March 15, 1960 H. C. PIERSON 2,928,463

GRAIN CAR DOOR

Filed June 7, 1954 4 Sheets-Sheet 1

Fig. 1

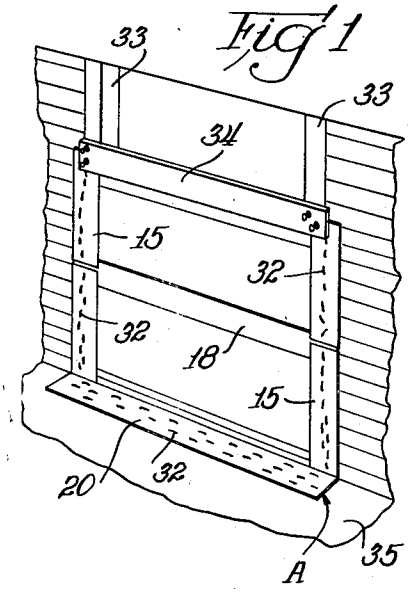


Fig. 2

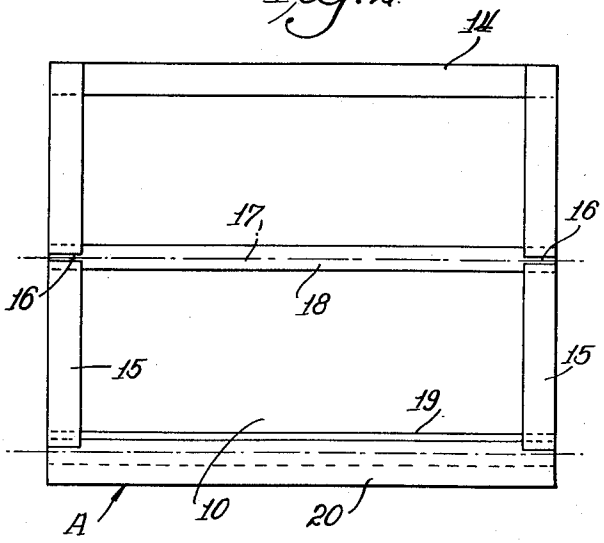
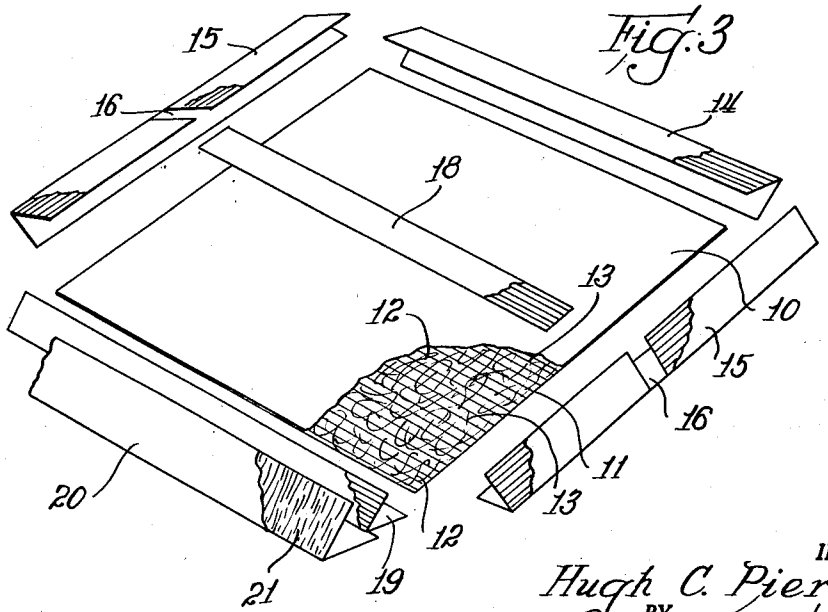


