Sept. 24, 1968 C. D. LANDOW ET AL 3,402,457

METHOD OF MAKING A FLUSH TYPE OVERHEAD DOOR

Filed June 23, 1966 3 Sheets-Sheet 1

Fig-1.

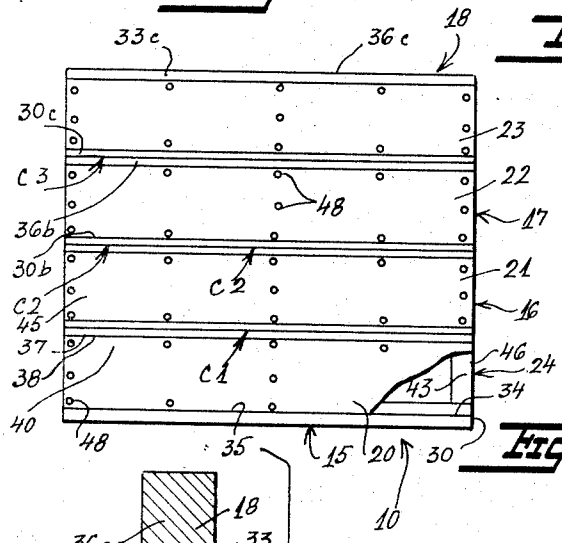


Fig-14

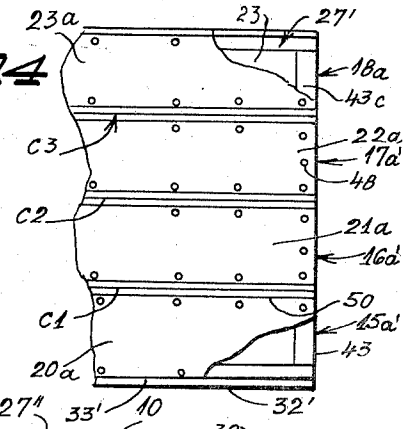


Fig-11.

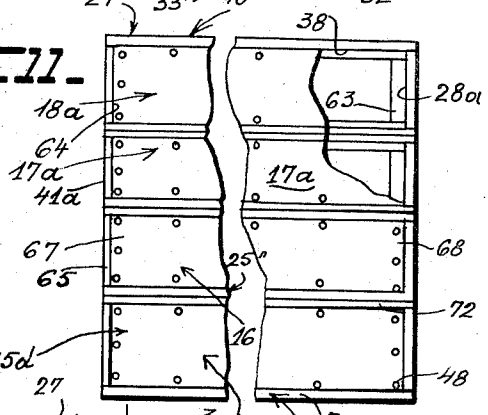
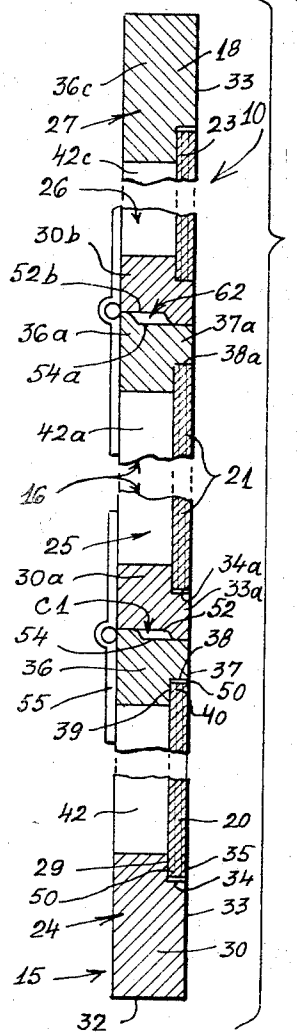


Fig-3.



