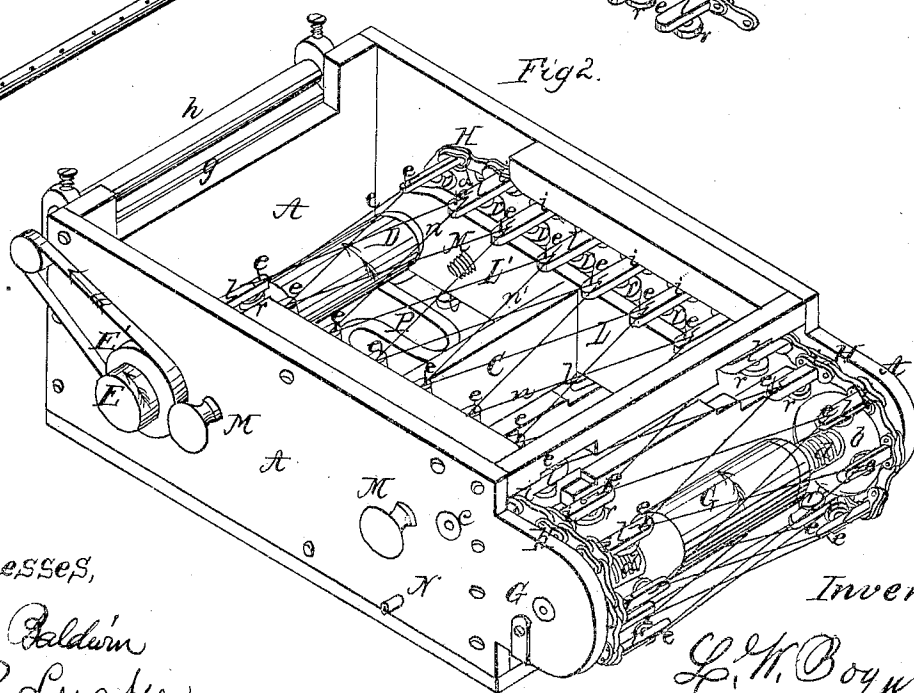
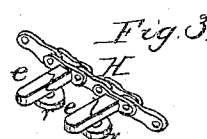
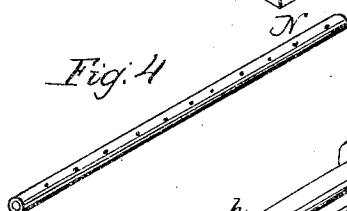
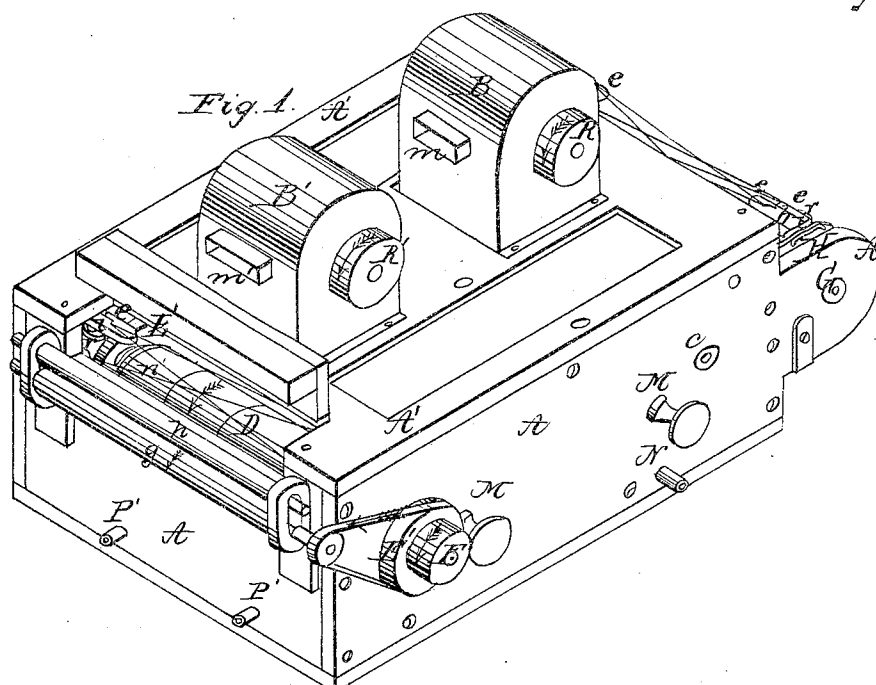


L. W. Boynton.
Machine for Drying Cloth.
N^o 63,461. Patented Apr. 2, 1867.



Witnesses,
E. W. Baldwin
J. D. Lucke

Inventor
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United States Patent Office.

LEANDER W. BOYNTON, OF HARTFORD, CONNECTICUT.

Letters Patent No. 63,461, dated April 2, 1867.

IMPROVEMENT IN MACHINE FOR DRYING CLOTH, &c.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, LEANDER W. BOYNTON, of the city and county of Hartford, in the State of Connecticut, have invented a new and useful Improvement in Apparatus or Machinery for Drying Cloth, &c.; and I do hereby declare that the following is a full, clear, and exact description of the construction, character, and operation of the same, reference being had to the accompanying drawings which make part of this specification, in which—

Figure 1 is a perspective view of the outside appearance of the apparatus or machine when ready for use, showing the fan towers or cases, the steam ports, withdrawing rollers, &c.

Figure 2 is a perspective view of the same with the cover removed, showing the character and position of the endless chains, the tentering hooks, guides, heat pipe, &c.

Figure 3 is a perspective view of a section of the endless chain, tentering hooks, &c.

Figure 4 is a perspective view of the perforated steam tube, through which the steam is passed into direct contact with the cloth to dry it.

