J. R. WELCH.

DOOR FOR AUTOMOBILE BODIES.

APPLICATION FILED JUNE 23, 1913.

1,091,608.

Patented Mar. 31, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

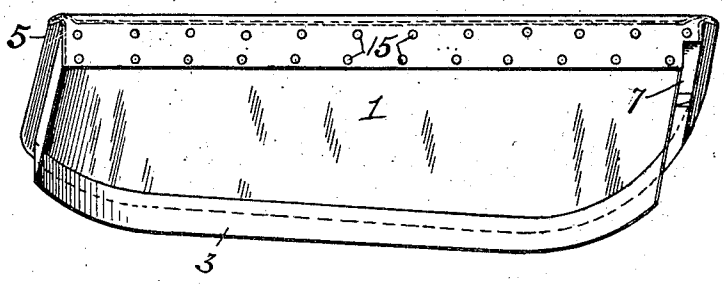


Fig. 2.

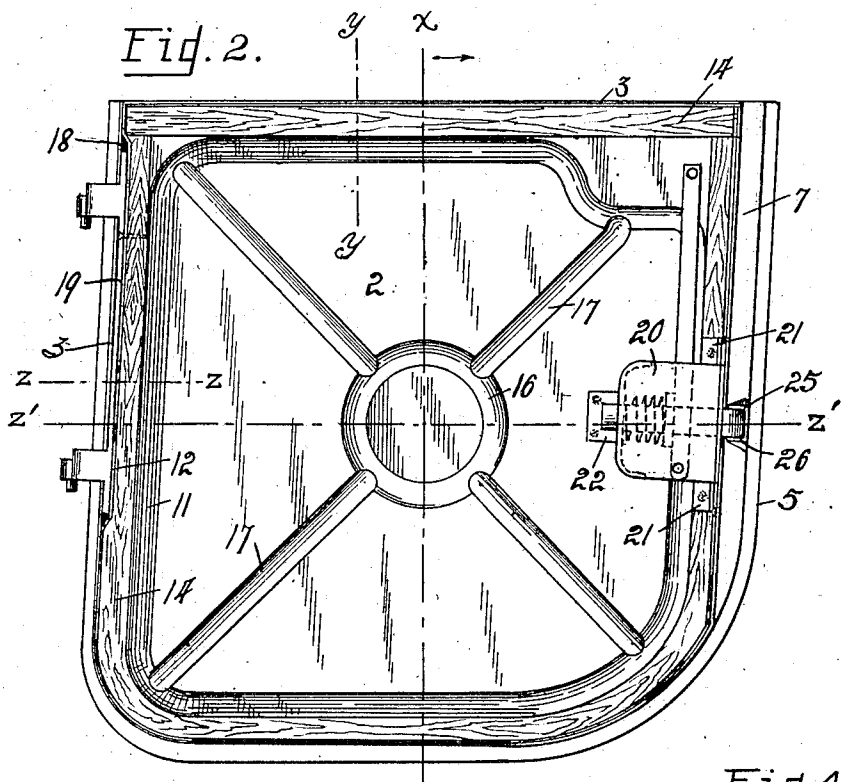


Fig. 3.

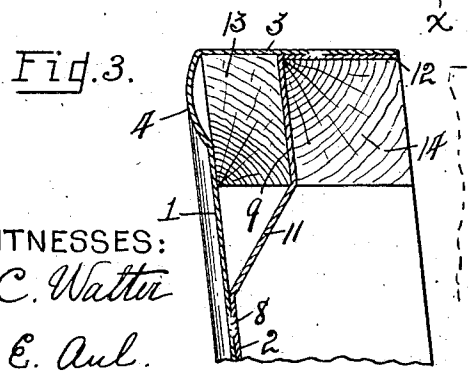
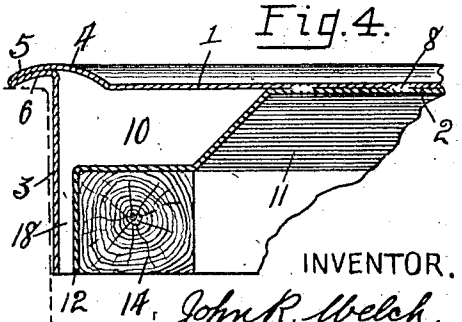


