

Nov. 17, 1931.

G. G. GILPIN

1,832,015

HOPPER DOOR

Filed March 27, 1930

3 Sheets-Sheet 1

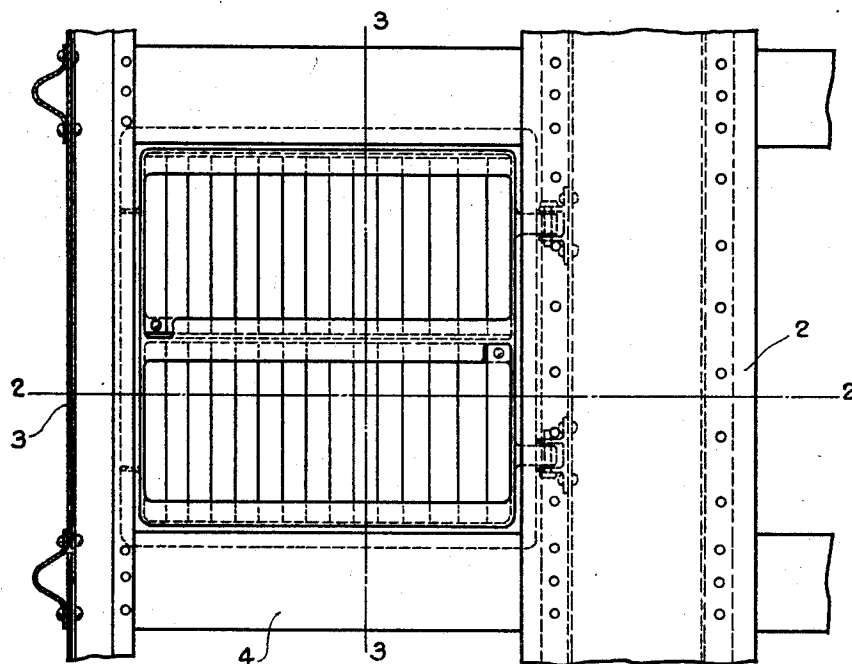


Fig. 1

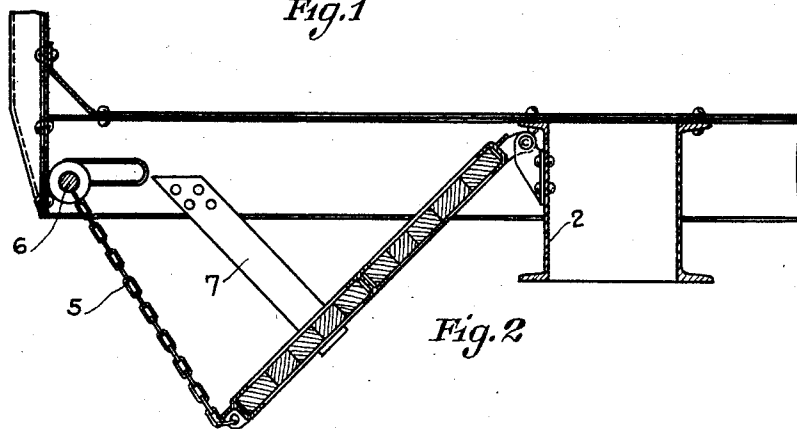


Fig. 2

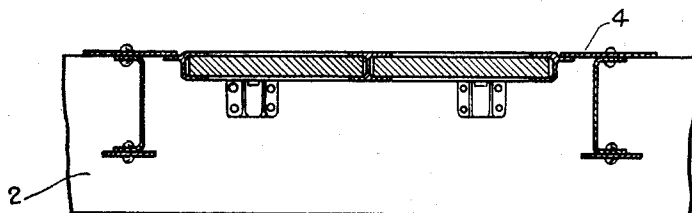


Fig. 3

