

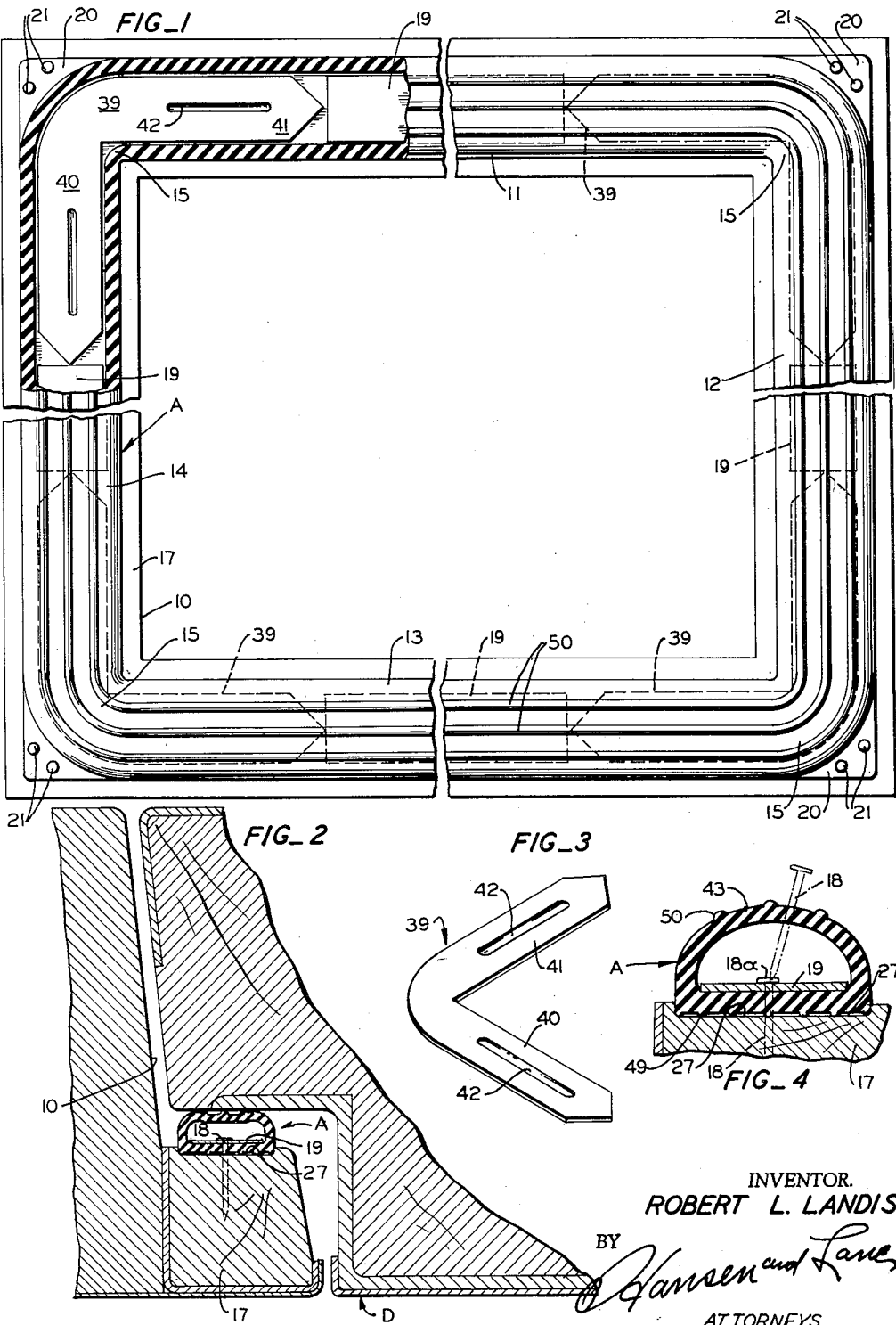
March 6, 1962

R. L. LANDIS
SEALING GASKET

3,023,466

Filed April 14, 1958

2 Sheets-Sheet 1



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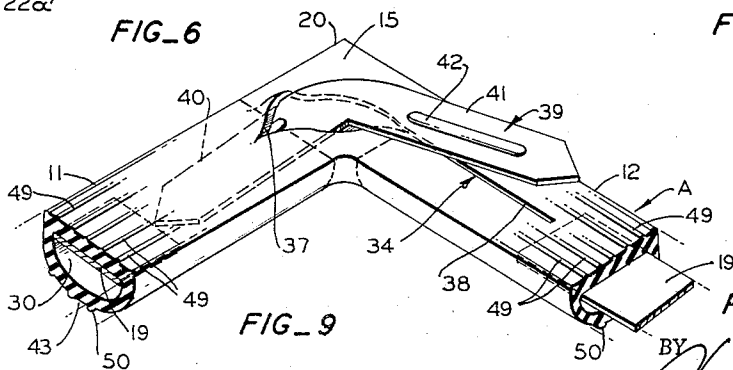
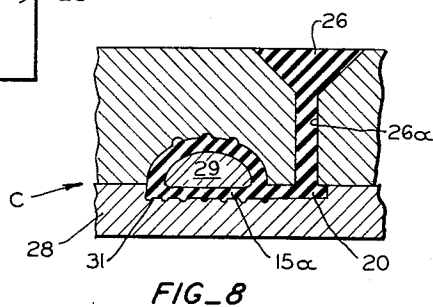
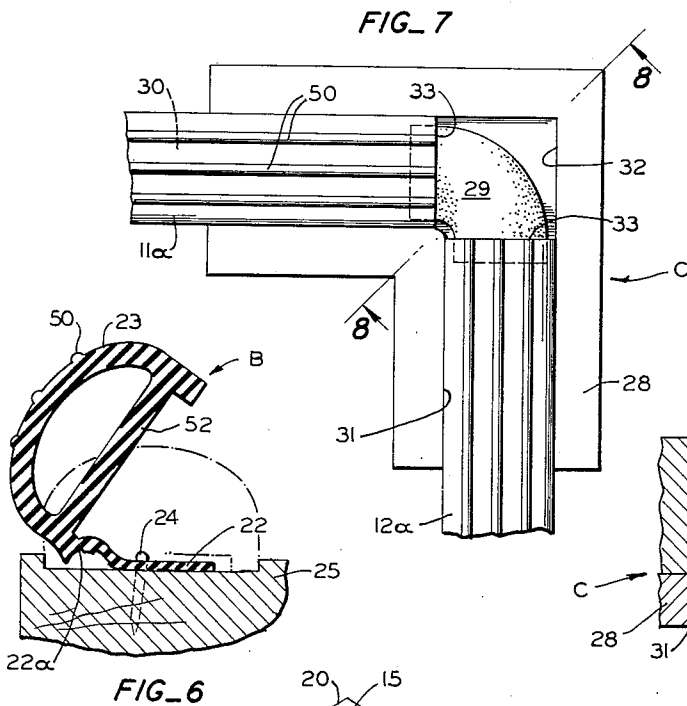
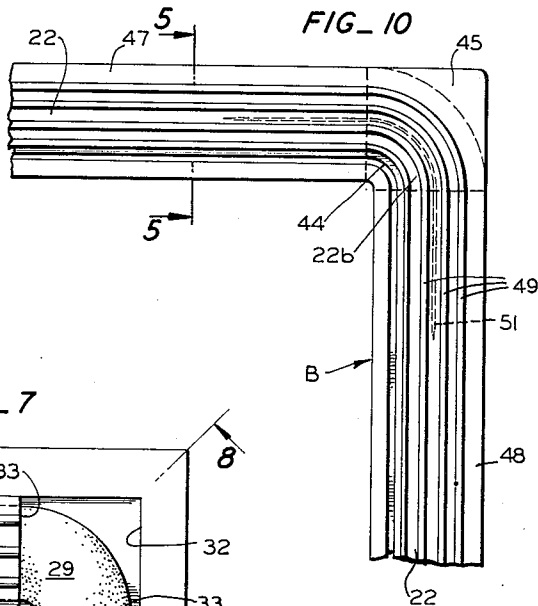
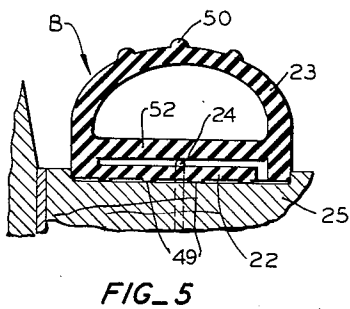
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SEALING GASKET

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Filed Apr. 14, 1958, Ser. No. 728,447

1 Claim. (Cl. 20-69)

The present invention relates to a seal, and pertains more particularly to a sealing gasket for railway refrigerator car doors.

