July 16, 1929. L. A. McDOWELL 1,720,913

DOOR CONSTRUCTION

Filed Nov. 8, 1926 2 Sheets-Sheet 1

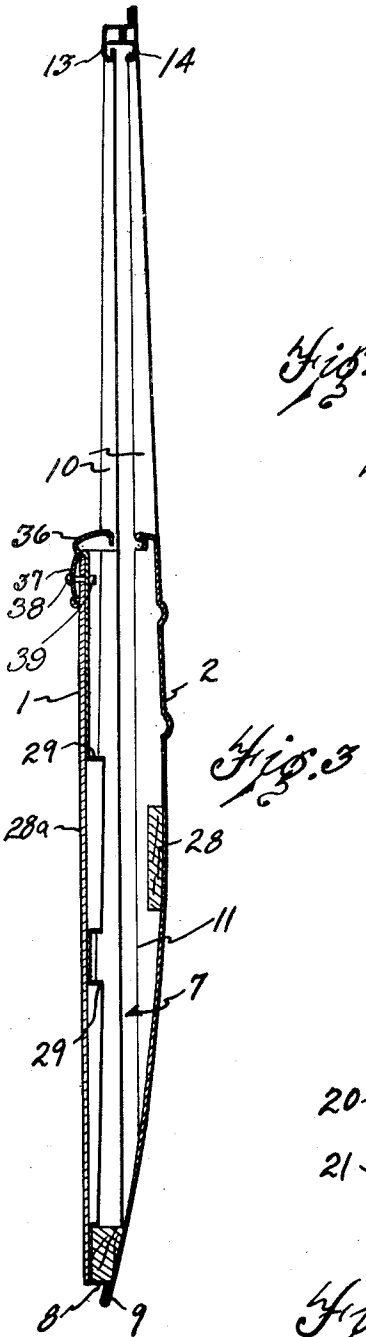


Fig. 3

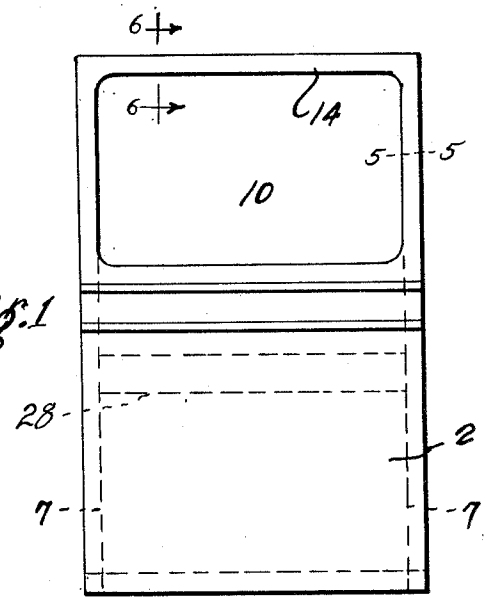


Fig. 1

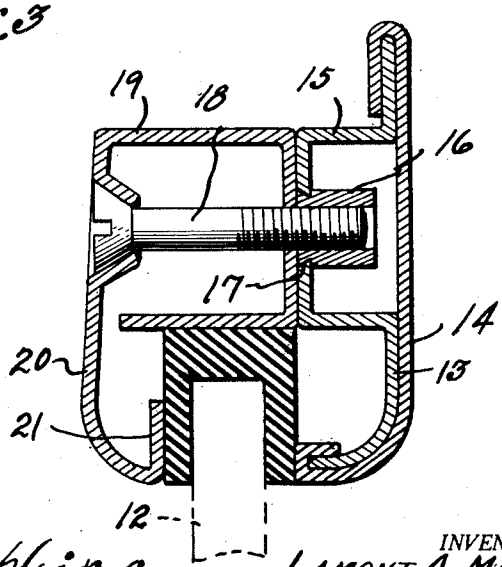


Fig. 6

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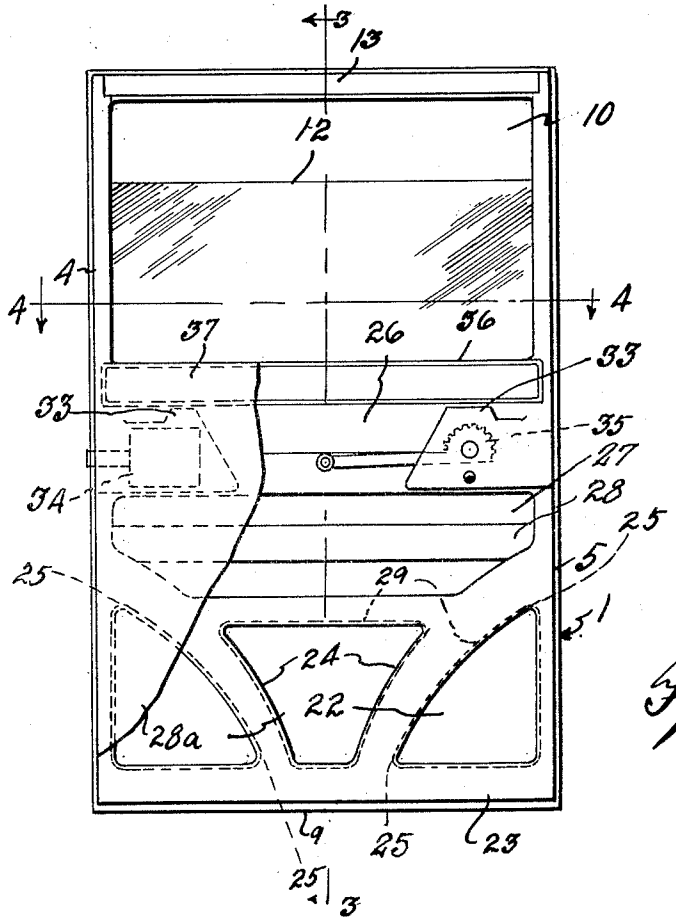
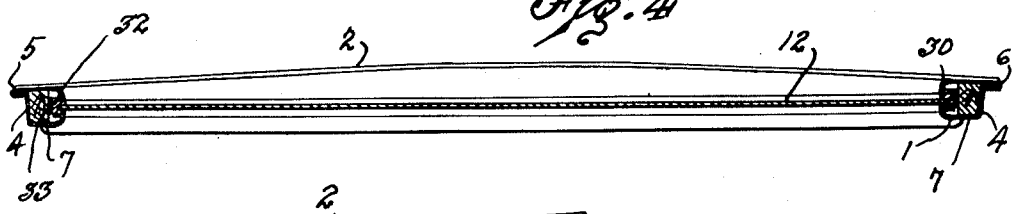


Fig. 2

Fig. 4



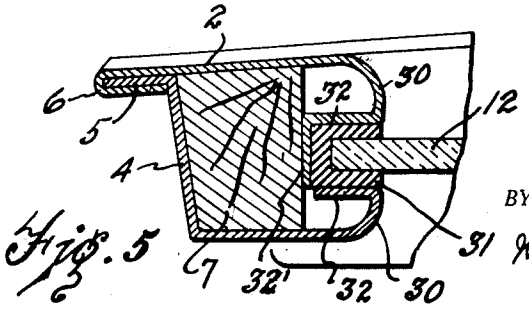


Fig. 5

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UNITED STATES PATENT OFFICE.

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DOOR CONSTRUCTION.

Application filed November 8, 1926. Serial No. 147,063.

This invention relates to door constructions, and particularly to motor vehicle door constructions.

It is one object of the invention to form a motor vehicle door of inner and outer sheet metal panels with an interposed wooden frame, so as to simplify the assembly and secure the necessary strength with a minimum weight.

Another object is to adapt a vehicle door, a lower corner portion of which must be cut away, for use at either the right or left side of a vehicle.

Still another object is to provide a door having a window opening in its upper portion, and having a vertically sliding closure for said opening, and to provide for the quick detachment of a part of the top rail of the door to permit upward removal and downward replacement of said closure.

These and various other objects the invention attains by the construction hereinafter described, and illustrated in the accompanying drawings, wherein:

Figure 1 is an outside view of the improved door.