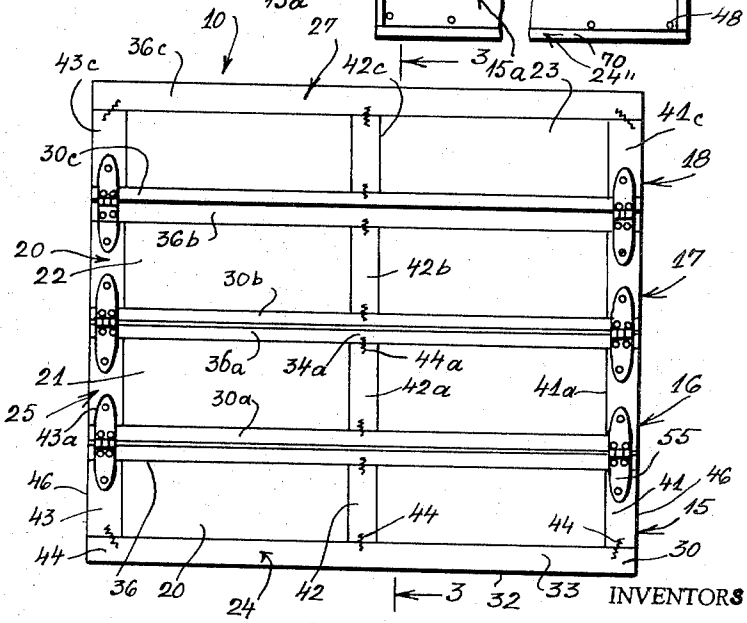


Fig-2.

INVENTORS

Charles D. Landow &
Jeanette Landow

BY Polachek & Saulsbury

ATTORNEYS

Sept. 24, 1968 C. D. LANDOW ET AL 3,402,457

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Filed June 23, 1966 3 Sheets-Sheet 2

Fig 4

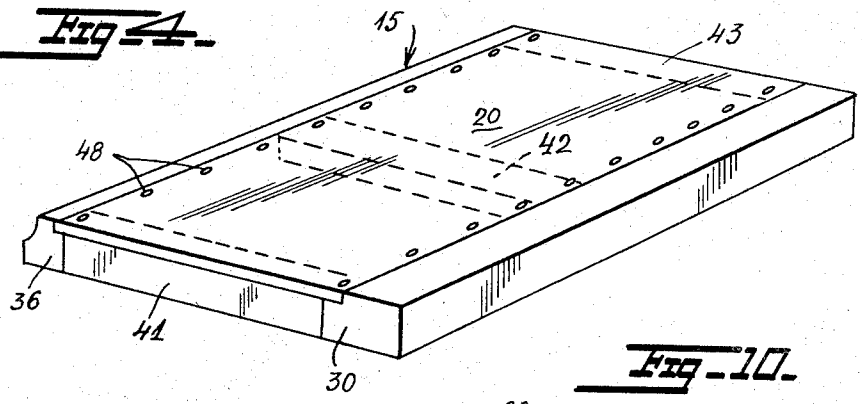


Fig 10

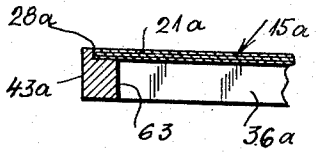


Fig 9

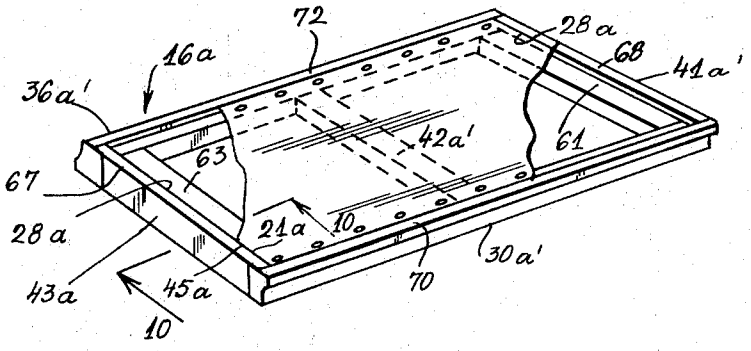
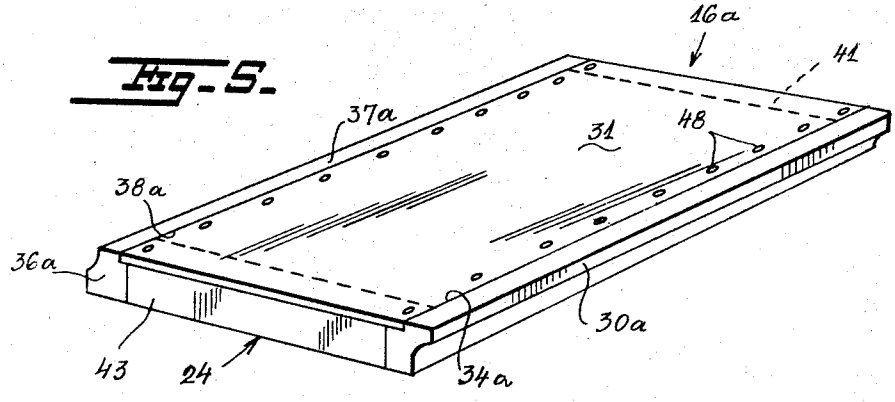