In the past, many different structures have been employed for the sealing of railway refrigerator car doors. However, most of such seals have proven to be less than fully satisfactory. The action of the car while moving, the variations of climate to which the cars are exposed, and the rough, and sometimes abusive treatment to which they are subjected during loading and unloading, present a serious sealing problem.

Some attempts have been made in the past to provide a hollow, resilient gasket for this purpose, but it has been difficult to attain such a seal which would seal properly, and adhere to the door frame structure at the corners of the car door opening.

The present invention contemplates the provision of a new unitary car door seal which is of continuous, hollow construction throughout, and wherein the corner portions are capable of being firmly and permanently secured to the supporting frame structure without danger of opening up or coming loose.

The invention also provides an improved, hollow, car door sealing gasket of resilient material which is adapted to be secured in place by nailing, and additionally if desired by sheet metal anchor members inserted through slits provided therefor in the under side of each corner.

A further object of the invention is to provide an improved and simplified sealing gasket for a railroad refrigerator car door.

These and other objects and advantages of the invention will be apparent from the following description and the accompanying drawings, consisting of two sheets, wherein:

FIG. 1 is a fragmentary plan view of one form of refrigerator car door seal embodying the invention, intermediate side portions thereof being broken away, and one corner portion being shown in section, metal anchor members being shown inserted therein.

FIG. 2 is a fragmentary, sectional view in reduced scale through a refrigerator car door structure, showing the door in closed condition, and in compressing, sealing relation with the sealing gasket shown in FIG. 1.

FIG. 3 is a perspective view of a sheet metal corner anchoring insert shown in FIG. 1.

FIG. 4 is an enlarged, transverse, sectional view taken transversely through a door sealing gasket of the type shown in FIGS. 1 and 2, a nail being shown in solid lines in fully driven condition, and in broken lines ready to be driven through the anchor member.

FIG. 5 is an enlarged sectional view taken along line 5-5 of FIG. 10 and showing a modified form of sealing gasket anchored to a supporting frame member.

FIG. 6 is a sectional view similar to FIG. 5, showing the body portion of the gasket swung upwardly to expose the bottom flap for stapling to the frame.

FIG. 7 is a plan view in reduced scale of a lower die for molding a gasket corner structure onto two extruded straight gasket portions, the upper die being removed.

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FIG. 8 is a sectional view taken as along line 8-8 of FIG. 7, but showing the upper die closed on the lower die and the molded gasket corner portion therein.

FIG. 9 is a perspective view showing the underside of a corner portion of a gasket similar to that shown in FIGS. 1, 2 and 4, and illustrating the method of inserting metal anchor members therein, the straight anchor strips being shown inserted in the gasket.

FIG. 10 is a bottom view in reduced scale of a corner portion of the gasket shown in FIGS. 5 and 6.

Briefly, the form of the invention shown in FIGS. 1, 2, 4, 8 and 9 comprises an integral, hollow door gasket A in the form of a rectangular frame for completely surrounding a railway refrigerator car door opening 10 (FIG. 1). The complete gasket A (FIG. 1) comprises four straight, hollow gasket side portions 11, 12, 13 and 14, and four identical corner portions 15 formed integrally onto the adjoining corner portions of the side portions 11-14. The straight side portions 11-14 are of conventional, extruded gasket construction, and of suitable resilient, weather-resistant material, such as, for example, rubber, neoprene or plastic.

The gasket A is fitted onto a frame 17 provided therefor within the car door opening 10, and is secured in place thereon by nails 18, driven through the gasket A, through anchor members 19 and 39 fitted into the gasket, and on into the supporting frame 17 as shown in FIGS. 2 and 4. A corner fastening tab 20 is provided on the outer side of each molded corner portion 15 for fastening to the frame 17 as by nails 21 (FIG. 1).

