(No Model.)

J. N. LILYGREN.

DOOR.

No. 386,018. Patented July 10, 1888.

Fig. 1.

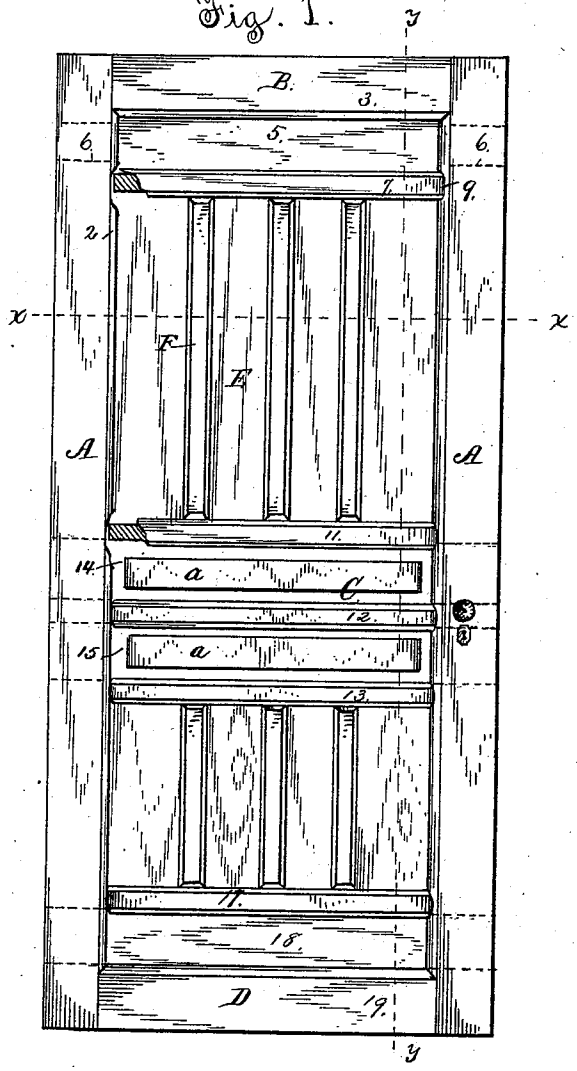


Fig. 3.

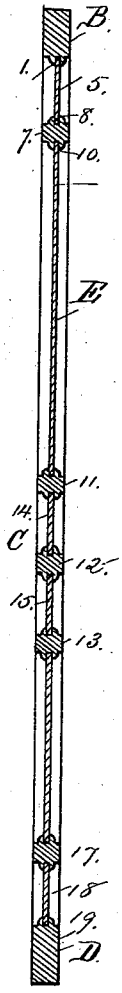
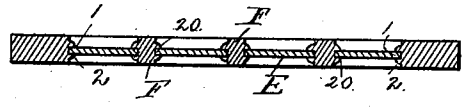


Fig. 2.



Witnesses.
J. Thomson Cross.
J. L. Lowe.

Inventor,
John N. Lilygren.
By his Attorney
A. G. Heylmun.

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UNITED STATES PATENT OFFICE.

JOHN NELSON LILYGREN, OF MUSCATINE, IOWA.

DOOR.

SPECIFICATION forming part of Letters Patent No. 386,018, dated July 10, 1888.

Application filed October 21, 1886. Serial No. 216,805. (No model.)

To all whom it may concern:

Be it known that I, JOHN NELSON LILYGREN, a citizen of the United States of America, residing at Muscatine, in the county of Muscatine, in the State of Iowa, have invented a new and useful Door, of which the following is a specification.

My invention has relation to improvements in doors of that class generally known as "panel" or "ogee" doors, and the objects are to improve the construction of doors of the kind named by improving the means for connecting the parts so that more substantialness is attained, and at the same time I can use less material and maintain the beauty of the door. With these objects in view my invention consists in the novel construction of parts and their combination, as will be hereinafter more fully described, and specially as the same is pointed out in the claims made hereto.

I have fully illustrated my invention in the accompanying drawings, wherein—

Figure 1 is a front view in elevation of a door constructed according to my invention, having one of the stiles broken away at the top rail and at the lock-rail to show the connection of parts. Fig. 2 is a cross-section taken on the line *x x* of Fig. 1, and showing the muntins on the under side made flush with the face of the stiles; and Fig. 3 is a vertical section taken on the line *y y* of Fig. 1.