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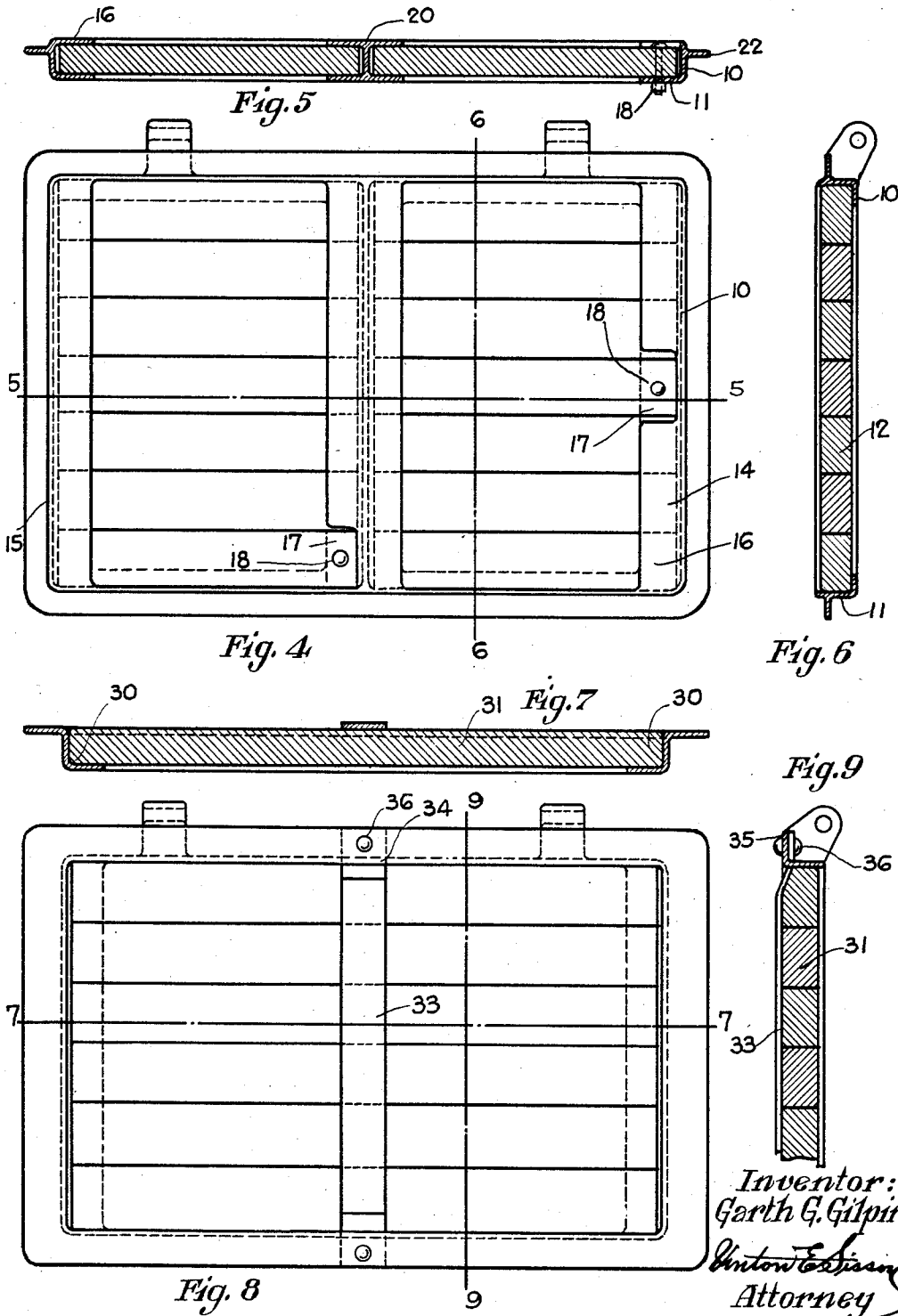
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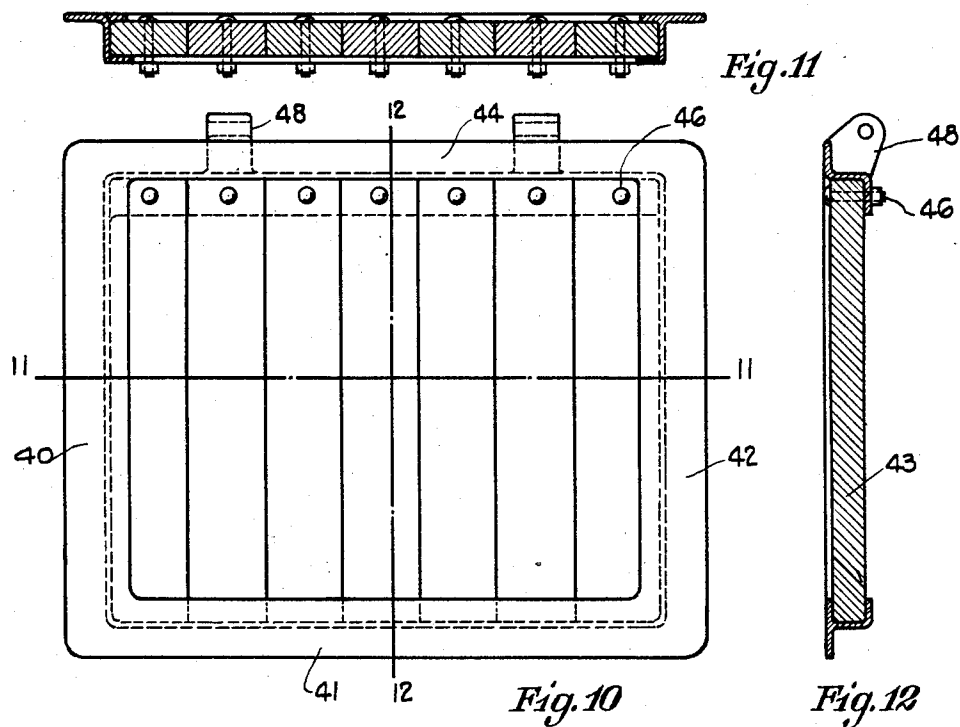
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UNITED STATES PATENT OFFICE

