April 14, 1942. J. S. REID 2,279,345

FABRICATED THERMOPLASTIC DECORATIVE TRIM MEMBER

Filed Feb. 17, 1938 4 Sheets-Sheet 1

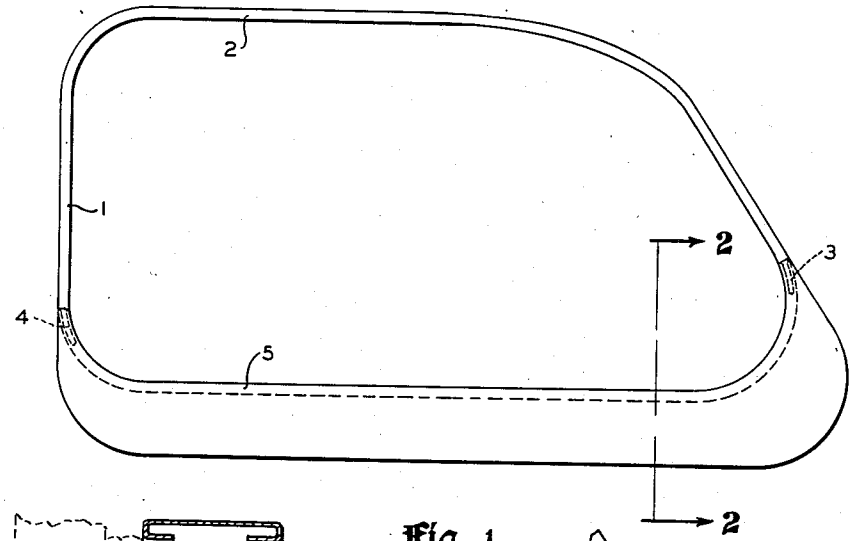


Fig. 1

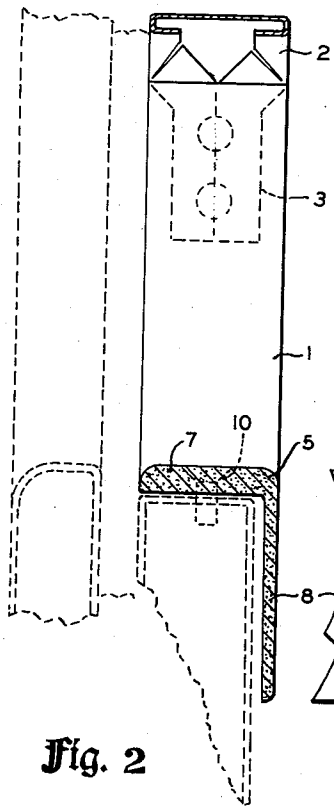


Fig. 2

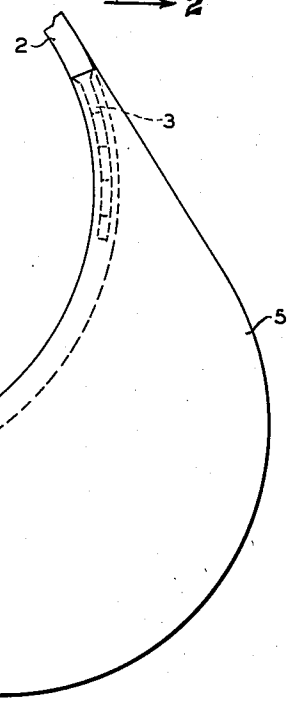


Fig. 3

INVENTOR.
JAMES S. REID

BY John H. Reinard,

HIS ATTORNEY.

