No. 870,133. PATENTED NOV. 5, 1907.

A. C. SARGENT.

DRIER.

APPLICATION FILED APR. 11, 1907.

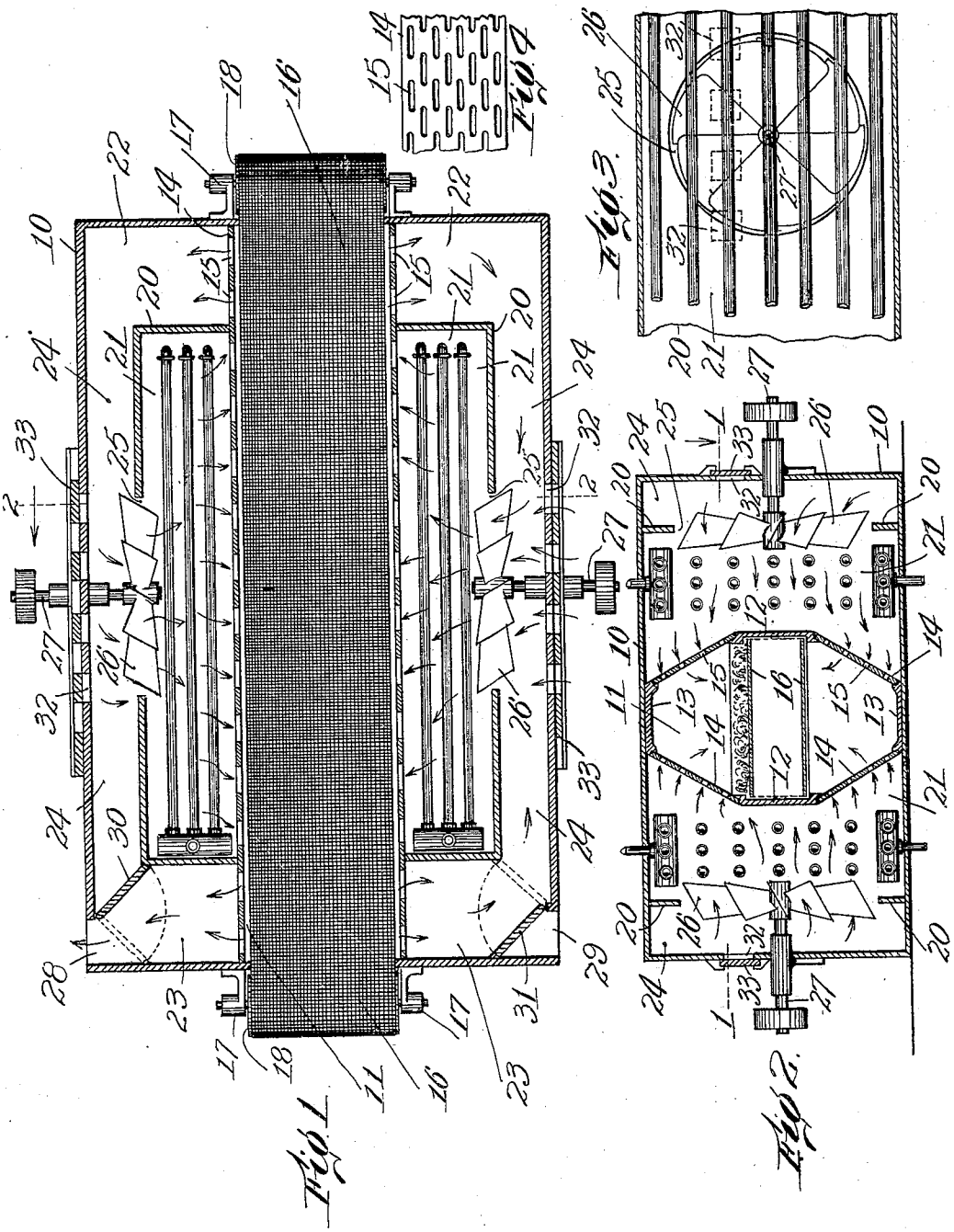


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

WITNESSES:

C. F. Wesson

E. M. Allen.

INVENTOR.

A. C. Sargent.

BY

Southgate & Southgate.

ATTORNEYS.

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ALLAN C. SARGENT, OF WESTFORD, MASSACHUSETTS, ASSIGNOR TO C. G. SARGENT'S SONS, OF WESTFORD, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

DRIER.

No. 870,133. Specification of Letters Patent. Patented Nov. 5, 1907.

Application filed April 11, 1907. Serial No. 367,509.

To all whom it may concern:

Be it known that I, ALLAN C. SARGENT, a citizen of the United States, residing at Westford, in the county of Middlesex and State of Massachusetts, have invented a new and useful Drier, of which the following is a specification.

This invention relates to a device for drying wool, cotton and similar materials.

