

(No Model.)

2 Sheets—Sheet 1.

J. K. PROCTOR.  
DRYING MACHINE.

No. 502,237.

Patented July 25, 1893.

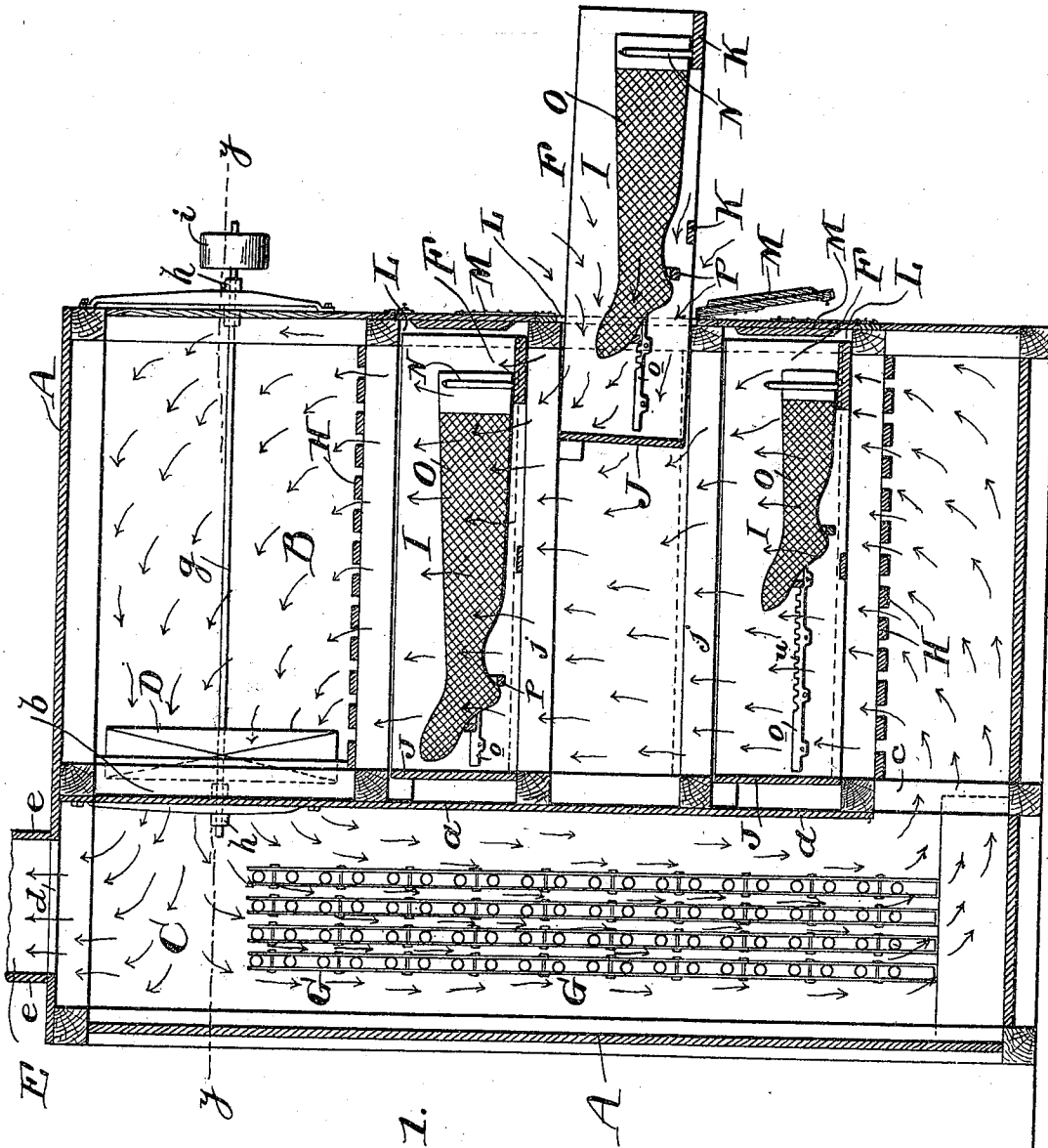


FIG. 1.