Fig. 3



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GRAIN CAR DOOR

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Fig. 4

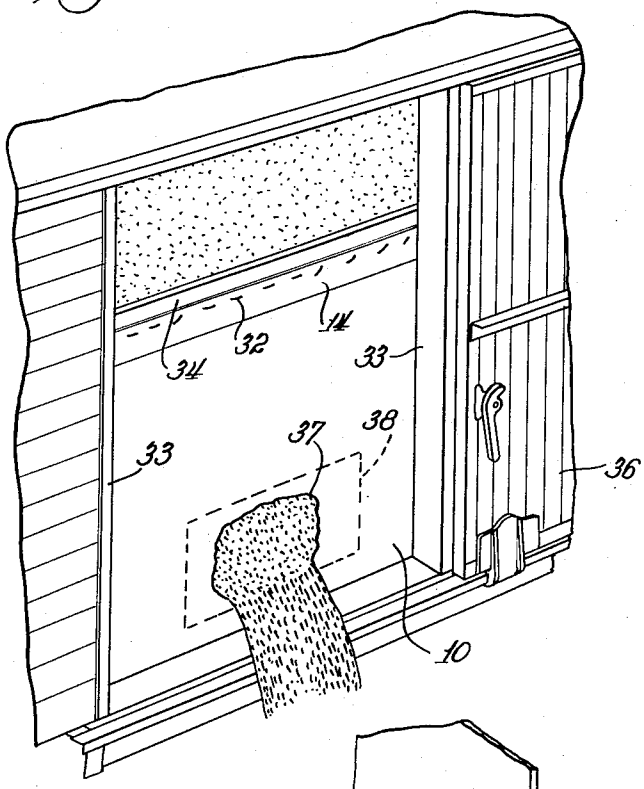


Fig. 9

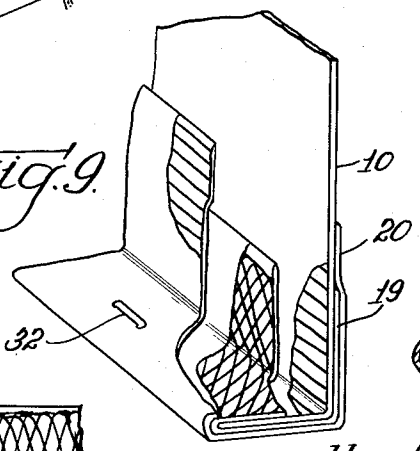
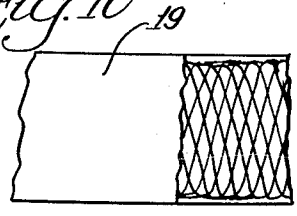


Fig. 10



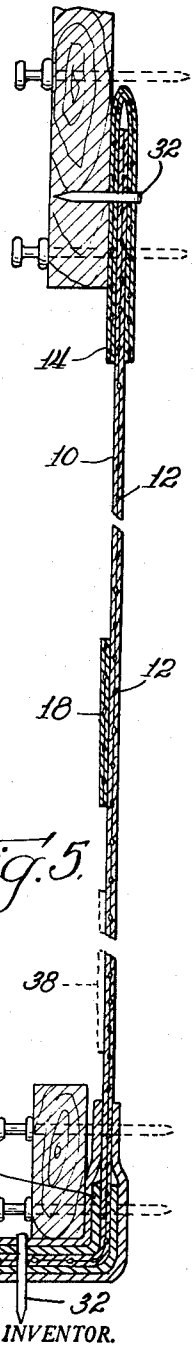


Fig. 5.

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GRAIN CAR DOOR

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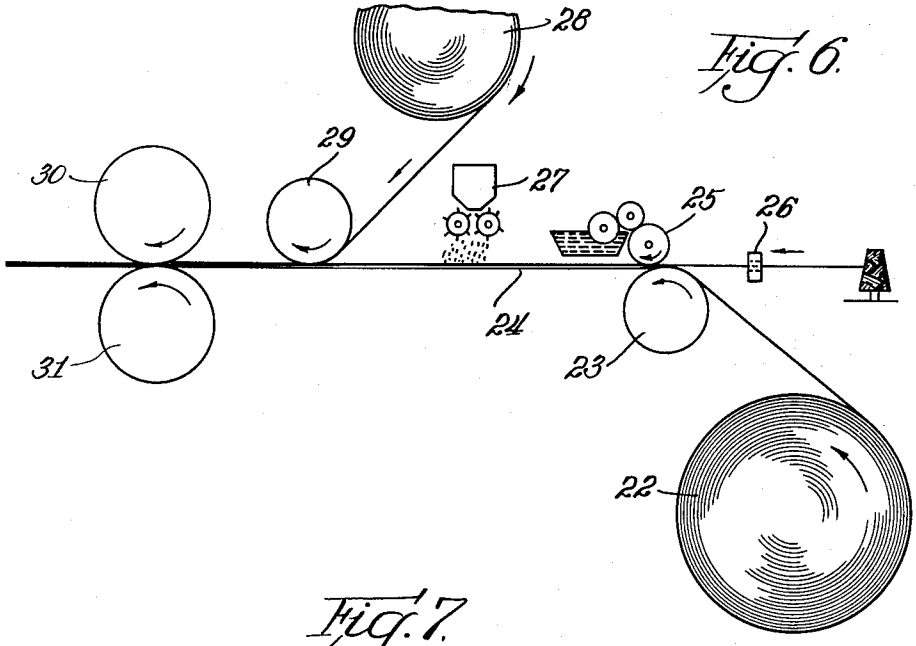
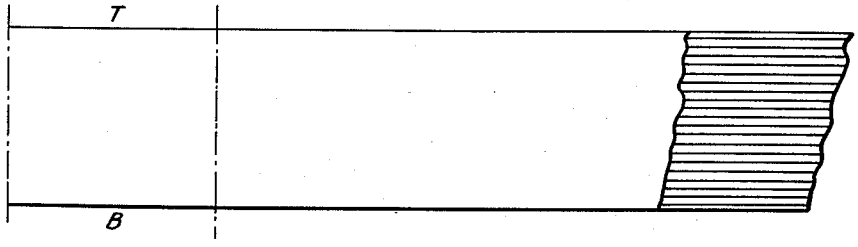


Fig. 6.

Fig. 7.



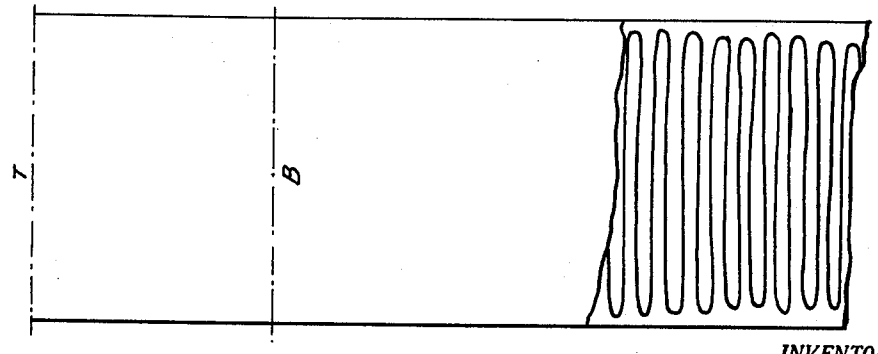


Fig. 8.

