May 12, 1964 E. G. STACK 3,132,981

METHOD OF CONSTRUCTING MULTI-ARCH CORELESS FLUSH DOORS

Filed July 14, 1959

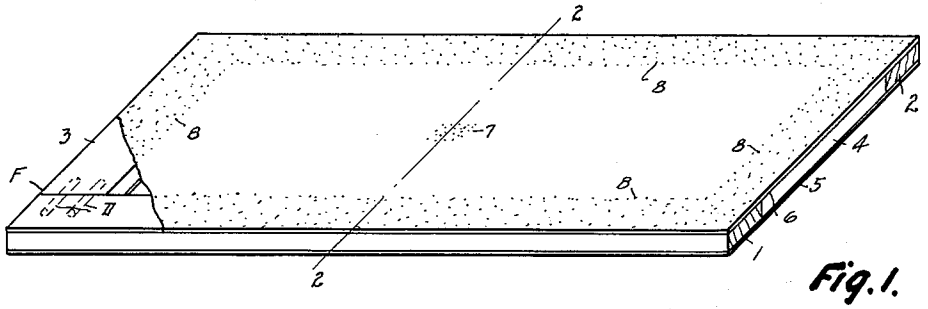


Fig. 1.

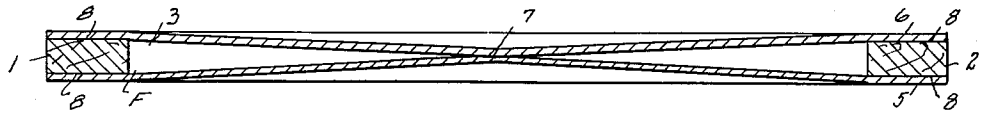


Fig. 2.

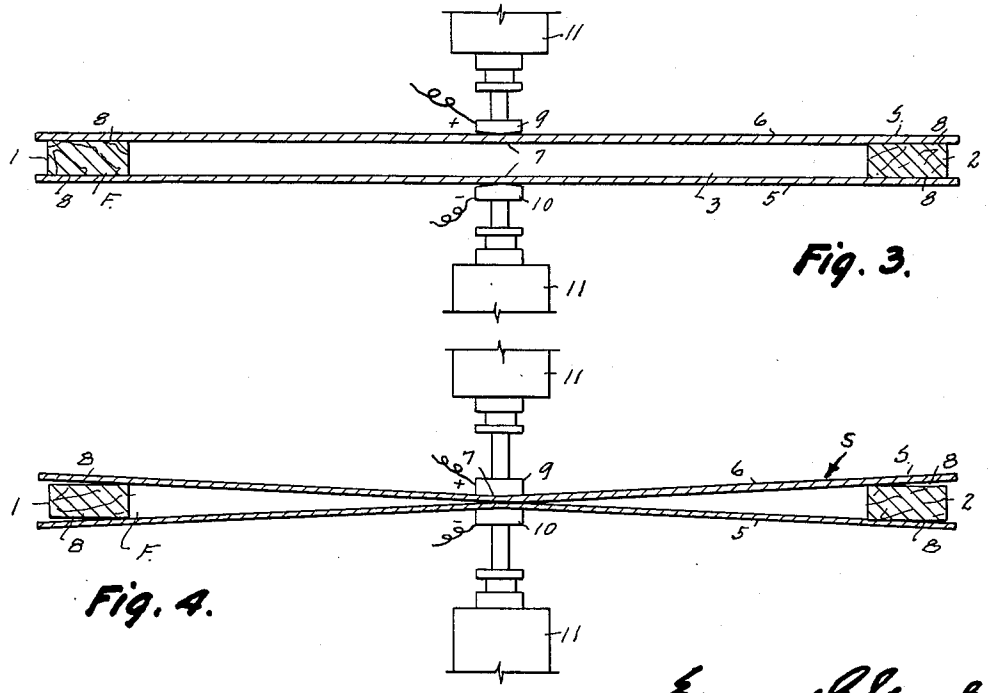


Fig. 3.

Fig. 4.

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METHOD OF CONSTRUCTING MULTI-ARCH CORELESS FLUSH DOORS

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6 Claims. (Cl. 156—163)

My invention relates to the method of constructing the multi-arch coreless flush door described in my application Ser. No. 338,807, now Patent 2,799,059, and my applications Ser. No. 290,858 and Ser. No. 456,696, now abandoned.