WITNESSES:

*Henry Dwyer*  
*Wm. H. Bennett*

INVENTOR:

*Josiah K. Proctor*  
By *Wm. H. Bennett*

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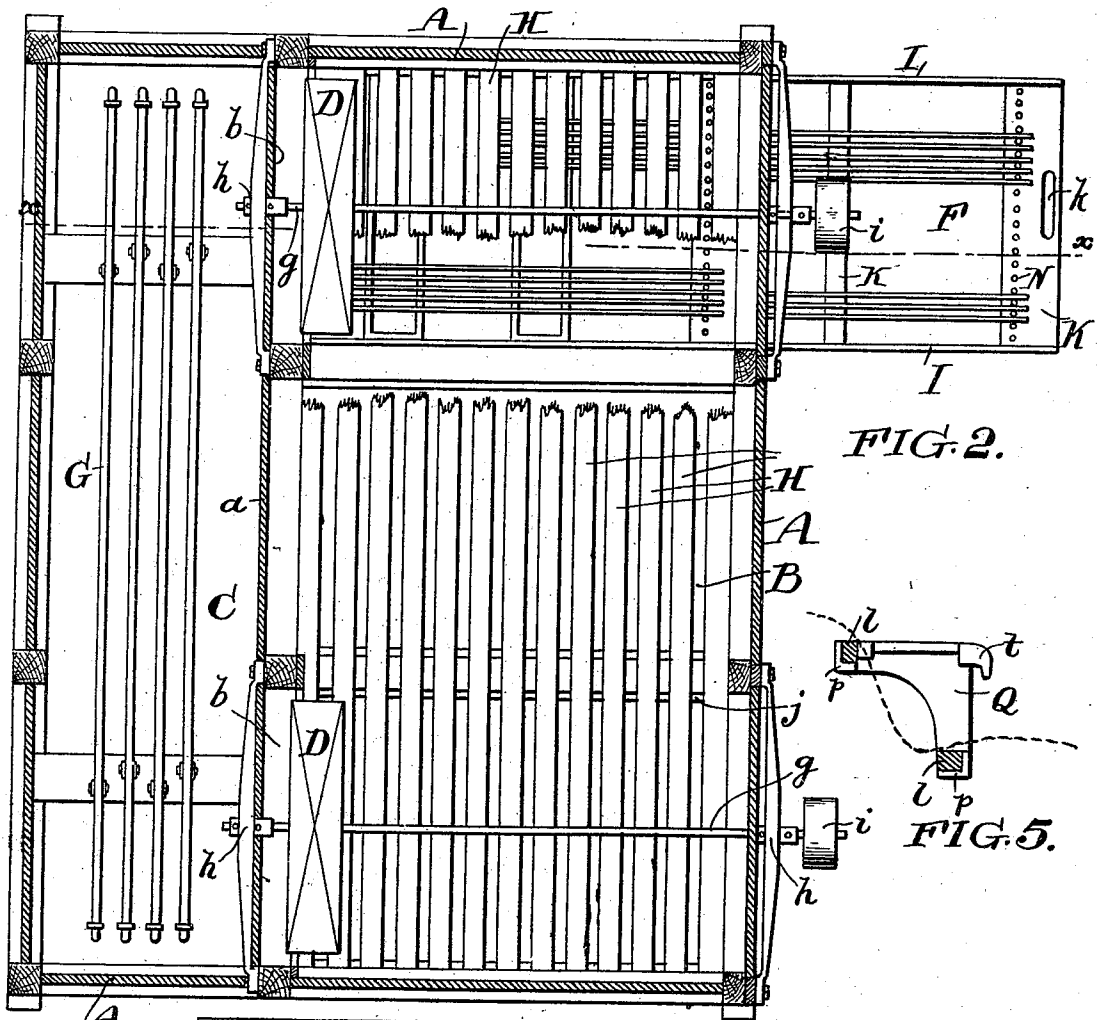


FIG. 2.

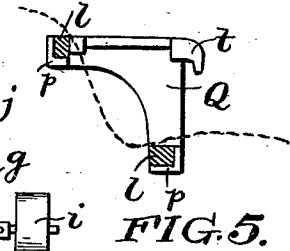


FIG. 5.

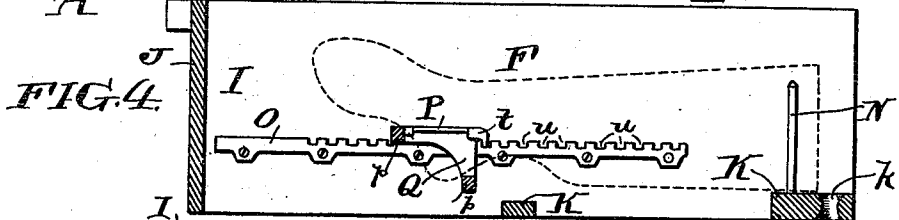


FIG. 4.

