May 6, 1958 J. E. MARTIN 2,833,228

DRAIN CHANNEL AND TROUGH FOR STORAGE SHELTERS

Filed July 27, 1953

FIG. 1

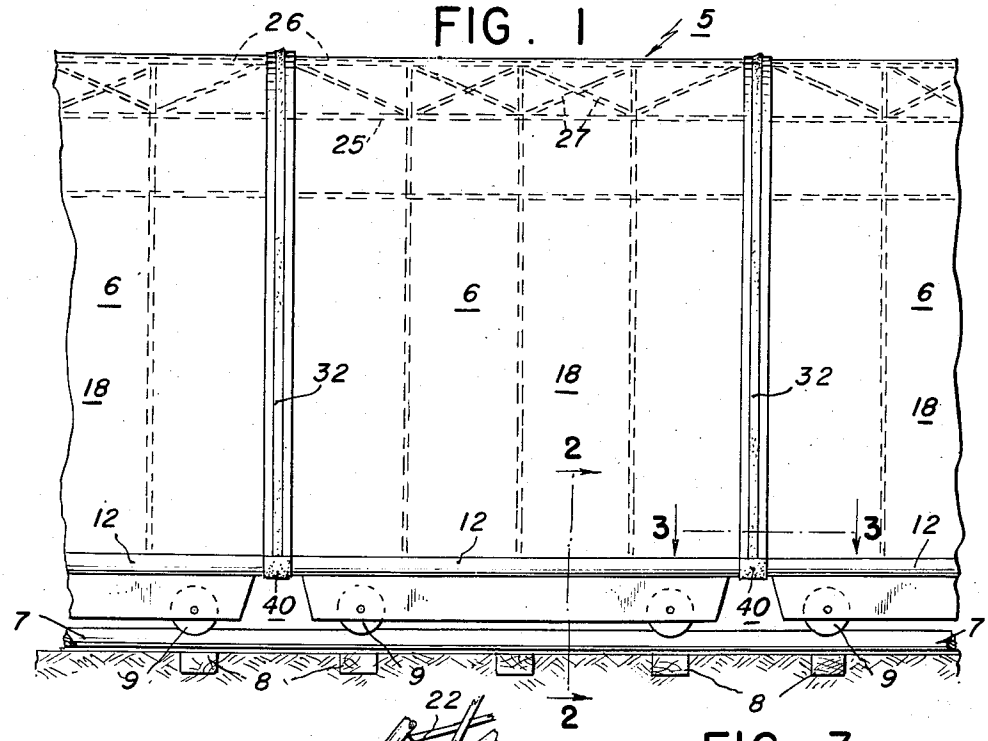


FIG. 2

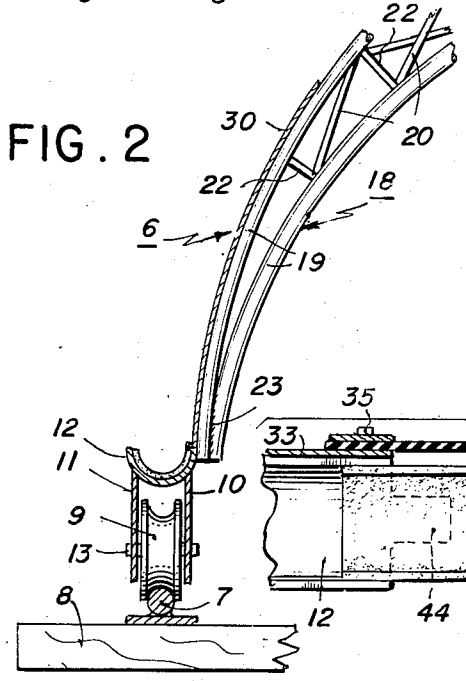


FIG. 3

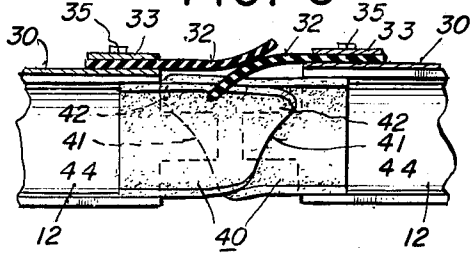
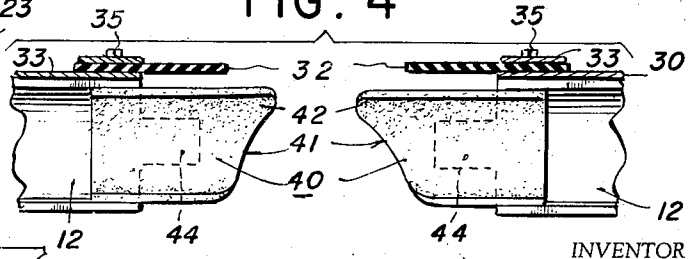


FIG. 4



INVENTOR

JOSEPH E. MARTIN,

BY J. E. Trundle

ATTORNEY

United States Patent Office

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DRAIN CHANNEL AND TROUGH FOR STORAGE SHELTERS

Joseph E. Martin, Detroit, Mich.

