

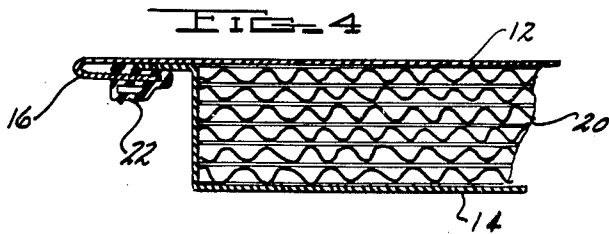
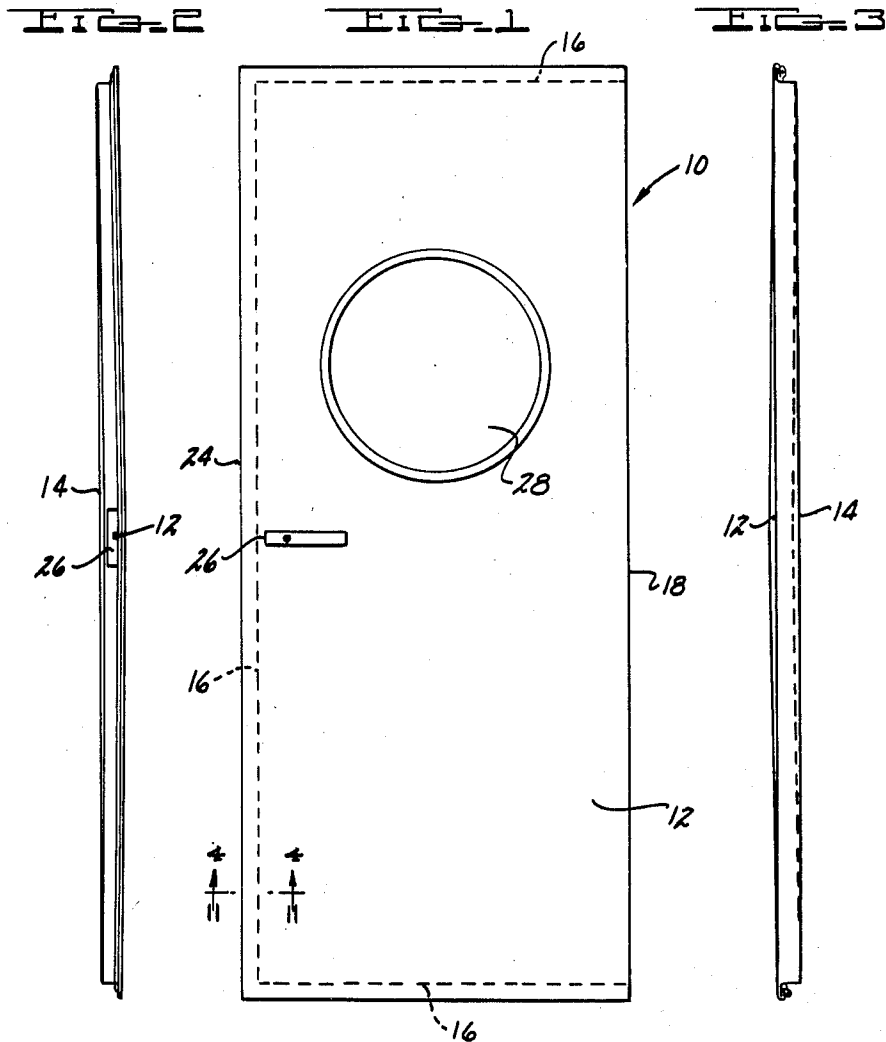
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DOOR CONSTRUCTION

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2,781,875

DOOR CONSTRUCTION

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1 Claim. (Cl. 189—46)

The present invention relates to improvements in the construction of doors, and particularly those suitable for use in house trailers, cabin cruisers or the like. It also relates to the method of forming such doors.

It is one of the objects of the present invention to provide an improved door construction which is characterized by its strength and light weight and which will not readily be warped or distorted out of shape.

It is another object of the present invention to provide an improved door of the foregoing character which is constructed and arranged to have a lip projecting from at least three of its edges with a weather sealing strip mounted on said lip and in which the lip is formed by bonding together lapped edges of sheet metal panels, thereby providing an attractive finish on the door and a permanently tight weather seal, the door being further characterized in that it has a relatively straight hinged edge and a camber on its opposite edge for use in maintaining the door tightly closed, thereby avoiding rattles and the like.

It is another object of the present invention to provide an improved door construction of the foregoing character which has thin sheet metal panels forming its opposite sides and a pad is disposed between such panels which will resist indentation or deformation of such panels, said pad being characterized by its low cost and insulating properties.

It is still another object of the present invention to provide a method of constructing a door which can be rapidly and economically produced and which embodies the foregoing desirable features.

Other objects of this invention will appear in the following description and appended claim, reference being had to the accompanying drawings forming a part of this specification wherein like reference characters designate corresponding parts in the several views.

In the drawings:

Fig. 1 is a front elevation of a door embodying the present invention;

Fig. 2 is a side elevation of the door as seen from the left side of Fig. 1;

Fig. 3 is a side elevation as seen from the right side of Fig. 1; and

Fig. 4 is a fragmentary section taken on the lines 4—4 of Fig. 1 showing the lip and pad construction used in the door.