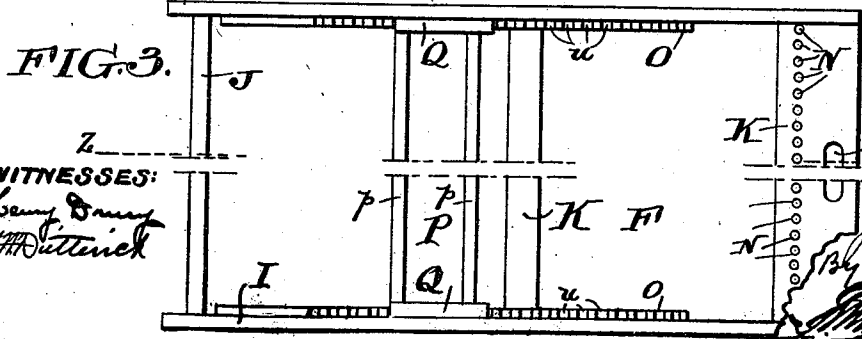


FIG. 3.

WITNESSES:  
*Henry Denny*  
*Wm. Outenick*

INVENTOR:  
*J. K. Proctor*  
*By his atty*  
*Wm. H. ...*

# UNITED STATES PATENT OFFICE.

JOSIAH K. PROCTOR, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE PHILADELPHIA TEXTILE MACHINERY COMPANY, OF SAME PLACE.

## DRYING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 502,237, dated July 25, 1893.

Application filed January 26, 1893. Serial No. 459,769. (No model.)

*To all whom it may concern:*

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

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

My invention relates to that class of drying machines, in which the material to be dried is supported in a drying inclosure and is subjected therein to heat furnished by radiating surfaces, the heated air being diffused and mixed by means of air currents.

My invention, while designed primarily for the drying of stockings when stretched over forming boards, is not confined to the drying of stockings only, but relates with equal force to any class of goods or material which can be supported within the drying inclosure in a manner similar to that employed by me as hereinafter described.

It is also an object of my invention to provide means for quickly and conveniently placing the goods to be dried within the inclosure and for removing them therefrom when dry.

In the drawings: Figure 1 is a longitudinal vertical sectional view of my drying machine on the line  $x-x$  of Fig. 2. Fig. 2 is a horizontal sectional view of the same on line  $y-y$  of Fig. 1. Fig. 3 is a plan view of one of the supporting devices for the goods which are to be dried. Fig. 4 is a longitudinal vertical sectional view of the same on the line  $z-z$  of Fig. 3; and Fig. 5 is a detail view in section of a portion of the supporting devices.

The directions of the air currents are indicated in Fig. 1 by the arrows.

A is the inclosure of the drying machine having the usual side, end, top and bottom walls, and closed from all communication with the atmosphere except through the outlet  $d$  in the top of the machine, which may be provided with projecting walls  $e$  to form a chute or flue E.

$a$  is an interior vertical partition dividing the inclosure A into drying and air heating

compartments B and C respectively. The adjacent compartments B and C communicate with each other through the openings  $b$  and  $c$  at the top and bottom of the partition  $a$  respectively.

D, D are air moving fans placed in the upper or top part of the partition  $a$  at the openings  $b$  for circulating the air within the inclosure, the currents produced by the fan passing continuously downward through the heating compartment C and continuously upward through the drying compartments B. These fans are preferably arranged vertically in the partition  $a$  but any other arrangement of fans may be adopted that will cause the air currents to circulate in the manner indicated by the arrows. One or more fans may be employed. Each of the fans D is mounted on a shaft  $g$  supported by suitable bearings  $h$  and may be driven by belt pulleys  $i$  on the outside of the inclosure A or in any other well known manner.

G is a heating coil arranged within the heating compartment C to heat the air currents which are circulated within the inclosure. The opening  $d$  in the top of the inclosure for the discharge or escape of the saturated air preferably leads from the heating compartment C; and the air discharged through the opening  $d$  may be conducted out of the room in which the drying machine is located through the chute or flue E. The opening  $d$  may, however, be placed in any other convenient position on the drying inclosure A, where the air currents can be forced through it by the fan D; and, if more convenient, there may be two or more of these discharge openings.

Arranged horizontally across the drying compartments B are slotted or perforated partitions H, H, dividing the compartment into lower, central, and upper divisions. The goods to be dried are placed in the central division between the partitions H, H and the lower and upper divisions constitute air distributing chambers only. The object of the partitions H, H is to cause the air which is forced through perforations or openings in the partitions to ascend through the central or drying division of the compartment in a more uniform and evenly distributed manner than it otherwise would do.

The goods within the machine are supported in properly constructed slides or drawers F which are capable of being wholly or partially withdrawn from the machine while the goods are being placed in them and also of being returned within the machine while the goods are being dried. These slides F are preferably composed of frames consisting of side pieces I, I, back pieces J and cross braces K, K. The front cross brace K may be provided with an opening or handle K to permit the slide F to be moved. The slide or drawer F while within the machine rests upon the side cleats *j* attached to the frame work of the machine and these cleats serve also to guide the drawers while they are being withdrawn from the machine or returned to it.

