J. B. EDSON.

Method of Drying Celluloid.

No. 219,235. Patented Sept. 2, 1879.

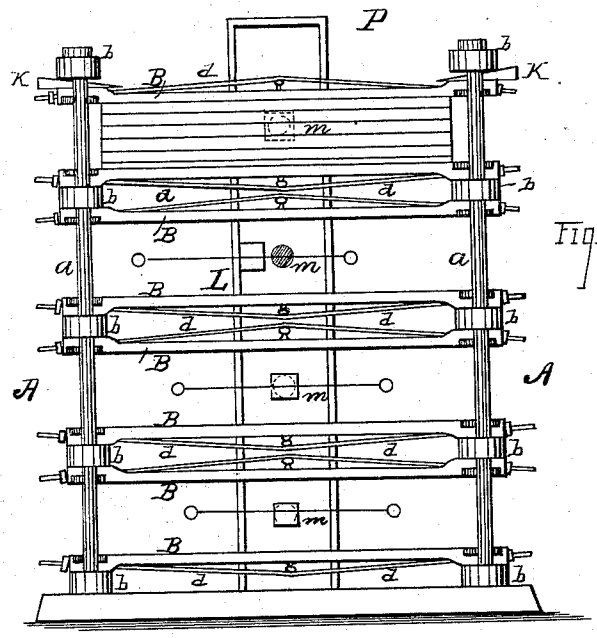


Fig. 1.

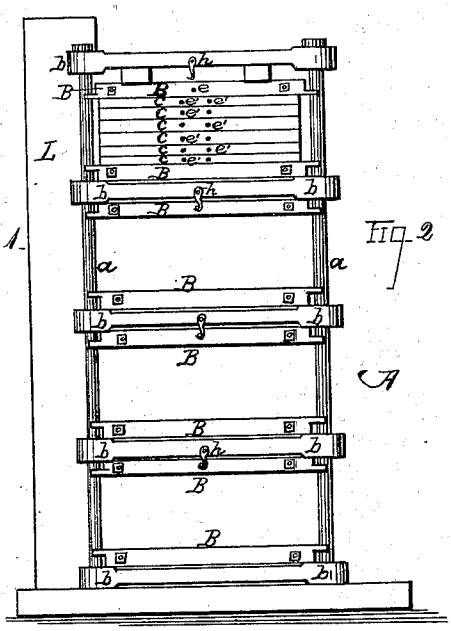


Fig. 2.

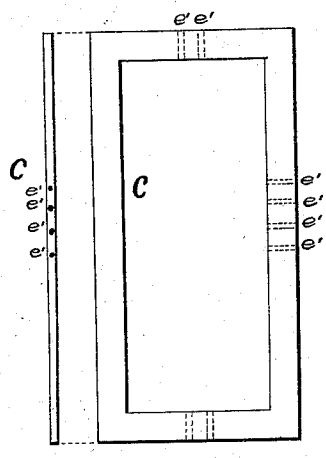


Fig. 3.

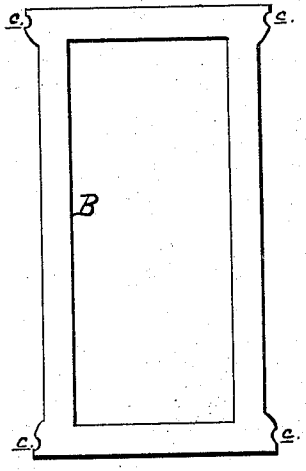


Fig. 4.

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UNITED STATES PATENT OFFICE.

JARVIS B. EDSON, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE CELLULOID MANUFACTURING COMPANY, OF NEW YORK, N. Y.

IMPROVEMENT IN METHODS OF DRYING CELLULOID.

Specification forming part of Letters Patent No. **219,235**, dated September 2, 1879; application filed July 18, 1879.

To all whom it may concern:

Be it known that I, JARVIS B. EDSON, of Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Methods of Drying Substances having the Form of Sheets, of which the following is a specification, reference being had to the accompanying drawings.

The invention relates to an improved method of drying substances having the form of sheets. While it is especially adapted to drying sheets of plastic material, it may be successfully practiced in the treatment of other substances, as hereinafter set forth.

By the methods heretofore in use the drying of sheets of plastic material has been a tedious and uncertain process, often accompanied by much embarrassment and loss. The method generally practiced has been to employ a pair of frames for each sheet, the material being secured between the frames by means of bolts and thumb-pieces, and then placed in a drying-room, or otherwise exposed to the action of a drying agent. This method, requiring as it does that the edges of the sheet be carried a considerable distance between the frames, so as to be effectually held by the action of the screws, necessarily entails a loss of a considerable percentage of material, by reason of injury to the edges between the frames, and often causes the sheet to warp to such an extent as to be unmerchantable. It also necessitates the utmost care in the adjustment of the frames, which occasions delay and gives rise to inconvenience.

To obviate these difficulties, and provide a method whereby the drying can be successfully, rapidly, and economically effected, are the objects of my invention.