April 14, 1942. J. S. REID 2,279,345

FABRICATED THERMOPLASTIC DECORATIVE TRIM MEMBER

Filed Feb. 17, 1938 4 Sheets-Sheet 2

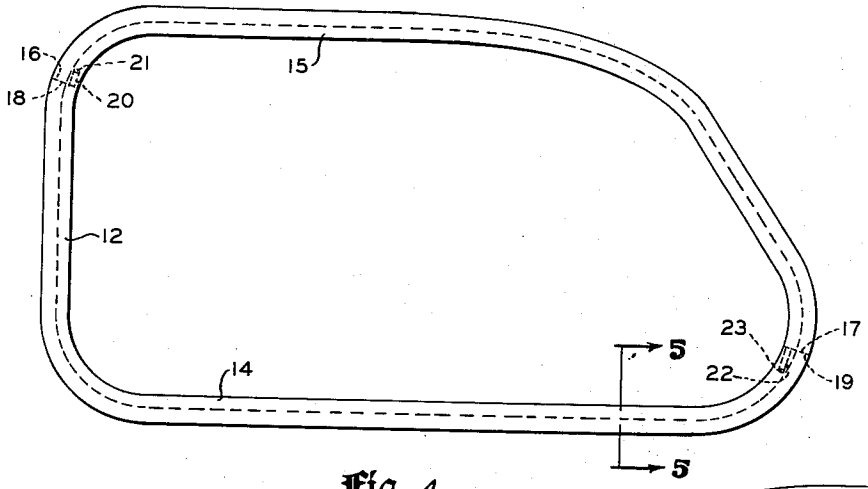


Fig. 4

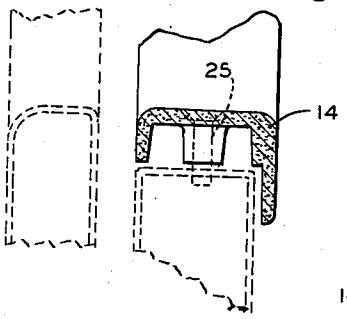


Fig. 5

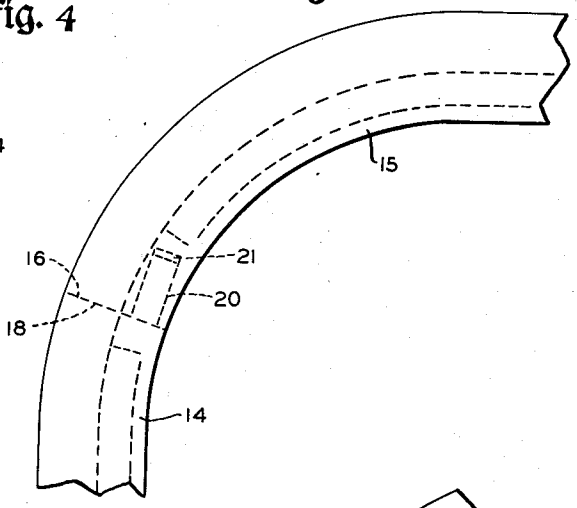


Fig. 6

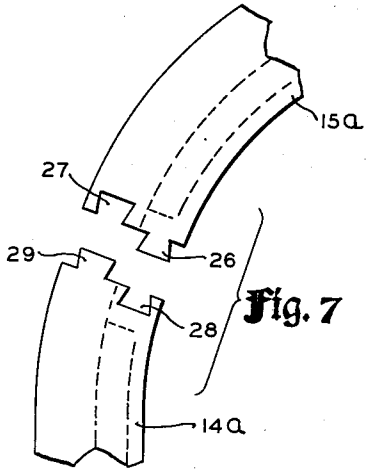


Fig. 7

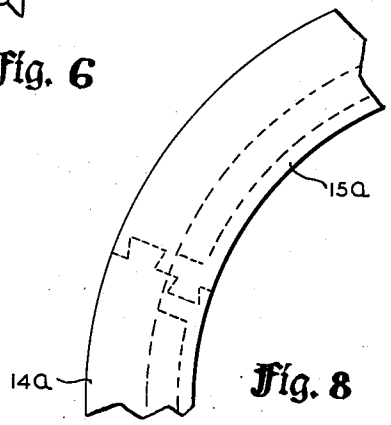


Fig. 8

INVENTOR.
JAMES S. REID
BY
John S. Brennan,
HIS ATTORNEY.