Before explaining the present invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also, it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

Referring to the drawings, a preferred construction of the door 10 can be seen. It has sheet metal panels 12 and 14 forming its front and rear sides which are lapped

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together as shown in Fig. 4 to form a lip 16 which is adapted to engage the door frame (not shown). The lip 16 is formed on three edges of the door 10 and normally will not be used on the edge 18 to which hinges are adapted to be attached. However, the present invention is not limited to a door construction having such a lip extending from only three edges since it is contemplated using embodiments of this invention where all edges will have a lip, such as might be desired on marine vessels, or where less than three edges may require lips.

The panels 12 and 14 are constructed and arranged to be in spaced relation except where joined at their edges. Disposed between the panels 12 and 14 is a corrugated cardboard pad 20 which is bonded to the inner surfaces of panels 12 and 14 by any suitable bonding agent, one of which has proved very satisfactory being Chrysler Cycle-Weld. If desired, other suitable corrugated material may be used.

The use of this corrugated pad is one of the important features of the present invention. Heretofore, it has been conventional practice to use a fiber-glass pad or a similar material which is placed loosely between the door panels. Such pads have proved to be of little value in preventing the relatively thin sheet metal panels from buckling in when pressed upon and thereafter snapping back to their original position. They also do not prevent rattling to the extent desired for house trailers or the like.

The corrugated cardboard pad 20 as is used in the present invention is found to provide a great deal of support for the panels 12 and 14 to maintain them in a fixed position and the door construction is found to be substantially free from rattles or noises resulting from vibrations of the panels. Furthermore, the corrugated cardboard is very low in cost and is found to provide a door with superior heat insulating properties than is the case when the prior art types of pads are employed.

Another feature of the present invention is the manner in which the panels 12 and 14 are joined together. It has been the general practice heretofore to join these panels by spot welding them together. This was found to detract from the appearance because the weld marks showed through the paint. In the present invention the lapped edges are joined by a bonding operation, and an agent which has proved to be very satisfactory is the aforementioned Chrysler Cycle-Weld. This manner of joining the lapped edges also proves to be very satisfactory for mounting a rubber-like weather seal strip 22 on the portion of the lip 16 which is adapted to engage the door frame (not shown) when the door 10 is closed.

The operation of bonding the corrugated pad 20 to the panels 12 and 14 and of bonding the lip 16 and weather seal strip 22 together may be carried out in a press using a diaphragm of the type shown in Weyant application, Serial No. 44,121, filed August 13, 1948, now Patent No. 2,634,773, issued April 14, 1953. By using such a press construction the door 10 can be formed with a camber in its unhinged edge 24, such as can be seen in Figs. 2 and 3. It will be observed that the hinged edge 18 is substantially straight while the unhinged edge 24 is bowed. The camber is a very desirable feature of the door construction because the resilient properties of the sheet metal panels will cause the lip 16 and weather seal strip 22 to be biased against the door frame (not shown) when the lock 26 is engaged in said door frame. Not only will this effect a weather tight seal, but it will prevent rattling of the door in its frame.

The steps of forming the present door construction are rather simple and can be carried out with surprising speed. The opposite panels 12 and 14 are sheared to size in-

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cluding blanking operations for lock 26 and window 28, and the edges and corners are formed.

A corrugated pad, preferably cardboard, is then trimmed to fit the panels and it is routed out to accommodate the window 28 and a wood block (not shown) for carrying the lock 26. Thereafter, the corrugated pad is run through a roller type gluing machine and is then assembled between the panels 12 and 14.

This assembly is then put into a steam press where the parts are pressed together for three to five minutes depending upon the bonding agent employed and the sheet metal used in forming the door. Normally aluminum or steel will be used and the former is found to require less time to complete the bonding operation. Following the bonding operation, the window 28, hinges (not shown) and lock 26 are installed.

From the foregoing it can be seen that the method of assembling the door is quite simple and can be performed in a relatively short time so as to be very economical. Furthermore, because of the use of the corrugated pad extra strength is added to the door permitting thinner sheet metal to be used, thereby reducing the cost of materials necessary to manufacture the door.

Having thus described our invention, we claim:

A rectangular fabricated door comprising front and rear sheet metal panels having their central portions in spaced relation, a corrugated pad conforming to the shape of such central portions so as to occupy the space therebetween and bonded to the inner sides of said panels, three of the corresponding edges of said panels being shaped and fastened together to form a continuous marginal recess for fitting into a door frame, the joint between said three corresponding edges being formed by

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the front panel having a peripheral edge folded back in a reverse direction along its inner side, said rear panel having its corresponding edge turned toward the front panel and extending into engagement with the latter, the terminal portion of said corresponding edge being turned laterally so as to fit under the folded back portion of the front panel, and a resilient weather sealing member having a generally U-shaped cross-section fitting over the folded back portion of the front panel so that one leg of the sealing member is clamped between said terminal portion and said folded back portion, the other leg fitting over and being bonded its entire length to the exposed side of said folded back portion to provide a flexible weather stripping for engagement with a door frame, the remaining pair of corresponding edges being joined to form a box-like section for fitting against the hinge-carrying side of the door frame, the hinged edge of said door being relatively straight and the opposite edge being cambered to present a concave face toward its rear panel.

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