Figure 2 is an inside view of the same.

Figure 3 is a vertical section taken on line 3—3 of Figure 2.

Figure 4 is a cross section view on line 4—4 of Figure 2.

Figure 5 is a cross sectional view taken on line 5—5 of Figure 1.

Figure 6 is a sectional view taken on line 6—6 of Figure 1.

In these views, the reference characters 1 and 2 respectively designate inner and outer sheet metal door panels, adapted to be secured to each other as will presently appear. At each of its vertical edges the inner panel 1 carries reinforcing posts, preferably integral with said panel extending the full height of the door, comprising members 4 outwardly projecting from the panel and formed with flanges 5 extending oppositely laterally. The outer panel is adapted to seat marginally against the flanges 5 and to be secured thereto, preferably by bending marginal portions of said panel to embrace said flanges, as indicated at 6. Uprights 7 of a wooden frame disposed between the panels 1 and 2, lie adjacent to the posts 4, 5 and form fillers between said panels.

At its lower margin the inner panel is reinforced by a member 8 forming a slight outward projection across the full width of the door and flanged downwardly as indicated at 9 to coact with the flanges 5 in seating and securing the outer panel to the inner one.

The upper portions of the two panels are similarly formed with window openings 10 which register when the construction is assembled. The upper portions of the posts 4, 5 lie one at each side of the openings 10 and the lower portions of the wooden uprights 7 are channeled as indicated at 11 to guide a sliding closure for the openings 10 indicated at 12.

