

Feb. 13, 1934.

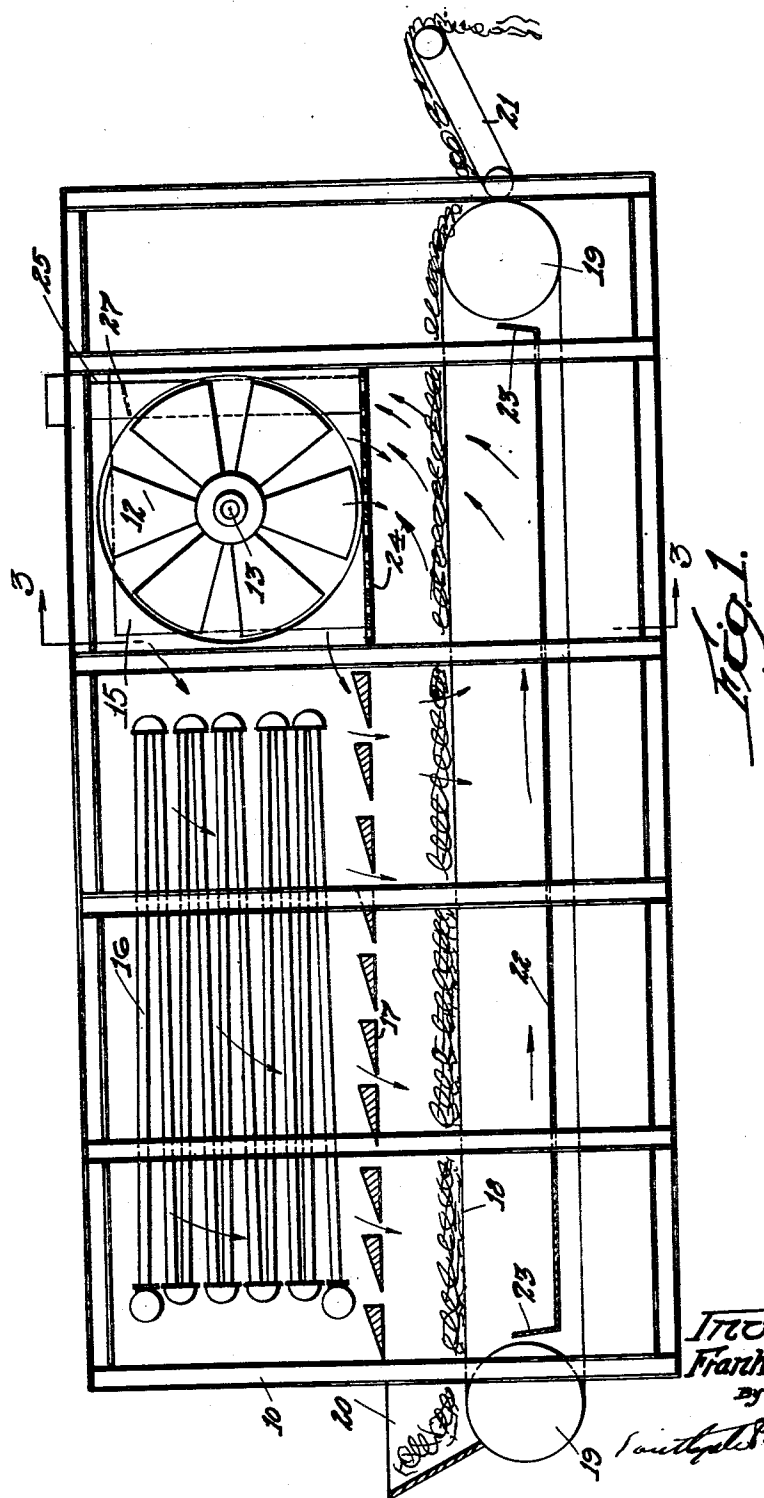
F. L. FURBUSH

1,947,338

DRIER

Filed May 11, 1931

3 Sheets-Sheet 1



INVENTOR:
Frank L. Furbush
By Attorneys
Southgate & Healey

Feb. 13, 1934.