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7 Claims. (Cl. 108—1)

The present invention relates to improvements in storage shelters, and more especially to a flexible channel connector for the ends of the channelways along each side of each storage shelter unit.

The primary object of the invention is to provide the ends of the channels at each side of each shelter unit or section with flexible rubber flap-like members which are shaped to flex and permit the projecting end portions to overlap when the sectional storage units are moved relative one to the other in either a lateral or longitudinal direction, such movement of the storage shelter units is necessary to gain access to the interior of the storage area when storing or removing various articles, equipment and commodities.

Another object is to provide connector members for the ends of the channel members at each side of each unit, which channels perform the function of providing a resting shelf and trackway for an adjacent sectional unit when the same are arranged in nested relation one on top of the other, and said channel members also form effective drain troughs for carrying off rain water toward one or either end of the storage shelter structure. It is the object of the invention to provide rubber flaps at the ends of the channel members and to form the flaps of such a shape that they will interfit and overlap when adjacent sectional storage units are arranged in abutting relation.

Another object is to provide combination trackways and drain troughs with rubber sealing flaps at the ends thereof which have one end secured to the channel member and the projecting end cut on a bias which enables easy flexing of the sealing flaps although the sectional shape is of a semi-cylindrical and channel shape to fit the combined trackway drain channel.

Another object is to provide a drain trough flap for the ends of the channels of each sectional storage unit which will form a continuous channelway or drain trough along each side of a storage shelter formed of sectional units so that rain water will drain to one or either end of the storage shelter, and will thus not find its way beneath the sectional units and cause the ground in the shelter area to become damp with the resultant damage to articles and commodities stored in said shelter area.

Another object is to provide a sealing flap construction which will not only form a continuous flow pathway for drain water on each side of the storage shelter, but will permit of the easy separation or displacement of the sectional units relative one to the other without necessitating disconnecting fastener elements or other devices of a similar nature.

Another object is to provide a flap connector between the ends of adjacent rain trough channels of sectional storage units which are cut on the bias and provide pointed ends which when brought together either laterally or longitudinally, will flex at random and arrange themselves in overlapping relation to form a continuous uninterrupted channelway on each side of the storage shelter.

Another object is to provide a flap connector structure between the ends of the channelways at each side of the storage shelter which will not interfere with the sealing flaps between adjacent edges of the sectional storage shelter units.

Other objects and advantages of the invention will become apparent during the course of the following description of the accompanying drawing, wherein:

Figure 1 is a fragmentary side elevational view of a storage shelter formed of a series of sectional units with the flap connectors between the longitudinally extending channels shown in their operative positions.

Figure 2 is a vertical cross-sectional view illustrating the sectional shape of the longitudinal channel members and showing the manner in which the connector flaps are secured within the channel at the end thereof to project from each end of said channel member.

Figure 3 is an enlarged fragmentary cross-sectional view taken on line 3—3 of Figure 1, and looking in the direction of the arrows, to illustrate the manner in which the connector flaps are overlapped when the sectional storage shelter units are placed in abutting relation one with the other, and

Figure 4 is an enlarged fragmentary cross-sectional view similar to Figure 3, but showing the sectional storage shelter units displaced longitudinally with the connector flaps disengaged and in a position to be brought into operative relation when the sectional units are moved in a direction to form a complete storage shelter.

In the drawing, and more in detail, attention is first directed to Figure 1 wherein there is shown a storage shelter structure generally designated 5 formed of sectional shelter units, likewise generally designated 6. The storage shelter 5 may be of any desired length by increasing or decreasing the number of sectional units 6 depending upon the storage area required and the equipment or commodities to be stored. A pair of tracks 7 are supported on suitable ties 8, and said tracks 7 are of round section to receive the grooved supporting wheels 9 of which there may be a plurality on each side of each shelter unit 6.