April 14, 1942. J. S. REID 2,279,345

FABRICATED THERMOPLASTIC DECORATIVE TRIM MEMBER

Filed Feb. 17, 1938 4 Sheets-Sheet 3

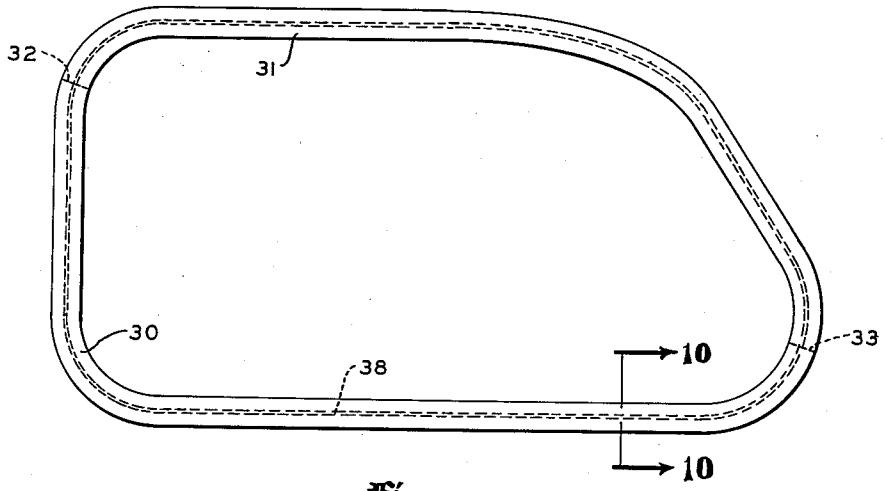


Fig. 9

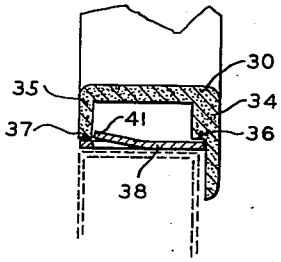


Fig. 10

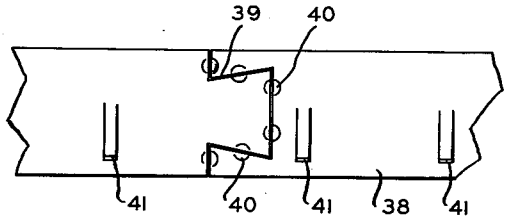


Fig. 11

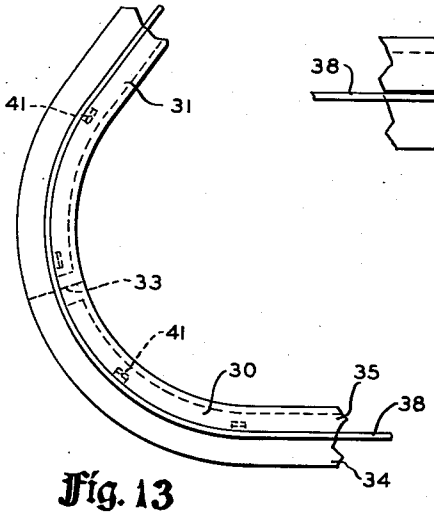


Fig. 13

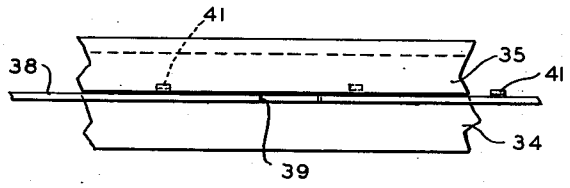


Fig. 12

INVENTOR.
JAMES S. REID

BY

HIS ATTORNEY.