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

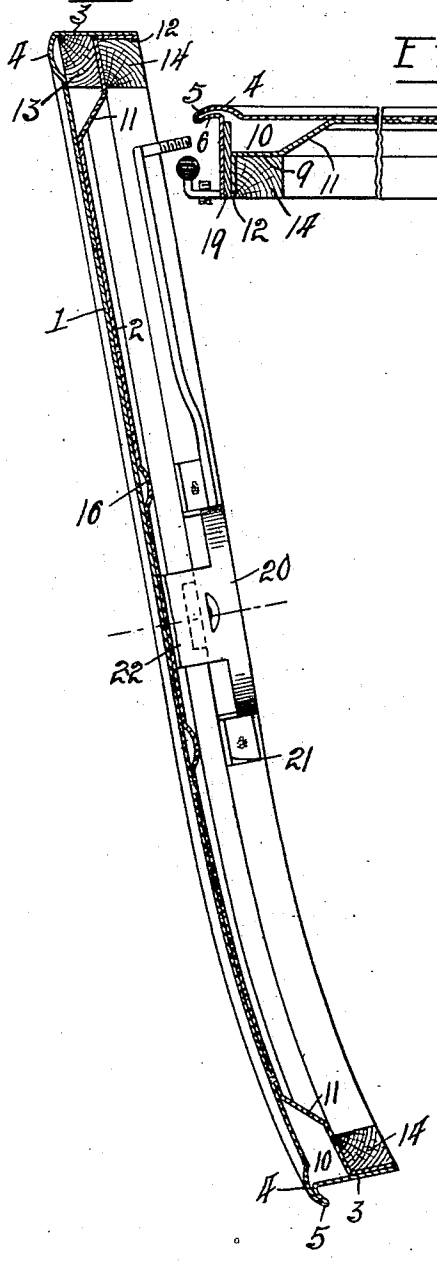


Fig. 6.

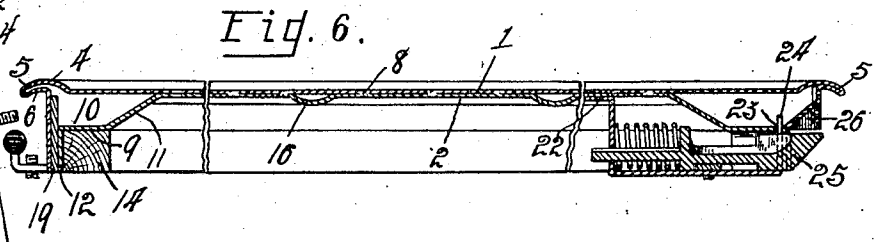
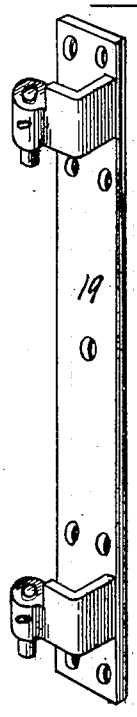


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN R. WELCH, OF TOLEDO, OHIO, ASSIGNOR TO THE KINSEY MANUFACTURING COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO.

DOOR FOR AUTOMOBILE-BODIES.

1,091,608. Specification of Letters Patent. Patented Mar. 31, 1914.

Application filed June 23, 1913. Serial No. 775,365.

To all whom it may concern:

Be it known that I, JOHN R. WELCH, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Door for Automobile-Bodies; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates particularly to the construction of doors for use in connection with automobile bodies, but is not restricted to such use, as it may be used in any connection for which it may be adapted or appropriate.

The object of my invention is the provision of an improved sheet steel door of the character described, which is simple and inexpensive to manufacture, strong and durable in its construction, and capable of having the parts thereof easily and quickly assembled, whereby to enhance the practicability and commercial value of such devices.

A further object of the invention is the provision of a door of this character having an integral molding strip at the outer marginal side and bottom edge thereof, which strip has the projecting flange portion thereof longitudinally dished on its inner side to enable it to fit closely against the outer marginal surface of the door casing irrespective of slight uneven portions in such surface.

Further objects and advantages of the invention will be apparent from the following detailed description thereof.