This door is shown in the accompanying drawings of which FIG. 1 is a perspective of the door; FIG. 2 is a vertical section on the line 2—2 of FIG. 1; FIG. 3 is a vertical section showing the overhang of the cover sheets in the sandwich and prior to pressing; and FIG. 4 is a vertical section showing the cover sheets pressed together in position for the glue to be set by the current flowing thru the electrodes.

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

My coreless flush door is simplicity itself in so far as appearance goes but its construction presents many problems.

Primarily the door consists of a rectangular frame F comprising two longitudinal members or stiles **1** and **2** and two cross members or rails **3** and **4**, these members being joined at the corners as by the dowels D, shown. To each side of the frame thus formed is glued a cover sheet such as plywood. The two cover sheets **5** and **6** are depressed into contact with each other at their center and glued together. It follows from the above that each of the cover sheets will be arched in every direction, namely, lengthwise, crosswise, and diagonally, whereby the stresses in the cover sheets will tend to balance and the multi-arch door will have a natural tendency to stay straight and out of wind. Straight lines were used in illustrating the arches but the cover sheets **5** and **6** are actually formed with smooth compound curves.

Flush doors usually have covers with straight flat surfaces which lie in the same plane. These cover sheets are either sheets of plywood or are built up of veneers on a solid or crate core. The sandwich is then put in any suitable hot or cold press where it remains until the glue is set.

It is apparent that in my door the two cover sheets **5** and **6** must be depressed or brought into contact with one another at their centers before said cover sheets are clamped to the frame F. This fact brings about a lot of grief as will be apparent from what follows. Because of my depressed door, face sanded plywood must be used for the cover sheets **5** and **6** hence care must be exercised to keep glue or adhesives from getting on the door face.

Openings are limited in multiple opening hot presses to approximately 2½" and it is difficult if not impossible sometimes to enter the sandwich S together with a pressure block (not shown) positioned at the center of each cover sheet whereby the center of both cover sheets may be depressed into contact with one another. It is very difficult to position these pressure blocks and hold them without marring the door surface.

With the method disclosed in this application spotting of the cover sheets is minimized. Either hot or cold presses may be used. Pressure blocks may be dispensed with.

The members **1**, **2**, **3**, and **4**, of the door frame F are milled, assembled, and held together in any of the ways known to door manufacturers. Glue or an adhesive **8** is spread upon both sides of the assembled door frame F, preferably by running said frame F thru a mechanical

glue spreader, and upon the area **7** of the cover sheets **5** and **6**. The frame F is placed upon one of the cover sheets as **5** and the cover sheet **6** laid upon the frame F thus completing the sandwich S. It is preferable to lay up the door sandwich S in some sort of a jig (none being shown) and kept therein while the glue at **7** is being set.

In some high frequency units now on the market the pressure P may be applied directly thru the electrodes **9** and **10** as shown diagrammatically in FIG. 4. No attempt is made to show or describe any high frequency unit other than to say that the electrodes **9** and **10** may be brought into contact with the cover sheets **5** and **6** thru the agency of means such as air or oil operated cylinders as **11**.

The positive electrode **9** is shown adjacent the cover sheet **6** and the negative electrode **10** adjacent the cover sheet **5**. It may be pointed out that both electrodes **9** and **10** may be positioned adjacent either sheet **5** or **6** if said electrodes are separated so that the electrical field is from one to the other thru the glue area **7**. In this last modification (not shown) one or the other of the cylinders must operate a non-electrically effected pressure bar (not shown). Whatever the unit or type of unit used it should have sufficient capacity to set the glue or adhesive at **7** within a reasonable period of time. In other words the sandwiches should be stuck fast enough to keep a 20-opening hot press supplied.

When the glue at the center of the door sandwich has been set electronically the sandwich S may be stacked up with others and put in clamps or a cold press or said sandwiches may be loaded into a multiple opening hot press where the glue or adhesive **8** on the door frame F may be set with electric or steam heat thru conduction.

A door is a highly competitive article of manufacture and cost is of the essence. Time enters into cost.