April 14, 1942. J. S. REID 2,279,345

FABRICATED THERMOPLASTIC DECORATIVE TRIM MEMBER

Filed Feb. 17, 1938 4 Sheets-Sheet 4

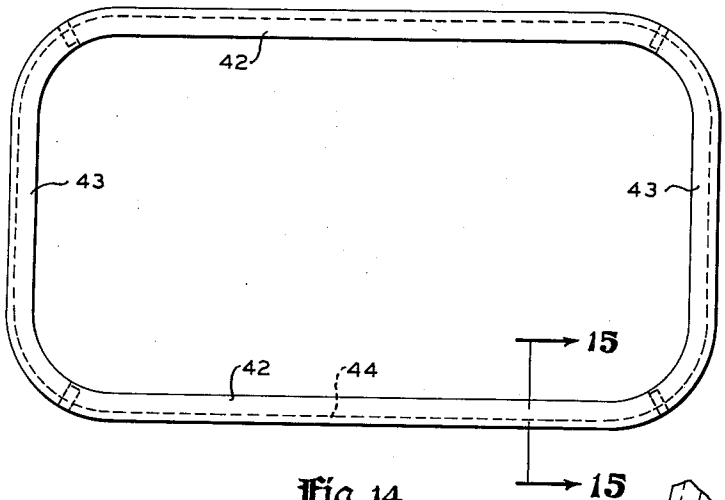


Fig. 14

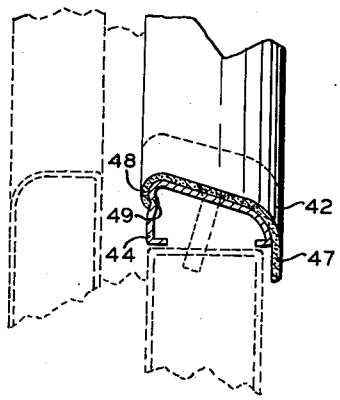


Fig. 15

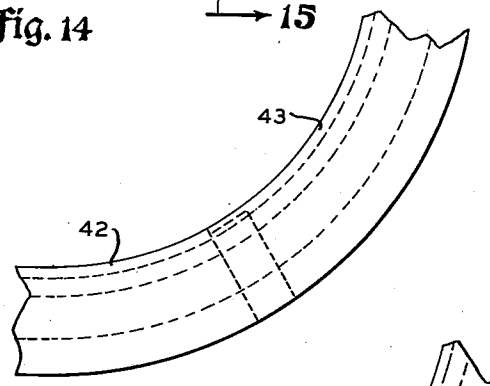


Fig. 16

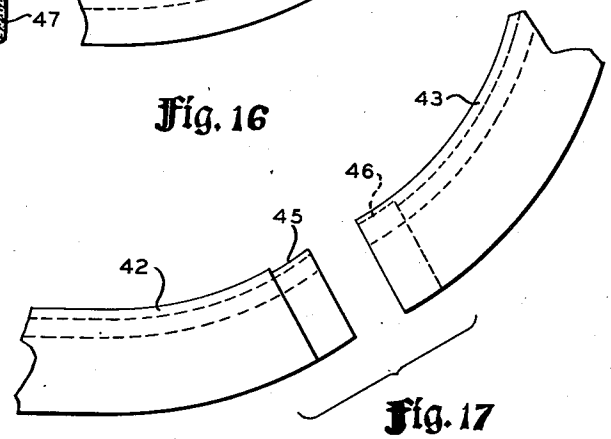


Fig. 17

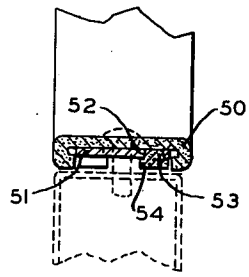


Fig. 18

INVENTOR.
JAMES S. REID
BY
HIS ATTORNEY.

Patented Apr. 14, 1942

2,279,345

UNITED STATES PATENT OFFICE

2,279,345

FABRICATED THERMOPLASTIC DECORATIVE TRIM MEMBER

James S. Reid, Shaker Heights, Ohio, assignor, by mesne assignments, to The Standard Products Company, Port Clinton, Ohio, a corporation of Ohio

Application February 17, 1938, Serial No. 191,062

4 Claims. (Cl. 296—44)

This invention relates to an improved decorative fabricated trim structure made of thermally moldable material for use in connection with finishing and concealing the relatively rough periphery around window openings, panels and the like.

The preferred embodiment of the invention discloses such a decorative trim member applied to window openings in automobile doors and bodies. Its use, however, for other purposes is readily apparent.