In the drawings like notations designate similar parts, and reference being had thereto the letter A designates the stiles. These have grooves 1 cut in their inner side edges to receive the standing panels and have shapely moldings or beads 2 formed on them, substantially as seen in the drawings.

The letter B designates the top rail of the door, the special construction of which is as follows: These top rails consist of three pieces. The top rail proper, 3, is tenoned in the stiles, as usual, and has a groove in its lower edge to receive the cross-panel or lying panel 5, which is of the same thickness as the standing panels, and has its ends of the same thickness as the body of the panel and carried through mortises in the stiles, as indicated at 6. These ends or tenons are left the thickness of the cross-panel, in order that the full strength of the stuff may be utilized; but they may be narrower than the width of the panel, as shown, without jeopardizing the strength of the frame. Next is the lower section, 7, of the top rail, which might be termed the "frieze-piece." This is formed with a groove, 8, in its upper edge to receive the lower edge of the cross-panel 5, and may have its ends formed with a short tenon to set in the grooves of the stiles, and has the shoulders of the ends mitered or chamfered at 9 to set snugly over the molding or beads of the stiles, and a groove, 10, in the under edge to receive the ends of the standing panels.

The letter C designates the middle or lock rail, composed of five sections or pieces. The sections 11, 12, and 13 have their ends mitered or chamfered to set over the moldings of the stiles and grooved in their upper and lower edges to take the panels and cross-panels, and thus be held against removal by direct pressure. The cross-panels or lying panels 14 15 have their ends fitted to mortises in the stiles, as indicated by dotted lines in Fig. 1.

The letter D designates the bottom rail. This consists of three sections, 17 18 19, which are identical in construction with three sections comprising the top rail, respectively, excepting, of course, that their arrangement in the door is the reverse of the top section.

The letter E designates the standing panels, the outer ones of which have their edges arranged in the grooves of the stile and their inner edges set in the grooves 20 of the muntins F, and the inner standing panels are disposed with their edges in the grooves of the muntins, and all have their respective ends set in the grooves of the cross-rail. These muntins F may have their edges grooved to receive the standing panels, or they may be plates set and secured by cementation to the faces of the meeting panels, and the ends of the muntin may be formed with tenons to fit the grooves of the rails and have the shoulders of the tenons chamfered reversely, thereby saving material.

By the foregoing construction I greatly economize in the quantity of material used in the body of the door, since I can use thinner stuff for the panels and narrower rails and stiles and yet have a substantial and durable door. I can use any number of cross-panels, which serve as rails by having their ends inserted through mortises through the stiles.

The cross-panels can be made of any desired thickness in the interior by raisings, as shown at *a*, in the center. I may also apply the construction to doors of greater width than common by the use of a center stile mortised in the upper and lower rails and letting the cross-panels through the stiles. By the use of a central section or cross-panel in the rails I get a stronger tenon than can be made by a tenoning-machine, because the spurs in a machine has a tendency to weaken the tenon at the shoulder, while in my construction the panel is let through the stiles in its full thickness without cut or diminution. The top and bottom rail, each having two tenons, give additional bracing functions to the frame.

Any finish desired can be put on the face of the stiles and across the rails. I can also make the center rail and muntins of thinner stuff than outside frame, as seen in Fig. 3 on the upper side.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A door composed of stiles and top and bottom cross-rails united together and formed with grooves in their inner edges, top, bottom, and central cross-panels of uniform thickness throughout their length, having their ends lodged in mortises through the stiles, thin vertical panels and frieze-pieces, as 7, 11, 12, 13, and 17, having grooves in their longitudinal edges to take and hold the edges of the cross-panels and the ends of the vertical panels, all substantially as described.

2. A door composed of the following elements: the stiles having mortises to receive the tenons of the top and bottom cross-rails, and grooves on their inner edges to receive the edges of the standing panels, top, middle, and bottom cross-panels 5, 14, 15, and 18 thinner than the stiles and cross-rails and having their ends of the same thickness as the panel and lodged in mortises through the stiles, frieze-pieces 7, 11, 12, 13, and 17, having grooves in their longitudinal edges to receive the cross-panels and the ends of the standing panels, the standing panels having their ends in the grooves of the frieze-pieces and their outer edges in the grooves of the stiles, and muntins F on the standing panels having their ends set in the grooves of the frieze-pieces, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two attesting witnesses.

JOHN NELSON LILYGREN.

Attest:
FREDERICK STOCKER,
THOS. BROWN.