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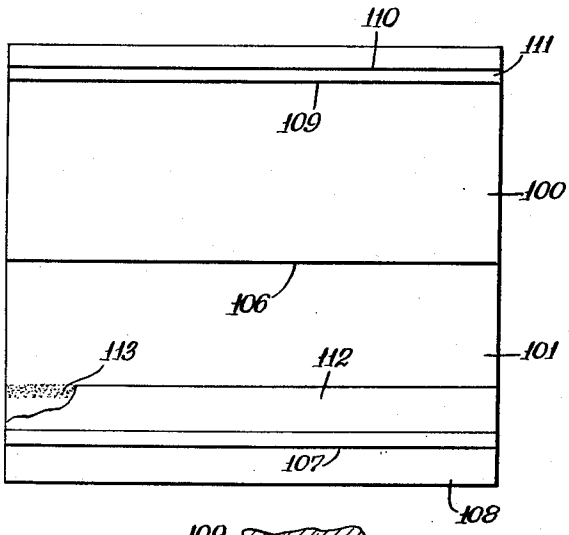
Atty.

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GRAIN CAR DOOR

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Fig. 11.



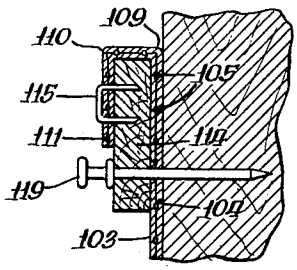


Fig. 13.

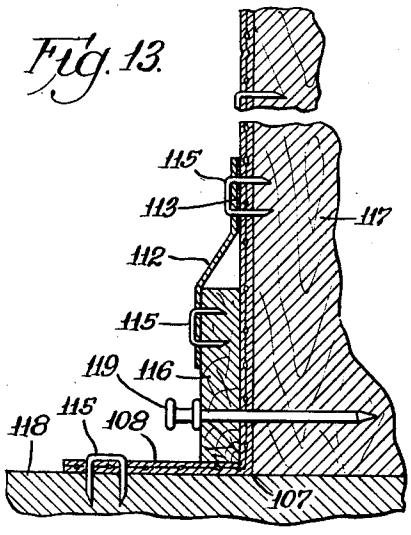
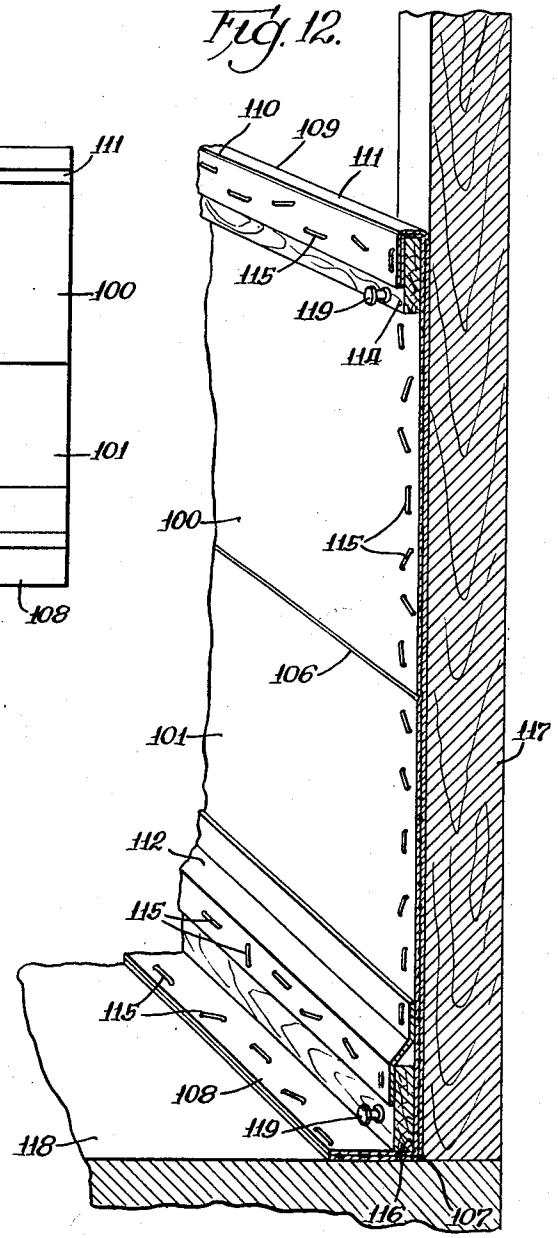


Fig. 12.



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United States Patent Office

2,928,463

Patented Mar. 15, 1960

2,928,463

GRAIN CAR DOOR

Hugh C. Pierson, Minneapolis, Minn; Bernice Pierson, administratrix of said Hugh C. Pierson, deceased

Application June 7, 1954, Serial No. 434,731

17 Claims. (Cl. 160—368)

This invention relates to prefabricated grain doors and a method of fabricating and mounting them.

This application is a continuation-in-part of my co-pending application, Serial No. 362,729, filed June 19, 1953, now abandoned.

So-called "grain doors" are used to close, completely or partially, the doorways of railroad boxcars in shipping bulk grain therein. The older practice which is still widely followed is to build a temporary wooden door in place before the car is filled with grain. Later, this temporary door is pried loose to release the grain. Prefabricated steel-strap reinforced grain doors are also in use. These doors are formed of sheets of paper with steel straps extending from side to side, and the ends of the steel straps are provided with holes so that they can be nailed securely to the car door posts.