Fig 5



INVENTORS

Charles D. Landow &
Jeanette Landow

BY Polachek & Saulsbury

ATTORNEYS

Sept. 24, 1968 C. D. LANDOW ET AL 3,402,457

METHOD OF MAKING A FLUSH TYPE OVERHEAD DOOR

Filed June 23, 1966 3 Sheets-Sheet 3

Fig. 6.

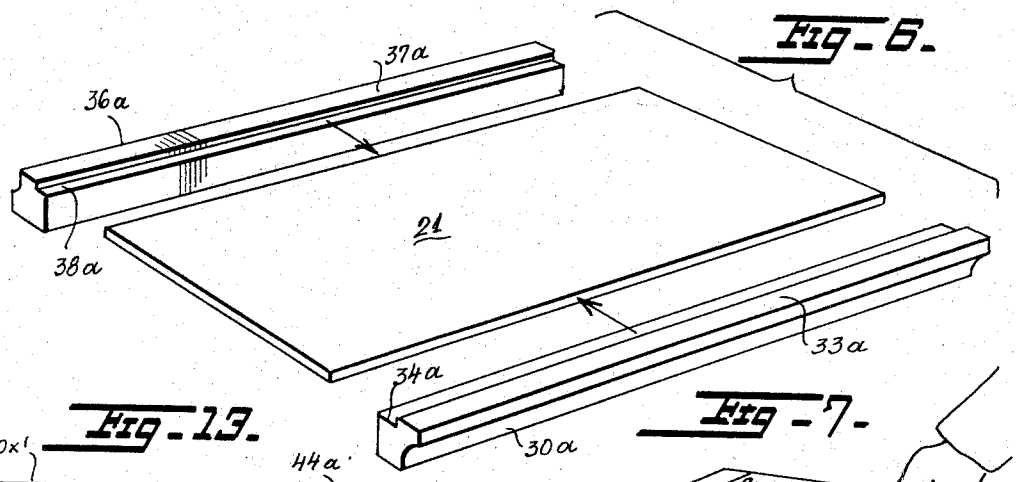


Fig. 13.

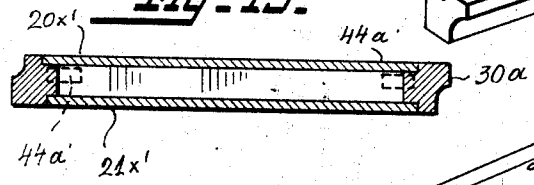


Fig. 7.

Fig. 8.

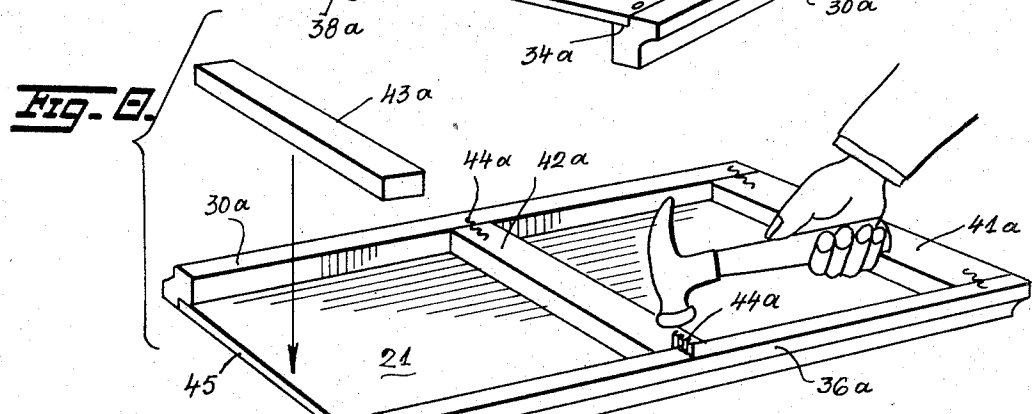
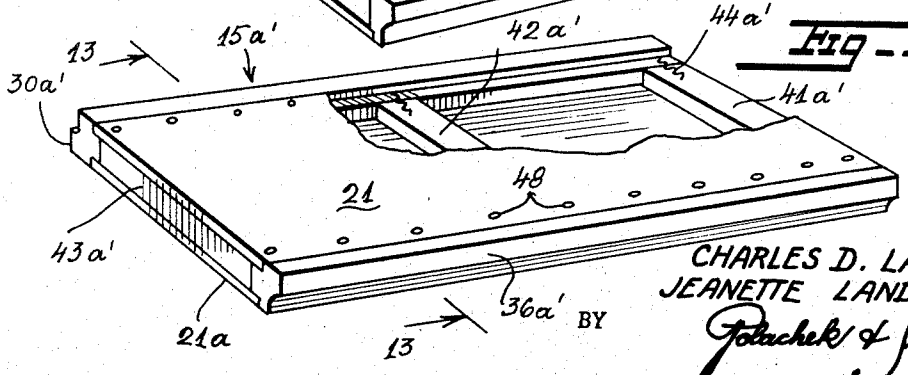


