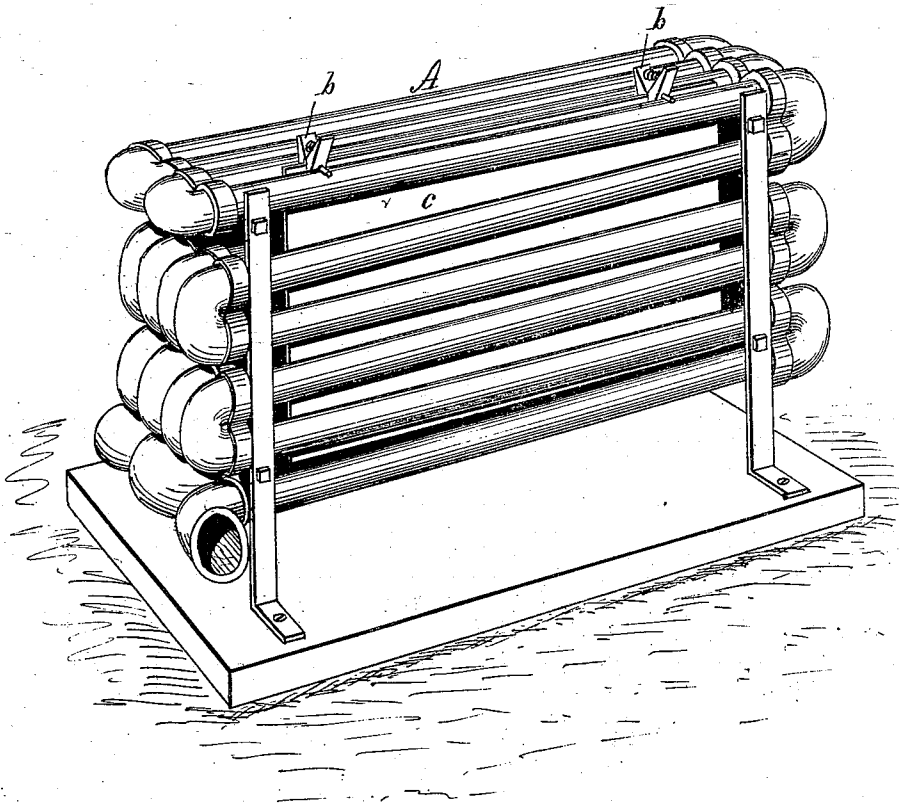


B. F. FIELD.

DRYING APPARATUS FOR PAPER-BOARD.

No. 179,289.

Patented June 27, 1876.



Witnesses;
Grenville Lewis
[Signature]

Inventor
Benjamin F. Field

UNITED STATES PATENT OFFICE.

BENJAMIN F. FIELD, OF FOND DU LAC, WISCONSIN.

IMPROVEMENT IN DRYING APPARATUS FOR PAPER-BOARD.

Specification forming part of Letters Patent No. **179,289**, dated June 27, 1876; application filed May 5, 1876.

To all whom it may concern:

Be it known that I, BENJAMIN F. FIELD, of Fond du Lac, in the county of Fond du Lac and State of Wisconsin, have invented a new and Improved Drying Apparatus for Paper-Board; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings forming part of this specification, in which my invention is represented by a perspective view.

My invention consists of an improved apparatus and method for drying boards, formed by pressure out of paper-pulp.

Hitherto these boards have been dried in various ways, as by passing them in long sheets between heated surfaces, or by laying them horizontally in shallow heating-chambers, and they have also been suspended loosely in a heated room. All the methods used for this purpose, so far as I am aware, have been subject to this disadvantage, that by them the board was unequally dried, and consequently warped.

In carrying out my invention, I provide a heating apparatus similar to the ordinary steam-coils used for heating rooms, known as the box-coil. These coils must be of sufficient height and length to accommodate a sheet of the pressed board, and must also be arranged in parallel rows, and with a vertical space between these rows large enough to admit the board to be dried.

Any number of rows of these steam-coils may be placed side by side. Instead of the coils, thin vertically-arranged chambers, formed of sheet metal, may be used with the spaces for the reception of the boards between the chambers. But the coils of pipes are better, inasmuch as they give better opportunity for the circulation of the air. Above this drying apparatus I provide suitable devices for suspending the sheets in proper vertical position between the coils. These should be sufficient in number to sustain the board without the sagging of any part. On these suspending devices, and in the spaces between the coils, I suspend the sheets to be dried, so as to allow free and

equal circulation of the heated air, and equal exposure of the sheet to the heat of the coils.

To this end it is necessary that the sheet should be suspended free so as not to rest in any part on the bottom. This presents the surfaces of the sheets equally on both sides, and about the edges, to the heat of the coils, and dries them with perfect uniformity, and without warping.

Inasmuch as the boards shrink considerably in the process of drying, I have found it necessary to provide for some movement on the part of the suspending devices to correspond to their shrinkage.

In the drawing hereunto annexed and forming part of this specification, I have shown a drying apparatus suitable for carrying out my invention. In it A is a box-coil, differing in no respect from the ordinary form used for heating rooms, except that the length and depth are proportioned to the size of the sheets, and the spaces between the separate coils are made clear and of a size to admit a single sheet and allow it to be freely suspended.

The suspending devices are shown at *b b*. The form shown consists of spring-clamps like those in common use, except that it is provided with a transverse pin, the projecting ends of which rest on the upper sections of the coil. Any number of these may be used, depending upon the length and weight or strength of the board, it being necessary that the board should be so held up that no part can sag and crinkle out of proper shape.

Any other form of clamp or suspending device may be used, provided that proper lateral motion be allowed.

The sheet is represented at C suspended in place for drying.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. An improved apparatus for drying paper-boards, consisting of a series of coils of metal pipe, arranged for the passage of steam, hot air, or any other suitable heating medium, with vertically-arranged spaces between the coils sufficient to admit the sheets,

and with suitable suspending devices arranged above for supporting the sheets, as set forth.

2. The movable clamp shown to hold the sheet and rest upon the top of the coil, in order to allow for the shrinkage of the sheet, as set forth.

3. An improved process for drying paper-

boards, consisting in suspending each board in a vertical position between heated surfaces, as and for the purpose set forth.

BENJAMIN F. FIELD.

Witnesses:

FRANK MCKENNY,
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