

E. B. AYRES.
DRIER FOR SOAP.

APPLICATION FILED JAN. 22, 1912.

1,060,414.

Patented Apr. 29, 1913.

Fig. 1.

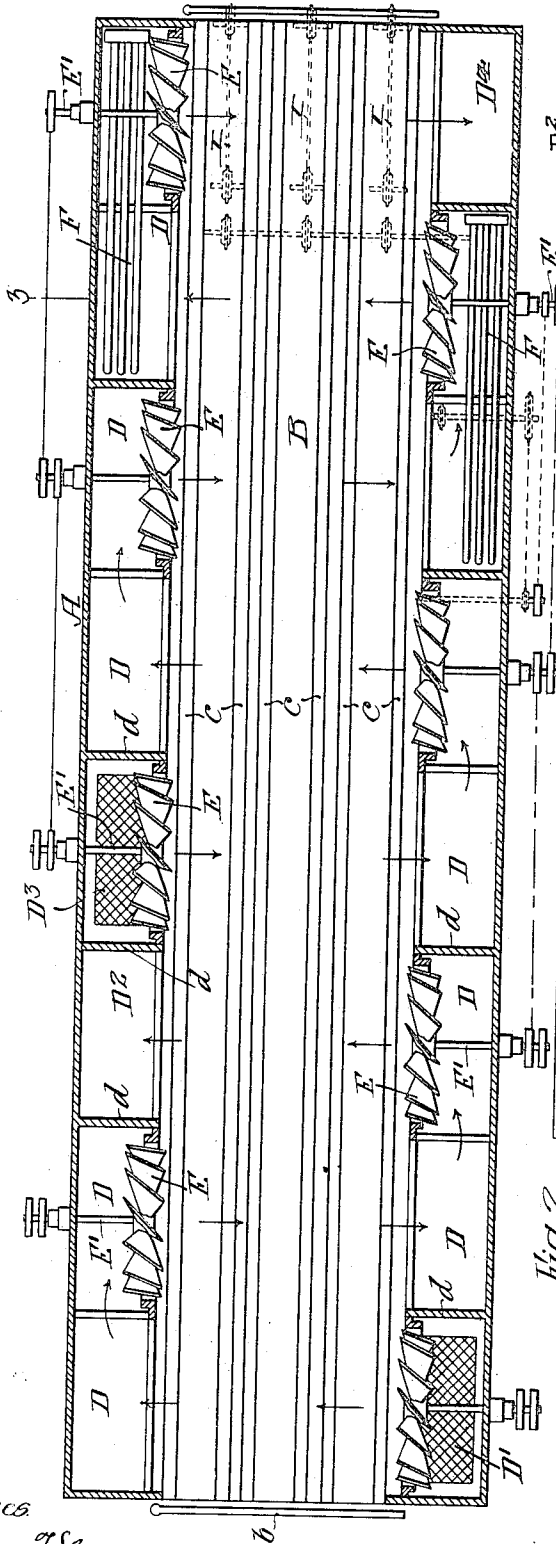


Fig. 2.

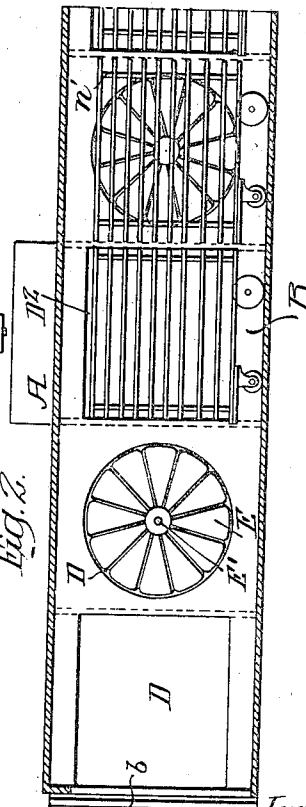
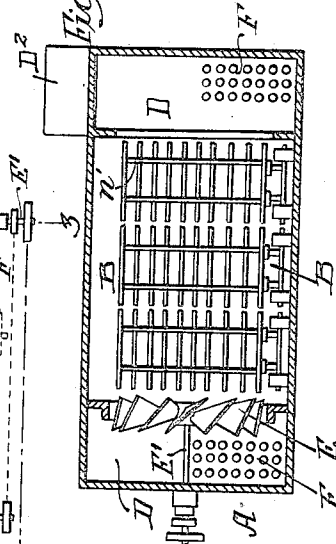


Fig. 3.



Witnesses
William F. Nason
H. L. Burrows

Inventor
E. B. Ayres.
by his Attorneys
H. W. Brown & Son

UNITED STATES PATENT OFFICE.

ELWOOD B. AYRES, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE PHILADELPHIA TEXTILE MACHINERY COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

DRIER FOR SOAP.

1,060,414.

Specification of Letters Patent.

Patented Apr. 29, 1913.

Application filed January 22, 1912. Serial No. 672,639.

To all whom it may concern:

Be it known that I, ELWOOD B. AYRES, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Driers for Soap, of which the following is a specification.

The object of this invention is to provide a machine for drying laundry or other soap so that the soap will have a hard outer surface which will keep the moisture within the body of the soap, which is particularly advantageous in soaps used for laundry purposes.

In the accompanying drawings:—Figure 1, is a sectional plan view of my improved soap drying apparatus; Fig. 2, is a longitudinal sectional view of part of the drier; and Fig. 3, is a transverse sectional view on the line 3—3, Fig. 1.