It is pointed out that the glue area adjacent the door perimeter may also be set electronically but whether it is set in that manner, by means of heated platens, or in a cold press with the aid of time/heat, it is believed that much is to be gained by first setting the glue at the door center and then setting the glue at the door perimeter and it is to these separate steps that my invention is directed.

In the body of the specification both glue and adhesive are mentioned while in the claims the term adhesive is mentioned. It is to be understood herein that the term adhesive is to include glue.

What is new in the art is set forth in the appended claims.

I claim:

1. The method of constructing a multi-arch coreless flush door which comprises constructing a frame enclosing an area between the frame members, placing a cover sheet on each side of the frame to form a sandwich, spreading an adhesive between the frame and the cover sheets and between the cover sheets adjacent the center of their area, initially depressing the center of both cover sheets inwardly into contact within the enclosure to give them a continuously curved dome-like surface, setting the center adhesive with high frequency current, transferring the sandwich to a point remote and stacking said sandwich upon other sandwiches in spaced apart relation and subsequently applying heat and pressure to each sandwich to set the adhesive between the frame and cover sheets thereof, said pressure being applied simultaneously to each sandwich in the stack.

2. The method of constructing a multi-arch coreless flush door which comprises constructing a frame enclosing an area between the frame members, placing a cover sheet on each side of the frame to form a sandwich, spreading an adhesive between the frame and the cover sheets and between the cover sheets adjacent the center of their area, initially depressing the center of both cover

sheets inwardly into contact within the enclosure to provide a myriad of arches radiating in all directions through a common center, setting the center adhesive with high frequency current, transferring the sandwich to a point remote and stacking said sandwich upon other sandwiches in spaced apart relation and subsequently applying heat and pressure to each sandwich to set the adhesive between the frame and cover sheets thereof, said pressure being applied simultaneously to each sandwich in the stack.

3. The method of constructing a multi-arch coreless flush door which comprises constructing a frame enclosing an area between the frame members, placing a cover sheet on each side of the frame to form a sandwich, spreading an adhesive between the frame and the cover sheets and between the cover sheets adjacent the center of their area, initially depressing the center of both cover sheets inwardly into contact within the enclosure to give them a continuously curved dome like surface, setting the center adhesive with high frequency current, transferring the sandwich to a point remote and stacking said sandwich upon other sandwiches to form a stack and subsequently applying pressure to the stack and holding said pressure until the adhesive is set between the frame and the cover sheets.

4. The method of constructing a multi-arch coreless flush door which comprises constructing a frame enclosing an area between the frame members, placing a cover sheet on each side of the frame to form a sandwich, spreading an adhesive between the frame and the cover sheets and between the cover sheets adjacent the center of their area, initially depressing the center of both cover sheets inwardly into contact within the enclosure to provide a myriad of arches radiating in all directions through a common center, setting the center adhesive with high frequency current, transferring the sandwich to a point remote and stacking said sandwich upon other sandwiches to form a stack and subsequently applying pressure to the stack and holding said pressure until the adhesive is set between the frame and cover sheets.

5. The method of constructing a multi-arch coreless flush door which comprises constructing a frame enclosing an area between the frame members, placing a cover sheet on each side of the frame to form a sandwich, spreading an adhesive between the frame and the cover sheets and between the cover sheets adjacent their medial line, initially depressing the center of both cover sheets inwardly into contact within the enclosure to arch said sheets with the frame providing the arch haunches, setting the center adhesive with high frequency current, transferring the sandwiches to a point remote to form a stack of sandwiches and subsequently applying pressure to said stack of sandwiches until the adhesive between the frame and cover sheets of the sandwiches is set.

6. The method of constructing a multi-arch coreless flush door which comprises constructing a frame enclosing an area between the frame members, placing a cover sheet on each side of the frame to form a sandwich, spreading an adhesive between the frame and the cover sheets and between the cover sheets adjacent their medial line, initially depressing the center of both cover sheets inwardly into contact within the enclosure to arch said sheets with the frame providing the arch haunches, setting the center adhesive with high frequency current, transferring the sandwiches to a point remote to form a stack of sandwiches and subsequently applying heat and pressure to said stack of sandwiches until the adhesive between the frame and cover sheets of the sandwiches is set.

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