Fig. 12.



INVENTORS
CHARLES D. LANDOW &
JEANETTE LANDOW
BY
Tolachek & Saulsbury
ATTORNEYS

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3,402,457

METHOD OF MAKING A FLUSH TYPE OVERHEAD DOOR

Charles D. Landow and Jeanette Landow, both of 735 Kappock St., Bronx, N.Y. 10463

Filed June 23, 1966, Ser. No. 559,758
4 Claims. (Cl. 29—428)

This invention concerns an improved method of making a flush type door construction especially intended for articulated overhead plywood doors such as used in garages, warehouses and the like, and to the method of making the same.

It is the principal object of this invention to provide a weather-type garage made of plywood in which the edges of the plywood are enclosed by the frame of the door section and protected thereby from moisture which causes the peeling of the plywood laminations.

It is another object of the present invention to provide an articulated sectional door construction which can be manufactured rapidly and easily assembled by relatively unskilled personnel, and in a manner different from that done heretofore.

It is another object of the invention to provide such a door construction from plywood which is weather tight and water tight, attractive in appearance, light in weight and more economical to manufacture than prior sectional doors.

Each section in the door construction has a single rectangular plywood panel as its principal body member. This panel is the basis for the strength of the door as well as its water-tight structure. Frames are fitted around the panels, and hinges are attached to the frames of adjacent door sections. The panels are applied to both sides of the door sections.

According to a modification of the invention, the end frame rails are rabbeted and the ends of the panel are seated in the rabbeted portions and secured thereto whereby the ends of the panel are weatherproofed.

Broadly, the invention comprises sectional door construction, each section composed of a rectangular-shaped wooden panel having frame members which are fitted along the long sides thereof and bracing rails across the ends and intermediate the ends on one surface thereof, all of the frame members according to the method involved being fitted to the plywood panel rather than making the frames and fitting the panels thereafter to them. The long edges of the panel fit in rabbeted portions of the frame members whereby the edges of the panel are protected against chipping or separating and preventing of moisture from getting into the plies of the panel and warping the panel.

In assembling a door section, the side frame members are fitted against the long side edges of the plywood panel, with the panel seating in the rabbeted portions of the frame members. The panel is then nailed to the rabbeted portions of the frame members. The unit is then turned over and the bracing rails fitted between the side frame members and secured by fastening elements spanning the junctures between the rails and frame members.

In the accompanying drawings forming a material part of this disclosure:

FIGURE 1 is a front elevational view of a sectional door construction embodying the invention, parts being shown broken away.

FIG. 2 is an enlarged rear elevational view thereof.

FIG. 3 is an enlarged vertical sectional view taken on line 3—3 of FIG. 2.

FIG. 4 is a top perspective view of a top or a bottom door section of a door construction such as shown in FIG. 1.

FIG. 5 is a top perspective view of a complementary

intermediate door section of which there may be two or more.

FIG. 6 is a top disassembled and collective perspective view illustrating a step in the manufacture of the door section of FIG. 5 or of FIG. 4, the long side rails or frame members being brought to the side edges of the plywood board.

FIG. 7 is a similar view showing the next step of the rail assembled to the edges of the board and being brad nailed thereto.

FIG. 8 is a view showing the assembled board and rails turned upside down and the short frame pieces being assembled on the board between the rails with corrugated fasteners as a final step.