Wheel supported frames are provided for each of the shelter units 6 and include inner and outer frame members 10 and 11 connected at their upper ends by means of a channel member 12 of semi-circular or rectangular cross section (Fig. 2). The supporting wheels 9 are mounted on short axles 13 extending through alined bearing openings in the frame members 10 and 11, and it is to be noted that the round section of the tracks 7 which receive the grooved wheels 9 provide a pivot or fulcrum for swinging each of the sectional storage units 6 laterally with respect to the longitudinal tracks or trackway formed thereby.

Connecting the channel members 12 of each sectional storage unit is a plurality of arch members generally designated 18 which are formed of inner and outer structural elements 19 interbraced and reinforced by diagonal truss bars 20 and transverse cross bars 22. The lower ends of the inner and outer structural members 19 are welded together as at 23 and are fastened to the channel members 12 by welding or other fastening means. The arch members 18 are interbraced one from the other by inner and outer longitudinal structural members 25 and 26 which are reinforced by diagonal truss bars 27. The inner structural members 25 being connected to the inner structural members 19 and the outer structural members 26 being connected as by welding or the like to the outer structural members 19. The ends of the storage shelter units are arranged to abut one another as shown in Figure 1, and each of the shelter units is provided with a cover or sheathing 30 formed of corrugated metal or light sheet aluminum. If desired, a plastic covering may be provided formed of one of the synthetic resins of the vinyl group.

Overlying the sheathing at each end of each storage shelter unit is a flexible sealing strip **32** which is held in place by means of a clamping strip **33** secured to the sheathing or one of the end structural members by means of a series of threaded fasteners **35** arranged in equidistantly spaced apart relation. When the sectional storage units **6** are moved together either longitudinally or laterally the flexible sealing strips **32** will flex and overlap to provide an effective sealing joint between adjacent storage shelter units. The rubber sealing strips **32** extend downwardly on each side of each sectional storage unit with its ends terminating at a point in close relation to the semi-cylindrical channel member **12**. Thus, should it be desired to gain access to the storage space intermediate the ends of the storage shelter **5**, the sectional storage unit at the desired location may be swung laterally with respect to the remaining sectional storage units, in which case the overlapping sealing strips **32** will simply flex to permit such movement. If desired, the sectional units may be shifted longitudinally relative one to the other to separate a preselected pair of storage units and gain access to the interior or storage area intermediate its length, in which case the sealing strips **32** will automatically overlap and thus provide an effective water seal between the various units.

The channel members **12** while being of semi-circular or rectangular section, can be of other cross-sectional shapes to provide rain troughs at each side of the storage shelter units **6**. In order to provide a continuous channelway and drain trough along the entire length at each side of the storage shelter **5**, connecting flaps **40** are secured to the ends of each channelway or drain trough **12**, and said flaps **40** are formed of rubber or a rubber composition such as neoprene. The connecting flaps **40** are affixed to the ends of the channelways **12** by an adhesive cement of the metal-to-rubber type, such as described in U. S. Patent 2,376,854 to S. G. Saunders, May 22, 1945. The adhesive described in the above patent is sold commercially under the name of "Cycle-Weld 55–6."

The flexible connectors **40** have their projecting ends cut on a bias as at **41** to form pointed portions **42** which are arranged in opposed relation, and are adapted to permit relative movement between the various sectional storage units either laterally or longitudinally, but which will overlap at random when the storage shelters are moved together longitudinally and will merely wipe over one another and arrange themselves in overlapping relation when one of the storage shelter units is moved relative to adjacent storage units in a lateral direction such as by rocking one side on the supporting wheels **9** by elevating the opposite side with suitable equipment.

In the various positions of the flaps **40**, the projecting ends **42** will arrange themselves in overlapping relation as shown in Figure 3 to provide a continuous drain trough along each side of the storage shelter **5**. It is noted, that the ends of the channel members **12** are spaced a slight distance one from the other and from adjacent channel members or drain troughs, and that the connecting flaps **40** bridge the space between said channel members and prevent water or other drainage from passing therebetween.

If desired, small projections **44** may be formed at the ends of the channel members or drain troughs **12** which will narrow the gap between the ends of said drain troughs at the bottom portions thereof so that when the sectional storage units **6** are arranged in nested relation with the supporting wheels **9** in the troughs **12** of an adjacent sectional storage unit, the supporting wheels **9** will roll over the projections **44** and permit an uppermost sectional storage unit to be shifted longitudinally substantially the entire length of the storage shelter formed by the remaining sectional storage units.

