July 2, 1957 B. H. FORD ET AL 2,797,749

BOXCAR OPENING CLOSURE

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Fig. 2

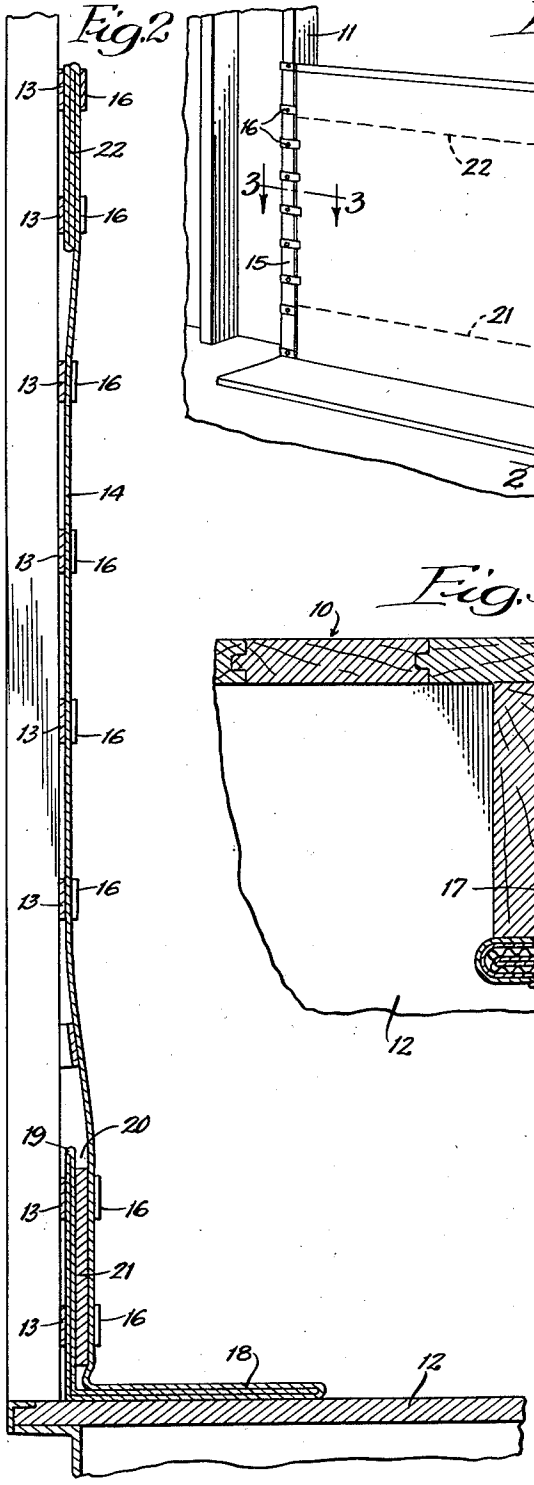


Fig. 1

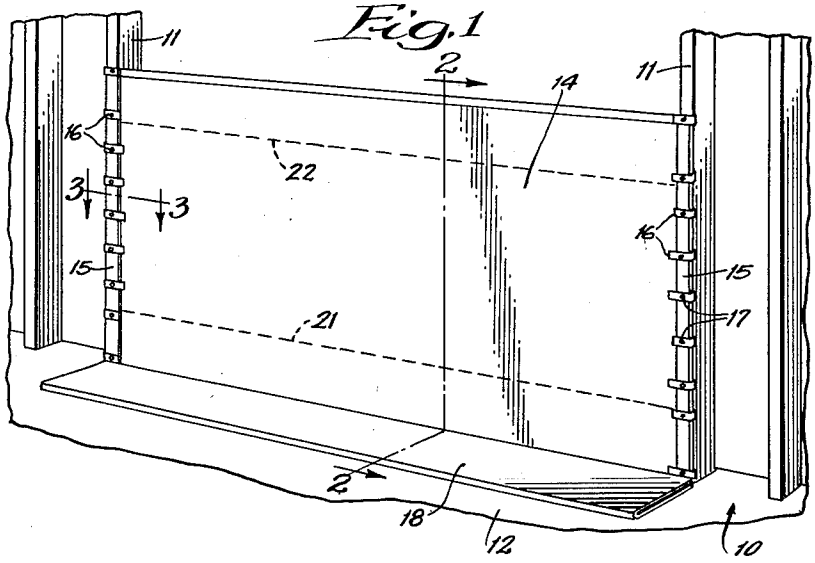
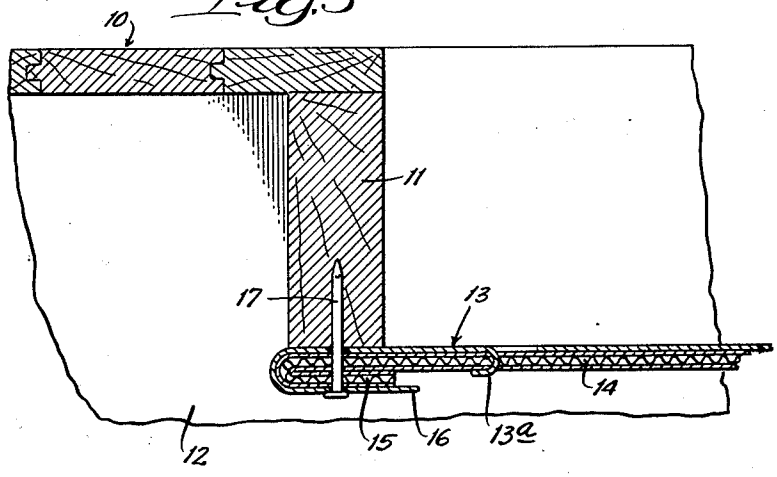