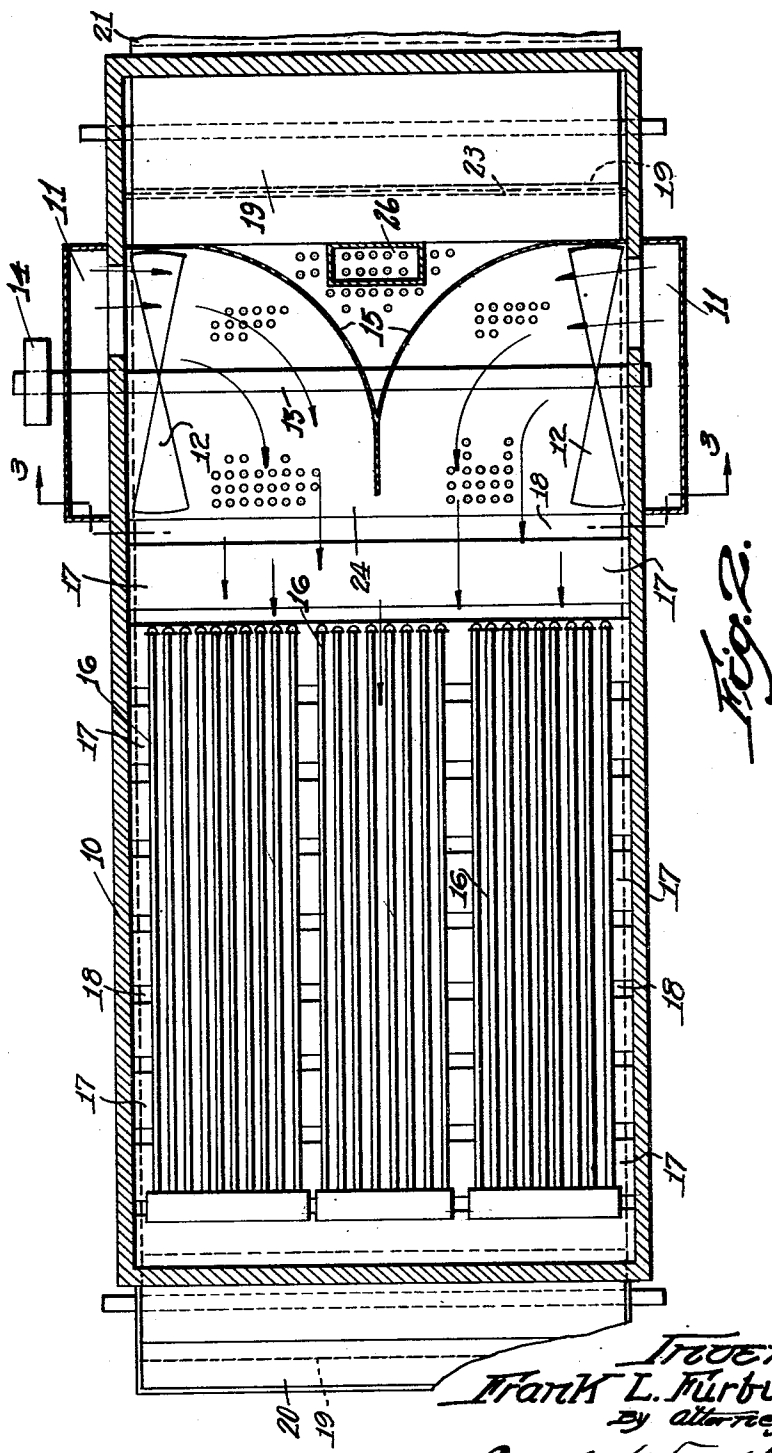
F. L. FURBUSH

1,947,338

DRIER

Filed May 11, 1931

3 Sheets-Sheet 2



Inventor:
Frank L. Furbush
By attorneys
Southgate Fay & Hawley

Feb. 13, 1934.