With the type of prefabricated grain door just discussed, it has been felt that the steel-strap reinforcing is required to give assurance that the door would remain in place without developing breaks therein during transit and thereby allowing grain to escape. This can readily be appreciated when it is realized that the heavily shifting grain load exerts large forces on the grain door in both outward and downward directions, tending to cause the doors to bulge outwardly, to develop breaks therein, or to tear loose from the door posts. Outward bulging of the doors is particularly undesirable, since it permits the grain load to exert downward shearing forces on the door which may cause horizontal tears to develop. At the same time, excessive outward bulging will bring the outer surface of the door into contact with the permanent outer steel doors of the car, causing friction to develop and tending to weaken the grain door by abrasive action.

While the use of steel-strap reinforced grain doors satisfactorily solves some of the problems discussed above, this type of reinforced door suffers from certain inherent disadvantages which prevent it from being a complete answer to the problem of providing a fully satisfactory prefabricated grain door structure. For example, to open the steel-strap reinforced grain doors, it is necessary to deliver a number of sharp blows with an axe adjacent the door posts to cut the steel straps along this line. The cutting of the straps in this manner leaves dangling strap portions with ragged ends which is a safety hazard both to personnel and machinery handling the grain if they happen to drop into flowing grain, and must be removed promptly and carefully to prevent injuries to elevator workmen and trainmen, as well as damage to other freight. Moreover, the removal of the grain door remnants from the door posts requires considerable effort and the use of special tools such as a claw hammer or pry bar. Another disadvantage of this type of door is that the door posts are frequently mutilated by the driving and pulling of large numbers of nails, and in addition are frequently cut and splintered during the chopping off of the straps in opening the doors.

It is therefore a general object of this invention to provide prefabricated grain doors and a method of manufacturing and installing them, which grain doors assure the safe transit of grain while at the same time permitting the doors to be easily opened. A further specific object is to provide a grain door structure which completely overcomes the safety hazard associated with the use of steel-strap reinforced grain doors. Still another object is to provide a grain door structure which can be quickly opened, left in place until the car is empty, and removed by hand without the use of special tools. Another object is to provide a grain door structure which can be reused, if desired. Further objects and advantages will appear as the specification proceeds.

This invention is illustrated in specific embodiments in the accompanying drawings, in which:

Fig. 1 is a fragmentary elevational perspective view showing the interior of a boxcar doorway with an installed grain door constructed in accordance with this invention;

Fig. 2 a top plan view of the grain door illustrated in Fig. 1 when in laid out position;

Fig. 3 an exploded perspective view of the same grain door;

Fig. 4, a fragmentary elevational perspective view of the exterior of a railroad boxcar showing the installed grain door of Fig. 1 as it might appear when partially opened to release the grain;

Fig. 5, a broken vertical sectional view of the installed grain door structure of Fig. 4 on an enlarged scale showing the door adapted for reuse with a closure patch over the opening formed therein;

Fig. 6, a diagrammatic view illustrating a method of forming grain doors in accordance with this invention;

Fig. 7, a plan view of a laminated reinforced sheet which can be formed as illustrated in Fig. 6, with the upper layer of the sheet partially broken away to show the reinforcing filaments therebelow;

Fig. 8, a view similar to Fig. 7 showing the reinforcing filaments arranged in a winding pattern beneath the upper layer;

Fig. 9, a side perspective view of the installed door of Fig. 5 showing the outer layers of the door broken away to expose the reinforcing filaments;

Fig. 10, a plan view of the floor flap portion of the door illustrated in Fig. 9, showing the upper layer broken away to expose the reinforcing filaments;

Fig. 11, a plan view of the modified grain door structure prior to installation;

Fig. 12, a partial perspective view of the grain door of Fig. 11 on an enlarged scale installed in the doorway of a railroad grain car; and

Fig. 13, a broken side sectional view of the installed grain door of Fig. 12 on a slightly enlarged scale.

In one of its aspects, this invention is concerned with a grain door formed of layers of flexible sheet material laminated together with non-metallic filaments arranged between the layers to reinforce the door. Preferably the grain doors are formed of layers of paper adhesively secured together. It has been found that door panels constructed in this manner and dampened not only have adequate strength for use in grain doors, but shrink enough to stretch them tighter in load equalized relationship and also permit the doors to be readily opened when non-metallic filaments are arranged between the laminated layers of paper to reinforce the door. Various types of non-metallic filaments can be used for this purpose, including a wide variety of natural and synthetic fibers. However, the principal reinforcing is preferably formed of continuous strands of filaments, such as thread or string. The reinforcing thread can be formed of cotton, silk, etc., although synthetic fibers are preferred, such as nylon, rayon, etc. Excellent results have been obtained with threads formed of a single or mono-

filament of a polyvinylidene chloride resin, such as those sold under the trade name of "Saran." Filaments formed of copolymers of vinyl chloride and vinyl acetate are also suitable, such as those sold under the trade name of "Vinyon." It will be understood that other non-metallic filments of high tensile strength can also be used, such as glass filaments like those sold under the trade name of "Fiberglas."

Looking first at Figs. 1 to 3, there is shown a prefabricated grain door A. As seen more clearly in Fig. 3, the main panels of grain door A are formed of an upper sheet **10** and a lower sheet **11** of paper adhesively secured together with non-metallic filaments **12** arranged therebetween to reinforce the panel. Reinforcing filaments **12** preferably extend from side to side across the door as illustrated, in vertically-spaced, substantially straight or parallel lines. In addition, it is preferred to provide relatively short reinforcing filaments, such as filaments **13** which extend crosswise between horizontal filaments **12**, thereby tending to tie these horizontal filaments together and provide vertical as well as horizontal reinforcing for the door.