The invention is fully described in the following specification, and while, in its broader aspect, it is capable of embodiment in numerous forms, a preferred embodiment thereof is illustrated in the accompanying drawings, in which,—

Figure 1 is a top plan view of the outer sheet metal member of a door. Fig. 2 is the inner side of a door embodying my invention as it appears before upholstering the same. Figs. 3 and 4 are enlarged sections on the lines *y*—*y* and *z*—*z*, respectively, in Fig. 2. Figs. 5 and 6 are enlarged sections on the lines *x*—*x* and *z'*—*z'*, respectively, in Fig. 2, with portions of the latter broken away, and Fig. 7 is a perspective view of the hinge member, which is intended to be carried by the door.

In the construction of my improved door I preferably provide the inner and outer sheet metal sections 1 and 2, respectively, the latter fitting within the former and coöperating therewith and with the members hereinafter referred to, to provide a door of strong and durable construction.

The outer section 1 is provided on its inner side entirely around its edge with a transversely projecting flange 3 of a depth substantially equal to the desired thickness of the door. The outer marginal edge of this section is formed, as at 4, to represent a molding strip, which strip has its outer edge extended beyond the edge of the section, except across the top edge thereof, to provide the stop-flange 5 at the outer edge of the door for lapping the respective outer marginal portion of the door casing.

The flange 3 at the sides and bottom of the section 1 projects substantially from the transverse center of the respective mold strips 4 and is integrally connected at its inner edge with the outer edge of such strip by an inwardly doubled or reëntrant portion 6 of the metal, as best shown in Figs. 4 and 6, which portion reinforces the flange 5. The portion 6 is drawn closely against the metal forming the mold strip 4, thus causing the inner side of the stop-flange 5 to have substantially the transversely dished or bowed form of the molding 4. The inwardly curving or extending of the free edge of the flange 5 in this manner enables such edge to have close contact with the outer marginal surface of the door casing, while a space is provided between the edge portion of such casing and the inner surface of the flange adjacent to the flange 3, as indicated in Fig. 4, the position of the casing being shown in dotted lines.

Heretofore, so far as I am aware, it has been the practice to provide the inner side of the customary stop-flange at right angles to the edge of the door, so that the inner side of the stop-flange will have flat contact with the portion of the casing which it laps. It is found that the flat seating of the inner side of the flange 5 against the edge of

the casing is objectionable, as such edge is usually of irregular form and protrudes more or less at the immediate edge thereof so that when a flat surface is seated thereagainst the outer edge of such surface is held spaced from the casing surface and gives a bad fitting effect. In order to obviate this objectionable feature I have caused the reëntrant portion 6 of the mold to be of transversely dished form or to stand at an oblique angle to the flange 3 so that the free or outer edge portion only of the flange 5 will have abutting contact with the surface of the casing which is lapped thereby. The outer or swinging edge of the section 1 of the door has its flange 3 stepped, as shown at 7, to coöperate with the adjacent correspondingly shaped side of the jamb or door casing to oppose the closing movements of the door.

The inner section 2 of the door is of suitable shape and size to adapt it to fit closely within the flange 3 of the section 1, and has the major portion of its body abutting against the inner side of the body portion of the section 1 and rigidly united thereto, as by electric spot-welding, or in any other suitable manner, the points at which the sections are spot-welded being indicated at 8. The marginal edge portion of the section 2 is spaced or offset from the marginal portion of the outer section 1, as indicated at 9, to provide the space 10 therebetween, the portion 9 being connected at its inner edge to the body portion of the section 2, which is in flat abutting contact with the section 1, by an inclined portion 11. The portion 9 is provided at its outer edge with an outwardly projecting flange 12, which fits closely within the flange 3 of the section 1 and terminates substantially flush with the outer edge of such flange. It is thus evident that the flange 3 of the outer door section is braced and reinforced by the marginal offset portion of the inner section and the flange 12 thereof, and that the body portions of the sections abut throughout the major part of their areas to reduce to a minimum the thickness of the body portion of the door and to provide ample room for the provision of an article carrying pocket between the upholstering, which covers and forms a facing for the inner side of the door, and the outer door wall 1—2, such upholstering not being shown, as it forms no part of the present invention.

A nailing-strip 13 of wood or other suitable material for such purpose is disposed across the top of the door within the space 10 with its top edge in abutting contact with the flange 3 of the outer section of the door. A similar nailing-strip 14 is also mounted within the flange 3—12 of the door sections against the offset portion 9 of the inner section and has its outer side substantially flush with the free edges of the flanges 3—12. The portion of the flange 3 which extends across the top edge of the door is provided with a plurality of apertures 15 in register with the top nailing-strips 13 and 14, through which apertures the shanks of tacks, screws or other trimming securing means may be projected and engaged with the registering strips 13 and 14. In some doors the top edge upholstering thereof comprises leather, in others a strip of wood. In either case, however, the upholstering or facing may be secured to the top edge of the door by nailing or otherwise suitably securing the same to the strips 13 and 14 through the apertures 15.

