R. F. HATFIELD.

Clothes-Drying Machine.

No. 217,102. **Patented July 1, 1879.**

Fig: 1.

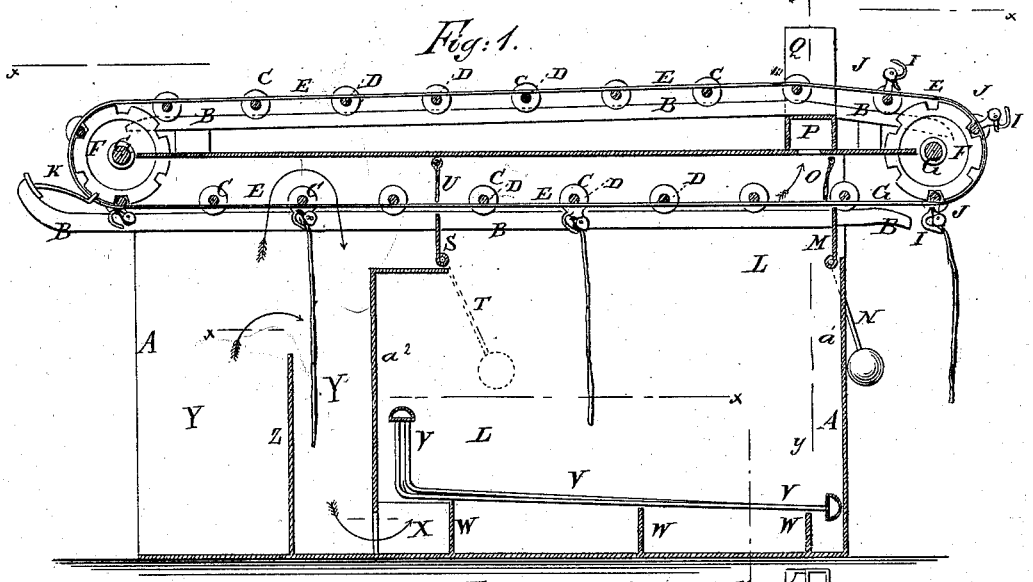


Fig: 2.

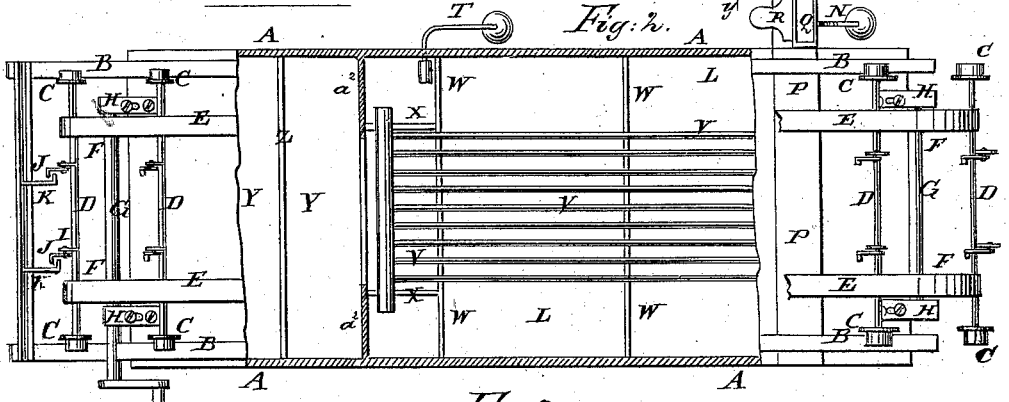


Fig: 3.