My improvement consists in fitting two endless chains with tentering hooks or points, to receive the wet cloth from the hands and carry it through the steam chamber, where the high steam will permeate or percolate through the texture of the cloth as well as surround it, and by its superabundant heat will convert the water or moisture in the cloth into steam, which will be carried off by the exhaust fan, leaving the cloth as dry as the steam used, and in continuing to carry the cloth on the same tentering hooks, so that it will pass through a dry-air chamber suitably heated with steam or warm air, and become perfectly desiccated, when it will be released from the tentering hooks by the withdrawing rollers and carried out ready for pressing or other finish. I make the frame of wood or any other suitable material, substantially in the form or shape represented at A A A, figs. 1 and 2, and in the top or cover, as shown at A' A', on the central part of which I erect two or any other suitable number of fan towers, as shown at B and B', fig. 1, in which I fit suitable fans to exhaust each of the chambers, which are revolved by means of suitable belts working on the pulleys R and R'. And I make a partition as nearly complete as the moving parts will admit, as shown at C, fig. 2, to divide the department L into which the high steam is admitted from L', or that containing warm air to complete the desiccation. Between the side-plates of this frame I fit a roller, as D, figs. 1 and 2, with a double-flanged wheel on each end, which flanges I cut in proper segment to receive the links of the two endless chains H H, which carry the cloth, one of which wheels or its flange is shown in part at a, fig. 2, and on the outer end I fit the driving-pulley E, and the pulley E', the belt of which works the withdrawing rollers g and h. I also fit two other rollers with double-flanged wheels, one of which rollers is shown at G, and one of the plain flanges at b, fig. 2, while the journal of the other roller is indicated at c, figs. 1 and 2. These last two rollers and their flanges are used to steady and support the endless chains H and H, as indicated in figs. 1 and 2, and to keep up the proper tension on the chains. I fit the flanged wheels on the roller G with splines, so that they may slide longitudinally on the roller by pressing against spiral springs, as d d, fig. 2, so that the endless chains H and H, or the tentering hooks or pins e e, &c., may be brought nearer together at that point, to render the putting on of the cloth less laborious for the hands; and within the frame I fit two guide-plates, one of which is shown at L and L', fig. 2, and partially at L', fig. 1, which I adjust to the width of the cloth by two sets of graduating screws, as shown at M and M on the outside, and M on the inside; and I fit the flange wheels on the rollers so that they will slide longitudinally to conform to the width. In the right-hand part of this frame A A A I fit a perforated tube, fig. 4, one end of which is shown at N, figs. 1 and 2, through either or both ends of which I introduce the high steam to act directly on the cloth; and in the left-hand end I fit a tube or pipe open at both ends, as shown outside at P and P, fig. 1, and inside at P, fig. 2, through which I pass steam or warm air to finish or complete the desiccation of the cloth before it leaves that chamber; and at the left hand of the frame I fit a pair of rollers, as g and h, figs. 1 and 2, (worked by a belt,) to withdraw the dried cloth from the frame. I make the endless chains of three flat pieces for links, in the usual way of making chains for carrying the gear-work of watches, &c., except that I cast or make one of the parts, as i, with a bar, l, extending out at right angles from the side of the link, or parallel with the rivet, to sustain the tenter pin or hook, e e; and on the under side of each bar, l, I fit a friction-roller, r r', which works against the outer sides of the guide-plates L and L', under a suitable flange or projection, to prevent friction, all as represented in figs. 3 and 2, and indicated in fig. 1. Having made the several parts and put them

together substantially as before described and represented in the drawings, figs 2 and 1, I bring the cloth to the right-hand end of the machine, slip the flanges *b* inward toward the centre of the roller *G*, and hook or hitch the selvages of the cloth on to the tentering hooks or pins, *e e*, when, having shipped the driving-belt on to the pulley *E*, let the high steam into the tube *n*, and the steam or warm air into one of the ends, as *P'*, fig. 1, of the zigzag pipe *P*, fig. 2, and put the machinery in motion, the endless chains and tenter pins will carry the cloth in to the ends of the guide-plates *L*, when it will be stretched to the full width of the cloth, and the high steam, which should be from four to six atmospheres, when the steam will percolate or permeate through and around the cloth, and its superabundant heat will convert the moisture in the cloth into steam, and the exhausting fan in the tower or case *B* will force the steam and vapor out through the eduction port *m*, leaving the cloth as dry as the steam which I use. And I allow the endless chains to pass on with the cloth to the other apartment, when the warmth caused by the dry air from the surface of the zigzag pipe *P*, (fig. 2,) will remove the remaining moisture, while the fan in the case *B'* will be constantly exhausting at *m'*, so that by carrying the cloth out between the withdrawing rollers *g* and *h*, (which are sufficiently elevated to raise the cloth off of the points of the tenter hooks,) it will be ready for pressing. If I wish to use this apparatus for drying wool, or any other substance not suited to the use of the tentering apparatus, I use elastic cords drawn diagonally from the tenter bars, from side to side, crossing each other, as shown at *n n*, fig. 2, or I use any other analogous means to support the article being dried. The velocity of the movement of the endless chains and tentering apparatus must be graduated to suit the temperature of the steam, and the wetness and thickness of the cloth, which any one will readily understand with very little practice.

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

1. The combination of the endless chains and tenter hooks in a machine in which high steam is used, when the machine is constructed, combined, and fitted to produce the result substantially as herein described and set forth.
2. I claim the combination of the apparatus for conveying the cloth to be dried with an apartment in which high steam is used, (where most of the moisture is converted into steam,) and an apartment supplied with dry air, (where the drying is completed,) when they are constructed and arranged substantially as herein described and set forth.

L. W. BOYNTON.

Witnesses:

E. W. BALDWIN,
J. B. LUCKE.