(No Model.) 2 Sheets—Sheet 1.

H. S. HALE.

FLEXIBLE CURTAIN AND MATERIAL THEREFOR.

No. 333,408. Patented Dec. 29, 1885.

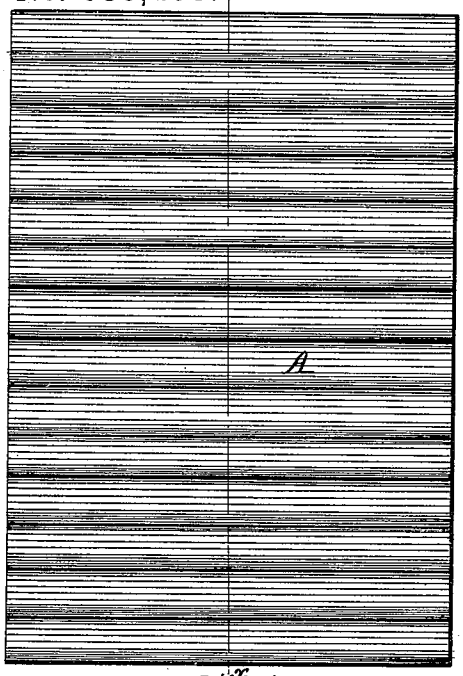


Fig. 1.

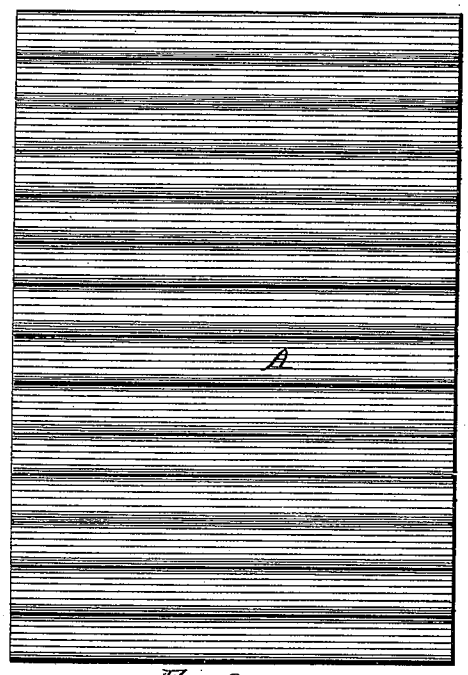


Fig. 2.

Fig. 3.

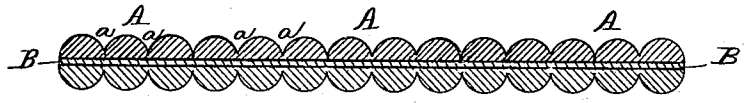


Fig. 4

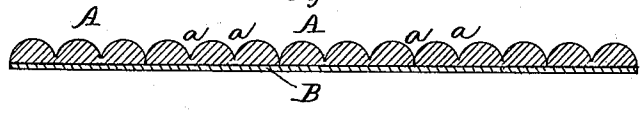


Fig. 6.

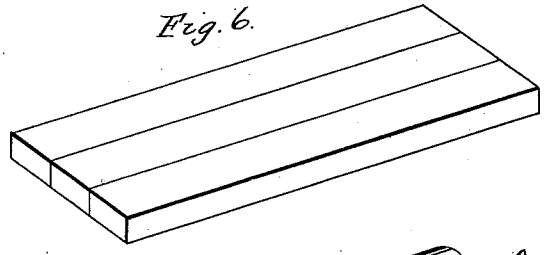


Fig. 5.

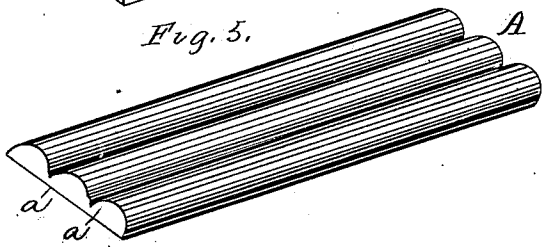
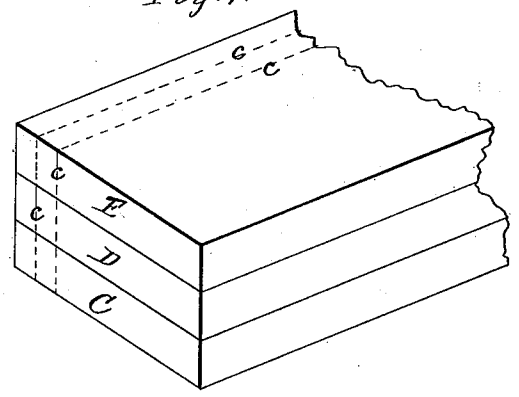


Fig. 9.



Witnesses.
H. Burke
J. S. Barker.

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H. S. HALE.

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Fig. 7.