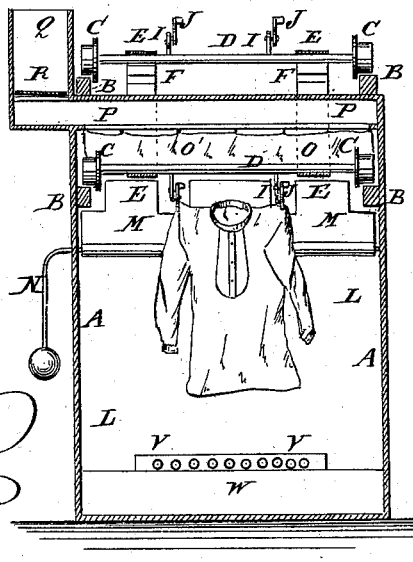
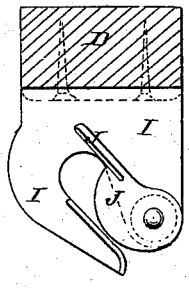


Fig: 4.



WITNESSES:

Chas. Nida

C. Sedgwick

INVENTOR:

R. F. Hatfield

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ROBERT F. HATFIELD, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN CLOTHES-DRYING MACHINES.

Specification forming part of Letters Patent No. **217,102**, dated July 1, 1879; application filed January 17, 1879.

To all whom it may concern:

Be it known that I, ROBERT F. HATFIELD, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Clothes-Drying Machines, of which the following is a specification.

Figure 1 is a vertical longitudinal section of my improved drying-machine. Fig. 2 is a top view of the same, partly in section, through the broken line *x x x x*, Fig. 1. Fig. 3 is a cross-section of the same, taken through the line *y y y*, Fig. 1. Fig. 4 is a detail view of one of the clamps.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved machine for drying clothes and other similar articles, which shall be so constructed that the clothes will pass through the machine in one direction and the hot air in the other, which will allow the clothes to be attached outside of the drying-room, which will cool the clothes as they pass out, and will drop them automatically as they pass out, which will so direct the currents of air as to effect the best results, which will allow the escape of the air to be controlled, which will economize the heat, and which shall be simple in construction and convenient in use.

The invention consists in means, substantially as hereinafter described, by which the clothes are secured, carried through a drying-chamber so as to automatically open weight-held doors, and discharged without manual intervention, a counter-current of heated air blowing upon them as they proceed.

A represents the frame-work, which is tightly inclosed at the bottom, the sides, and the top. To the frame A, above and below the top of the casing, are attached two tracks, B, one directly above the other, upon which roll the wheels C of the endless carrier.

The wheels C revolve upon journals formed upon the ends of the axles D, which are attached at a little distance from the wheels C to two endless belts, E. The belts E pass around and rest upon the faces of pulleys F, which faces are notched to receive the axles D, and thus act as spur-wheels to carry the carrier forward and prevent it from slipping, so that the said carrier will be carried forward at a uniform speed.

The pulleys F are rigidly attached to the shafts G, which revolve in bearings H, attached to the frame A, or to supports attached to the said frame A. One or both the sets of bearings H are slotted to receive the fastening-bolts, so that they can be adjusted to regulate the tension of the carrier-belts E.

Motion may be given to the carrier by a hand-crank or any convenient power applied to either of the pulley-shafts G.

The clothes or other articles to be dried are connected with the axles D by clamps, which are made in two parts, I J. The parts I are securely fastened to the axles D, and their outer ends are slotted to receive the edges of the clothes, which are secured in place in the said slots by the other parts, J. The slots in the parts I are inclined downward and backward, as shown in Fig. 4, to cause the clothes to drop out more readily when released.

The part J is made cam-shaped, is provided with a handle, and is pivoted to one of the jaws of the part I in such a position as to clamp the edge of the clothes between it and the other jaw or a flange formed upon the side of the said jaw. The cam J is so arranged as to lock with an inward movement of the handle and an outward movement of the face of the cam.

With this construction the clothes are secured by pushing their edges back into the jaws of the parts I, and then drawing them outward slightly. This slight outward movement of the clothes causes the cam J to bite, and thus hold them securely and in such a way that any pull upon the clothes will only cause them to be held more securely. The carrier projects at the forward end of the machine so far that there will be sufficient space to attach the clothes to it before it enters the drying-chamber and while in motion.