It consists in providing an upright frame, of the requisite strength and proportions, which is provided with horizontal rests or cross-pieces, adapted to support a series of horizontal frames, between which smaller frames, employed to hold the material, are inserted horizontally and locked by means of wedges or otherwise. The smaller frames are rectangular in shape, having rectangular interior edges, and are perforated horizontally, so as to permit of an artificial circulation of air between them. The extreme edges of the sheets of material are placed between the smaller frames, as many being used as convenient, when they are securely locked together. Heated air is then drawn or forced through the perforations in the frames until the sheets are fully dried. To effectuate the circulation of the air, the structure may be placed in a heated room and the air drawn through the perforations of the frames by suction, or the circulation of the air may be accomplished in any other manner.

In the accompanying drawings, Figure 1 is a plan view of a device embodying the elements of the invention. Fig. 2 is an end view of same, and Figs. 3 and 4 are detached plan views of the frames B C.

A denotes the main frame or skeleton of the structure, which, in the present instance, is formed of the four posts *a*, securely attached at their bases, and connected by a number of horizontal brace-pieces, *b*, the brace-pieces, as well as the other parts of the structure, being made of sufficient strength to resist the pressure to which they are subjected. Constructed to move vertically within each of the spaces between the pieces *b* are two frames, B, between which the movable frames C, which hold the sheets of material, are locked, as hereinafter more fully set forth.

The frames B are employed only to hold the movable frames C, to effectuate which they may be of any suitable construction. In the present instance they are formed with broad, even, horizontal, contiguous surfaces, to facilitate the insertion and withdrawal of the frames C, and are guided and rendered more efficient by the projections *c*, which form lateral seats for the posts *a*. They are strengthened by means of brace-rods *d*, and the upper one, in each instance, provided with pins *e*, whereby it may be supported by means of the hooks *h* on the pieces *b*, as shown in Fig. 2.

While I attach importance to the particular construction of the frame of the structure just described, and claim it as my invention, it is plain that frames of essentially different construction may be used in connection with the other parts hereinafter described with, perhaps, equally good results.

The movable frames C constitute a highly important feature of the invention, and should be carefully constructed. They are constructed

of any suitable material, and are adapted in size to the frames B, between which they are placed at pleasure. They are rectangular in form, and have rectangular interior edges, both their upper and lower surfaces being as true as possible. In their sides are formed the horizontal apertures *e'*, which, in the present instance, are in three of the sides—a construction which I prefer to employ, but which may be varied, if desired. Any convenient number of the movable frames are used in each section of the structure.

The sheets of material are placed between the frames C, their extreme minimum edges being nipped by the interior edges of the frames, to facilitate which the frames will be adapted to the size of the sheet. The movable frames C and sheets of material, thus arranged, are placed between the frames B, which are locked by means of the wedges K, or in any other convenient manner. Air is then forced through the horizontal apertures *e*, between the sheets, until they are effectually dried.

By preference I make use of the means of drying shown in the drawings, which consists in placing the structure in a heated room or compartment, (indicated by the letter P,) and supplementing it with the vertical pipe L, provided with the apertures *m*, and connected with a suction-pump having a discharge opening out of the compartment as may be convenient. The frames C, having the horizontal apertures *e* in three of their sides, are inserted in place and locked, the apertures *e'* being in proximity to the apertures *m* in the pipe L, the parts being so adjusted that when the suction-pump is operated a current through all the intervals between the sheets in all the sections will be created simultaneously. The suction-pump being worked, the heated air is drawn rapidly and evenly into the intervals and across the faces of the sheets, thus drying the sheets very speedily and successfully.

While I do not limit myself to this construction and arrangement, I regard it as highly desirable, and as having marked advantages over any other of which I know.

The different parts and elements which I have described may be varied in many particulars, and may be employed for purposes other than the treatment of sheets of plastic material. Thus, sheets of any other nature, as well as articles having irregular edges or outlines, may be inserted between the frames C, as may be convenient, the frames being locked to nip the projecting parts or points of the edges. In this way hides and other material may be successfully and rapidly dried.

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

1. The process of drying material having the form of sheets herein described, which consists in locking the material between frames having horizontal apertures, and creating a current of air through the apertures and over the surfaces of the material, substantially as set forth.

2. A process of drying material having the form of sheets, in which a series of frames having apertures and suitable interior edges are employed to hold the material, substantially as set forth.

3. A process of drying material having the form of sheets, in which currents of air are circulated simultaneously through two or more series of frames provided with apertures to admit the air, substantially as set forth.

4. The frame or structure consisting of the posts *a*, secured at their bases, the brace-pieces *b*, and frames B, substantially as described.

5. The combination of the frames B and C with the wedges K, or their equivalents, substantially as specified.

6. The frames C, provided with apertures on three of their sides, substantially as set forth.

7. The frame A, connected by the brace-pieces *b*, in combination with the frames B C, the latter having apertures, substantially as set forth.

8. The rectangular frames B, having projections *c*, in combination with the posts *a*, substantially as specified.

9. In a machine for drying sheets, the combination of two or more locking-plates, two or more smaller plates having apertures, and a means for supplying air, substantially as set forth.

In testimony that I claim the foregoing improvement in methods of drying substances having the form of sheets, as aboved described, I have hereunto set my hand this 10th day of July, 1879.

JARVIS B. EDSON.

Witnesses:
CHAS. C. GILL,
WM. BRO. SMITH.