

No. 811,306.

PATENTED JAN. 30, 1906.

J. H. LORIMER.
 DRYING MACHINE.
 APPLICATION FILED MAY 20, 1905.

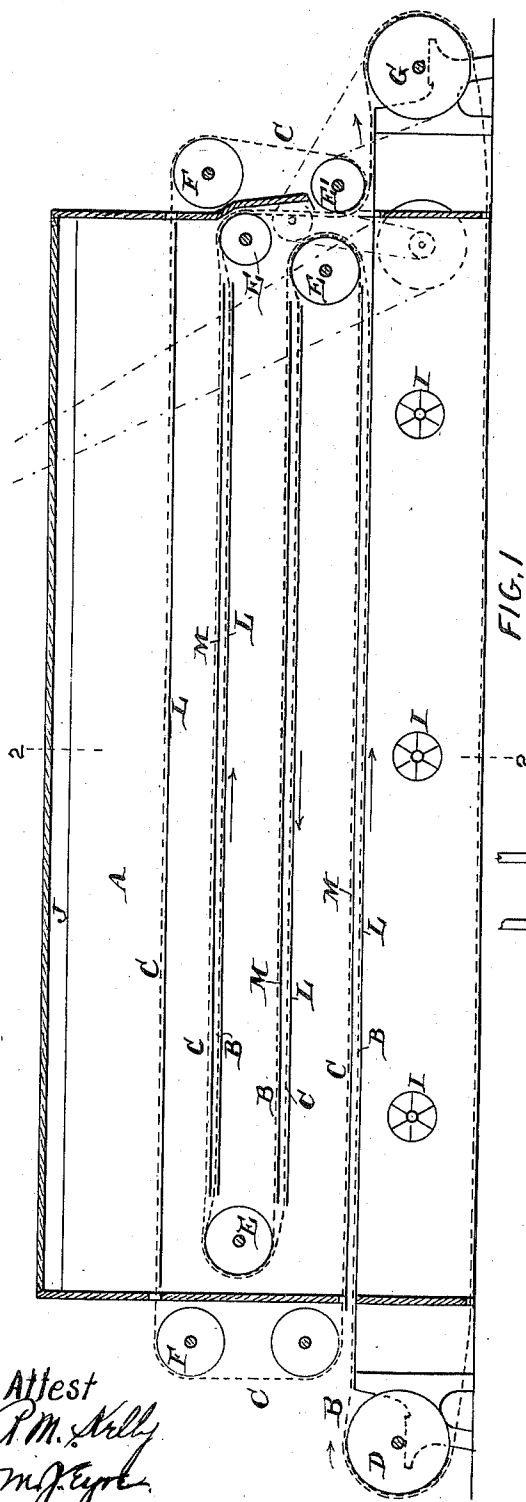


FIG. 1

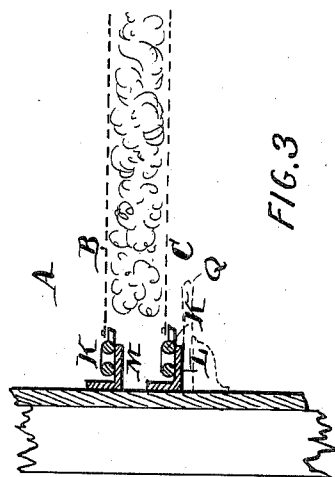


FIG. 3

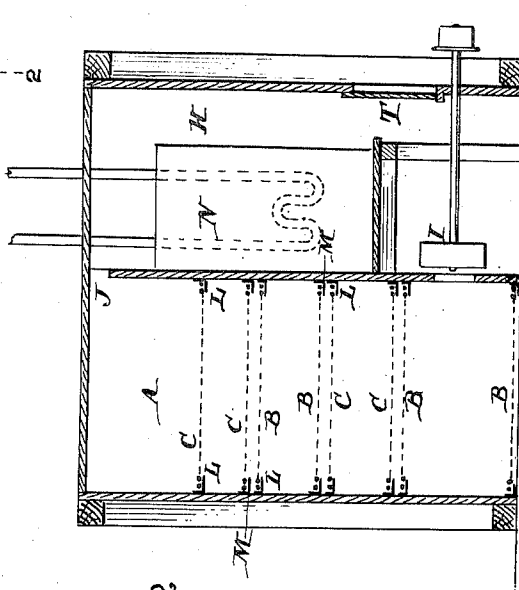


FIG. 2

Attest
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JOHN H. LORIMER, OF PHILADELPHIA, PENNSYLVANIA.

DRYING-MACHINE.

No. 811,306.

Specification of Letters Patent.

Patented Jan. 30, 1906.

Application filed May 20, 1905. Serial No. 261,364.

To all whom it may concern:

Be it known that I, JOHN H. LORIMER, of the city and county of Philadelphia, State of Pennsylvania, have invented an Improvement in Drying-Machines, of which the following is a specification.

My invention has reference to drying-machines for textile and other materials; and it consists of certain improvements; which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

In drying-machines of the class to which this improvement relates I have heretofore employed two endless aprons of meshed or open material operating in pairs and holding the wool or other material between them while being conveyed through the drying-chamber and the vertical currents of air put into circulation through the aprons. In such machines the aprons passed horizontally through the chamber, and while the lower apron supported the textile material the upper apron pressed heavily upon it. In the reverse transit through the chamber the upper apron takes the lower position and supports the textile material with the other apron pressing down upon it. While the two aprons are necessary because of this reversal and also for conveying the textile material to different levels and around the guide-wheels, the pressure of the upper apron-section upon the material when traveling horizontally is very objectionable on some materials, as it tends to compress the material and prevent proper permeation of the drying medium, be it air or gas.

The object of my present improvement is to provide a drying-machine of this character with means for separating the aprons where they pass horizontally, or substantially so, whereby while confining the material between the aprons it is permitted to be in proper condition to be readily permeated by the air driven through it under the action of the blowers. The extent of the separation of aprons will vary with the materials being treated, and I am enabled to have any separation desired to suit the conditions best adapted for the materials being dried.