To a cross-bar or other support at the rear end of the machine are attached the outer ends of two arms, K, the inner ends of which are so formed as to strike the handles of the cams J and open the clamps, releasing the clothes. The arms K are inclined so as to

push the clothes out of the jaws of the clamps in case they should not drop promptly when released from the cams J.

The forward end of the machine is closed by a casing, a^1, which extends up nearly to the lower part of the carrier, space being left between its upper edge and the said carrier for the clothes to pass through in entering the drying-chamber L, which space is closed by a door, M, hinged at its lower edge and extending up to the said carrier.

The door M is held closed by a weighted lever, N, attached to the projecting end of its pivot.

The door M is designed to prevent the air from passing through, and is opened by the pressure of the clothes as they are drawn against it by the carrier. The said clothes while entering close the space and prevent the air from passing.

The air is prevented from passing through the space between the lower part of the carrier and the top casing of the machine by a flap, O, attached at its upper edge to the said casing, and which rests upon the back of the lower part of the carrier.

In a slot in the upper forward part of the top casing of the drying-chamber L is secured a spout, P, the lower side of which is left open to receive the air, and with one of its ends is connected a flue, Q, through which the moist air escapes.

The flue Q is provided with a slide-damper, R, so that the escape of the air can be controlled as desired.

The rear end of the drying-chamber L is closed by a partition, a^2, the upper part of which, at about a level with the upper edge of the forward casing, a^1, is bent inward at right angles, and to its edge is hinged the lower edge of a door, S, which extends up to the lower part of the carrier, and is held in an erect or closed position by a weighted lever, T, attached to the projecting end of its journal.

The door S prevents the passage of air into and from the drying-chamber L. The door S is opened by the pressure of the clothes as they pass out of the drying-chamber. The said clothes while passing out close the space and prevent the passage of air.

The air is prevented from passing through the space between the lower part of the carrier and the top casing of the machine by a flap, U, attached to the said top casing, and which rests upon the back of the said lower part of the carrier.

The air is heated to dry the clothes by a system of steam-pipes, V, which receive steam from any suitable steam-boiler or steam-generator, and which rest upon low walls or bearers W, which rest upon the bottom of the drying-chamber L, and extend entirely across the said drying-chamber.

Cold air to be heated enters the drying-chamber L through an opening in the lower middle part of the partition a^2, which opening is surrounded with a box, X, open at the top, so that the cold air as it enters must rise and come in contact with the end parts of the steam-pipes.

The air is designed to be kept in the drying-chamber L until it is saturated with moisture, or nearly so, and it is then allowed to escape through the spout P and flue Q, the damper R allowing its escape to be controlled as desired.

The drying-chamber L should be provided with a hygrometer, so that the condition of the air can be readily known.

Y is the cooling-chamber, which is divided into two compartments by a partition, Z, which should be of such a height that the clothes will come in contact with its upper edge while being carried through the said chamber. With this construction the clothes will close the space between the upper edge of the partition Z and the lower part of the carrier, so that the cold air must pass up along one side of the clothes, pass over their upper edge, through the space between the lower part of the carrier and the top casing of the machine, down along the other side of the clothes, and through the opening in the lower part of the wall a^2 into the drying-chamber L. In this way the air will cool the clothes, and at the same time will be partially warmed before entering the drying-chamber L, thus utilizing the heat that would otherwise be wasted.

A receiver is designed to be placed at the outer end of the cooling-chamber Y, to receive the dry clothes as they are dropped from the carrier.

I am aware that doors of a similar construction and operated by gravity are not broadly new.

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

1. The combination, with two tracks, B, one above the other, of endless carriers projecting at the front end of the drying-chamber L, and having wheels C, the axles D, provided with clamps I J, and the notched pulleys F, rigidly attached to rotary shafts G, as shown and described.

2. The combination, with endless clothes-carriers, substantially as described, of a drying-chamber having the doors M S, held to by weights, and adapted to be opened by the pressure of the clothes, as specified.

ROBERT F. HATFIELD.

Witnesses:
JAMES T. GRAHAM,
C. SEDGWICK.