drums superimposed to each other.

Referring to the drawings, and first particularly to FIGS. 1 to 3, five sieve drums 10, 11, 12, 13 and 14 are mounted next to each other in one row. A fibrous lap, ribbon, or web 15 is wound alternately under and over the adjacent drums 10 to 14. The peripheral parts of each drum are covered in a manner known as such which is therefore not particularly illustrated in the drawings. Each drum has a closed end and an open end to which exhaust fans 16, 17, 18, 19 and 20, driven by electromotors 16', 17', 18', 19' and 20' are mounted which produce the required suction through the lap or web 15 from outside of the sieve drums to the inside of the drums. The drums and fans are enclosed by a housing as shown.

The individual fans of the adjacent drums are alternately mounted on opposite sides thereof, fan 16 thus being mounted on the right side of drum 10, as seen in the direction of movement of web 15, while fan 19 is mounted on the left side of the adjacent drum 11. Fan 17 of drum 12 is in turn mounted on the right side of such drum and fan 20 on the left side of drum 13, while finally fan 18 is mounted on the right side of drum 14. Such alternate arrangement of the fans of the adajcent drums at one side or the other affords each fan sufficient space so as to be as large and powerful as desired. This is due to the fact that each fan can thus partly extend over the cross-sectional area of the adjacent drum. Since the suction is thus applied from both sides by reason of the alternate positioning of the fans, the drying action upon the full length web or other material to be dried over a plurality of drums will also be much more uniform, and the air will pass evenly through both sides of such material. The rate of air flow per square foot of drum surface will be relatively large since the fans may be very powerful and the suction effect will be very uniform. As illustrated in the drawings, adequate space remains between the adjacent fans on each side to gain access from one side to the next respective drum for cleaning the inside thereof. Heating elements 21 may also be mounted above or below the fans, respectively, for heating the air which is discharged from the fans.

FIGS. 4 and 5 illustrate a similar arrangement in which, however, the drums are staggered relative to each other. For this purpose, drum 23 is mounted above drums 22 and 24 but extends partly between these drums. The web 25 to be dried loops successively over and partly around drums 22 to 24. The surfaces of the drums which are left free of web 25 may be covered in a manner known as such. Next to drums 22 and 24, two fans 27 and 28 are mounted on the left side of these drums, as shown in FIG. 5, while drum 23 above and between drums 22 and 24 is provided with a fan 26 at the right side and likewise mounted at a higher level. Again, heating elements 29 may be provided above or below the respective fans. It will be seen from the drawings that there is adequate room for mounting large fans without interfering with each other, and even though each fan partly extends beyond the outer cross-sectional area of the adjacent drum, there is still sufficient room for access to the inside of such drum. Since the fans are thus

provided on both sides of the drier, the air suction upon the web 25 or the like will be quite uniform. Obviously, a larger number of drums than shown in FIGS. 4 and 5 may also be provided in a similar staggered relationship.

In FIGS. 6 and 7, two drums 30 and 31 are disposed one above the other, with a web 32 or the like being looped around the same. This drum arrangement has the advantage that the loop of the web is so nearly complete on each drum that there are hardly any drum surfaces left uncovered. Adjacent to the lower drum 31, exhaust fan 34 is mounted on the left side, as shown in FIG. 7 so as to draw the air out of that drum, while for the upper drum 30 a similar fan 33 is provided on the right side thereof. As there is only one fan on each side, they may be made as large as desired, and due to such bilateral arrangement of the fans the flow of air will be very uniform over the entire width of web 25. Heating elements 35 heat up the air after being drawn out of the drums. The drums are also easily accessible from the side opposite to their respective exhaust fan.

Such alternate arrangement of the different fans above or below the adjacent sieve drums results in a very intensive air suction, as well as a far more uniform drying action than was possible with sieve drum driers of previous design. Such alternate arrangement also permits the size of the entire machine to be made relatively small, although very large exhaust fans may be applied therein. Despite such large size of the exhaust fans, the alternate arrangement thereof also allows an easy access to the drums at least from one side, and in the embodiment last described even from both sides.

Although our invention has been illustrated and described with reference to the preferred embodiments thereof, we wish to have it understood that it is in no way limited to the details of such embodiments, but is capable of numerous modifications within the scope of the appended claims.

Having thus fully disclosed our invention, what we claim is:

1. A sieve drum drier for loose fibrous matter, textiles, webs and the like comprising a plurality of sieve drums mounted parallel and closely adjacent each other, each drum having one closed end and one open end, a turbine-type suction fan connected to the open end of each respective drum, said fan having a diameter larger than that of its respective drum but less than twice the diameter of the drum for removing drying air from the interior of the drum through the open end and back to the outer surface of the drum, each fan being positioned alternately on opposite ends of the drums, heater means for heating the air removed from each drum, and a housing enclosing said drums, fans and heater means.

2. A sieve drum drier as in claim 1, said drums being mounted in a vertically staggered relationship.

References Cited in the file of this patent

UNITED STATES PATENTS

1,377,793	Schwartz	May 10, 1921
2,669,086	Wambreuze	Feb. 16, 1954

FOREIGN PATENTS

691,920	France	July 22, 1930
860,039	Germany	Dec. 18, 1952