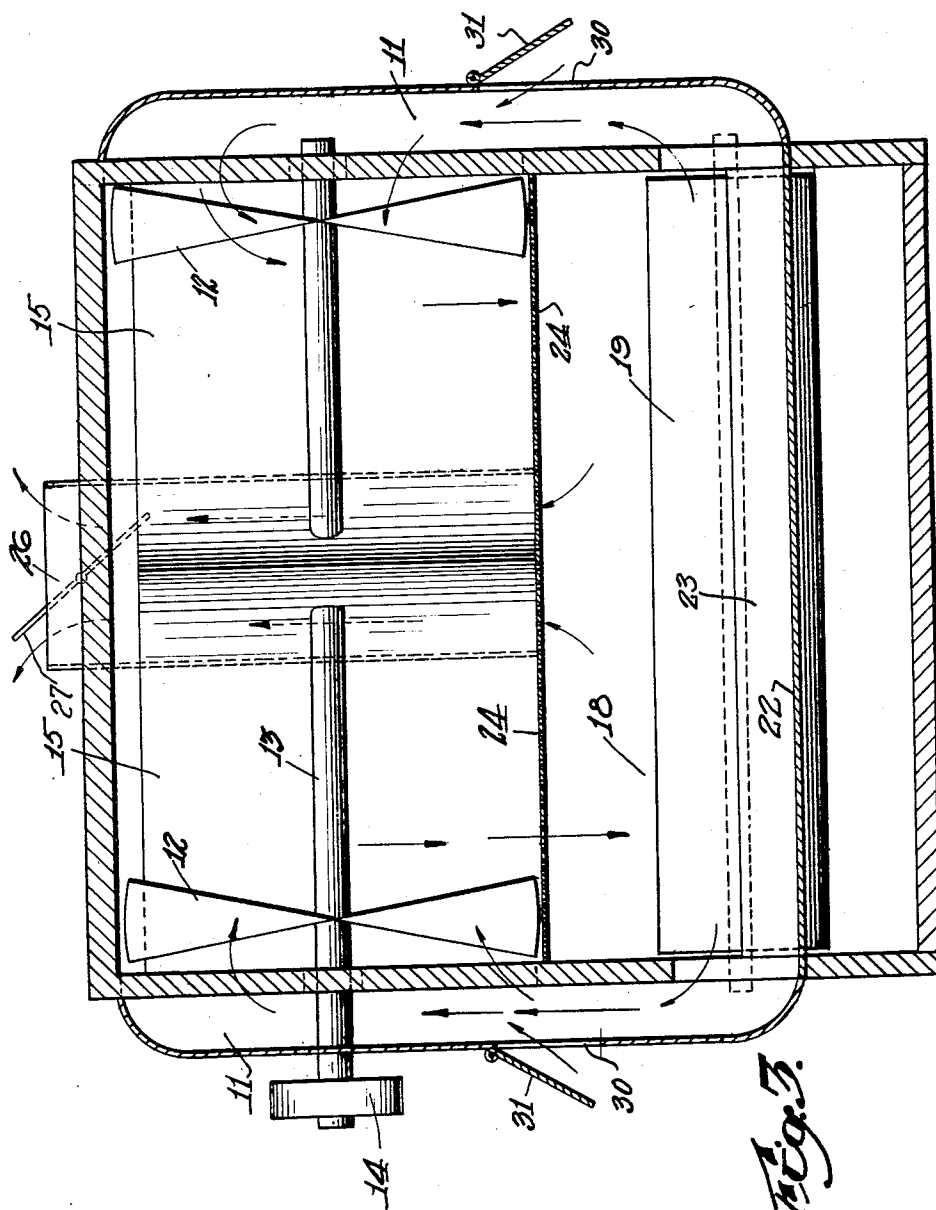
F. L. FURBUSH

1,947,338

DRIER

Filed May 11, 1931

3 Sheets-Sheet 3



INVENTOR:
Frank L. Furbush
BY ATTORNEYS
Sawyer, Foy & Hanks

UNITED STATES PATENT OFFICE

1,947,338

DRIER

Frank L. Furbush, Graniteville, Mass., assignor to
C. G. Sargents' Sons Corporation, Graniteville,
Mass., a corporation of Massachusetts

Application May 11, 1931. Serial No. 536,431

2 Claims. (Cl. 34—12)

This invention relates to a drier for fibrous and flocculent materials, particularly, but is capable of use for any kind of material which can be conveyed through the drier. It is used particularly for cotton and wool.

The principal objects of the invention are to economize in the space occupied by placing the drying coils within the drier over the conveyor and also placing the blowers inside where they will not take up any room outside. In fact they are practically placed in the passages usually present through which the air circulates, thus decreasing the outside dimension of the whole device, and also to provide an improved circulation of the air, whereby the air passes through the stock on the upper or supporting strand of the conveyor and then is prevented from passing far below this strand, so that it must move along directly under the stock and thereby take additional moisture from it. The invention also involves the provision of a riffle plate so made that the currents of air will speedily remove any dust and lint deposited on them and which also tend to force the air backwardly toward the cool end of the conveyor.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which

Fig. 1 is a side elevation with the front wall removed of a drier for textile materials constructed in accordance with this invention;

Fig. 2 is a plan of the same taken just under the top of the drier casing, and

Fig. 3 is an end view in section on a line 3—3 in Fig. 1.

The drier shown comprises a casing 10 formed, preferably, in a rectangular shape. It has no projecting parts except a pair of conduits 11 at opposite sides for conducting the outside air through openings 30 regulated by doors 31 into a position to be received by a pair of blowers 12. These conduits are open at the top. These two blowers are arranged on a shaft 13 and located oppositely on the shaft and at opposite ends thereof. When the shaft is rotated, as by a pulley 14, the blowers will turn in opposite directions and both draw air in horizontally from the conduits 11 as indicated by the arrows.