A is a casing having a longitudinal passage B throughout its entire length, closed at both ends by doors *b* movable in and out of position in any suitable manner.

c, c are tracks located a given distance apart—three sets in the present instance—which guide the trucks on which the soap to be dried is mounted. These trucks may be of any of the ordinary forms used in carrying materials, but which I preferably so design that the soap can be readily stacked thereon so as to allow the currents of air to pass through the stack or pile on the truck, as indicated in Figs. 2 and 3.

At each side of the passage B are chambers D, D', D², D³, D⁴ containing fans E mounted on shafts E' adapted to suitable bearings and rotated by power in any manner desired. These fans are alternately arranged on opposite sides of the passage B, as clearly illustrated in Fig. 1. The series of chambers on each side of the passage B are divided by vertical partitions *d*, and in the two compartments at the forward end of the apparatus at each side of the passage are steam pipes F so as to warm the air as it passes through these particular compartments. The end compartment D' at the discharge end of the apparatus is open at the bottom to the atmosphere, so as to allow the fan E in the compartment to draw fresh air into the drier and force it across the longitudinal passage B into the receiving chamber opposite to it. The air is drawn from

this receiving chamber by the next fan which is on the side opposite to the first mentioned fan, and this fan forces the air across the passage in the opposite direction, as indicated by the arrows. The air enters the second receiving chamber and is carried by the third fan across the passage B into the final receiving chamber D², which is open at the top to allow the air to pass from the drier. The compartment D³ has an inlet opening in the floor, and the fan E in said compartment draws the air through said opening and forces it across the passage B into a receiving chamber of the second series, and this fan forces the air across the passage in the opposite direction, where the third fan takes it and again forces it across, and so on throughout the length of the drier until it escapes from the chamber D⁴ at the front of the drier.

The last chamber on one side, and the next to the last chamber on the opposite side have steam pipes F therein which warm the air, as above mentioned, and consequently the soap as it enters the passage is subjected to the action of warm air. This air partly dries the soap and as the soap travels through the passage it comes in contact with the cooler air and finally cold air is blown onto the stacks of cakes of soap, which forms a hard crust on the cake, and this hard crust retains the moisture within the body of the cakes of soap.

The trucks can be conveyed through the passage B by any suitable means. In the present instance, I have shown conveyer chains I which are driven from any source of power, and these conveyer chains have lugs or other projections which engage the trucks and move them forward, one truck pushing the one in front of it, and when one truck is inserted in the drier at the forward end thereof, another truck is projected from the drier at the discharge end.

The trucks N are made of a certain length and the trays *n* containing the soap are so proportioned that they can be piled one upon another on the trucks. The cleats *n'* of the several trays, as indicated in the drawings, are in line one with another and are also in line with the permanent partitions of the drier. So that, when the trucks are moved forward by the mechanism at the

inlet end of the drier, they will be moved the length of one section and the series of cleats form vertical partitions throughout the entire length of the drier and these partitions aline with the permanent partitions in the side compartments, and when the air is forced by the fans across the central passageway containing the trucks it is confined by the cleats, which from the vertical partitions, to a certain extent and the air must travel directly across the drier.

The mechanism is so arranged and the trucks are of such a size that when one truck enters the drier another truck is discharged therefrom.

While my invention is particularly adapted for drying soap it will be understood that it may be used for drying glue and like material, where it is desired to have the body of the material being treated not as hard as the exterior surface.

The soap when it reaches the drier is in a moist condition and cold. When it is introduced into the drier it is subjected to the action of the currents of warm air and this immediately warms the outer surface of the cakes of soap which are spaced apart on the trays and, after being subjected for a given time to the warm air, they are intermittently moved into the path of the cold air currents and the warm outer surface of the cakes is chilled and a thin hard crust is formed which is desirable for stamping and wrapping purposes.

I claim:—

1. The combination in a soap drier, of a casing having a longitudinal passage throughout its entire length; chambers on each side of said passage; fans alternately arranged within the said chambers on each side of the passage; means for driving the fans; inlets for cold air and outlets for air; means for heating the air at the forward end only of the drier; and carriers for the soap adapted to travel through the longitudinal passage so that the soap in its passage through the machine is first subjected to the currents of warm air, which heats the outer surfaces of the cakes, and is then subjected to currents of cold air, whereby the warm, outer surfaces of the cakes of

soap are chilled, forming a thin hard crust thereon.

2. The combination in a soap drier, of a casing having a longitudinal passage throughout its entire length; doors at each end of the drier for closing said passage; rails on which trucks are mounted; power driving means for propelling the trucks through the drier chambers on each side of the longitudinal passage; fans in said chambers, said fans being alternately arranged on either side of the casing so that air admitted at one point will be forced across the chamber in one direction by one set of fans, and forced across the chamber in the opposite direction by another set of fans, with means for heating the air at the entrance end of the drier so that the soap will be first dried by warm air in the first part of the drier, and finally dried by cool air before being discharged from said drier.

3. The combination in a drier, of a casing having a central chamber; side chambers; transverse partitions in the side chambers; fans for blowing air across the central chamber; and trucks mounted in the central chamber having partitions which aline with the transverse partitions in the side chambers, so that the air is confined as it is blown across the drier and through the trucks.

4. The combination in a drier, of a casing having a central chamber; side chambers; transverse partitions in the side chambers; fans in the side chambers for blowing air across the central chamber; trucks; a series of trays mounted on the trucks; vertical cleats on each tray; the cleats being a distance apart equal to the distance apart of the transverse partitions so that when the trucks are intermittently moved through the central passage the cleats form, with the transverse partitions, flues for the passage of air.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ELWOOD B. AYRES.

Witnesses:

JOS. H. KLEIN,
WM. A. BARR.