

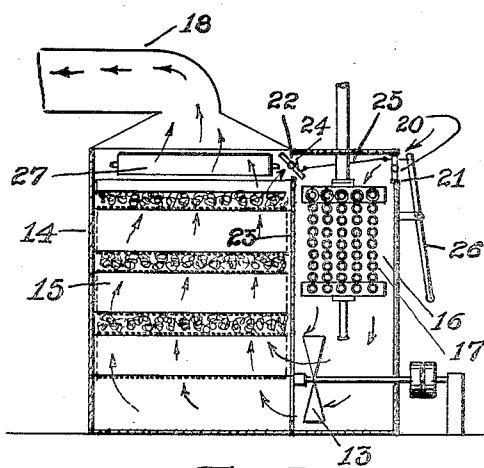
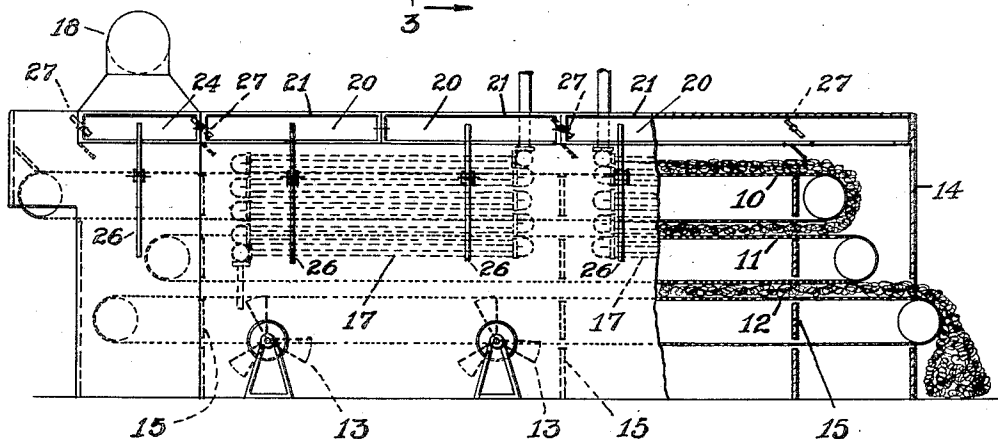
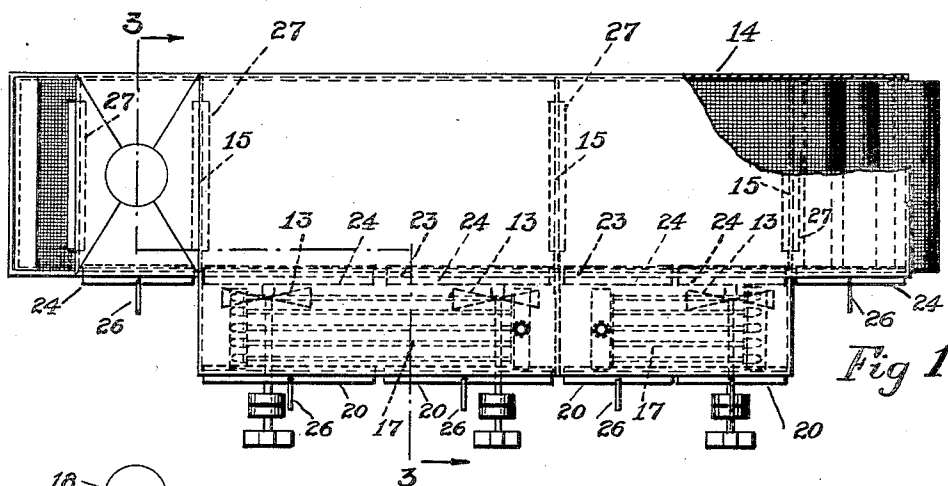
Dec. 4, 1923.

1,476,424

F. G. SARGENT

CIRCULATION REGULATING MEANS FOR DRIERS

Filed March 3, 1922



Inventor
F. G. Sargent
By attor nys

Southgate Southgate.

UNITED STATES PATENT OFFICE.

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

CIRCULATION-REGULATING MEANS FOR DRIERS.

Application filed March 3, 1922. Serial No. 540,892.

To all whom it may concern:

Be it known that I, FREDERICK G. 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 Circulation-Regulating Means for Driers, of which the following is a specification.

This invention relates to a drier for fibrous materials, such as cotton, wool and the like.

The principal objects of the invention are to provide means connected with each partition in the drier for regulating the direction of the circulation of air through the sections adjacent thereto; to provide dampers for regulating the intake of air for one or more sections, and variable means extending longitudinally of each section for controlling the circulation of air from the coil heating box into the top of the drier and combined with means for regulating the recirculation of the air down through the coil box; and to provide means whereby the latter two devices are connected to operate in unison so that when the air is admitted from the drier into the top of the coil box it will be prevented from going into the coil box from the exterior. Further objects and advantages of the invention will appear hereinafter.