The principal objects of the invention are to provide a drier of this character with an inner chamber which can be formed of substantially fire-proof material built in such a way that the parts thereof can be readily removed, which may be of such form and construction that the air currents will be directed in such a way as to secure a maximum of efficiency; to locate the driving fans and steam coils in such position with respect to each other and the inner drying chamber that the air will pass through the coils and be distributed in a more uniform manner than has heretofore been the case and the coils will assist in heating the walls of the inner chamber; and to provide an improved manner of circulating the air which can be so regulated as to modify the direction of the air currents whenever desired.

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

Figure 1 is a longitudinal sectional view taken on the line 1—1 of Fig. 2. Fig. 2 is a vertical sectional view longitudinally through the shafts of the fans of Fig. 1. Fig. 3 is an interior elevation of one of the steam coils showing a draft fan in the rear, and Fig. 4 is a detail showing one form in which the movable walls of the inner chamber can be constructed.

The invention is illustrated as comprising an outer casing 10 in which is located an inner drying chamber 11. This drying chamber is preferably formed of two stationary side walls 12 extending through the length of the outer chamber and with stationary top and bottom walls or cleats 13. The members 12 and 13 have rabbeted edges into which fit a plurality of removable metallic walls 14. These walls are shown as formed of sheet metal with long slots 15, as is indicated in Fig. 4, but they may be made of wire cloth, expanded metal, or any other metallic material which will permit air currents to pass through the chamber and will, at the same time, protect the same from fire. In cases where the fire protection is not desired, these walls may be made of other materials than metal. It will be seen that the walls slant inwardly from the supporting members 12. This is of some assistance in the circulation of air, as the air entering the perforations is directed toward the center of the chamber instead of being introduced parallel therewith. However, the shape of the chamber may be varied within wide limits within the scope of this invention.

Within the chamber 11 is a platform 16 for supporting the wool or other material being dried. This platform may be stationary, but is shown as mounted on brackets 17 at the ends of the casing 10 on which are rollers 18 on which the movable apron or platform is mounted.

In addition to the inner chamber 11, which has been described, an intermediate wall or partition 20 is provided surrounding the main portion of the chamber 11 and spaced at some distance therefrom at each side so as to form two intermediate chambers 21 on the two sides of the inner drying chamber 11. These chambers 21, however, do not extend to the ends of the outer casing 10 but are spaced therefrom so as to provide passages 22 and 23 along the two ends of the casing and they are also spaced from the side walls to provide side passages 24.

The side walls 20 are provided with perforations 25 in which are located draft fans 26. These fans may either force air into the chamber 11 or exhaust it therefrom, the former construction being indicated. They are mounted on shafts 27 mounted in bearings on the outer casing and driven in any desired way, preferably from the outside of the drier. It is to be observed that they are located on opposite sides of the inner drying chamber and force air in at opposite sides both at the top and bottom and that the air meeting thus in four currents near the center of the chamber will be forced along the chamber toward both ends thereof where it can be discharged through the perforated walls into the end passages 22 and 23. From these it may be passed into the side passages 24 and circulated back through the fans into the chamber 11, but the side walls of the casing are provided with passages 28 and 29 at one end of the drier which are adapted to be closed by dampers 30 and 31. These dampers can be swung to the full or dotted line positions and the circulation of the air will be varied accordingly. In the position in which the dampers are indicated in full lines, the air from one side and one end of the inner drying chamber will be discharged through the openings 28, while that from the other side at the same end will be forced to circulate around again through the passage 24 and the opening 25. If the dampers are changed to the dotted line position, the opposite circulation will be necessary. Both dampers may be opened if it is desired to discharge more air or if for a limited time it is desired to circulate all the air back through the drier, both can be closed.

The air is admitted to the fans from the outside

through openings 32 controlled by slides 33 or the like. Heretofore, it has been customary to provide steam coils somewhere in the current of air through the drier to heat the same. I have located the steam coils inside the chambers 21 and between the fans and the inner drying chamber 11 in order that they may serve to heat the air immediately after it passes through the fans and have the additional function of assisting in spreading the air so that it may strike the drying chamber in more uniform currents. It will be observed that while the fans would tend to drive the air directly into the drying chamber, the steam coils located at this point assist in spreading the air out longitudinally so that part of it may be discharged into the drying chamber from the ends of the coils.

It will be seen that by the construction of a drier in accordance with the principles of this invention, whether in the particular form shown or not, an inner drying chamber can be made in such manner as to be substantially fireproof; that it can be used either with a stationary drying platform or a movable one in the form of an endless apron, as indicated; that the fans being located at a distance from this chamber and separated from it by the drying coils, the air from them is directed against the perforated chamber in such a manner as to give a more even distribution of the air and that the air when directed against the perforated walls, is broken up and distributed through the slots against the wool or cotton, both on the top and bottom without unduly agitating or disturbing the distribution of the same on the platform. Moreover, the air is not only heated by the steam coils but they are located sufficiently near the metallic walls of the drying chamber to cause them to distribute more heat so that they themselves materially assist in keeping the air hot to assist in drying the wool. Moreover, the air escapes from the ends or sides of the interior casing and may be conducted back to the fans to be used over again as stated or by manipulating the dampers, may be discharged from the machine. The air may be either forced in or exhausted through the drying chamber as has been stated.