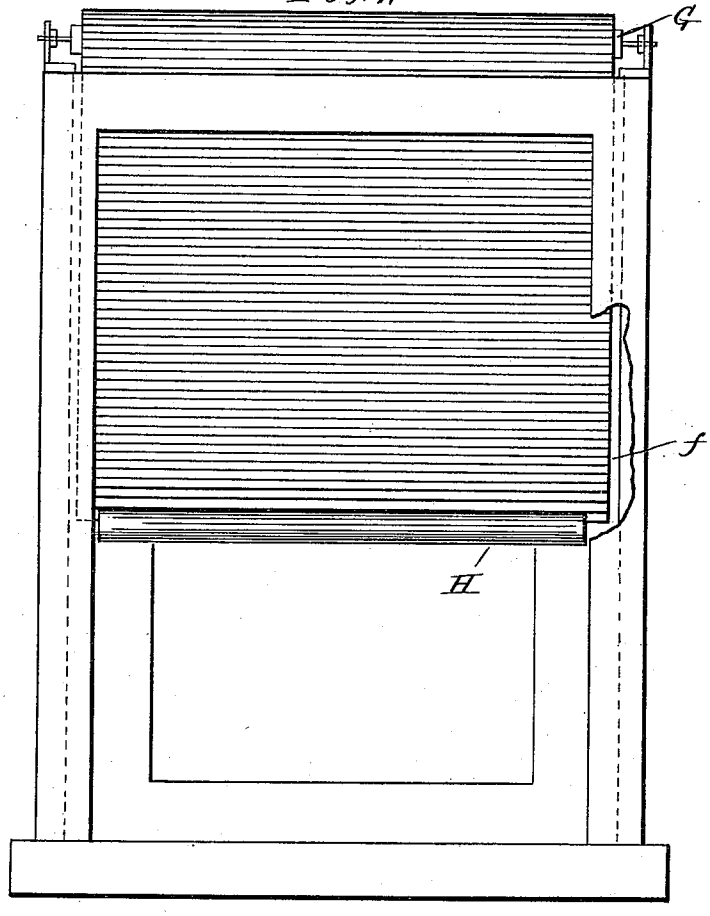
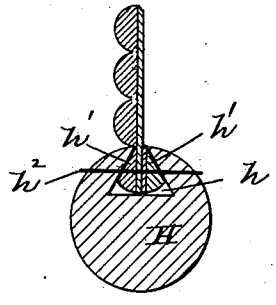


Fig. 8.



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UNITED STATES PATENT OFFICE.

HENRY S. HALE, OF PHILADELPHIA, PENNSYLVANIA.

FLEXIBLE CURTAIN AND MATERIAL THEREFOR.

SPECIFICATION forming part of Letters Patent No. 333,408, dated December 29, 1885.

Application filed May 17, 1884. Serial No. 131,881. (No model.)

To all whom it may concern:

Be it known that I, HENRY S. HALE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Flexible Curtains and Material Therefor, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a top or plan view of a fabric made in accordance with my invention. Fig. 2 is a bottom view of Fig. 1. Fig. 3 is a cross-section on line *x x*, Fig. 1. Fig. 4 is a similar section, showing a modification. Fig. 5 is a perspective of one of the strips of wood. Fig. 6 is a perspective view illustrating the blank from which the strips are made. Fig. 7 is a perspective view showing my improved fabric as used in a window-curtain. Fig. 8 is a transverse section, enlarged, of the roller and lower end of a curtain containing my invention. Fig. 9 is a perspective showing the manner of forming the blanks.

Heretofore compound flexible fabrics adapted to be used in the manufacture of various articles in which it is desirable to form the exterior surface of wood in ornamental designs have been made by attaching narrow slats or strips of wood having their edges rounded to a canvas or other flexible back. In making such fabrics for use in curtains it is necessary that the slats should be very narrow, in order that the curtain may roll, and it is found practically impossible to attach such narrow strips of wood to the supporting canvas or back with the regularity and accuracy necessary, for it will be seen if each strip does not run perpendicular to the edge of the fabric and parallel with each other strip the curtain will not roll properly.

It is the purpose of my invention to reduce the cost and labor of making such a fabric, as well as to insure that the strips of wood may be put upon and secured to the flexible back with the required degree of accuracy; and to this end it consists in grooving upon one face a comparatively wide slat, which on account of its width may be easily handled, so that there shall be formed a series of narrow beads, the slat being adapted, after it has been attached to the canvas, to bend or separate along the lines of the grooves, thereby permitting it to be rolled upon a comparatively small roller.

In the working of my invention I take thin slats or strips A of wood, and by means of suitable wood-working machinery form one surface into narrow beads *a a*, having their corners rounded, so that the grooves or incisions between two adjacent beads shall be of such depth that the films or strips of wood at the bottoms of the grooves are sufficiently strong to hold together the various beads or narrow strips *a*, forming the grooved slat, if carefully handled during their attachment to the canvas; but at the same time they are so weak that they may be broken without leaving slivers or rough edges after they are attached to the fabric, in order to facilitate the curtain being wound upon a small roller, there being thus formed as many narrow strips as there were beads, each one of which strips will be parallel with the others.