The drawers F are inserted in the machine or withdrawn from it through openings L in the front wall of the drying inclosure. These openings are provided with suitable covers or doors M which may be opened to permit the slides or drawers F to be inserted and may then be closed and suitably fastened while the drying operation is taking place.

In the drawings the drawers F are all shown placed wholly within the machine with the covers or doors M closed with the exception of one drawer which is shown partially withdrawn out of the inclosure. In practice in placing the goods in the drawers, I prefer not to remove the drawers entirely from the machine but to only partially withdraw them, the extent of withdrawal being regulated by the length of the goods to be operated upon. When the drawer is within the inclosure and the door M is closed over the end of the drawer no air can pass into the inclosure around the drawer but when the door M is opened and the drawer or slide partially drawn out the external air enters the opening L as shown by the arrows in Fig. 1 being drawn in by the suction of the fans D. It will be observed, therefore, that no hot or damp air can escape from the inclosure A, into the room in which the machine stands, but that external air from the room will be drawn into the machine, thus serving to ventilate the room and keep it cool.

In the drawings the slides or drawers F are shown as fitted up for the support of stockings when stretched over forming boards. For the purpose of supporting the stocking boards, I provide the front of the drawer with a series of pins N inserted in the front cross brace K and projecting upward therefrom. The stocking boards and stockings O are placed between adjacent pins N, and as many boards may be placed in one drawer as there are spaces between the pins and the air may pass between adjacent boards O. To support the foot end of the stocking board, I provide a frame P of peculiar construction shown clearly in Figs. 3, 4 and 5. I prefer to make this frame of one single casting, usually of iron, in which case the frame consists of the two end parts Q, Q united by the cross bars *p, p*. The end parts Q, Q of the frame P are

provided with lugs *s* and *t* which rest on horizontal side cleats *o* carried by the inner surfaces of the sides of the drawer F. The frame P is free to slide on its lugs the whole extent afforded by the length of the cleats *o*, and may be adjusted to any position thereon. In order to prevent the frame P from being displaced by any jar or other accident after once being adjusted to a position, the cleats *o* may be provided with a series of notches *n* to receive the lug *t*.

The cross bars *p, p* which support the foot end of the stocking board when made of iron may be provided on their supporting edges with strips of wood *l* so that the wet stocking may not come in contact with the metal, which might result in discoloring the stocking at the point of contact. It is apparent that the same result may be obtained by constructing the supporting bars *p, p*, entirely of wood, or of some material that would not be liable to injure the stocking.

The supports P may be adjusted on their rests or cleats *o* to or from the pins N to suit the length of the stocking boards and stockings O to be supported by them. In Fig. 1 I have shown them adjusted for three different lengths of stockings. Any number of drawers or slides F may be placed in the division between the partitions H, H, one above the other and side by side as the size of the division may permit.

The operation of drying in the apparatus is as follows: The goods or materials to be dried are placed in the slides or drawers F in the manner described and the drawers are introduced into the inclosure through the openings L. The doors M are closed and the drying is accomplished by the heated air currents which are circulated by the fans D. When the goods are dry the doors M are opened and the drawers F drawn out to permit the dried goods to be moved. No precise order of filling the drawers need be observed but any one of the drawers may, at any time, be withdrawn and filled with goods to suit the necessity of the operator, or two or more drawers may be withdrawn at the same time. In practice several operators are assigned to one of these machines, and as it requires only about ten minutes to dry the goods in any one drawer it happens that but a very brief interval ever occurs during which one or more drawers are not open. This being the case it has been found that for the successful practical operation of the machine, no inlet is required for the air into the inclosure other than the inlets temporarily created by the opening of the doors during the time of the withdrawal of the drawers. Such inlets, may, however, be provided if desired. The fans may be placed at the bottom instead of at the top of the inclosure in which case the direction of the air currents will be reversed from that shown. Instead of doors to close the openings through which the drawers slide the outward ends of the drawers may be made with

a continuous front, so as to close up the opening when the drawer is returned into the machine. These and other details of construction may be modified without departing from my invention; hence I do not limit myself to the precise details shown and described.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

10 1. The adjustable frame P for holding the foot end of the stocking boards in combination with the cleats *o* attached to the sides of the slides or drawers so that the frame can be adjusted for the holding of various lengths  
15 of boards.

2. The adjustable frame P having downwardly projecting lugs *t* at either end of the frame, in combination with the notched cleats *o* attached to the sides of the slides or drawers so that the frame can be adjusted to and re- 20 tained in various positions with respect to the front of a slide or drawer for the purpose of rendering one slide or drawer capable of holding boards or goods of different lengths.

In testimony of which invention I have 25 hereunto set my hand.

JOSIAH K. PROCTOR.

Witnesses:

J. H. KNOWLES,

WM. H. WIGHTMAN.