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HOPPER DOOR

Application filed March 27, 1930. Serial No. 439,397.

My invention relates to the construction of railway cars having drop doors, such as hopper cars, hopper gondola cars, drop bottom or general service gondola cars, mill type gondola having drop end doors, or the like, having a door forming a part of the car for retaining the load therein, which door is provided with hinges adjacent one of its edges and is capable of being "dropped" or swung open. Any means of raising the door to the closed position and any means for locking and releasing the door may be employed with my device. Such a door is commonly called a "hopper door".

An object of the invention is to provide a hingeable door forming part of the load retaining means of a railway car comprising a cast metal frame and a removable flooring. The cast metal frame preserves the shape of the door, thus assuring a proper fit with the associated parts of the car, while the use of removable flooring permits that part of the door which is damaged and worn in service to be readily replaced.

Another object is to provide a simple and easy method of removing and replacing the flooring in the frame.

Another object is to provide a door which is not affected by corrosion, which is especially desirable in coal carrying cars.

Another object of forming the car part of cast metal is to eliminate the possibility of loose connections which would permit relative motion between the component parts of the car part, as it is common knowledge that the vibration of the car in motion, due to rough and uneven track, and steel wheels rolling on steel rails, together with longer trains and high speeds in present day practice, cause riveted joints and built up sections to work loose and the railroads look with favor upon any device which reduces the number of parts and joints as these are the weak parts of the car and the more such weak parts are eliminated, the longer the life of the car.

In the drawings:

Figs. 1, 2 and 3 show a typical application of one form of my door applied to a railway car.

Figs. 4, 5 and 6 show the door of Figs. 1, 2 and 3 in detail.

Figs. 7, 8 and 9 show a modified construction.

Figs. 10, 11 and 12 show another modified construction.

Figs. 1, 2 and 3 show a typical so-called general service gondola car wherein the floor comprises a plurality of doors hingedly secured to the center construction 2 and extending to the side wall 3 of the car. These doors engage the cross bearers 4 at their side margins so as to completely close the opening. The door is raised by winding the chain 5 upon the shaft 6. Any convenient stop, such as 7, may be used.

Figs. 4, 5 and 6 illustrate a door comprising a cast metal frame having four sides, each provided with a recess formed by the wall 10 and the flange 11. The removable flooring 12 is fitted into these recesses. In the preferred form two opposite sides of the door 14-15 are provided with grooves formed by the web 10 and flanges 11 and 16 into which the removable flooring fits. I prefer to cut away certain portions (17) of one of these flanges so that the several boards comprising the flooring may be inserted in the groove and then moved laterally to the desired position and securing the last board by the bolt 18 or other means.

In larger doors I prefer also to use a cross piece 20 extending between two opposite sides of the door, which cross piece may be provided with companion recesses or companion grooves into which the removable flooring is fitted. This cross piece may be provided with a cut away portion 17.

I prefer to reinforce the sides of the metallic frame with an outwardly projecting flange 22 which greatly strengthens the section of the side in both horizontal and vertical direction.

Figs. 7, 8 and 9 show a modification wherein opposite sides are provided with recesses into which the removable flooring 31 is fitted and retained therein by a strap 33 extending over the flooring and through notches 34 in sides of the frame and thence underneath a flange 35 of the side of the frame.

This strap is preferably secured to the sides of the frame by a bolt or rivet 36. This strap eliminates the necessity of any other means of securing the boards in place.

5 Figs. 10, 11 and 12 show another modified construction wherein the three sides 40—41—42 of the cast metal frame are provided with grooves for reception of the removable flooring 43 and the fourth side 44 is provided
10 with a recess into which the removable flooring fits and bolts 46 or other means are provided to secure the flooring to the side of the frame having the recess. Bolts are not needed on the other three sides. This construction
15 is especially adaptable to doors which are hinged on one side and drop to discharge the lading and, therefore, the hinge butts 48 are preferably cast integral with the recessed side.