An important object of the present invention is to provide a decorative trim member of thermally moldable material which is durable in character, attractive in appearance, and inexpensive to manufacture.

Another important object is to provide a decorative trim member which is fabricated from a plurality of separate molded trim elements each having end surfaces, the end surface of one element being complementary in shape and designed to abut the corresponding end of the adjacent element so as to lie in fitting relation and provide a composite decorative frame structure.

A further important object is to provide such a decorative trim member which may be conveniently installed around a window opening in place of the usual metal trim member.

A more specific object is to provide a decorative trim frame structure fabricated from different materials, one of which is a thermally moldable material by forming end portions on one of the elements so that the material of the other element may be conveniently molded and joined to the said one element during the molding of the said other element.

Another specific object is to provide a composite decorative frame structure comprising a plurality of separate elements of thermally moldable material, the end faces of one element abutting with the cooperating end faces of an adjacent element to provide a continuous frame structure and a continuous retaining band tightly pressed around the continuous frame structure to permanently hold the said structure in assembled relation.

A further specific object is to provide a durable finishing surface of thermally moldable material for a preformed reinforcing frame structure by molding separate elements of thermally moldable material to the desired size, shape and cross section and positioning each of these elements over the surface of the preformed frame structure to produce a wear-resisting decorative surface which is attractive in appearance and more durable in character than prior painted frame structures.

Another specific object is to apply a decorative finishing strip of thermally moldable material to the surface of another member by providing the said member with an aperture, positioning the strip of thermally moldable material on one face of said member in the desired location, and then attaching a retaining member of thermally moldable material by an adhesive to the thermally moldable strip from the opposite side of the member through the apertures.

Other objects and advantages of the present invention will become apparent from a consideration of the specification and accompanying drawings:

In the drawings,

Fig. 1 is a side elevation of a fabricated frame structure, one element of which is made of thermally moldable material and the other element is of a different material, the ends of the said other element being molded and permanently embedded in the associated ends of the element of thermally moldable material;

Fig. 2 is an enlarged fragmentary sectional view through the molded portion of the frame member and is taken substantially along the line 2—2 of Fig. 1;

Fig. 3 is an enlarged fragmentary side elevation showing one form of juncture between the fabricated elements;

Fig. 4 is a side elevation of a frame member made from two separate sections of thermally moldable material which are joined together at their ends to provide a unitary composite structure;

Fig. 5 is an enlarged fragmentary sectional view through the frame taken substantially along the line 5—5 of Fig. 4;

Fig. 6 is an enlarged fragmentary side elevation showing the juncture between the elements of the frame;

Fig. 7 is an enlarged fragmentary side elevation of one form of interlocking joint between the elements which comprise the fabricated member, the elements being shown in separated relation;

Fig. 8 is a view similar to Fig. 7, showing the elements in interlocking relation;

Fig. 9 is a side elevation of a modification of the frame member, the elements of which are retained in assembled position by a continuous band;

Fig. 10 is an enlarged fragmentary sectional

view through the frame taken substantially along the line 10—10 of Fig. 9;

Fig. 11 is a fragmentary side elevation of a metal band used for holding the elements of the frame in permanent assembled relation;

Figs. 12 and 13 are enlarged fragmentary elevations of the frame member, showing the band in assembled relation;

Fig. 14 is a side elevation of another modification of the decorative frame;

Fig. 15 is an enlarged fragmentary sectional view through the frame taken substantially along the line 15—15 of Fig. 14;

Fig. 16 is an enlarged fragmentary side elevation of one of the corners of the frame in Fig. 14, showing the joint between adjacent molded elements of the frame in assembled relation;

Fig. 17 is a view similar to Fig. 16, showing the joint in separated relation; and

Fig. 18 is a fragmentary sectional view taken similarly to Fig. 15 through a modification of the frame shown in Fig. 14.

For purposes of illustration only, the molded fabricated frames disclosed in the drawings will be described as being made of thermoplastic material, such as cellulose acetate, because this material is most suitable as to moldability, flexibility and appearance. It should be readily understood, however, that other thermally moldable materials may be employed for this purpose. Also, the fabricated frame structure will be shown in connection with window openings for automobile doors or bodies, its application around other openings or objects being readily apparent therefrom.