Fig. 3



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BOXCAR OPENING CLOSURE

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6 Claims. (Cl. 160—368)

This invention relates to a boxcar opening closure, and is particularly useful in connection with grain doors or retainer doors, etc., employed with boxcars and the like.

In the fabrication of disposable or temporary closures for boxcar openings, such as retainer doors, grain doors, etc., it is common to employ a sheet material or board material in combination with steel straps. Where the bulk goods is of such a character as to require sampling by an inspector, etc., a pry-board or protector board is applied at the bottom of the temporary door, and usually a board is also secured across the top portion of the door to enable a person to climb out of or into the car without damaging the door. Also, in order to protect the board or paper structure, it is common to apply battens along the sides of the door and over the frame beams of the door. Even with this protection, it is sometimes found that the door edges become loose and grain works its way about the door edges and escapes.

An object of the present invention is to provide a door closure structure of a lightweight and disposable type which can be effectively secured across the door opening and to the door frame without requiring the use of battens and while at the same time providing a stronger securing means about the door edges to prevent the escape of grain. A further object is to provide effective means for supporting a pry-board and a top board as a part of the door structure. A still further object is to provide an improved temporary door structure which may readily be placed in position and secured in a minimum of time for effectively closing a boxcar opening against the outflow of grain and other bulk material. Other specific objects and advantages will appear as the specification proceeds.

The invention is shown, in an illustrative embodiment, by the accompanying drawing, in which—

Figure 1 is a perspective view of a door closure embodying our invention; Fig. 2, an enlarged vertical sectional view, the section being taken as indicated at line 2—2 of Fig. 1; and Fig. 3, an enlarged sectional detail view, the section being taken as indicated at line 3—3 of Fig. 1.

In the illustration given, 10 designates a portion of a boxcar, or like vehicle, having a door frame 11 consisting of side rails resting upon the car floor 12. To the side rails are secured metal straps 13, which extend in spaced relation across the door opening between the beams 11. On the inner side of the spaced straps 13 extends a web or board member 14 which, in the illustration given, consists of a corrugated paper board. The end of the board is scored, and the end portion folded upon itself to form a border 15 of double thickness, and about the border extends the end portions 16 of the metal straps 13. Nails 17, or other securing means, extend through the overlapping strap portions and into the beams 11, as illustrated more clearly in Fig. 3. It will be understood that the straps 13 may be equipped with spaced perforations which, in the overlapping portions illustrated in

Fig. 3, are in alignment so that a nail 17 will extend through the aligned openings. By folding over the strap portion 16 about the edge portions of the board 14, we find that the battens or lath strips heretofore employed may be omitted, while at the same time a protective gripping of the edge portions of the board is brought about, providing a reinforcing which prevents bending or opening of the board for the escape of grain. The straps 13, which are preferably formed of spring band steel, provide, at the edges where the short portion 16 is turned into the overlapping position shown, a relatively stiff brace for the edge portion of the board, and when the nails 17 are driven into the beams 11, they cause the overlapping portion 16 to compress a relatively wide area of the board 14 toward the beam structure 11 and thus to provide an effective seal against the escape of grain about the edges of the board. Further, the structure provides a sturdier support for the metal straps themselves and produces an effective union between the straps and the edges of the board 14.

The bottom of the board 14 extends downwardly and is looped upon itself at the bottom to form a bottom flap 18. The board is also extended upwardly at the rear to provide a vertical buffer post 19 and thence downwardly and between the folded portion of the lower flap 18. The structure shown results in a pocket 20, into which may be placed a board 21 formed of wood, metal, plastic, or other suitable material, of such toughness as to prevent the breaking of the board 14 when a pry-bar is used from outside the car to shift the outer car doors (not shown). With certain types of paper board 14 having considerable toughness, it will be found that the inner insert board 21 can be omitted and the folded portion 19 may in itself be sufficient to provide the protection necessary in the use of the pry-bar.

We also provide at the top of the door a strip or bar of sufficient strength to support a grain inspector or sampler when the car is visited, and also to support a workman who, after securing the door on the inside thereof, climbs out over the top of the door. As shown more clearly in Fig. 1, the top portion of the board 14 is folded downwardly upon itself and thence upwardly to form a three-ply top bar or strap 22, the top bar 22 being strengthened by the U-shaped metal strap portions 13 and 16 enclosing the end portions of the board 14.

