(No Model.)

H. A. BENEDICT.

PANEL.

No. 406,618. Patented July 9, 1889.

Fig. 1.

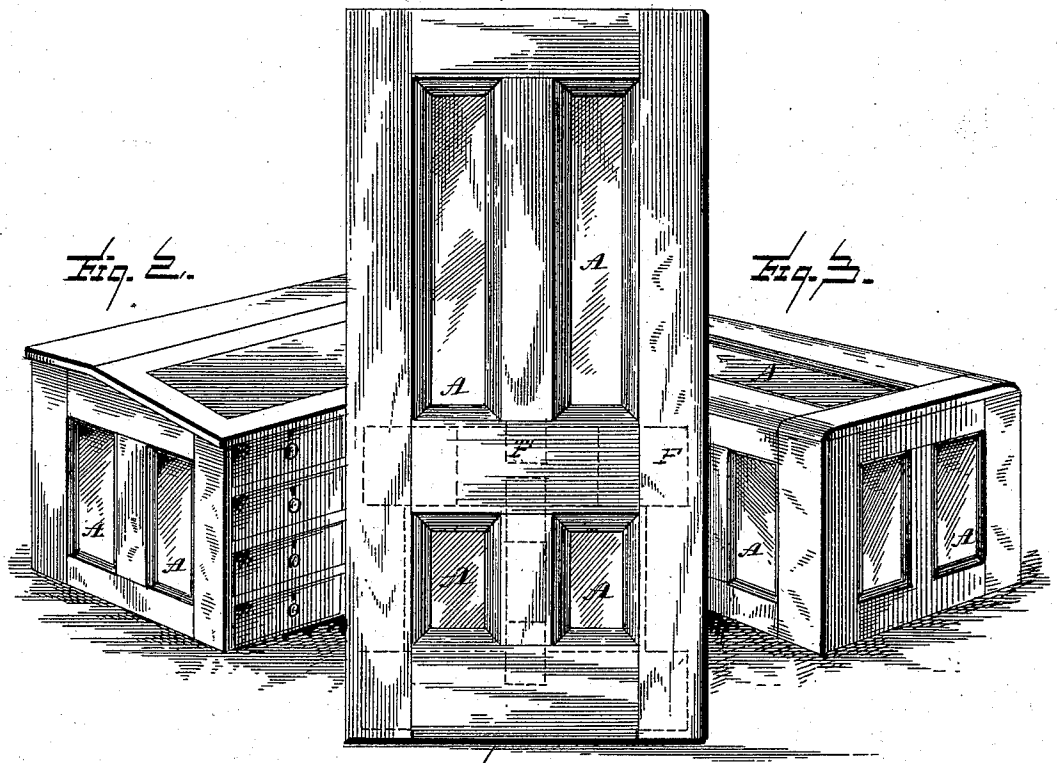


Fig. 2.

Fig. 3.

Fig. 4.



Fig. 5.

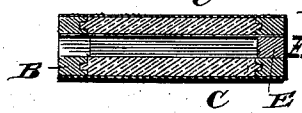


Fig. 6.

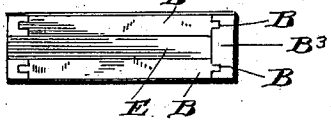


Fig. 7.

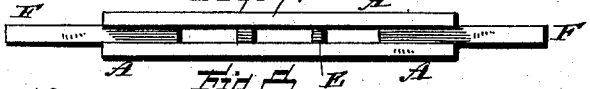


Fig. 8.



Fig. 9.

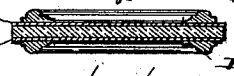


Fig. 11.

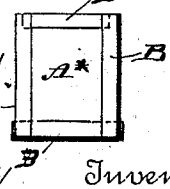
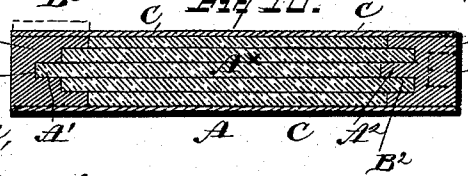


Fig. 10.



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UNITED STATES PATENT OFFICE.