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

Fig. 1 is a plan of a drier comprising a plurality of endless aprons with a preferred embodiment of this invention applied thereto;

Fig. 2 is a side view of the same partly in section, and

Fig. 3 is a sectional view on the line 3—3 of Fig. 1.

As stated I have shown the invention as applied to a drier of that type in which a plurality of endless aprons 10, 11 and 12 of open mesh material are used to convey the loose fibrous material through the drier from one end to the other, and in which the air is caused to circulate up through the aprons with the fiber on them by means of one or more fans 13. These aprons are located in a long main body 14 constituting the principal part of the drier, and this body is divided up by a plurality of partitions 15 having openings through them for the aprons and their contents so as to pro-

vide compartments in which the air can be made to circulate in any desired way.

At one side of the main body 14 is a compartment 16 in which the fans are located, with their driving shafts. These fans in the present form are at the bottom and they force air through the side up through the aprons and up through the outlet 18. In the upper part of the compartment 16 are coils of pipes 17 for the circulation of steam for heating purposes. This compartment 16 is usually called the coil box. As so far described this drier is of a well known type.

For the admission of air into the drier from outside, I provide one or more openings 21 controlled by pivoted dampers 20. These are located along the top of the outer wall of the coil box 16. They constitute the only openings in the present instance through which the air is admitted from the outer atmosphere to the drier. The air drawn in in this way is drawn immediately down through the pipe coils 17, heated and forced up by the fans through the material to be dried as the arrows indicate.

I have also provided a series of passages 22 like the openings 21 over the walls 23 which separate the main body 14 from the coil box 16. These are controlled by a plurality of dampers 24 parallel with the dampers 20. When these dampers 24 are opened some of the air drawn up through the aprons will be directed back into the compartment 16 and down between the steam pipes 17 to be heated again, its moisture evaporated, and forced back up through the material to be dried. Each damper 20 is exactly opposite a damper 24 of the same height and length. In other words, they are arranged in pairs and the dampers of each pair are connected with each other by an operating rod 25. Each of these operating rods is connected with a lever or handle 26 for operating it, and the connection is such that these dampers 20 and 24 are operated in unison. When the damper 20 is closed and the damper 24 is open, the current of air coming down through the coil box necessitates the drawing in of the air from the upper part of the main drying chamber 14, but when air is desired to be drawn in from outside the damper 20 is opened and the damper 24 is closed. Each pair of these dampers may be operated independently of

the others, but usually they are operated so as to work together.

In order to regulate the conditions in the several sections of the driers separated by the vertical transverse partitions 15, I have provided at the top of each of them a space or opening adapted to be controlled by a transverse damper 27. This is pivoted and arranged like the others and can be operated in any desired way. These dampers 27 are usually closed when the dampers 24 are open because then it is not desired that the air in the top of each compartment shall pass out through the outlet 18.

By the use of a regulating arrangement of this character the circulation of the air in the drier is under the control of the operator at all times, and he can use the air over and over as many times as can be done before it becomes saturated, thus introducing a material economy in the use of the heat which is applied, and this action can be regulated in any way that proves to be desirable so as to avoid waste of the heat in evaporating too much moisture from the air at times.

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 of a main enclosed casing, means therein for conveying the material to be dried, a steam coil, means for forcing the air from the steam coil through the drier, means whereby the air to be circulated through the steam coil can be drawn into it either from the exterior or from the space over the aprons in the drier, and means for preventing the air entering from either whenever it is permitted to enter from the other.

2. In a drier, the combination of a main

enclosed casing, a series of endless aprons therein for conveying the material to be dried, a steam coil box, means for forcing the air from the steam coil box, through the aprons in the drier, a pair of sets of air inlets along the tops of the walls or partitions, one of which sets separates the drier proper from the coil box, and the other of which constitutes the exterior wall of said coil box, and means for simultaneously operating the two dampers of a pair to close one when the other is open.

3. In a drier, the combination of a main enclosed casing or frame, a series of endless aprons therein for conveying the material to be dried, a steam coil box for heating the drier, means for forcing the air from the steam coil box up through the aprons in the drier, means whereby the air to be circulated through the steam coils can be drawn into them either from the exterior or from the space over the aprons in the drier, said main drier being provided with transverse partitions for dividing it into sections, an outlet from one of said sections, a series of openings at the top of said partitions for permitting circulation of air from all of them to said outlet, and dampers over said partitions for closing the openings and forcing the air to go back through the coil box.

4. In a drier, the combination of a series of aprons therein for conveying the material to be dried, a steam coil box, means for forcing the air from the steam coil through the drier, said main drier being provided with transverse partitions for dividing it into sections, an outlet from one of said sections, a series of openings at the top of said partitions for permitting circulation of air from all of them to said outlet, and dampers over said partitions for closing the openings and forcing the air to go back through the coil box.

In testimony whereof I have hereunto affixed my signature.

FREDERICK G. SARGENT.