In one embodiment of this invention, it has been found desirable to provide a relatively stiff frame about the flexible door panels for the purpose of maintaining the door panels in a flat prestressed condition. In the embodiment of Figs. 1–5, this is accomplished by providing a frame about the border of the door panels formed of laminated reinforced paper strips similar to the door panels themselves. However, the multilayers of paper around the edges cooperate to provide the necessary stiffening of the doors. In the illustration given, the top edge of the door panel is reinforced by a folded strip **14** which overlaps both sides of the top of the door panel and is adhesively secured thereto. Strip **14** can also be formed of two layers of paper with horizontally-extending reinforcing filaments therebetween. The side edges of the door panel are reinforced by folded strips **15** which are similar to strip **14** except that they are provided centrally with a slot **16** in one side thereof. The purpose of slot **16** is to facilitate folding of the grain door so that the upper panel, for example, can be folded on top of the lower panel for more convenient storage and shipment of the prefabricated doors. The door illustrated in Figs. 1 to 3, for example, can be folded along fold line **17** as illustrated in Fig. 2. When folding of the doors is contemplated, it is desirable to provide an additional central reinforcing strip **18** which overlies the fold line and is adhesively secured to the flexible panels at this point. It is also preferred to have strip **18** formed of laminated layers of paper with non-metallic filaments arranged therebetween to provide reinforcing.

The bottom of the door can be reinforced with a strip **19** similar to strip **14**. In addition, it is preferred to provide a floor flap **20** which is secured over strip **19** and extends downwardly from the lower door panel so that it can be secured to the floor of the boxcar just in front of the doorway. Preferably, the principal reinforcing filaments **21** in floor flap **20** stand crosswise of the floor flap, as illustrated more clearly in Fig. 3.

One method of manufacturing the grain door panels, as well as the multi-thickness frame strips of reinforced paper is illustrated in Fig. 6 of the drawing. A roll of 60 lb. or heavier kraft paper is shown at **22** which passes upwardly over guide roller **23**, thence along conveyor belt **24**. An asphalt or other suitable adhesive material is sprayed on or applied by reverse roll application at **25** to the upper surface of the paper layer. At the same time, a plurality of non-metallic filaments are continuously laid on the same surface, for example, by means of cord guide bar **26**. One pattern of the strands is illustrated in Fig. 7 where they extend in parallel alignment along the length of the sheet. Another is illustrated in Fig. 8 where one or more filaments are laid on in a winding or overlapping pattern. This might be accomplished, for example, by adapting core guide bar **26** for suitable reciprocating movements.

If desired, short fibers can be applied to the adhesive-coated layer of paper at **27**. A pattern of reinforcing filaments similar to that illustrated in Fig. 3 can be produced. Thereafter, another sheet of 60 lb. kraft paper is fed from a roll at **28** beneath guide roll **29** onto the lower sheets, and both sheets are pressed together by passing through compression rollers **30** and **31**. This laminated reinforced sheet material is then employed to form the final prefabricated grain doors, as illustrated in Fig. 3 for example. The kraft paper employed can be as heavy as 200 lbs. per ream if desired.

The modified grain door structure illustrated in Figs. 11 to 13 is also formed of layers of flexible sheet material laminated together with non-metallic filaments arranged between the layers to reinforce the door. Specifically, the grain door comprises two interconnected panels **100** and **101** formed of two layers of paper **103** and **104** adhesively secured together with non-metallic filaments **105** disposed therebetween and running along generally parallel lines across the width of the panels.

Between the upper panel **100** and lower panel **101** there is provided a fold line **106**. In other words, panels **100** and **101** have their adjacent edges meeting along a fold line which extends for the full width of the panels. A similar fold line **107** extends across the bottom portion of panel **101** and divides it from floor flap portion **108**, which is foldable at right angles to panels **101** and **100** and adapted to rest on the floor of a railroad grain car. Also, near the top of panel **101** there is provided two parallel fold lines **109** and **110**. The panel portion above fold line **109**, designated by the number **111**, serves as an attachment flap and is foldable to a J or U-shaped configuration.

The embodiment of Figs. 11 to 13 also includes a narrow strip **112** of flexible sheet material, preferably paper, extending across the lower portion of panel **101** and above but closely spaced to fold line **107**. As seen more clearly in Figs. 11 and 13, the upper portion of strip **112** is adhesively attached to panel **101**, as indicated at **113**, while the lower portion of strip **112** is free to swing outwardly from panel **101**.

Operation

The operation of the grain doors of this invention is illustrated particularly in Figs. 1, 4 and 5. The grain door which may have been shipped in folded condition can be applied to the inside of the boxcar doorway as illustrated in Fig. 1. First the grain door is wetted as by soaking or sprinkling until damp. If desired, preparatory to the application of the grain door, the usual top protecting board can be nailed across the door frame. The grain door is then unfolded and placed against the inside of the doorway in the position illustrated in Fig. 1. A stapling machine can then be used to apply staples along the edges of the grain door. For example, as illustrated in Fig. 1, staples **32** have been applied in vertical lines through side strips **15** and extend into door posts **33**. A top protecting board **34** has been nailed with double-headed nails to the door posts **33** across the top of the grain door, and as illustrated more clearly in Fig. 4, staples **32** have been applied in a line along the top of the grain door extending through top strip **14** into top protecting board **34**. Bottom flap **20** has also been stapled securely by a plurality of rows of staples **32** to the floor **35** of the boxcar. The exterior appearance of the door after installation is seen in Fig. 4. It will be understood that during shipment the outer steel door **36** will be pulled over the doorway.