HEMAN A. BENEDICT, OF SYRACUSE, NEW YORK, ASSIGNOR OF ONE-HALF TO GEORGE I. BEACH, OF SAME PLACE.

PANEL.

SPECIFICATION forming part of Letters Patent No. 406,618, dated July 9, 1889.

Application filed June 30, 1888. Serial No. 278,666. (No model.)

To all whom it may concern:

Be it known that I, HEMAN A. BENEDICT, a citizen of the United States, residing at Syracuse, in the county of Onondaga, State of New York, have invented certain new and useful Improvements in Panels or Composite Boards, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to panels or composite-board sections for constructing various articles, among which may be mentioned those which are usually constructed of wood, although such class of articles does not include all to which the invention may be applied.

It will be seen that the word "panel" is employed herein with its usual signification. For example, in a door, blind, trunk, desk, and other cabinet constructions a wall is usually made up of stiles and cross-bars constituting a frame-work, and this frame-work is provided with panels proper to complete the structure. The same features of construction occur in wainscoting and ceilings.

My invention relates, primarily, to the construction of such panels, and, secondarily, to the embodiment of the invention in stiles, cross-bars, and other frame-works, as will more clearly hereinafter appear.

The principal material employed in an embodiment of the invention consists of pulp of any desired character, whether of paper or other material. It may be the article of manufacture known as "straw-board," "pulp-board," or any other well-known form of paper-board or similar fabric. In this invention the body portion of a section is constructed of any desired material mentioned above or having characteristics similar to those mentioned, while the exterior surface or surfaces of the section may be covered with or consist of a veneer of any desired wood or of any other material in sheet or veneer form. Another characteristic of the section embodying this invention is that it is provided with a complete frame of wood and jointed to said frame in a manner which renders the connection of the body portion and frame firm and lasting. This frame may be connected with the body by a mortise-and-tenon connection of any character, and the section may be put upon the market with the frame thicker than the body portion or without the exterior finishing-surface, whereby said frame or said body portion, or both, may be planed or otherwise thinned, either along the frame or over the entire surface of the section to adapt it for use in connection with grooved stiles, mullions, or other casings of structures of which the section is to become a part, or said section may be put upon the market with the exterior finishing-sheet of veneer surface applied thereto.

Other objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 represents a door constructed of sections made in accordance with my invention. Figs. 2 and 3 are perspectives of a desk and a box or case, respectively, formed of sections embodying my invention. Fig. 4 is an edge view of a stile for doors and other structures constructed in accordance with my invention. Fig. 5 is a section on the line $x\,x$, and Fig. 6 is an end elevation of the stile, looking in the direction of the arrow in Fig. 4. Fig. 7 is an edge view of a cross-bar or what may be designated as a "cross-stile" to be used in connection with structures which consist or are composed of frame-work and panels. Fig. 8 is an edge view, and Fig. 9 is a section on the line $z\,z$, of the panel used in the structures mentioned in the description of Fig. 7. Fig. 10 is a cross-section of a composite board which may be used for any of the purposes hereinbefore specified. Fig. 11 is a plan of my section with the finishing-surface removed.

Like letters refer to like parts in all the figures of the drawings.

In constructing a section A in accordance with my invention I take a number of sheets of straw-board, pulp-board, or any other desired suitable material and compress and cement the same into one compact mass, as shown at $A^{\times}$, Fig. 10. I then completely surround the same with a wooden frame B, having either a groove B′, into which a tenon A′ of the body of the section is fitted, or having

a tenon B^2 entering a groove A^2, formed in the body. The frame B may be thicker than the body, as shown by dotted lines B^3, Fig. 10, in order that the same may be planed down to the required thickness to fit a groove formed in any structure intended to receive a panel. The tenons above mentioned are made shorter than the depth of the grooves for their reception, in order that the finish and strength of the frame may not be impaired. A veneer C, of any desired material, is now secured upon the body at one or both sides of the same, as desired, and upon the frame B, thus serving to re-enforce the joint of the body and frame, and thus also securing the presentation of an entire exterior surface of wood. The board is now ready to receive exterior ornamentation—as, for example, by means of molding D, arranged on one or both sides thereof, in accordance with the taste or judgment of the user, so that it can be applied to a useful purpose in constructing desks, trunks, doors, wainscoting, window-cases, ceilings, floors, and any other purpose to which wood, sheet metal, and other materials may be applied. My panel or section may be duplicated, so as to adapt it to many varied uses. For example, the corner-posts of a desk or of a box, trunk, or case with which panels are connected, and also the stiles and cross-bars of doors, or what is considered the equivalent, the base-board, cap-piece, and standards of wainscoting or the borders and cross-pieces of ceilings may be made of sections constructed in accordance with my invention.