In order to give the door additional strength the inner sheet metal section 2 thereof is provided with a centrally disposed circular rib or emboss 16 and with ribs or embosses 17 radiating therefrom to the corner portions of the section and being merged at their outer ends in the inclined or tapered portion 11 of the section 2.

The flange 12 of the section 2 is inwardly offset from the flange 3 at the rear or hinged edge of the door for a portion of the length of such edge to provide a narrow elongated recess 18 in which a hinge-plate 19 may be inserted, such recess being of suitable width to snugly receive the hinge-plate therein. This plate preferably carries both the upper and lower corresponding hinge members of the door and is rigidly secured to the flanges 3 and 12 by rivets, electric welding, or in any other suitable manner. The securing of the hinge plate 19 in this manner to a door enables an accurate positioning of such plate relative thereto so that no future adjustment is necessary to provide a perfect hanging of the door within its casing, providing, of course, the other member of the hinge is secured in proper position to the casing.

The holder or casing member 20 of the door lock is provided, in the present instance adjacent to its front edge, with upper and lower feet 21, which seat against and are secured to the adjacent portion 9 of the section 2 at the front edge of the door by electric welding, riveting or in any other suitable manner, the nailing strip 14 being cut away at the point where the lock is set in. The rear portion of the lock member 20 is provided with a foot 22, which rests against and is secured to the body portion of the door section 2 by electric welding or in any other suitable manner and supports the rear end portion of the lock in flush relation to the inner side of the door. To facilitate an assembling of a door and lock the portion 9 of the door section 2 against which the lock member 20 is secured is provided with a slot 23 into which an inturned flange or tang 24 at the forward edge of the lock plate is projected said slot and

flange being of suitable size for one to closely receive the other, whereby they cooperate to gage the proper position of the lock plate relative to the door and to retain the plate and door in proper assembled relation preparatory to the welding or otherwise suitable securing of the feet 21 and 22 to the inner door section. The bolt 25 of the lock has its nose normally projected through a registering cut or slot in the front edge portion of the flange 12 and the registering portion of the flange 3 of the door section. A depression 26 is provided in the intermediate step 7 of the front end of the door in transverse register with the bolt 25 to receive the part of the door casing with which the bolt has locking coaction when the door is in full closed or locked position.

It is evident that I have provided a simple inexpensive and strong construction of door of the type more particularly intended for use in automobile bodies, and that the two body sections 1 and 2 after being formed into their respective shapes may be quickly assembled and secured one within the other, with a nailing-strip 13, if such strip is required, disposed between the upper spaced edge portions thereof within the flange 3 of the outer section. The hinge-plate 19 and lock 20 may then be quickly secured in proper accurate position to the door body and the marginal nailing-strip 14 secured upon the offset portion 9 of the inner section 2 in abutting contact with the flange 12 thereof, thus making the door body ready for receiving the upholstering, which upholstering may vary for cars of different styles and prices.

It is also evident that this construction of door is not only exceptionally strong and durable in its construction, but that the narrowness of the body portion thereof provides a maximum pocket space therein which is an important feature in automobiles where the utilizing of all available space is material.

I wish it understood that my invention is not limited to any specific construction, arrangement or form of the parts, except in so far as such limitations are specified in the claims, and that it may be used for both the front and rear doors of automobile bodies or in any other connection for which it may be appropriate.

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

1. In a door of the class described, an outer sheet metal section substantially plane in cross-sectional contour and having an inwardly projecting edge flange, an inner sheet metal section having its body portion resting against and secured to the inner side of the body portion of the outer section with its marginal edge portion inwardly offset from the marginal edge portion of the outer section and formed at its outer edge with a flange projecting outwardly therefrom in the direction of projection of the flange of the outer section, said flanges laterally abutting one within the other and having their edges terminating in adjacent position.