After the boxcar has reached its destination and it is desired to unload part or all of the grain, it is only necessary to cut an opening in the door with a sharp knife. If it is planned to reuse the door or to unload

only a portion of the grain, it is preferred to cut a rather small opening, such as opening 37 as illustrated in Fig. 4, through which the grain will then automatically discharge itself. When the grain has been completely discharged, the door can be readily removed by cutting it into strips with a knife and pulling the strips free from the floor, door post, and top protecting board. In this operation the frame-providing strips assist in the removal of the staples. It has been found that by grasping these strips with the hand and pulling directly outwardly that the staples can be removed without requiring the use of special tools, and that this tends to prevent undue damage to the floor and door posts of the car. Alternatively, especially when only a small opening has been formed in the door, it is possible to reuse the door; for example, this can be done by applying a patch over the opening. Preferably, the patch is adhesively secured to the door on its inside surface and extends over a considerably larger area than than of the opening, as does closure patch 38 illustrated more clearly in Fig. 5.

The area covered by closure patch 38 is also indicated by the dotted lines in Fig. 4.

By means of a multi-thickness frame of reinforced paper about the door, the main sheet or panels of reinforced paper are held in taut position after the door has dried across the car door opening after installation of the door. This tends to prevent the door from being installed with wrinkles therein or from being installed too loosely on the door posts. This is very important, because if the door is not installed in tight, wrinkle-free condition, unequal stresses will develop when the car is loaded with grain, and any original looseness in the door will be augmented under the load pressure of the filled car. If this occurred, it would be difficult or impossible to close the outer door after the car had been loaded, for the outer metal door would be blocked by coming in contact with the inner grain door. Further, even if it is possible to close the outer door, it would be very undesirable to have the grain door in contact with or rub against the outer metal door during transit. This would tend to produce breaks in the grain door, causing leakage of grain.

Another important advantage of the grain door structure described herein also stems from the multi-thickness frame of reinforced paper. This frame, in effect, provides nailing edges for proper installation of the doors. It has been found that with doors of the type described, there is little tendency for the doors to tear loose at the points where they are nailed or stapled to the door posts. Particularly good results are obtained in this connection with doors having the reinforcing filaments disposed in the manner illustrated in Fig. 3, that is, with the main reinforcing filaments extending horizontally across the door panels and vertically along the side reinforcing strips. With this construction, apparently there is an equalization of stresses so that the load applied to the door panels is distributed evenly along the side strips and not concentrated at the nailed or stapled points. The flexible sheet material of the door panels is in effect prestretched and framed, and this is believed to be largely responsible for the success of the doors in use.

The embodiment of Figs. 11 to 13 *is* preferably installed by first placing the grain door on the floor of the box-car with its inner side uppermost, as illustrated in Fig. 11. A narrow wooden support bar long enough to extend entirely across the grain door, is then placed with its upper longitudinal edge on fold line 109, and attachment flap 111 is folded about the wood bar. Preferably the wood bar has a thickness corresponding to the distance between fold lines 109 and 110. The desired arrangement is illustrated in Figs. 12 and 13, where attachment flap 111 has been folded around wood bar 114 and has been stapled to the front face thereof, the staples being designated by the number 115. Another wood support bar 116, similar to bar 114, is then placed with its lower longitudinal edge along fold line 107 with its upper portion extending under the lower portion of strip 112 in the manner illustrated in Figs. 12 and 13. The lower portion of strip 112 is then stapled to support brace 116.

After support bars 114 and 116 have been attached respectively to panels 100 and 101 in the manner described, the grain door is ready to be mounted in the doorway. As a first step, support brace 116 is nailed to the door post 117 in the manner shown in Figs. 12 and 13, with floor flap 108 extending outwardly and resting on the car floor 118. Preferably double-headed nails 119 are used to nail wood bar 116 to the door post, as well as wood bar 114, which is next attached to door post 117 in the position shown in Figs. 12 and 13. Preferably panels 100 and 101 are placed under a slight tension between wood bars 114 and 116. The mounting operation is then completed by stapling the side edges of panels 100 and 101 to door posts 117 and floor flap 108 to floor 118. The appearance of the installed door is clearly illustrated in Figs. 12 and 13.

When the grain door of Figs. 11 and 13 is installed in the manner described, it will be in smooth, wrinklefree condition, and will be drawn tightly across the doorway. Strip 112 will prevent grain from seeping in between wood bar 116 and panel 101, and thereby tending to bow the door panels outwardly. Also, the side thrust or lateral pressure of the grain against panels 100 and 101 will be partially taken by wood bar 116 instead of being taken entirely by floor flap 108. In this way, floor flap 108 will be prevented from separating from the floor and allowing grain to escape under the door.

While in the foregoing specification this invention has been described in considerable detail in relation to certain specific embodiments thereof and many details have been set forth for purpose of illustration in connection with these embodiments, it will be apparent to those skilled in the art that this invention is susceptible to other embod.ments and that many of the details set forth can be varied widely without departing from the basic concepts of the invention.

I claim:

1. A prefabricated car doorway closure panel comprising a sheet of heavy flexible material of a horizontal length sufficient to overlie the side frames of the doorway, said panel having a straight fold line parallel with and spaced from the lower edge providing an edge portion foldable at a right angle to the upper portion and adapted to rest on the floor of a railway car with the fold line against the side frames, and a narrow strip of flexible sheet material extending across the upper portion a spaced distance from said fold line, the upper edge portion of said strip being secured to said panel and the lower portion of said strip being free to swing outwardly from said panel.