FIG. 9 is a fragmentary top perspective view of a door section embodying a modified form of the invention, parts being shown broken away wherein the end short frame pieces are rabbeted to enclose the end edges of the plywood board.

FIG. 10 is a fragmentary sectional view taken on the line 10—10 of FIG. 9 and through the rabbeted short frame pieces.

FIG. 11 is a fragmentary front elevational view of a door construction made up of the sections of the forms shown in FIG. 9.

FIG. 12 is a fragmentary top perspective view of a double board door section, the long side rail being rabbeted on the rear side to similarly accommodate a rear board.

FIG. 13 is a cross-sectional view taken on line 13—13 of FIG. 12, and

FIG. 14 is a fragmentary rear elevational view of a door construction made up of double board door sections of the form shown in FIGS. 12 and 13.

Referring now to FIGS. 1 to 7, inclusive, there is shown first articulated sectional door construction **10**, including four plywood door sections **15**, **16**, **17** and **18**, there being top, bottom and intermediate sections for each door. These door sections comprise forwardly-facing rectangular-shaped plywood panels **20**, **21**, **22** and **23**, respectively. The panels are formed of plywood and each is laminated and rectangular in shape. These panels are respectively framed by wooden frames **24**, **25**, **26** and **27**.

The frame **24** of lowermost or bottom door section **15** has a wide bottom horizontal rail **30** with a flat bottom surface **32**, FIGS. 3 and 4. The front side **33** of rail **30** is rabbeted at **34** defining a ledge **29** on which seats the bottom edge **35** of plywood panel **20**. The front side **33** of the front side of the rail is wide and contains the bottom edge **35** of the panel protected and removed from the floor moisture.

The frame **24** has a horizontal narrower top rail **36** formed and rabbeted at **38** to define a narrow forwardly exposed ridge **37**, and a ledge **39** on which seats the upper edge **40** of panel **20**. Connecting the upper and lower rails **30** and **36** are three vertical bars or frame pieces **41**, **42** and **43** spaced apart. Opposite ends of the bars are secured to inner facing edges of rails **30**, **36** by corrugated fasteners **44** as best seen in FIG. 2 and being applied in FIG. 7. The center bar **42** is equally spaced horizontally from end bars **41** and **43**. Lateral edges **45** of the panel **20** overlie bars **41**, **43**. The edges **45** extend out to and are flush with lateral side faces **46** of bars **41**, **43**. Nails **48** secure the panel **20** to the rails **30** and **36** and the bars **41**, **42** and **43**. At upper and lower edges of the panel **20** may be applied waterproof sealing cement **50**, FIG. 3. It will be apparent that in the door section **15**, the panel **20** serves as the major structural frontal member and the frame **24** serves only as backing whose members are held in rectangular configuration by the panel **20**.

The intermediate door section **16** is similar in con-

struction to door **15** as shown in FIGS. 1 to 7. In the door section **16**, the frame **25** built about panel **21** has vertical bars **41***a*, **42***a* and **43***a* joined to lower and upper rails **30***a*, **36***a* by corrugated fasteners **44***a*. The lower rail **30***a* and upper rail **36***a* have forwardly facing rabbets **34***a*, **38***a* in which seat lower and upper edges respectively of panel **21**.

The bottom surface of rail **30***a* is formed with a rabbet **54** formed in the top of rail **36** in frame **24**. This provides a run-off channel C1 for any rainwater which may fall on the vertical door assembly. This channel also facilitates folding movements of the doors with respect to each other when the door assembly is drawn up to a horizontal position for clearing a doorway in which the door will be mounted. Hinges **55** are used to secure the doors pivotally together. A further rabbet **54***a* is formed at the top of rail **36***a*. This rabbet faces a rabbet **52***b* in the bottom rail **30***b* of frame **26**, to define a second channel C2.

Door section **17** is formed like door section **16**, FIGS. 3 and 4 so that no further explanation of this door is required. The uppermost door **18** has a wide rail **36***c* at the top and narrower rail **30***c* at the bottom. Vertical bars **41***c*, **42***c* and **43***c* join the rails **30***c* and **36***c*, FIG. 2. Panel **23** overlies the frame **27** and is secured thereto by nails **48**. Channel C3 is defined between facing rabbets in the upper surface of upper rail **36***b* and the bottom surface of lower rail **30***c*. A wide ridge **33***c* is exposed at the top of the door. The entire door assembly is easily and quickly assembled with the several hinges placed on the rear faces of the door.