2. In a door of the class described, an outer sheet metal section having a substantially plane body portion and an inwardly projecting flange at the edge thereof, an inner sheet metal section having its central body portion abutting against and rigidly secured to the inner side of the body portion of the outer section and having its marginal portion offset from the marginal portion of the outer section to provide a space therebetween, said offset marginal portion having a flange at its outer edge projecting away from the outer section in close abutting relation to the inner side of the outer section flange and rigidly secured thereto, and a nailing strip mounted on said offset marginal portion at the outer side thereof.

3. In a door of the class described, an outer sheet metal section having an inwardly projecting edge flange, an inner sheet metal section secured within the flange of the outer section and having its central body portion inwardly offset from its marginal edge portion and in rigid contact with the inner side of the outer section body, the marginal portion of said inner section being disposed intermediate the inner and outer edges of said flange and having an outwardly extending flange secured to the inner side of said outer section flange and terminating adjacent to the free edge of said latter flange, a nailing strip disposed between the outer section and the marginal portion of the inner section at one edge of the door, said outer flange having apertures in register therewith, and nailing strip means carried by the marginal portion of the inner section at the outer side thereof.

4. In a door of the class described, inner and outer sheet metal sections having their edges flanged in the same direction and set one within the other with their flanges rigidly secured together, said inner section having its central body portion inwardly offset relative to its marginal portion and in contact with the body portion of the outer section.

5. In a door of the class described, inner and outer sheet metal sections having their edges flanged in the same direction and set one within the other with their flanges secured together, the central body portion of the inner section being inwardly offset to have abutting contact with the body portion of the outer section and provided with reinforcing ribs, said sections being rigidly secured together.

6. In a door of the class described, inner

and outer sheet-metal sections having edge flanges projecting in the same direction and secured one within the other, the inner section having a marginal portion which is offset from the marginal portion of the outer section to provide a space therebetween, and being connected by an inclined portion to the central body portion of the inner section.

7. In a door of the class described, inner and outer sections having laterally projecting edge flanges and secured one within the other with their flanges in abutting relation, the inner section having its marginal portion laterally offset from its body portion to place such marginal portion intermediate the inner and outer edges of the flange of the outer section, and nailing-strips mounted on said offset portion substantially around the edge portion of the door.

8. In a door of the class described, inner and outer sheet-metal sections, the outer section having a laterally projecting edge flange around the same and the inner section being set within the outer section and having its body portion secured in abutting relation to the body portion of the outer section and its marginal edge portion laterally offset from the registering edge portion of the outer section and laterally flanged at its outer edge with such flange projecting in the same direction as and having side contact with the flange of the outer section, the flanges of the inner and outer sections being provided across their top portions with apertures, a nailing-strip secured within the space between the marginal edge portions of the sections across the top thereof beneath a portion of said flange apertures, and nailing-strips secured to the exposed side of the offset portion of the inner section substantially around the same with the top portion of such strips beneath a portion of the apertures in the top portions of said flanges.

9. In a door of the class described, inner and outer sections having their edges flanged in the same direction and set one within the other with their flanges spaced apart at the rear edge of the door to coöperate to form a hinge-plate receiving recess.

10. In a door of the class described, inner and outer sheet metal sections having their edges laterally flanged and set one within the other, said flanges being spaced apart at the rear edge of the door to coöperate to form a hinge plate receiving recess.

11. In a door of the class described, an outer sheet-metal section having a marginal edge flange, an inner sheet-metal section secured within the flange of the outer section and having its central portion substantially abutting against the central portion of the outer section and its marginal edge portion laterally offset from the adjacent edge portion of the outer section, and a lock secured within the flange of the outer section against the exposed side of the inner section with its outer end portion resting upon the associated offset portion of the inner section and with its inner end resting upon and secured to the body portion of the inner section, said edge flange having an opening therein through which the nose of the lock bolt projects.

12. In combination in a door of the class described, an outer sheet-metal section having an edge flange projecting therefrom, an inner sheet-metal section set within the flange of the outer section and having a marginal edge portion adjacent to said flange and offset relative to the body portion of the outer section to form an internal shoulder within said flange, said shoulder having a slot provided in one side thereof, a lock having its plate provided with a tongue for insertion into said slot and having a portion resting on said shoulder and secured thereto and a portion resting on the body portion of the inner section and secured thereto, and said flange having an opening for the nose of the lock bolt to work through.

In testimony whereof, I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

JOHN R. WELCH.

Witnesses:
C. W. OWEN,
S. T. KLOTZ.