2. A prefabricated car doorway closure panel comprising a sheet of heavy flexible material of a horizontal length sufficient to overlie the side frames of the doorway, said panel having a plurality of horizontally disposed fold lines one spaced from the bottom edge, another spaced from the top edge, and a third intermediate the other two, the two portions of said panel upon opposite sides of each fold line being foldable at right angles with respect to one another, the lower end portion of the panel below the first mentioned fold line being adapted to rest on the floor in front of the doorway and with all the fold lines against the side frames.

3. A prefabricated car doorway closure panel comprising a sheet of heavy flexible paper of a horizontal length sufficient to overlie the side frames of the doorway, said panel having a straight fold line parallel with and spaced from the lower edge dividing said panel into two portions foldable at right angles with respect to each other, strips of heavy reinforcing material secured

along the vertical edges of one of said portions to hold said one of the portions flat and reinforce same for nailing to the side frames where they overlie the side frames, said strips being interrupted proximate to the fold line on the inwardly folded face of the panel.

4. The closure panel called for in claim 3, in which a reinforcing strip is secured to said panel along and overlying the fold line.

5. A prefabricated car doorway closure panel comprising a sheet of heavy flexible material of a horizontal length sufficient to overlie the side frames of the doorway, said panel having a plurality of horizontally disposed straight fold line one spaced from the bottom edge in close proximity thereto and another located intermediate the top and bottom edges, the two portions of said panel upon opposite side of each fold line being foldable at right angles with respect to one another, strips of heavy material secured along and overlying the fold lines, and strips of heavy reinforcing material secured along the vertical edges of the panel on opposite sides of the intermediate fold line to hold the portions flat and reinforce same for nailing to the side frames where they overlie the side frame.

6. A prefabricated car doorway closure panel comprising a sheet of heavy flexible material of a horizontal length sufficient to overlie the side frame of the doorway, said panel having a straight fold line parallel with and spaced from the lower edge providing a lower flap portion foldable at a right angle to the upper portion and adapted to rest on the floor in front of the doorway, a strip of flexible reinforcing material overlying the fold line, a second strip of flexible reinforcing material along the upper edge of said panel, and strips of flexible reinforcing material along the vertical edges of said panel overlying the ends of said second strip to hold the panel flat in a vertical plane and reinforce same for nailing to the side frames where they overlie the side frames.

7. A prefabricated car doorway closure panel formed from a sheet of heavy flexible material of a horizontal length sufficient to overlie the side frames of the doorway, said panel having a plurality of straight fold lines parallel with and spaced from the lower edge, one of said fold lines providing an edge portion along the bottom of the panel that is foldable at a right angle to the upper portion and is adapted to rest on the floor inwardly of the doorway, another one of said fold lines being disposed in the upper portion of the panel and dividing it into two panel portions foldable at a right angle with respect to one another, horizontally extending elongated means adhered to the inner face of said upper portions on opposite sides of said other fold line for supporting said panel at said other one of the fold lines, the ends of said means overlying the side frames for securement to the side frames, and elongated means for supporting the upper edge of said panel including a reversely folded edge element and a rigid member secured thereto throughout its length adapted to overlie said side frames and be secured thereto, said panel being adapted to engage the side frames in leak-tight relationship therewith with the fold lines disposed against said side frames.

8. A prefabricated car doorway closure panel comprising a plurality of sheets of heavy flexible material bonded together and of a horizontal length to overlie the side frames of the doorway sufficiently to be secured thereto in leak-tight relationship, said panel having a plurality of horizontally disposed non-metallic filaments bonded between said sheets and having a plurality of horizontally disposed fold lines parallel therewith, one of said fold lines being spaced from the bottom edge and providing an edge portion along said bottom of the panel that is foldable at a right angle to the remaining portion of the panel and adapted to rest on the floor inwardly of the doorway, and a second one of said fold lines being spaced vertical from the first one and dividing the remaining portion into two vertically spaced panel portions foldable at a right angle with respect to one another, reinforcing means including an elongated flat member secured against the inner face of said vertical panels along said second fold line, means for supporting the upper edge portion of said upper panel portion including a rigid member secured thereto throughout its length, means for supporting the bottom of the panel including a rigid member engaging said panel along said one of said fold lines said elongated members overlying said side frames at their ends, and means for securing the panels and the elongated members to the side frames with the fold lines disposed against said side frame where they overlie the side portions.

9. In a door for resisting loads from granular bulk materials stored thereagainst, a heavy flexible fibrous sheet comprising two layers of paper having horizontal, vertically spaced non-metallic monofilaments therebetween, said panels being adhesively secured together and having non-metallic monofilaments therebetween crosswise of said horizontal monofilaments adapted to tie said horizontal monofilaments together, a reinforcing strip overlapping the vertical marginal edges of said sheet and having vertical monofilaments therein, said sheet having a floor flap formed integrally therewith and defined by a horizontal fold line adjacent the lower edge thereof, said sheet having a second horizontal fold line vertically spaced from the first fold line a predetermined distance with the portion of the sheet above said second fold line capable of being moved into a horizontal plane temporarily for affording selective folding of said sheet in condition for storage and opening for mounting on a box car door or the like, said reinforced edges being slotted in registration with said second fold line to provide ready movement of said portion of the sheet above said second fold line into superposed relationship with the portion below said second fold line.