The air currents from the two blowers are separated from each other, and kept from interfering with each other, by walls 15 which are shown as quadrants and as meeting at the center so that they force most of the outside air brought in by the blowers in a horizontal straight cur-

rent into the heating elements 16. A small part of this air goes down through a perforated partition 24 against the material on the top of an apron 18. The heating elements are shown as in the form of steam coils located in the top of the casing at the same level, preferably, as the blowers. The heated air is driven through the heating elements and down through a riffle plate consisting of a plurality of riffles 17. These are arranged horizontally under the heating coils to receive the heated air therefrom and are spaced apart. Each bar or riffle extends across the casing horizontally under the steam coils and each one is slanting on top. This slant is in the direction in which the air currents pass in a general way. The usual air currents will clear these surfaces of lint and light particles of dust. No important amount of dust or lint will collect on their upper surface. The spaces between them are rather large so as not to obstruct the air currents too much. The riffle, however, holds back the air currents enough so that they are directed on the conveyor 18 uniformly. The slants on the upper surfaces of the riffles tend to force the air currents further toward the feeding end of the conveyor 18 below.

The conveyor 18 is of the ordinary endless apron type mounted on two cylinders 19 and operated in any desired way. The material is introduced into a hopper 20 and the top strand of the conveyor moves to the right as indicated by the arrow. The material when dried is delivered from the conveyor on a delivery apron 21 in the usual way.

Underneath the supporting strand of the conveyor is a horizontal partition 22 having upwardly extending ends and sides 23. This is a continuous partition which extends throughout practically the whole length and breadth of the casing. It prevents the air, coming down through the upper strand of the perforated conveyor 18, from passing down into the bottom of the casing. It forces the air, which is heated and not saturated with moisture, to pass along from the feeding-in end of the drier to the discharge end under the upper or carrying strand 18 of the conveyor but close to it. This air therefore extracts further moisture from the material on the conveyor as it passes along under it in this manner. The moistened or saturated air has a chance to pass upwardly from the free end of this partition 22 through the conveyor 18 and through a horizontal perforated partition 24 into the spaces just at the inside of the two blowers. It is taken back through the heating coils by the blowers

and its moisture dried out and used over again. Some of the air, however, passes directly up through a conduit 25 to a discharge opening 26 and out into the air. A damper 27 is located in this conduit to control the amount of air discharged and thereby the amount of air re-circulated through the system. If this is closed, or nearly so, the circulation below the plate 24 will be different from that shown by the arrows in the drawing.

It will be seen that the blowers are located inside the casing and do not project out of it in any way and that the heating unit, instead of being located along the side near the bottom as usual where it adds to the area taken up by the casing, is located inside the casing. With ordinary drier ovens, that is merely a space for conducting the heated air. The air coming from the heating coils is evenly distributed to and from the stock by the rifle plate which does not allow the air to come down to the conveyor 18 in any one place but forces it to spread out above it and come down through the openings or passages in it in a substantially uniform way. Also some of the air passes downward from the blowers directly through the plate 24 to encounter the material to be dried just before it passes upwardly again and out of the machine. This is of importance because some of the heated air used for drying all the way along up to this point holds more or less moisture. But here, just before the stock is removed from the machine, fresh air without any moisture is brought into contact with it and then taken directly back up again. A further object of the partition 22 is to catch any dirt that may sift through the stock and prevent its traveling around with the conveyor.

Although I have illustrated and described only a single form of the invention, I am aware of the fact that modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in

the claims. Therefore, I do not wish to be limited to all the details of construction herein shown and described, but what I do claim is:—

1. In a drier, the combination with a casing, an air inlet thereto, a conveyor for the material to be dried located in said casing near the bottom and heating coils in the casing near the top, of a horizontal stationary partition in the casing between the carrying strand and the return strand of the conveyor, to conduct currents of heated air under said strand close thereto for further drying the materials thereon, a horizontal perforated partition under the air inlet for permitting the air to pass from the lower part of the casing upwardly from one end of the conveyor, a blower located in position to receive this air and re-circulate part of it, and an air exit extending upwardly from the perforated partition out of the influence of the blower.

2. In a drier, the combination with a dryer casing and a traveling apron therein for supporting the material to be dried, said casing having a pair of air inlets at the sides, of a pair of blowers adjacent to said inlets for drawing the air into the casing through the inlets, a vertical partition adjacent to each fan shaped to divert the air currents inside the casing from the fan horizontally in a direction at right angles to the axis of the blowers, heating coils in the path of said currents of air, located on the same plane as said blowers, a horizontal rifle plate under the heating coils and over the main part of the apron, a perforated plate under the blowers through which a small part of the air from the blowers passes to the top of the material on the apron and an outlet to receive the air from the portion of the apron to which said small part of the air currents from the blowers is directed, said outlet having a damper for controlling the air currents, whereby any desired proportion of the air can be recirculated through the heating coils.

FRANK L. FURBUSH.

45

120

50

125

55

130

60

135

65

140

70

145

75

150