I preferably form the flooring of wood
20 but any other removable material may be used.

On account of the service to which railway car doors are subjected I prefer that the flooring may be loosely secured to the frame, therefore, it is not necessary to obtain a snug or
25 tight fit between the flooring and the frame.

The boards comprising the flooring may be positioned lengthwise or crosswise of the door.

30 The accompanying drawings illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various
35 modifications thereof, within the scope of the claims, will occur to persons skilled in the art.

I claim:

40 1. A hingeable door forming part of the load retaining means of a railway car comprising a cast metal frame having four sides, each provided with a recess, a cross piece connecting opposite sides provided with oppositely disposed recesses, removable flooring
45 fitting in the recesses of the sides and the cross piece, and means to retain the flooring in said recesses.

50 2. A hingeable door forming part of the load retaining means of a railway car comprising a cast metal frame having certain opposite sides, each provided with a groove, removable flooring fitting in the grooves of the sides, one of said grooves having cut away
55 portions for the insertion of the flooring, and means to retain the flooring in said grooves at the cut away portions.

60 3. A hingeable door forming part of the load retaining means of a railway car comprising a cast metal frame having certain opposite sides, each provided with a groove, a cross piece connecting opposite sides provided with oppositely disposed grooves, removable
65 flooring fitting in the grooves of the sides, some of said grooves having cut away portions for the insertion of the flooring, and

means to retain the flooring in said grooves at the cut away portions.

4. A hingeable door forming part of the load retaining means of a railway car comprising a cast metal frame having four sides,
70 one of said sides having an angular recess and provided with hinge butts, the others of said sides having grooves therein, removable flooring fitting in said grooves and said recess,
75 and means to retain the flooring in said recess.

5. A hingeable door forming part of the load retaining means of a railway car comprising a cast metal frame having four sides,
80 one of said sides having an angular recess and provided with hinge butts, the others of said sides having grooves therein, removable flooring fitting in said grooves and said recess, and means to retain the flooring in said
85 recess, said sides provided with outwardly projecting flanges.

6. A hingeable door forming part of the load retaining means of a railway car comprising a cast metal frame for a railway car door, said frame having four sides, one of
90 said sides having an angular recess and provided with hinge butts and the opposite side therefrom having a groove therein, removable flooring fitting in said groove and said
95 recess, and means to retain the flooring in said recess.

7. A hingeable door forming part of the load retaining means of a railway car comprising a cast metal frame for a railway car door, said frame having four sides, one of
100 said sides having an angular recess and provided with hinge butts and the opposite side therefrom having a groove therein, removable flooring fitting in said groove and said
105 recess, and means to retain the flooring in said recess, said flooring comprising a plurality of parallel members extending from said side having the angular recess to the opposite side therefrom.

8. A hingeable door forming part of the load retaining means of a railway car comprising a cast metal frame for a railway car door, one of the sides of said frame having
110 an angular recess and the opposite side therefrom having a groove therein, removable flooring fitting in said groove and said recess, and means to retain the flooring in said
115 recess, one of said sides provided with integral hinge butts.

9. A hingeable door forming part of the load retaining means of a railway car comprising a cast metal frame having four sides, one of said sides having an angular recess, the
120 others of said sides having grooves therein, removable flooring fitting in said grooves and said recess, and means to retain the flooring in said recess.

10. A hingeable door forming part of the load retaining means of a railway car comprising a cast metal frame having four sides,
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one of said sides having an angular recess, the others of said sides having grooves therein, removable flooring fitting in said grooves and said recess, and means to retain the flooring in said recess, said sides provided with outwardly projecting flanges.

11. A hingeable door forming part of the load retaining means of a railway car comprising a cast metal frame for a railway car door, said frame having four sides, one of said sides having an angular recess and the opposite side therefrom having a groove therein, removable flooring fitting in said groove and said recess, and means to retain the flooring in said recess.

12. A hingeable door forming part of the load retaining means of a railway car comprising a cast metal frame for a railway car door, said frame having four sides, one of said sides having an angular recess and the opposite side thereon having a groove therein, removable flooring fitting in said groove and said recess, and means to retain the flooring in said recess, said flooring comprising a plurality of parallel members extending from said side having the angular recess to the opposite side therefrom.

13. A hingeable door forming part of the load retaining means of a railway car comprising a cast metal frame for a railway car door, one of the sides of said frame having an angular recess and the opposite side thereon having a groove therein, removable flooring fitting in said groove and said recess, and means to retain the flooring in said recess.

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