10. The combination according to claim 9 wherein a central reinforcing strip is secured adhesively to said sheet in overlying relationship to said second fold line.

11. A prefabricated car doorway closure panel formed from a sheet of heavy flexible material of a horizontal length sufficient to overlie the side frames of the doorway, said panel having a plurality of straight fold lines parallel with and spaced from the lower edge, one of said fold lines providing an edge portion along the bottom of the panel that is foldable at a right angle to the upper portion and is adapted to rest on the floor inwardly of the doorway, another one of said fold lines being disposed in the upper portion of the panel and dividing it into two panel portions foldable at a right angle with respect to one another, horizontally extending elongated means adhered to the inner face of said upper portions on opposite sides of said other fold line for supporting said panel at said other one of the fold lines, the ends of said means overlying the side frames for securement to the side frames, and elongated means for supporting the upper edge of said panel including a reversely folded edge element and a rigid member secured thereto throughout its length and adapted to overlie said side frames and be secured thereto, said panel being adapted to engage the side frames in leak-tight relationship therewith with the fold lines disposed against said side frames.

12. A prefabricated car doorway closure panel comprising a plurality of sheets of heavy flexible material bonded together and of a horizontal length to overlie the side frames of the doorway sufficiently to be secured thereto in leak-tight relationship, said panel having a plurality of horizontally disposed non-metallic filaments bonded between said sheets and having a plurality of horizontally disposed fold lines parallel therewith, one of said fold lines being spaced from the bottom edge and providing an edge portion along said bottom of the panel that is foldable at a right angle to the remaining portion of the panel and adapted to rest on the floor inwardly of the doorway, and a second one of said fold

lines being spaced vertical from the first one and dividing the remaining portion into two vertically spaced panel portions foldable at a right angle with respect to one another, a reinforcing means including an elongated flat member secured against the inner face of said vertical panels along said second fold line, means for supporting the upper edge portion of said upper panel portion including a rigid member secured thereto throughout its length, means for supporting the bottom of the panel including a rigid member engaging said panel along said one of said fold lines said elongated members overlying said side frames at their ends, and means for securing the panels and the elongated members to the side frames with the fold lines disposed against said side frame where they overlie the side portions.

13. A prefabricated car doorway closure panel comprising a plurality of interconnected web panel portions of heavy paper of sufficient length horizontally to overlie the side frames of the doorway and having a plurality of horizontal non-metallic filaments interstitially therein, said panel portions being arranged one above the other with their adjacent edges meeting along a horizontal fold line permitting said panel to be folded with said panel portions in superposed relation and having disposed therebetween a plurality of vertically spaced non-metallic filaments and an adherent folded strip of paper overlying each side of the vertical marginal edges of the panels to distribute the load from said panel and notched out at the fold line to facilitate folding.

14. The closure panel construction called for in claim 13 including vertically aligned non-metallic filaments disposed interstitially in each of the said strips whereby load carried by the horizontally extending filaments in said panel may be transferred to the vertically extending filaments in said strips to eliminate stress concentration at points on said strips where fastening means may be disposed.

15. The closure panel construction called for in claim 13, in which said panel portions and said strips comprise laminated layers of heavy paper with said horizontal non-metallic filaments disposed between said panel layers and a plurality of non-metallic filaments adapted to tie said horizontal filaments together to prevent bulging of said panels and vertical displacement of said horizontal filaments.

16. A prefabricated car doorway closure panel formed from a sheet of heavy flexible material of horizontal length sufficient to overlie the side frames of the doorway, said panel having a plurality of straight fold lines parallel with and spaced from the lower edge, one of said fold lines providing an edge portion along the bottom of the panel that is foldable at a right angle to the upper portion and is adapted to rest on the floor inwardly of the doorway, horizontally extending elongated means adhered to the lower part of said lower portion along the above said one of said fold lines, another one of said fold lines being disposed in the upper portion of the panel

and dividing it into two panel portions foldable at a right angle with respect to one another, a second horizontally extending elongated means adhered to the inner face of said upper portions on opposite sides of said other fold line for supporting said panel at said other one of the fold lines, the ends of said second means overlying the side frames for securement to the side frames, and elongated means for supporting the upper edge of said panel including a reversely folded edge element and a rigid member secured thereto throughout its length adapted to overlie said side frames and be secured thereto, said panel being adapted to engage the side frames in leak-tight relationship therewith with the fold lines disposed against said side frames.

17. A prefabricated car doorway closure panel comprising a plurality of sheets of heavy flexible material bonded toegther and of a horizontal length to overlie the side frames of the doorway sufficiently to be secured thereto in leak-tight relationship, said panel having a plurality of horizontally disposed non-metallic filaments bonded between said sheets and having a plurality of horizontally disposed fold lines parallel therewith, one of said fold lines being spaced from the bottom edge and providing an edge portion along said bottom of the panel that is foldable at a right angle to the remaining portion of the panel and adapted to rest on the floor inwardly of the doorway, horizontally extending elongated means adhered to the lower part of said lower portion along the above said one of said fold lines and a second one of said fold lines being spaced vertical from the first one and dividing the remaining portion into two vertically spaced panel portions foldable at a right angle with respect to one another, a second reinforcing means including an elongated flat member secured against the inner face of said vertical panels along said second fold line, means for supporting the upper edge portion of said upper panel portion including a rigid member secured thereto throughout its length, means for supporting the bottom of the panel including a rigid member engaging said panel along said one of said fold lines said elongated members overlying said side frames at their ends, and means for securing the panels and the elongated members to the side frames with the fold lines disposed against said side frame where they overlie the side portions.

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