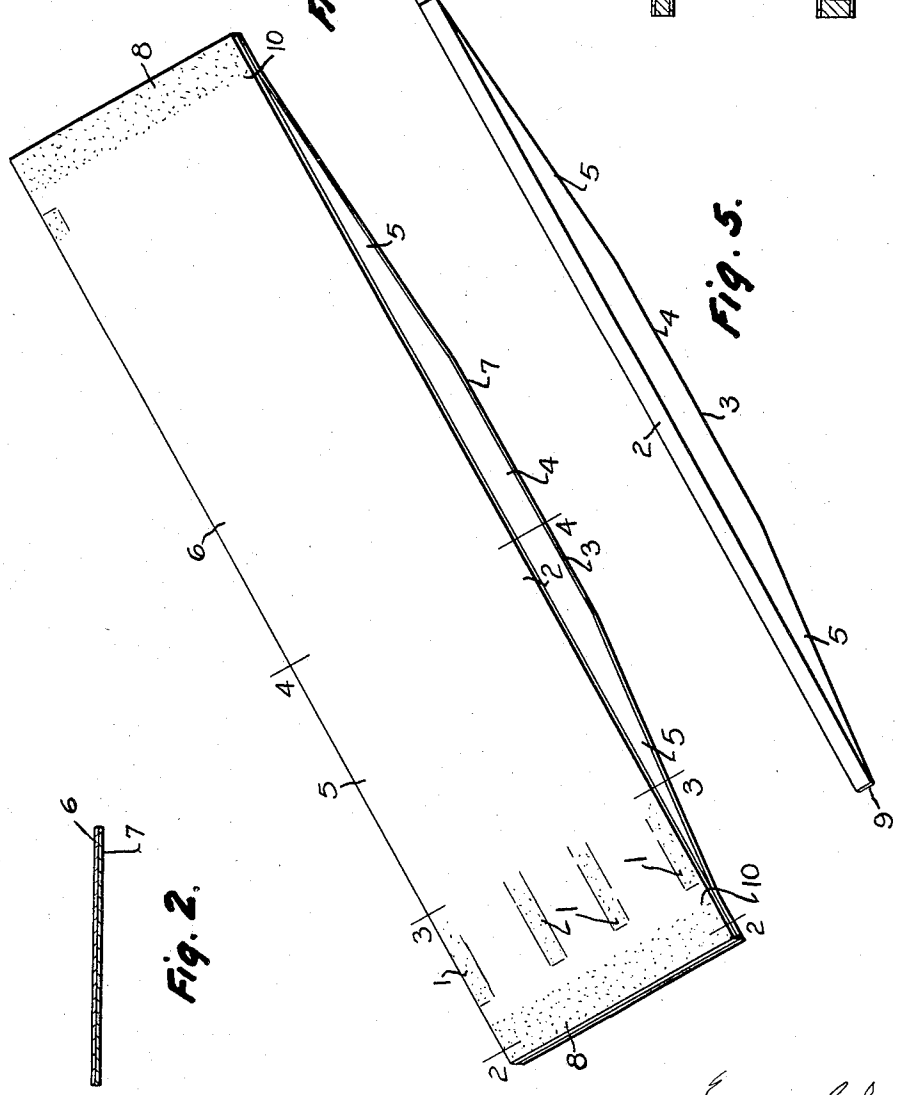
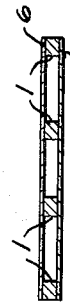
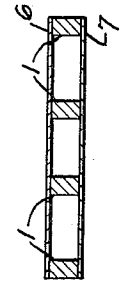
June 17, 1958 E. G. STACK 2,838,808

GRAIN DOOR

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GRAIN DOOR

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1 Claim. (Cl. 20—35)

My invention relates to grain doors and has for its objective the provision of a grain tight barricade for box car door openings.

This application is a continuation in part of my copending application Ser. No. 330,684, filed January 12, 1953.

These doors have applications other than the barricading of box car door openings. For instance, they may be used as panels to form the floor, walls, and roofs of buildings. For such use appearance plays an important part. To enhance appearance, while at the same time retaining the great strength of my double convex grain door described in the above application, the door of this application has one straight side and one convex side with the overall thickness of the door being retained. Tests have shown this flat side door to have a strength equal to that of the double convex door when the load is on the flat side of the door but only 80% of its strength when the load is on the convex side.

A section of a straight side grain door is shown in the accompanying drawings in which Fig. 1 is a perspective of a door section; Fig. 2 is a cross section on the line 2—2 of Fig. 1; Fig. 3 is a cross section on the line 3—3 of Fig. 1; Fig. 4 is a cross section on the line 4—4 of Fig. 1; and Fig. 5 is a perspective of a spacer.

Throughout the drawings and the specification similar numerals refer to similar parts.

Similar to the doors in my copending application the present grain door section comprises two sheets of material, such as plywood, of greater length than width having their adjacent narrow ends glued to each other with their middle portions spread apart for the reception of spacing means to which the cover sheets are glued.

Figs. 1, 3, and 4, show the use of four spacers 1 for each door section S. This spacer 1, as shown in Fig. 5, has one straight side 2 and one convex side 3. This convex side 3 may be formed as a smooth curve or it may have a straight middle portion 4, approximating the middle third of the spacer length, parallel to the straight side 2. From each end of the middle portion 4 an end portion 5 converges toward the straight side 2. The

smooth curved spacer is the more costly to manufacture and nothing is gained in strength or appearance by its use.

The adjacent faces of adjacent narrow ends of the cover sheets 6 and 7 are glued to each other for a distance of approximately 4". The cover sheets 6 and 7 are also glued to the spacers 1. The spacers 1 are made one foot shorter than the cover sheets 6 and 7 hence terminate 2" short of the glue area 8 thus permitting the spacer 1 to have a blunt end 9 which is not so easily damaged as it would be if the end of the spacer feathered out at 10 or the beginning of the glue area 8.

Tests show that a 24" x 84" door section having four 1⅝" x 1⅝" spacers covered with ¼" unsanded fir plywood will deflect only 1½" under a load of 3450# on a 6'0" clear span—the door being loaded at the third points.

Tests show that a 24" x 96" door section having four 2⅝" x 2⅝" spacers covered with ¼" unsanded fir plywood will deflect only 1½" under a load of 4970# on a 7'0" clear span—the door being loaded at the third points.

The above door sections meet all requirements of the railroads for their box cars used to transport grain.

24" x 192" sections with three 1⅝" x 3⅝" spacers covered with ¼" unsanded fir plywood carried a uniformly distributed live load of 20# per square foot on a 15'0" clear span with only 7/16" deflection.

It is apparent that these panels or sections have great strength and may serve as grain bins and corn cribs. Sufficient ventilation for corn cribs may be had by routing vertical slits (not shown) in the cover sheets.

These panels or sections may be used to build up other buildings such as barracks. Window or sash openings (not shown) may be framed into the panels of such buildings.

Where insulation is required the same (not shown) may occupy the space between the spacers.

The information given above will serve to make other applications more apparent.

What I claim as new in the art follows:

A grain door section having a pair of cover sheets of greater length than width having the end portions of adjacent faces of their adjacent narrow ends glued to each other to leave a flat bearing surface on both sides of both ends of the door section and means to spread the cover sheets apart between their glued together ends which means comprises a plurality of similar longitudinal spacers each having one straight face and an oppositely disposed arched face to which faces the cover sheets are glued.

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