My invention consists of a chamber through which air is circulated in a vertical direction combined with guide-wheels and two endless aprons of open-work and guides for guiding the said aprons at a distance apart during their travel horizontally, but permit them to

lie close together in passing about the guide-wheels and when being raised or lowered from one level to another.

My invention also comprehends details of construction which, together with the features above specified, will be better understood by reference to the drawings, in which—

Figure 1 is a longitudinal sectional elevation of a drying-machine embodying my invention. Fig. 2 is a cross-section of same; and Fig. 3 is an enlarged view of a portion of Fig. 2, showing the independent guides for the two aprons.

A is the drying-chamber and is preferably furnished with a side chamber H, in which may be placed heating-coils N and the fans I. The fans draw air downward through the chamber A and force it upward over the heating-coils, from which it passes by passage J into the top of the chamber A again. A door P may be used to allow escape of damp air and entrance of fresh air.

B and C are two endless aprons which are caused to travel close together for a portion of the circuit and then separate at the feeding and delivery ends. These aprons are guided about the guide-wheels E and the wheel E', arranged outside of the chamber at the feeding and delivery ends. The apron B is also guided about the large wheels D at the feeding end and the wheel G at the delivery end and wheels D and G being outside of the chamber. The apron C is further guided away from the apron B by wheels F outside of the chamber. The aprons travel as indicated by the arrows, and the wheels may be driven in any suitable manner to impart motion to the aprons.

Where the aprons pass about wheels E E', they are required to lie close together, as is also the case when they pass from wheel E to E' to prevent the textile material shifting.