The board structure 14 may be formed not only of corrugated paper board, but also of heavy paper, wood board, plastic material, and a number of other web-forming materials which are effective in holding bulk matter. Further, the door, instead of being formed in one piece, as illustrated in the drawing, may be formed in different sections, as illustrated in our Patent 2,599,443, which issued June 3, 1952.

The bottom flap 18 of the board 14 lies flat against the floor 12 of the car and is not attached in any way to the car, because the weight of the bulk material serves to lock it securely against the floor and to prevent the egress of the bulk material.

In actual operation, it is customary to omit the pry-board 21 when the commodity or granular material is of such a character that samples need not be taken. However, when wheat or similar food materials have to be sampled by inspectors, etc., at the point of destination and before the car is unloaded, the pry-board 21 is desirable because it permits the door to be opened for such inspection prior to the unloading of the car and after the inspection and sampling, the car may be shifted on the track to an unloading point without spillage of grain because the pry-board 21 protects the inner board 14 against injury. Similarly, when the car is not to be inspected, the upper board 22 may be omitted. When the car is to be used for the shipment of grain such as

wheat, etc., and where sampling is necessary, we prefer to employ a protection for the board **14** against a pry-bar by employing a protective strip **19** with or without an insert **21**, and similarly to employ a top strap or bar **22** which is sufficient to support the weight of the sampler climbing over the temporary door.

The straps **13** are preferably secured to the board 14 by any suitable means as, for example, striking prong segments **13***a* from the straps **13** and extending them through or into the board **14**, as described more fully in our copending application, Serial No. 465,253, or by means of staples, as shown in our said Patent 2,599,443.

In the operation of the structure, the temporary door, which may consist of the single panel or board 14 reinforced with the metal straps **13** anchored thereto at spaced distances, may be placed in position and nails **17** driven through the portions **16** overlapping portions of the strap **13**. The forward portion **16** of the strap **13** provides a stiffening support about the edges of the board which strengthens the top bar or strap **22** and also the bottom portion enclosing the pry-board **21**. The workman, after affixing the door as described, can climb over the head board or top board **22** and thus leave the car. The car may then be filled with grain, cottonseed hulls, soybeans, coal, abrasives, gravel, phosphate rock, and a great variety of bulk commodities. The weight of the bulk material holds the bottom flap **18** tightly against the floor **12** to seal the bottom of the door, while the overlapped strap portions about the ends of the board secure and reinforce the sides of the board. In the event that wheat and other perishable foodstuffs are being shipped and samples are to be taken by an inspector, the outside doors of the car may be opened, using a pry-bar which bears against the outer flap **19** of the door. The inspector may climb over the top or head board **22** and take a sample of the grain material and leave the car over the head board. Thereafter, when the car has reached the point for unloading, the board **14** may be cut at any point to provide a discharge opening and the bulk material may be allowed to flow therethrough into a receiving truck or receptacle.

While, in the foregoing specification, we have set forth a specific structure in considerable detail for the purpose of illustrating the invention, it will be understood that such details may be varied widely by those skilled in the art without departing from the spirit of our invention.

We claim:

1. A temporary door for a car opening, comprising a web body equipped with spaced metal straps, said straps extending around the edges of the web to provide overlapping front portions adapted to be secured to the frame of the door opening, said web having a top folded portion providing a head board and having also a forwardly-extending bottom flap portion and an upwardly-extending rear protective board portion.

2. A temporary door for a car opening, comprising a web body equipped with spaced metal straps, said straps extending around the edges of the web to provide overlapping front portions adapted to be secured to the frame of the door opening, said web having a top folded portion providing a head board and having also a forwardly-extending bottom flap portion and an upwardly-extending rear protective board portion, said protective board portion providing a pocket adapted to receive an insert protective board.

3. A temporary door for a car opening equipped with a door frame, comprising a web body adapted to extend between the vertical members of the door frame, reinforcing straps secured in vertically-spaced relation to the web body to reinforce the same and extending to the edges of the web body, said straps being formed of metal and at their ends being folded with the end portions of the web body to provide inwardly-extending reinforcing ribs about the folded edge, said folded edge providing a vertically-reinforced post lying against the vertical portion of the door frame, and means extending through said posts for securing the same to the door frame.

4. The structure of claim 3, in which the web body is formed of corrugated paper board and in which the straps are secured against the outer side of the corrugated board, the strap edges being inwardly of the corrugated board edge when the same is turned upon itself.

5. A temporary door for a car opening, comprising a web body equipped with longitudinally-extending reinforcing straps in vertically spaced apart relation, the web body being formed of corrugated board, and the reinforcing straps being secured to the outer surface of the corrugated board, said web body at each end thereof adjacent the door frame being turned upon itself to bring said strap end portions upon the inner side of the door and to form a vertically-reinforced post edge aligned with the door frame, and means extending through said post portions of the door for securing the same to said door frame.

6. The structure of claim 5, in which the web body is provided at its lower end with an inwardly-extending integral flap having the side edges thereof unfolded but aligned with said vertical post portions of said web body.

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