WEATHER STRIP FOR CAR DOORS

Filed Oct. 27, 1931

3 Sheets-Sheet 2

INVENTOR:

J. H. MATTERN

1,921,422

Aug. 8, 1933.

WEATHER STRIP FOR CAR DOORS

Filed Oct. 27, 1931

3 Sheets-Sheet 2

INVENTOR:

J. H. MATTERN

1,921,422

Aug. 8, 1933.

WEATHER STRIP FOR CAR DOORS

Filed Oct. 27, 1931

3 Sheets-Sheet 2

INVENTOR:

J. H. MATTERN

1,921,422

Aug. 8, 1933.

WEATHER STRIP FOR CAR DOORS

Filed Oct. 27, 1931

3 Sheets-Sheet 2

INVENTOR:

J. H. MATTERN

1,921,422

Aug. 8, 1933.

WEATHER STRIP FOR CAR DOORS

Filed Oct. 27, 1931

3 Sheets-Sheet 2

INVENTOR:

J. H. MATTERN

1,921,422

Aug. 8, 1933.
My invention relates generally to a freight car door construction, and more particularly to a construction which includes as an element a weather strip disposed at the top of a door and formed to the shape of a trough or gutter for carrying away water, dirt, cinders, or other matter likely to be in between the door and door opening.

The principal object of the invention is to combine a weather strip of this nature with a sliding door and door frame in such manner as to produce an effective weather seal, without requiring a radical departure from the present practice of constructing freight car doors and door frames.

A further object of the invention is to provide a weather strip which serves not only to seal the top of the door opening to which it is applied, but also operates as a guide assisting sliding movement of the door, and as a safety catch preventing loss of the door in the event of failure of its rollers or other parts.

Still other objects and advantages characterizing my invention will become more fully apparent from the description hereinafter of several forms or embodiments thereof, the description having reference to the accompanying drawings.

Of the drawings:

Fig. I represents a side elevation of the middle portion of a box car having a sliding door and door frame embodying my invention, a portion of the door being broken away to show the door frame construction.

Fig. II represents a vertical cross section of the same, taken as indicated by the lines II—II of Fig. I.

Fig. III represents a horizontal cross section of the same, taken in the vicinity of a door post as indicated by the lines III—III of Fig. I.

Fig. IV represents a perspective view showing portions of the door frame construction at the upper left hand corner of the door opening.

Fig. V represents an enlarged sectional view similar to the top portion of Fig. II, but showing a modified form of my invention.

Fig. VI represents a similar enlarged sectional view showing an additional modification; and,

Fig. VII represents a similar enlarged sectional view showing a modification in which the invention has been applied to a sliding door of the top-hung type.

Similar reference characters are used to designate similar parts in the several figures of the drawings.

With particular reference to Figs. I and II, there is shown a portion of a box car of ordinary construction having a side wall 1 with door posts 2 therein defining a door opening, which in the example selected for illustration is closed by double side doors 3 of the bottom-hung type.

The floor of the car is designated at 4 and is shown supported upon a channel sill 5. To the channel sill 5 brackets 6 are riveted at spaced intervals, the brackets 6 supporting a track 7. Each door 3 is provided near its bottom edge with hangers 8, accommodating roller bearing rollers 9 which engage the track 7, and with suitable guide pieces 10 and 11 for keeping the door on the track.

The doors 3 are of a well-known corrugated type, stiffened horizontally with corrugations 12 and vertically with corrugations 13. Conventional forms of door starters and locks are designated respectively at 14 and 15.

The particular construction of the door frame and doors as outlined above represents merely an example of a box car to which my invention may be readily applied, and it will be apparent from the description hereinafter that the invention may be applied to many other forms of freight car doors.

At the top of the door opening, as clearly shown in Fig. II, there is a reinforcing plate 16 to which is attached the customary Z-bar side top plate 17, the web portion 18 of which is horizontal, and the upturned flange 19 of which abuts against the reinforcing plate 16. To the upturned flange 20 of the Z-bar top plate 17, there is riveted a hood 21 which extends outwardly and downwardly, and which, where bottom-hung doors are used, is preferably provided with an extension 22 projecting around the top edges of the doors 3. The hood 21 and its extension 23 may also take the form of Z-bars.