Referring to the drawings, and particularly to Figs. 1 to 3, inclusive, the frame structure 1 comprises a preformed strip 2 of material other than what is commonly known as thermoplastic material. This strip may be either a solid piece of metal or a rolled piece of hollow metal. The ends of this strip are preferably reduced in size from the remainder of the strip, as indicated at 3 and 4. These reduced ends are joined to the corresponding ends of a molded element 5 which is preferably made of thermoplastic or other like material. The element 5 is formed in a suitable mold specifically designed for that purpose and is concurrently joined to the ends of the strip 2. This may be accomplished by placing the strip in the mold so that the reduced end portions 3 and 4 lie partially within the cavity which forms the element 5 so that the plastic material flows around these reduced portions and becomes permanently joined thereto during the molding operation. The reduced portions are shown perforated so that the material may flow therethrough, as indicated in Fig. 2, to provide a more effective bond between the elements 2 and 5. The surfaces of the elements 2 and 5 are preferably smooth and flush at the juncture, as indicated in Fig. 3.

The cross section through the molded element 5 is best shown in Fig. 2 and comprises a flanged portion 7 and an apron portion 8, which are angularly disposed to each other. The exposed finished surface of the portion 7 is preferably substantially identical with the exposed finished surface of the element 2 so that the connection between the elements 2 and 5 can be maintained flush and smooth. The apron 8 extends in a direction outwardly from the perimeter of the frame and faces the interior of the vehicle to provide a decorative finished side portion therefor. This apron 8 conceals the relatively rough opening around the window, as indicated in dotted lines in Fig. 2, and also conceals the end portion of the fabric lining on the inside surface of the door.

To attach the frame structure to the door opening, suitable screws, indicated at 10, may be employed, which pass through openings in the flange 7 and the strip 2 and fasten into a portion surrounding the door opening.

The molded thermoplastic element 5 is placed on the lower side of the frame 1 to insure a more lasting finish to this portion of the frame. This part of the frame is the only part that is subjected to any appreciable wear, particularly on the side windows opposite the driver's seat. Oftentimes the driver of the vehicle rests his arm on the window frame when the glass is lowered, and as a result, the painted finish applied to the usual metal frame members becomes scratched by buttons or jewelry and requires frequent re-touching in order to maintain an attractive appearance. The thermoplastic element 5, however, retains its attractive finish regardless of the wear to which it is subjected. It is only necessary to buff the scratched or worn spots until they are smooth and polished. Consequently, the necessity for frequent touching by paint of this part of the frame is eliminated.

Many of the interior parts of modern automobiles, such as steering wheels, knobs and handles, are made of thermoplastic having a particular color or color combination. These colors are difficult to reproduce by painting and are consequently expensive and unsatisfactory. The present structure, however, provides a frame member which may be made of the same thermoplastic material as the handles, knobs and steering wheel.

Furthermore, this frame of thermoplastic material is much more comfortable to the touch than the usual frame of sheet metal. For example, after a car has been exposed to the hot sun for a period of time, the metal in the body of the car absorbs a large amount of heat. When the driver rests his arm on the surface of a window frame made of metal after such exposure, the heat in the frame causes temporary discomfort to the arm. The present thermoplastic frame structure, however, eliminates this discomfort because of the relatively high heat insulating quality of the thermoplastic material.

Referring next to Figs. 4 to 8, inclusive, a frame structure 12 is shown comprising separate frame elements 14 and 15. Each of these elements is made of thermoplastic material which is molded to the desired size and shape in any suitable molding apparatus. The element 14 terminates in end surfaces 16 and 17, and the element 15 terminates in end surfaces 18 and 19, each of which is formed in the mold. Thus, when the elements 14 and 15 are positioned as shown in Fig. 4, these surfaces accurately fit together so as to provide a smooth flush surface between the elements.