The corner-posts, stiles, and cap and base pieces are constructed of two of my sections A, arranged side by side, but spaced or separated by strips of wood E, or other suitable material, whereby a groove is formed for the reception of the edges of the panel to be used in connection therewith (see dotted lines, Fig. 1) and for the reception of tenons F, projecting from the cross-bars. In this use of the section one of its surfaces may be not provided with the veneer C or other surface finish, and the portion of the section consisting of the frame B at one edge thereof is preferably extended to and formed integrally with the frame B of the adjacent panel, as shown at $B^{3\times}$, Fig. 6, whereby the stile of standard has a solid wooden edge. The cross-bars are constructed of two sections spaced with the strips E and provided with the tenons F, all as shown in Fig. 7.

By the use of my section constructed and adapted as above described, either singly or in duplicate, it will be seen that almost any desired structure can be made light, at a minimum cost, strong and serviceable, and that the structure will not be liable to split, warp, swell, or shrink, and for this reason the various stiles, cross-bars, and panels of the structure may be glued together at the joints—a method of fastening which is not and cannot be practically adapted in similar structures when made wholly of wood—so that the objectionable shrinking of the panels until the unpainted portions thereof become exposed to view is always liable to occur, whereas in my invention such objections are overcome.

All the parts of my section are cemented or glued solidly together. Therefore it is apparent that in some instances it may be desirable to connect the section with adjacent parts of a structure by mounting it on a rib or tenon instead of arranging it in a groove in said structure. This may be readily accomplished by grooving the frame B at and along any edge of the section, as shown by dotted lines B^4, Fig. 10. In this manner several sections may be connected with each other to form close and accurate joints, thereby adapting the same for use in parquetry for floors and other purposes.

Various other modifications may be adopted, so that a non-shrinkable, light, strong, and comparatively inexpensive panel or section is provided, and one which will withstand exposure and wear, and possess the strength of a section made wholly of wood, and yet be free from the objections accompanying the use of that material which arise from contraction and expansion and exposure to dampness.

It is evident that the mountings, when fastened, can be molded or beveled and coped the same as in the ordinary door-work.

What I claim is—

1. A section consisting of pulp-board or its described equivalent completely framed with wood, the pulp and frame being jointed together and having a surface-finishing material secured to the section and extending over the frame to the extreme edges of the same, substantially as specified.

2. A stile, standard, or cross-bar comprising two sections, each consisting of a body of pulp-board and having a surrounding frame of wood jointed or secured thereto, said sections being fastened apart, whereby grooves are formed for the reception of panels, substantially as specified.

3. A cross-bar consisting of two sections, each comprising a pulp-board body having a surrounding frame B of wood jointed thereto, tenons F, and spacing-blocks E, substantially as specified.

4. A section consisting of pulp-board or its described equivalent completely framed with wood, the pulp and frame being jointed together, and the frame being jointed at its corners by mortise-and-tenon joints, the tenons being shorter than the thickness of the mortised pieces, whereby the exterior surfaces of the latter are unimpaired, substantially as specified.

5. A structure comprising sections each consisting of two or more sheets of pulp-board cemented and compressed together, jointed to a wooden frame, and surfaced with veneer,

and standards and cross-bars each comprising two of said sections connected together, substantially as specified.

6. A structure comprising sections consisting of a pulp-board body completely framed with wood and surfaced with veneer, standards made up of two of such sections spaced, as described, to form mortises for tenons, and cross-bars made up of two of such sections spaced and provided with tenons, substantially as specified.

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

HEMAN A. BENEDICT.

Witnesses:
CLARENCE V. KELLOGG,
GEO. I. BEACH.