Our improved method of assembling of these door sections is illustrated in FIGS. 6 to 8, inclusive. According to the invention, the long side rail frame members are first brought to the long parallel side edges of the panel **21** as indicated by the arrows in FIG. 6, and the long edges of the panel positioned or seated in rabbets **34***a* and **38***a* and between the ridges **33***a* and **37***a* of the rail frame members. The panel is then fastened in position by driving the nails **48** thereinto as shown in FIG. 7. Next the panel and attached frame members are turned over and the bracing bars or pieces **41***a*, **42***a* and **43***a* are placed in position and fastened to the side frame members by driving the corrugated fastening elements **44***a* therein and across the joint between the bars and long frame members as shown in FIG. 8. FIG. 5 shows the door section returned to the upright front position.

In FIGS. 9, 10 and 11 a modified form of door section **16***a* is shown which differs from the door section **16** merely in that the end bars **41***a'* and **43***a'* are rabbeted as indicated at **28***a*, to receive and protect the end edges **45***a* of the panel **21***a* as well as the long edges of the panel are protected. A center bar **42***a'* is located between the end bars and similarly secured to the long rails or frame members **30***a'* and **36***a'*.

FIG. 11 illustrates a door construction **10'** made up of sections **16***a*, **17***a* and similar constructed bottom and top sections **15***a* and **18***a*. In door construction **10'** and bars **41***a'* and **43***a'* are formed with a rabbet **28***a* to define ledges **61**, **63** on which lateral vertical edges **45***a* of the panels rest. Ridges **67**, **68** on the end bars flank the end edges **45***a* of the panel. The bottom and top rails **30***a''* and **36***a''* of each door frame have the rabbets **28***a* defining horizontal ledges **70**, **72** which are continuous and coplanar with ledges **61**, **63**. Thus, the horizontal and vertical edges of each door panel is enclosed in a rectangular frame defined by ledges **61**, **63**, **70** and **72**. Any spaces existing between the edges of the door panels and the adjacent ridges can be sealed by a suitable caulking compound or sealing cement to render the door section water tight.

In FIGS. 12, 13 and 14, a double door section **16***a'* is shown. This door section **16***a'* differs from the door section **16** of FIGS. 1 to 7 in that the side frame members **30***a'* and **36***a'* are rabbeted on both sides thereof, and in addition to the panel **21** at the top, another panel **21***a* is provided and fastened in position at the bottom so that the door section is closed on both sides by the panels **21** and **21***a*. The door sections will be assembled in the same manner that the other doors are except that the hinges will be applied to the opposite ends of the sections over the ends of the panels.

The various doors described are light in weight, easy to construct, and economical to manufacture. Nevertheless, they provide longer, more satisfactory service than prior articulated doors having individual, recessed panels, They are attractive in appearance due to their flush front construction. Also, they are stronger and more water-tight. They will not splinter, warp or crack with continued use, since they are water-tight at their edges.

While we have illustrated and described the preferred embodiments of our invention, it is to be understood that we do not limit ourselves to the precise construction herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claims.

What is claimed is:

1. A method of manufacturing a door section for an articulated sectional door construction consisting of the steps of positioning long side rail wooden frame members underneath the long edges of a rectangular shaped wooden panel, the side frame members being rabbeted, fastening the long edges of the panel to the rabbeted portions of the side frame members, inverting the attached panel and side frame members and while inverted fitting and fastening bars between the side frame members.

2. A method of manufacturing a door section for an articulated sectional door construction as defined in claim **1**, wherein the step of fastening the panel to the side frame members consists of driving rows of nails through the long side edges of the panel into the rabbeted portions of the side frame members.

3. A method of manufacturing a door section for an articulated sectional door construction as defined in claim **1**, wherein the step of fastening the cross rails to the side frame members consists of driving metal fastening elements into and across the joint between the side frame members and the abutting cross rails.

4. A method of manufacturing a door section for an articulated sectional door construction as defined in claim **1** wherein the step of fastening the panel to the side frame members consists of driving rows of nails through the long side edges of the panel into the rabbeted portions of the side frame members and wherein the step of fastening the cross rails to the side frame members consists of driving metal fastening elements into and across the joint between the side frame members and the abutting cross rails.

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THOMAS H. EAGER, *Primary Examiner.*