In order to retain the elements in fabricated relation, one end 16 of the element 14 may be provided with a dowel projection 20 which fits into a recess 21 extending inwardly of the element 15 from the end surface 18. Likewise, the end surface 19 of the element 15 is provided with a projecting dowel 22 which is received in an opening 23 extending inwardly of the element 14 from the end face 17. These dowels may be permanently secured into their respective openings by means of suitable adhesive, or solvent

such as acetone, applied thereto prior to the assembly of the elements.

The cross section through the elements 14 and 15 in the present instance is generally channel-shaped, the opening of the channel facing toward the outside periphery of the frame member, as indicated in Fig. 5. One of the edge flanges of the channel is somewhat greater in length than the flange on the opposite edge and is disposed toward the inside of the vehicle, as shown in Fig. 5. This inside flange conceals the joint made between the relatively rough door frame opening, which is indicated by dotted lines in Fig. 5, and the periphery of the frame member.

This frame member may be very conveniently inserted in position around the frame opening from the inside face of the opening. When the frame is in the desired assembled position around the rough window opening in the door, it may be secured thereto by means of screws 25 which pass through openings in the elements and extend outwardly so as to engage and become attached to the rough window frame.

The end surfaces of the frame elements shown in Fig. 4 may be provided with interlocking portions which rigidly secure one element to the other when in assembled relation. Such an interlocking joint is illustrated in Figs. 7 and 8. The element 15*a*, which corresponds to the element 15 in Fig. 4, is provided on one end with a dovetail protuberance 26 and a dovetail recess 27. The element 14*a* is provided with a dovetail recess 28, which receives the protuberance 26, and a dovetail protuberance 29, which is received within the recess 27. These recesses and protuberances fit in interlocking relation with each other, as shown by the dotted lines in Fig. 8, and may be permanently secured together by applying an adhesive, such as acetone, to the engaging faces thereof prior to assembly.

Referring next to Figs. 9 to 13, inclusive, a frame similar to the one shown in Fig. 4 is illustrated. This frame comprises elements 30 and 31 which may be similar in cross section to the corresponding elements 14 and 15, respectively, in Fig. 4. Instead of the dowel or dovetail interlocking surfaces at the ends of the elements, however, the elements 30 and 31 are merely provided with flat abutting faces, as indicated by the transverse dotted lines 32 and 33. The inside edge flange 34 of this frame member is somewhat longer than the outside edge flange 35 to provide the necessary overlap for concealing the joint between the rough window opening in the door and the periphery of the frame member. This inner edge flange 34 is provided with a shoulder 36 which is directly opposite the end 37 of the outer edge flange 35. Thus, when the two elements 30 and 31 are brought into the position shown in Fig. 9, the shoulder 36 and the end surface 37 provide spaced peripheries of equal dimension around the outer periphery of the frame member.

The two elements 30 and 31 may be joined together as a unit by placing an endless and relatively tight-fitting band 38 of metal or other suitable material around the periphery of the frame member so as to concurrently engage the shoulder 36 and surface 37. This band serves as a reinforcement for the composite frame member and also as a means for securing the frame elements 30 and 31 together. The band may either be cut from a seamless sheet metal cylinder or may be formed from a strip of metal stock of the proper length with the ends joined together in interlocking relation, as indicated at 39 in Fig. 11. These ends may then be welded, as indicated at 40, to permanently hold them in interlocking relation.

The band 38 may be retained in assembled position around the periphery of the frame member by providing a plurality of resilient latching shoulders 41 formed by punching the stock of the band in a direction toward the inner periphery. These resilient shoulders 41 normally protrude from the inner periphery of the band 38, as best illustrated in Fig. 10. Thus, while the band is being pressed into assembled position on the frame member, the resilient shoulders 41 spring inwardly of the band to allow the surface 37 of the flange 35 to pass thereover. When the band is in fully assembled position, these resilient shoulders then assume their normal protruding position and lie in abutting relation against the inside face of the edge flange 35.