In the modified form B of the invention shown in FIGS. 5, 6 and 10, no metal anchor members are required. In this modified form of the invention, a bottom flap 22, formed integrally on a gasket body portion 23, is secured by fasteners, such as staples 24, to a supporting frame 25 similar to the frame 17 of FIGS. 1, 2 and 4.

Referring to the drawings in detail, and describing first the form A of the invention shown in FIGS. 1, 2, 4, 8 and 9, the four straight side portions 11-14 of conventional extruded gasket material, are first cut to length so that when the uniform corner portions 15 are molded integrally thereon, as shown in FIGS. 1, 7 and 9, the gasket A will be in the form of a rectangular frame which will fit exactly into a seat 27 (FIGS. 2 and 4) provided therefor in the frame 17 surrounding a car door opening 10 in which the gasket is adapted to be mounted. A suitable type of mold C for forming the corner portions 15 is shown somewhat diagrammatically in FIGS. 7 and 8.

As illustrated, this is an injection type of mold, wherein a charge of molding material 26 is injected under pressure into the mold through a gate opening 26a. The molding material 26 preferably is injected into the corner cavity 32 of the mold so as to have minimum disturbing effect on a core or mandrel 29 therein.

A lower molding die 28 has means, such as shallow channels 31 (FIGS. 7 and 8) for receiving in inter-fitted relation therein the end portions of an adjoining pair of extruded side members 11a and 12a (corresponding to portions 11 and 12 of FIG. 1).

A core member 29, curved through an angle of 90°, and having a cross-sectional configuration corresponding to that of the hollow interiors of the extruded side members 11a and 12a, is fitted into these members as shown in FIG. 7. The lower die cavity 31 is extended at 32 in the form of a right angle to provide the corner tab

20 (FIGS. 1, 8 and 9) on each corner portion 15a molded therein, by which the corners 15 of the completed gasket A can be securely fastened to the frame 17 as by nails 21 (FIG. 1). This fastening of the corners prevents the corners of the gasket from curling away from the frame 17 during use, a frequent cause of trouble in prior gaskets.

The end faces 33 of the straight, extruded, gasket side members 11a and 12a which are exposed within the mold C may be coated or treated in accordance with conventional molding practice so as to form a strong, integral bond with the molding material 15a with which the mold C is filled. After the mold C has been filled with suitable molding material, the mold is closed, as shown in FIG. 8, and, in accordance with conventional and well known molding practice the molding material 26 is injected therein. The mold may be heated to heat treat the completed corner portion 15a, to cause the material to conform to the mold C to vulcanize it if necessary, and to bond it substantially integrally onto the exposed end faces 33 of the gasket side members 11a and 12a.

After the molding operation is completed, the mold C is opened, and the completed corner structure 15, with the core 29 still remaining therein, is removed from the mold. The gate portion 26a is cut off flush with the corner portion 20, and a slit 34 (FIG. 9) is then cut completely through the bottom wall of the gasket. This slit extends around the corner portion 15 and for short distances, as at 37 and 38, along the straight extruded side portions. The slit 38 along one of the side portions 12 is slightly longer than one leg of a substantially L-shaped metal corner anchoring member 39 which is to be inserted therein. The slit 34 then may be opened and the core 29 removed.

For shipping the gasket A, it is preferred that the corner anchor members 39 and the straight side anchor strips 19 be omitted from the gasket. The gasket may then be folded or rolled as required to permit it to be shipped in a relatively small shipping container.

For using the gasket A, a straight strip 19 of suitable metal such as mild steel and of a size to fit freely into the gasket opening 30, and to rest on the bottom thereof as shown in FIG. 9, is inserted into each of the straight, extruded side portions 11-14 of the completed gasket A. These anchor strips 19 may be inserted in the manner shown for inserting the corner anchor 39 in FIG. 9. The corner anchoring members 39 may be of material similar to the anchor strips 19, and of the same width. Each corner anchor 39 preferably has two legs 40 and 41 extending at right angles to each other, and with a shallow groove 42 formed lengthwise of each leg thereof to assist in positioning the nails 18 which anchor the corner portions 15 of the gasket to the frame 17. After the anchor members 19 and 39 are inserted in the gasket A, suitable fastenings, such as the nails 18 (FIGS. 2 and 4) then are driven through the top wall 43 of the gasket A, through the anchor members 19 or 39, as the case may be, and into the frame 17. The heads 18a of these fasteners are driven entirely through the top wall 43 of the gasket by use of a suitable tool, such as a conventional nail set, not shown, to seated condition on the anchor member 19 or 39, as the case may be.