At the inside of the downturned flanges 30 of the side top plate 17, there is secured by rivets the vertical leg 23 of a weather strip 24. The weather strip 24 preferably is shaped to the form of a J-bar and extends from one door post 2 to the other. The horizontal leg 25 of the weather strip extends outward beneath the hood 21 and terminates in an upturned flange 26, thus forming a trough or gutter along the inside top edge of the doors 3. In the example of my invention shown in Fig. II, the doors 3 are provided at their top edges with extension plates 27 in the form of angles. When the doors are closed, the angles 27 are interposed between the upturned flange 35 of the weather strip 24 and the hood 21, and the
doors are thus guided for sliding movement between the weather strip 24 and hood 21.

In Figs. III and IV there is shown the connection between the ends of the weather strip 24 and the door posts 2. Each door post 2 is shown as being a hollow metal casting having a rounded inner face 28 terminating in a web 29, which, when the doors are closed, is engaged by a clip 30 secured to the side edge of the door. It will be particularly observed, as clearly shown in Fig. IV, that the trough-shaped leg 25 of the weather strip 24 extends horizontally beyond the inner faces 28 of the door posts 2, in such a manner as to shed the content of the weather strip into the recesses 31 at the outside of the post 2 from whence it drains off at the car side. At the top of the door posts 2 a stiffening web in the form of a Z-bar 32 is conveniently employed as the connection between the door posts and the side top plate 17. The weather strip 24 serves to collect water, snow, cinders, dirt or other matter which may be shed on the side of the door between the door posts 2 and the hood 21. It also serves to collect any matter which may leak through the space between the hood 21 and the downturned flange 30 of the side top plate 17. Hereof considerable difficulty has been experienced with leakage at this point. The matter collected in the trough of the weather strip 24 is carried off in a longitudinal direction behind the top edges of the doors 2 to the doors posts 2 where it is shed clear of the door opening in the manner described above.

In Fig. V there is shown a construction substantially similar to that shown in Figs. II, but wherein a different form of extension plate 27a is employed at the top edge of a sliding door 3a. The top side plate 17, the hood 21, with its extension 22, and the weather strip 24 correspond to these parts as previously described. The extension plate 27a is in the form of a Z-bar with its web portion 33 disposed vertically, and with its flanges 34 and 35 projecting respectively inward and outward. The flange 35 of the door extension plate 27a is guided for sliding movement in the upper edge of the hood extension 22 and substantially bridges the gap between the door 3a and the plate 35, obstructing the passage of matter around the top edge of the door. The other flange 34 of the door extension plate 27a projects above the upper end 26 of the weather strip 24 so as to shed matter directly into the trough thereof. In this example of the practice of my invention, the door extension plate 27a also serves as a safety catch preventing the door from falling off in the event of failure of the rollers or other parts. If the door 3a, due to injury or failure of its supporting parts, should leave the door track, the inwardly extending flange 34 will catch upon the upper end 26 of the weather strip.

In Fig. VI there is shown an additional modification wherein another form of door extension plate 27b is employed. The top side plate 17 and hood 21 have not been changed, but no hood extension is used in this arrangement. The weather strip 24b is formed with an upwardly and outwardly inclined end 37 to form a trough beneath the hood 21. Upon the door 3b an extension plate 27b is attached, this plate comprising an angle with its vertical flange 38 suited for sliding movement between the depending leg 39 of the hood 21 and the end 37 of the weather strip. The horizontal flange 40 is bent downward at its end 41 to parallel the end 37 of the weather strip. This construction effectively seals the door opening and also affords a safety catch preventing loss of the door 3b. The door 3b is positively retained in such manner that it cannot be removed from the side of the car without removal of the hood 21.

In Fig. VII there is shown an example of the adaptation of my invention to a top-hung door 3c. To the side top plate 17 a weather strip 24c of J-section is attached. The trough 42 of the weather strip 24c extends beneath a relatively narrow hood 21c. To the door 3c roller housings or hangers 43 are riveted. Rollers 44 are supported by pins 45 within the housings or hangers 43, and the rollers bear upon the web 18 of the side top plate 17 which serves as the door track. An extension plate 27c projects inwardly from the top of the door 3c to the space between the hood 21c and the weather strip 24c. The end 46 of this extension plate 27c is turned upward behind the depend- ing flange 47 of the hood 21c. Accordingly, the door 3c is caught and guided for sliding movement by the depending flange 47 of the hood 21c. The door opening is also effectively sealed against the admission of matter around the top of the door.

The various modifications of my invention which are illustrated and described herein are merely representative of the application thereof to box car doors of different types and are not by any means indicative of the scope of changes which may be made in the form of the door and hood construction without departing from the spirit of my invention as defined in the claims hereto annexed, which contemplates a great variety of forms of weather strips and associated parts.