Referring to Figs. 14 to 18, inclusive, the frame member herein shown comprises a plurality of preformed strips 42 and 43 of molded thermoplastic material positioned over a preformed frame member 44. The end portions of each of the strips 42 and 43 are provided with complementary surfaces which interfit with each other to provide a smooth flush joint between these strips when they are in assembled relation. In the present instance, one end of the strip 42, for example, contains an offset surface portion 45 which lies in overlapping relation with a cooperating surface portion 46 on the adjacent end of the strip 43, the assembled condition of these end portions being illustrated by dotted lines in Fig. 16.

Each of these strips 42 and 43 is mounted onto the surface of the preformed metal frame member 44, one at a time, with adjacent end portions in overlapping relation until the metal frame member is covered. The strips 42 and 43 are each provided with an inside edge flange 47 and an outside edge flange 48. The outside edge flange is curled inwardly slightly toward the flange 47 so that when one of the strips is mounted in position, this curled flange snaps around a contiguous undercut portion 49, on the member 44 and holds the strip in gripping relation to the metal member. The assembled relation of the strip and preformed number 44 is shown in Fig. 15. This composite frame assembly may thus be mounted in position around a window opening by means of screws, as shown.

Another modification of a reinforced type of frame member is illustrated in Fig. 18, wherein a strip of thermoplastic material 50 is molded to the desired size and shape and applied to a flat strip of reinforcing material 51. The thermoplastic strip 50 may be mounted on one surface of the metal strip 51 by providing apertures 52 in the strip and inserting a thermoplastic button 53 therethrough from the opposite face and causing the button 53 to adhere to the thermoplastic strip 50 by a suitable adhesive such as acetone. The button 53 is provided with an enlarged head portion 54 which lies wholly on the opposite side of the strip of metal 51 so that after the adhesive has joined the strip 50 to the button 53, the said strip is permanently mounted onto the metal strip 51. This fabricated frame member may also be mounted around the window opening by screws, as shown.

From the foregoing description, it will be seen that a novel composite thermoplastic frame structure for automobile window frame openings

and the like has been provided. Its use for other purposes, however, is readily apparent from the drawings and description, without departing from the spirit and scope of the invention as defined in the appended claims.

Having thus described my invention, I claim:

1. A fabricated decorative trim member of thermoplastic organic material comprising separate elongated molded elements, each element having a pair of end faces which are complementary to cooperating end faces of the adjacent element, and rigid means associated with said elements and bridging said complementary faces for permanently securing the elements together with their cooperating end faces in fitting relation and with the normally exposed faces of respective elements flush with each other and providing a unitary continuous fabricated trim member, said means being arranged to prevent separation of joined adjacent elements in a direction normal to the normally exposed faces thereof.

2. A fabricated decorative trim member comprising separate molded elements of thermally moldable material, said elements each having complementary end surfaces, the end surfaces of one element being designed to lie in accurate fitting engagement with the associated end surface of the adjacent element, said elements providing a continuous, flush, decorative trim surface when in assembled relation, a continuous peripheral face around the perimeter of the assembled elements, a continuous retaining member engaging said continuous peripheral face, and interlocking means on said member and engaging said elements at spaced locations to secure said elements in assembled relation.

3. A fabricated decorative trim member comprising separate molded elements of thermally moldable material, said elements each having complementary end surfaces, the end surfaces of one element being designed to lie in accurate fitting engagement with the associated end surface of the adjacent element, said elements providing a continuous, flush, decorative trim surface when in assembled relation, a continuous peripheral face around the perimeter of the assembled elements, a continuous metal band snugly engaging the continuous peripheral surface, and resilient interlocking shoulders on the band which engage the said molded elements after the elements and band have been assembled to permanently retain the band in engagement with the assembled elements.

4. A decorative trim member of thermally moldable material comprising separate preformed elongated cooperating elements, one element having an end portion lying within a complementary recess in the associated end portion of an adjacent element and which is open endwise of said adjacent element and bonded thereto to provide a fabricated decorative trim member of the desired size and shape, the interfitting end portion of one member and recess of the other being arranged to prevent separation of said members in a direction normal to the normally exposed faces thereof.

JAMES S. REID.