The modified form B of the invention shown in FIGS. 5, 6 and 10 may be used satisfactorily without any metal anchor members whatever. In this form of the invention, straight gasket side portions 47 and 48 (FIG. 10) are of extruded gasket material having a hollow body portion 23 (FIGS. 5 and 6) and having the bottom flap 22 formed integrally thereon and joined thereto along one side edge 22a of the flap 22.

Four similar corner portions 44 (FIG. 10) are molded integrally onto adjoining portions of four straight extruded side portions, such as the members 47 and 48, arranged to form a rectangular frame similar to the members 11-14 in FIG. 1. The straight side portions 47

and 48 are of the cross-sectional shape shown in FIGS. 5 and 6. A continuation 22b of the flap 22 is formed to extend around each corner portion 44, and to connect integrally and continuously endwise with the flaps 22 on the adjacent straight gasket portions 47 and 48. Corner fastening tabs 45, similar to the tabs 20 on gasket A, are provided one on each molded corner portion 44.

The core or mandrel, not shown, but similar to the mandrel 29 of FIG. 8, and which is used in molding the corner portions 44, is removed from the completed gasket B through a slit 51 (FIG. 10) through the bottom wall 52 (FIGS. 5 and 6) similar to the slit 34 in FIG. 6.

For securing the completed, rectangular gasket B to a car door frame 25 (FIGS. 5 and 6) the body portion 23 of the gasket B is swung upwardly, as shown in solid lines in FIG. 6, and the flap 22 is then secured in place by staples 24, driven through the flap 22 and into the supporting frame 25 at intervals preferably of a few inches. It is possible to thus expose the flap 22 for stapling throughout almost the entire length of each straight side portion 47 and 48, up to within a few inches of each corner portion 44. This stapling, together with the nailing of each corner tab 45 to the frame 25, securely and permanently secures the gasket onto the frame 25.

It is to be noted that the gaskets A and B are provided with bottom ribs 49 and top ribs 50 for improved contact with the car door D (FIG. 2) and supporting frames 17 and 25. Since such ribs are conventional in gasket construction, and since they are not material to the invention they are not described in detail herein.

The invention provides a simple, integral gasket which may be easily and quickly secured in place around the door opening of a refrigerator car and which, when mounted thereon, will provide full overall contact with the door including the corners thereof and these corners will be free from any danger of opening up or from pulling away from the frame which in the past have been major causes for dissatisfaction with prior types of gaskets used for sealing refrigerator car door openings.

The invention further provides a gasket which is clean, provides no lodging place for moisture or dirt and which is well adapted to withstand the use and abuse to which such gaskets are subjected.

While I have illustrated and described a preferred embodiment of the present invention and a modified form thereof, it will be understood, however, that various changes and modifications may be made in the details thereof without departing from the scope of the invention as set forth in the appended claim.

Having thus described the invention, what I claim as new and desire to protect by Letters Patent is defined in the following claim.

I claim:

A refrigerator car door sealing gasket comprising four straight side portions of hollow, resilient gasket material, each of a length to conform to one side of a refrigerator car door frame on which the gasket is adapted to be mounted, said gasket material having a flat under side and a domed top, said straight side portions being arranged to define a rectangle of a size corresponding to that of a car door frame upon which the gasket is adapted to be mounted, arcuate gasket corner portions integrally joined to the adjacent ends of said straight gasket portions, each corner portion being similar in cross-sectional configuration to the straight side portions and in continuation thereof, a flat substantially triangular nailing tab extending laterally outward from the perimeter of the gasket at only the convex side of each corner portion and having its straight outer edges aligned with the straight outer edges of said straight gasket side portions and merging therewith, and a nailing flap formed integrally with the

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gasket and secured thereto along its outer edge throughout the entire length of the gasket, the nailing flap normally lying beneath the gasket and in close proximity to the under side thereof, whereby the gasket can be bent upwardly relative to the flap to expose the latter for nailing to an underlying frame, the resiliency of the gasket material returning the gasket to close, overlying relation to the flap upon release of the gasket.

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