Having thus described my invention, I claim:

1. A freight car having a door opening therein, a sliding door for closing said opening, a top plate overlying the door opening, a hood extending from said top plate outwardly and downwardly along the top edge of said hood, and a weather strip extending outwardly beneath said hood to said door, said weather strip having a trough-shaped gutter adjacent to the top edge of said door.

2. In a freight car having a door opening therein, a sliding door for closing said opening, a top plate overlying the door opening, a hood extending outwardly and downwardly from said top plate, and a weather strip having a vertical leg secured to said top plate and having a horizontal leg extending outwardly beneath said hood and terminating in an upturned flange, the top of said door sliding between said hood and weather strip.

3. In a freight car having door posts defining a door opening, a sliding door for closing said opening, a hood overlying said door opening, and a trough-shaped weather strip attached to the car side beneath said hood and extending across said door opening to shed its content beyond the inner faces of the door posts.

4. In a freight car having door posts defining a door opening, a sliding door for closing said opening, a hood overlying the door opening and extending outwardly and downwardly from the car side, a trough-shaped weather strip attached to the car side beneath said hood and extending across said door opening to shed its content beyond the inner faces of the door posts.
yond the inner faces of the door posts, the top of said door sliding between said hood and weather strip.

5. In a freight car having a door opening therein, a sliding door for closing said opening, a top plate overlapping the door opening, a hood extending outwardly and downwardly from said top plate, and a weather strip forming a trough beneath said hood, said sliding door having an extension at the top thereof projecting inwardly, above said weather strip and serving as a safety catch to prevent the door from swinging outward.

6. In a freight car having a door opening therein, a sliding door for closing said opening, a Z-bar top plate overlapping the door opening, a hood extending from said top plate outwardly and downwardly around the top edge of said door, and a weather strip having a vertical leg secured to the depending flange of said top plate and having a horizontal leg extending outwardly to said door and forming a trough-shaped gutter adjacent to the top edge of said door.

7. In a freight car having a door opening therein, a sliding door for closing said opening, a side top plate overlapping the door opening, a hood extending outwardly and downwardly from said side top plate, and a weather strip having one part secured to said side top plate and another part of trough-shaped formation extending outwardly beneath said hood, said door having a plate at the top thereof extending inwardly beyond the outside edge of said weather strip and guided for sliding movement between said weather strip and said hood.

8. In a freight car having a door opening therein, a sliding door for closing said opening, a side top plate overlapping the door opening, a hood extending outwardly and downwardly from said side top plate, and a weather strip having a vertical leg secured to said side top plate and having a horizontal leg extending outwardly beneath said hood and terminating in an upturned flange, said door having a plate at the top thereof extending inwardly between said weather strip and said hood and bent around the upturned flange of said weather strip to serve as a safety catch.

9. In a freight car having a door opening in the side thereof, a sliding door for closing said opening, a Z-bar top plate overlapping said door opening with its upturned flange secured to the side of the car and its downturned flange spaced outwardly from the car side, a hood extending outwardly and downwardly from said top plate, and a weather strip having a vertical leg secured to the inside of the downturned flange of said top plate and having a horizontal leg extending outwardly beneath said hood to form a trough therebeneath, said door having a plate at the top thereof extending inwardly between said weather strip and hood and bent downwardly at its inner end over said trough to serve as a safety catch preventing the door from swinging outward.

10. In a freight car having a door opening therein, a top-hung sliding door for closing said opening, said door having a hanger with rollers thereon, a top plate overlapping the door opening and serving as a track for said rollers, a hood extending outwardly from said top plate, and a weather strip secured to said side top plate, and extending outwardly beneath said hood to said door, said weather strip having a trough-shaped gutter adjacent to the top edge of said door.

11. In a freight car having a door opening therein, a top-hung sliding door for closing said opening, said door having a hanger with rollers thereon, a top plate overlapping the door opening and serving as a track for said rollers, a hood extending outwardly from said top plate, and a weather strip secured to said side top plate and extending outwardly beneath said hood to said door, said weather strip having a trough-shaped gutter adjacent to the top edge of said door, and said door having a plate thereon interposed between said weather strip and hood and guided for sliding movement therebetween.

12. In a railway house car having a side door opening, in combination, a side plate, a header secured to said side plate and extending into said opening, said header having a trough positioned outwardly of said car, said opening being adapted to be closed by a door provided with a flange adjacent the upper margin thereof extending inwardly in overlapping relationship with said trough.

JOEL HUBERT MATTERN.