In practice I usually prefer to make the strip A of about seven-eighths of an inch in width and from one-sixteenth to an eighth of an inch in thickness, and then, by means of a suitable machine, groove one surface of the slat, as at *a a*, to the required depth, making three cuts, thus dividing the slats into four ribs or beads. I then take a series of such grooved slats and cement them to a sheet, B, of strong flexible fabric (say a sheet of canvas) by means of any suitable adhesive material—such as glue, for instance. By the use of two sets of such slats secured to an intermediate sheet of canvas I produce a fabric which is uniform in appearance upon opposite sides, and is sufficiently flexible to admit of its being applied to surfaces of irregular outline or contour.

In following one plan I propose to make a blank, C D E, (see Fig. 9,) by gluing together three thin boards of different kinds of wood of such sorts as will produce the desired effect—as, for instance, black walnut, ash, and cherry—the boards being of uniform thickness, such as to make the blank seven-eighths of an inch thick after they are glued together. I then, by means of an ordinary circular saw, cut the plank into strips or slats on the dotted lines *c c* and afterward cut the beads, making either three or six beads upon the surface of each

slat, the object in making either three or six being to facilitate cutting one groove upon the dividing-lines between adjacent strips of wood, with an intermediate groove or incision in the center of each strip of wood where it is desired to produce six beads upon each slat.

In Fig. 4 one series of slats is omitted, thus producing a fabric which exposes one surface of the canvas or other flexible material. In this latter construction I propose under some circumstances to use water-proof canvas—say one which has been coated with a preparation of rubber, enamel, or similar substance—to guard against undue action of moisture in loosening the slats from the canvas. A fabric, one member of which consists of a water-proofed flexible backing of such character, will be found very desirable for window-curtains in either railroad-cars or dwellings, from the fact that the ribbed or beaded wooden surface may be turned toward the interior of the apartment, while the outer canvas face may be placed toward the window, where it would be liable to be wetted by rain. In making this latter-described fabric I propose to ornament the exposed surface of the canvas by bending or otherwise inscribing thereon ornamental designs.

In Fig. 7 I have shown my fabric as used in a window-curtain, in which case I propose to groove the vertical casings, as at *f*, to receive the edges of the curtain and guide them to the roller G, which may be of any usual or preferred construction, although in practice I prefer that which is known as the "Hartshorn roller."

H is a roller or rod attached to the lower end of the curtain. This roller H is constructed with a longitudinal dovetailed groove, *h*, and in order to firmly secure the lower end of the curtain in the groove I bevel the opposite outer edges of two adjacent beads, as indicated at *h' h'*, and then, after folding the two beads against each other so as to make practically a single bead of dovetailed form in cross-section, insert them within the dovetailed groove *h*, and further secure them in place, if necessary, by gluing them or by inserting locking-pins h^2. The length of the bottom roller, H, is about equal to the width of the opening between the window-casings, and it is so placed upon the curtain that it, the curtain, will project to about equal distances beyond each end of the roller, in order that the engagement of the ends of the roller with the inner walls of the window-casing will prevent the edges of the curtain from rubbing against the bottoms of the grooves *f*, and will also insure that it shall run straight and true upon the roller G when winding up.

I do not wish to be limited to any particular number of grooves, incisions, or beads upon a single slat, nor to any particular width of slat, but I have described herein the best method now known to me of working my invention, although many modifications therein will readily suggest themselves to a skilled mechanic without making any departure from the spirit of my invention. Nor do I wish to be limited to making each slat of different kinds of wood, although I prefer, under ordinary circumstances, to make the slats of different kinds of wood in order to enhance the ornamental effect.

I am aware that a compound fabric consisting of slats with rounded edges cemented to a flexible fabric has been heretofore made, but I am not aware that a fabric composed of grooved or beaded slats secured to a flexible canvas or equivalent material has ever before been constructed. And such construction is a very desirable one, because of its increased flexibility, especially if the grooves or incisions be made deep enough to insure that the ribs shall be separated from each other by breaking apart the films of wood which connect them after a comparatively short use.

What I claim is—

1. The herein-described slat A, grooved upon one face to form beads *a a*, and adapted to be attached to a flexible back to form a curtain, substantially as set forth.

2. The herein-described slat, formed of separate strips of wood united together by their edges and afterward grooved upon one face along the lines of uniting of the different strips, and adapted to be attached to a flexible back to form a curtain, substantially as set forth.

3. The herein-described fabric, consisting of a flexible back, and slats grooved upon one face to form beads *a a*, and secured to the flexible back with the grooved face exposed, substantially as set forth.

4. The herein-described fabric, consisting of a flexible back, and slats formed of separate strips of wood united by their edges and grooved upon one face, and secured to the flexible back with the grooved face exposed, substantially as set forth.

5. The herein-described fabric, consisting of two series of slats, each slat grooved upon one face, and a sheet of flexible material interposed between the two series of slats, to which they are attached with their grooved faces exposed, substantially as set forth.

6. The combination of the roller H, provided with a dovetailed groove, and the curtain consisting of the flexible fabric and the wooden slats attached to one face thereof, the two lower slats being beveled upon their opposite edges, as at *h'*, whereby when folded together they form a dovetailed bead, adapted to fit the groove in the roller H, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY S. HALE.

Witnesses:
JNO. B. KILBURN,
JAS. S. BREEN.