In the horizontal travel of the aprons between the wheel E E the aprons B and C are caused to separate to the requisite distance to remove all excessive pressure from the material being dried. To accomplish this, I provide guides of angle-iron L M, upon which the sprocket-chains K of the aprons B C are caused to run and by which they are supported, as shown in Fig. 3. The guides L M may be made in any suitable manner so long as they support the aprons at different elevations. These aprons are ordinarily formed of two endless sprocket-chains connected by open-work webbing of metal or cross-slats, so as to permit free passage of air. The

sprocket-chains travel on the guides in such a manner as to prevent passage of air around the aprons. As a further precaution to prevent the air passing upward through the aprons C and B and adjacent to the guides L transversely-arranged boards Q may be arranged closely to the under sides of the guide L, as indicated in dotted lines, Fig. 3, to act as shields and direct the air away from the chains and guides and from the lateral edges of the aprons, which would naturally contain less of the material to be dried. These shield-boards may be or may not be used, as desired. I do not confine myself to any particular construction of apron.

The aprons are driven by the wheels E' and G, being formed as sprocket-wheels and meshing with the chains K of the aprons.

By having the aprons separated in the horizontal travel it is evident that the material is allowed to spread and expand and assume a most excellent condition to be acted upon by the downdrafts of air or gases. While perfectly free during the horizontal travel, the material is held tightly between the aprons when passing about the rollers E or from roller E to roller E', or, in other words, when passing from one level to another, whether up or down. This prevents displacement or congestion of the materials between the aprons.

It will be understood that while the apron B supports the material during the first and third horizontal passage through the chamber A the apron C supports it during the second horizontal passage through the machine, so that the two aprons B and C alternately shift their operative portions from above to below the material, and vice versa, and at the same time reverse the material. In the case of cotton or loose fiber it is evident that the separation of the aprons would be most beneficial, as it would permit the cotton to open or expand and be quickly dried and be delivered from the machine in a fluffy and desirable condition.

While I prefer the construction shown, I do not confine myself to the details, as they may be varied without departing from the spirit of the invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a drying-machine, a chamber, and means for circulating air-currents through said chamber, combined with two endless aprons of open-work for conveying materials between them to be treated through said chamber, guiding-wheels for said aprons at both ends of the chamber, and means arranged between the guiding-wheels for separating the two aprons whereby in their hori-

zontal travel the upper apron shall not press heavily upon the material supported by the lower apron.

2. In a drying-machine, the combination of a chamber, means for creating a circulation of air in a vertical direction through the chamber, two endless aprons of open-work for conveying between them materials to be dried, guiding-wheels for causing the aprons to travel back and forth through the machine at different levels, and means for separating the two aprons during their travel between the guiding-wheels whereby no undue pressure is put upon the materials to be treated when they are being subjected to the action of the air-currents.

3. In a drying-machine, a chamber, and means for circulating air-currents through said chamber, combined with two endless aprons of open-work and sprocket-chains at their side edges for conveying materials between them to be treated through said chamber, guiding-wheels for said aprons at both ends of the chamber, and means consisting of lateral guides for the chains arranged between the guiding-wheels for separating the two aprons whereby in their horizontal travel the upper apron shall not press heavily upon the material supported by the lower apron.

4. In a drying-machine, a chamber through which currents of air or other gaseous medium is circulated combined with two endless aprons which separate at each end of the chamber to respectively receive and discharge the materials being treated, guiding devices at each end of the chamber for guiding the aprons, and means within the chamber intermediate of the guiding devices for separating the aprons while passing through the chamber.

5. In a drying-machine a chamber through which currents of air or other gaseous medium is circulated combined with two endless aprons which separate at each end of the chamber to respectively receive and discharge the materials being treated said aprons having sprocket-chains upon their edges, guiding devices at each end of the chamber for guiding the aprons and their chains, and means within the chamber intermediate of the guiding devices consisting of laterally-extending guide-irons upon which the chains travel for separating the aprons while passing through the chamber.

In testimony of which invention I hereunto set my hand.

JOHN H. LORIMER.

Witnesses:

R. M. KELLY,
R. M. HUNTER.