At the top of the door, the inner and outer panels are formed with cross members 13 and 14 and the upper and lower margins of the member 14 are return-bent to embrace the corresponding margins of the member 13. The member 13 forms between its marginal portions a channel 15 for which the member 14 serves as a closure. Within said channel nuts 16 are fixedly mounted preferably by riveting the same as indicated at 17 to the vertical wall of said channel and said nuts are engaged by bolts 18 which secure to said channel a sheet metal header having the rectangular tubular upper portion 19 through which the bolts 18 pass. The wall of said header remote from the channel 15 projects below the portion 19 as indicated at 20 and has an upwardly extended marginal flange 21. Said flange is spaced from the interengaged lower portions of the members 13 and 14 to form an opening entered by the closure 12 in its closed position. The header 19, 20 may be detached from the door through removal of the bolts 18, thus providing for withdrawing the closure 12 from the door upwardly and for downwardly replacing it.

The lower portion of the panel 1 is formed with three openings 22 which lighten the door and which form a cross member 23 at the bottom of the panel and further form a pair of similar members 24 arcuately extending from the member 23 to the posts 4, 5. It is necessary for accommodation of a wheel housing (not shown) to cut away a lower corner portion of the door. Heretofore it has not been feasible to alternatively cut away either of said corner portions and consequently the same door has not been adapted for use at either

the right or left side of the vehicle. With the present construction, however, either corner may be cut away along one of the lines indicated at 25 (Fig. 2), and consequently the described door is adapted for use at either side of the vehicle.

Above the openings 22, and below the lock-board portion 26 of said panel there is formed another opening 27, serving to reduce the door weight and also to expose a cross bar 28 of the wooden frame which bar rigidly connects the uprights 7. The inner lining 28a of the door which is usually of a fabric nature may be secured in any suitable manner to the panel 1. Each of the openings 22 and 27 are flanged outwardly from the panel 1 for reinforcing purposes as indicated at 29.

The margins of the opening 10 in the two panels are flanged toward each other as indicated at 30 and a channel to receive a guide strip 31 for the closure 12 is formed by bending spaced portions 32 of said flanges toward the wooden filler member 7. The flange 30 of the outer panel furthermore has a marginal portion 32' bent transversely to the wall 32 and seating against the filler strip 7 to serve as a backing or seat for the guide strip 31.

The lock-board member 26 of the inner panel has its end portions correspondingly embossed interiorly of the door as indicated at 33 to mount a lock 34 and a window lifter mechanism 35. The location of said lock and mechanism upon said parts for use of the door at the right side of the vehicle will be reverse to their location on the left hand door of a vehicle.

In close proximity to the lower margin of the window opening, the inner panel forms a bead 36 substantially coextensively with said margin, and projecting beyond the inner face of the door. Just below said bead there is secured to said panel a finishing plate 37 which is also substantially coextensive with said door and which may serve to clamp the upper margin of the lining 28a in place. The securing means for said plate may be screws 38 engaging nuts 39 riveted to the back face of the panel 1.

The described construction produces a door of relatively low weight and high strength, the major portions of which are adapted to be formed by stamping operations at low expense.

Production and assembly costs are reduced by adapting one construction of door to be applied either to the right hand or left hand side of a vehicle.

The flanges 5 which through their engagement by the return bends 6 establish a connection between the inner and outer panels are adapted to further function as seating elements engageable with portions of the body (not shown) at each side of the doorway.

The construction further permits a minimum thickness of the top rail of the door and of the post portions thereof at each side of the window opening and consequently is favorable to clear vision.

What I claim is:

1. A door having a window opening in its upper portion, and a rail above said opening, said rail comprising a permanent and a detachable member formed of sheet metal, the detachable member having an upper portion of tubular form and having a flange depending from said tubular portion, said flange and the lower portion of said permanent member being bent toward each other and spaced to receive between them the upper margin of a closure for said opening.

2. A door construction comprising a pair of sheet metal panels rigidly connected, and jointly formed in their upper portions with an opening, a sliding closure for said opening, said panels being interlocked and jointly forming a permanent rail member above said opening, the rail portion of one of said panels forming a channel closed by the rail portion of the other panel, a detachable header mounted upon said channel, anchorage members within said channel, and fasteners for said detachable header engaging said anchorage members, said header co-acting with the permanent member of the rail to form a channel for receiving the upper margin of said closure.

3. A door construction comprising a pair of sheet metal panels rigidly connected, and jointly formed in their upper portions with an opening, a sliding closure for said opening, said panels being interlocked and jointly forming a permanent rail member above said opening, the rail portion of one of said panels forming a channel closed by the rail portion of the other panel, a sheet metal header detachably carried by the permanent member of said rail and comprising a tubular portion mounted upon the channel of said permanent member, and further comprising a flange projecting downwardly from said tubular portion, said flange and the lower portion of the permanent member of the rail being spaced to receive between them the upper portion of said closure, anchorage members carried by the permanent member of said rail within said channel thereof, and fasteners for the detachable header extended through its tubular portion and engaging said anchorage members.

In testimony whereof I affix my signature.

LAMONT A. McDOWELL.