While I have illustrated and described a particular form in which I prefer to embody the invention, I am aware that modifications may be made therein without departing from the scope of the same as expressed in the claims. Therefore, I do not wish to be limited to the particular form shown, but

What I do claim is:—

1. A drier having an inner metallic casing and a drying platform therein, said casing having openings both above and below said platform whereby the air is admitted on both sides of the platform.

2. A drier comprising a drying platform, and a chamber in which it is located, said chamber having a plurality of removable perforated walls.

3. A drier comprising a drying platform, and a chamber in which it is located, said chamber having four removable perforated metallic walls, two of said walls constituting each side of the chamber.

4. A drier comprising a drying platform, and a chamber in which it is located, said chamber having two side walls and four perforated walls having their edges resting against the two side walls and slanting inwardly therefrom, and means for causing air to pass through said perforated walls.

5. A drier having an inner metallic casing and a drying platform therein, said casing having openings both above and below said platform whereby the air is admitted on both sides of the platform, and fans for causing air to pass through said openings located above and below the platform and on each side thereof.

6. In a drier, the combination of an inner drying chamber, a drying platform therein, said chamber having perforations both above and below the platform, and draft fans located on opposite sides of the chamber, each of said fans extending both above and below the platform, whereby currents of air will be driven into the chamber on both sides of the platform.

7. In a drier, the combination of an inner drying chamber, a drying platform therein, said chamber having perforations both above and below the platform, draft fans located on opposite sides of the chamber, each of said fans extending both above and below the platform, whereby currents of air will be driven into the chamber on both sides of the platform, and steam coils located between each fan and the adjacent walls of the chamber whereby the steam coils will serve to heat the currents of air and also to heat the chamber.

8. In a drier, the combination of a drying chamber, a platform therein, said chamber having perforations through its walls both above and below the platform, an outer casing in which said casing is located, an intermediate wall or partition forming a chamber between the inner chamber and the outer casing, said intermediate wall having a perforation, a fan located adjacent to said perforation, and steam pipes located in said intermediate chamber.

9. In a drier, the combination of an outer casing, an inner drying chamber, an intermediate wall forming an intermediate chamber between the drying chamber and the outer casing, steam pipes located longitudinally in said intermediate chamber substantially throughout the height thereof, and means for forcing air between said steam pipes into the drying chamber, whereby said steam pipes act to spread, distribute and heat the air before it enters the drying chamber.

10. In a drier, the combination of an outer casing, an inner drying chamber, a platform therein, an intermediate wall forming an intermediate chamber between the drying chamber and the outer casing, steam pipes located from the bottom to the top of the intermediate chamber and spaced from each other, and means for forcing air between said steam pipes into the drying chamber both above and below said platform.

11. In a drier, the combination of an outer casing, an inner drying chamber, an intermediate wall forming two intermediate chambers one on each side of the drying chamber, said intermediate chambers extending throughout a part of the length of the drying chamber, steam coils within said intermediate chamber and extending substantially the entire length thereof adjacent to the walls of the inner chamber, and means for forcing air between said steam pipes into said inner chamber.

12. In a drier, the combination of an outer casing, an inner drying chamber extending throughout the length thereof and having intermediate walls or partitions forming an intermediate chamber along the side of said inner chamber throughout a part of the length thereof, said intermediate walls being spaced from the outer casing to form a side passage and an end passage, and means for forcing air through the side walls of the intermediate chamber and the side wall of the inner chamber and along the inner chamber in both directions to the ends thereof, whereby it will be discharged, said end passages communicating with the side passages whereby the air may be forced from the side passages back through the inner chamber.

13. In a drier, the combination of an outer casing having inlet passages in its side wall and outlet passages near the end, an intermediate wall or partition located within said chamber and spaced therefrom at the sides and ends to form side passages and end passages, and an inner drying chamber having perforated walls extending through the intermediate walls from end to end of the outer casing, said perforations communicating with the end passages and with an intermediate chamber formed by the

intermediate wall, the side walls of the outer casing having means for admitting air, the intermediate side walls having perforations to admit the air from the outside therethrough, and the outer casing being provided with dampers whereby the outlet passages may be closed or the connection between the side and end passages may be closed to control the circulation of air.

14. A drier for wool and the like having an outer casing, an inner drying chamber extending throughout the length of the outer casing, and intermediate walls extending part way along the sides of the inner chamber forming intermediate chambers spaced at their sides and ends from the outer casing.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

ALLAN C. SARGENT.

Witnesses:
F. G. SARGENT,
CHAS. G. SARGENT.