It is intended that the connector flaps **40** be formed of rubber or other material which can be shaped in section to correspond to the cross-sectional shape of the troughs or channel members **12**. Thus, when the flaps **40** are affixed to the ends of the drain troughs or channel members **12** by suitable adhesive, the flexible flaps **40** will assume the same shape as the sectional shape of the drain trough, and the projecting portion of each of the flaps **40** will likewise assume the same sectional shape as the drain trough or channelway by reason of the fact that it is held at one end to assume the channelway sectional shape.

The connector flap **40** is intended to be employed in connection with the type of portable storage shelter shown and described in my patent application Serial No. 323,878, Dec. 3, 1952, now Patent No. 2,789,668 with the sealing joint described in my application Serial No. 350,806, filed April 24, 1953.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred embodiment thereof, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

What I claim is:

1. In a mobile storage shelter formed of a series of sectional arch-shaped storage units, having channel members carried by and extending along each side thereof, sealing flaps on the ends of the shelter units adapted to overlap and seal the space between said units, and flexible connectors extending beyond the arch-shaped storage units and ends of the channel members arranged to overlap at random and form a continuous channel-way along each side of the storage shelter.

2. In a mobile storage shelter formed of a series of sectional arch-shaped shelter units, adapted to be arranged in abutting end to end relation to form a continuous storage shelter, channel members carried by and extending along the sides of each shelter unit, and flexible connector flaps extending beyond the ends of each arch-shaped units and channel member adapted to overlap one another at random when the shelter units are placed in abutting relation to provide a continuous channelway and drain trough extending the length of the storage shelter on each side thereof.

3. In a mobile storage shelter formed of a series of sectional arch-shaped shelter units adapted to be moved longitudinally into close relation in end to end fashion to form a shelter structure, flexible sealing flaps projecting beyond the ends of said units arranged to overlap the flaps of adjacent units one with the other, channel members carried by and extending along the lower side edges of each sectional unit with their ends terminating a short distance from one another when the sectional units are placed in longitudinal alinement, and flexible connectors projecting beyond said channel units and channel members adapted to overlap one another when the sectional units are placed in their operative position.

4. In a mobile storage shelter formed of a series of sectional arch-shaped storage units, channel members carried by and extending along the lower side edges of each of said sectional units, and resilient connectors projecting beyond the ends of each storage unit and channel member adapted to overlap one with the other to bridge the gap between the ends of said channel members and form a continuous drain channel extending the entire length of said shelter, said resilient connectors being formed of rubber composition and being of the same sectional shape as said channel members.

5. In a mobile storage shelter formed of a series of sectional arch-shaped storage units, channel members carried by and extending along the lower side edges of each of said sectional units adapted to be arranged in longitudinal alignment when said storage units are placed in end to end relation, and flexible connectors on the ends of each channel member adapted to cooperate one with the other to bridge the gap between the ends of

said channel members and form a continuous drain channel extending the entire length of said shelter, said flexible connectors being arranged to project beyond the edges of the shelter units and channel members with their ends diagonally cut to overlap one another at random when the sectional storage units are moved together either laterally or longitudinally with respect to one another.

6. In a mobile storage shelter including a series of sectional arch-shaped shelter units adapted to be arranged end to end to form a continuous shelter structure, flexible sealing flaps projecting beyond the end edges of each shelter unit adapted to overlap one another and seal the joint between adjacent units when the same are in alinement longitudinally, channel members carried by and extending along the lower side edges of said sectional units adapted to be longitudinally aligned when said shelter units are in abutting relation with their ends spaced one from another when said units are assembled, and flexible connector members extending beyond the edges of said shelter units and arranged to project beyond the end edges of said channel members to overlap one another when said sectional units are placed together, said flexible connector members being formed of rubber and of the same sectional shape as the channel members with their projecting ends cut on a bias to permit random overlapping of said connectors one with the

other when the sectional storage units are moved together either laterally or longitudinally.

7. In a mobile storage shelter including a series of sectional shelter units adapted to be arranged in longitudinal alinement to form a continuous shelter area, channel members mounted on the lower side edges of each sectional unit, said channel members being of a length to provide a slight space between the ends of adjacent channel members when the units are placed in longitudinal alinement, and flexible rubber connectors secured to and extending beyond the end edges of said shelter units and beyond the ends of each channel member with their projecting end portions cut diagonally to provide pointed end portions adapted to permit overlapping at random when the sectional storage units are brought into longitudinal alinement, said connector members being affixed to the ends of the channel members by a metal-to-rubber bonding adhesive.

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