Oct. 21, 1947. C. L. MOORMAN 2,429,274

END ICE BUNKER CAR

Filed Jan. 19, 1946 2 Sheets-Sheet 1

Fig. 1

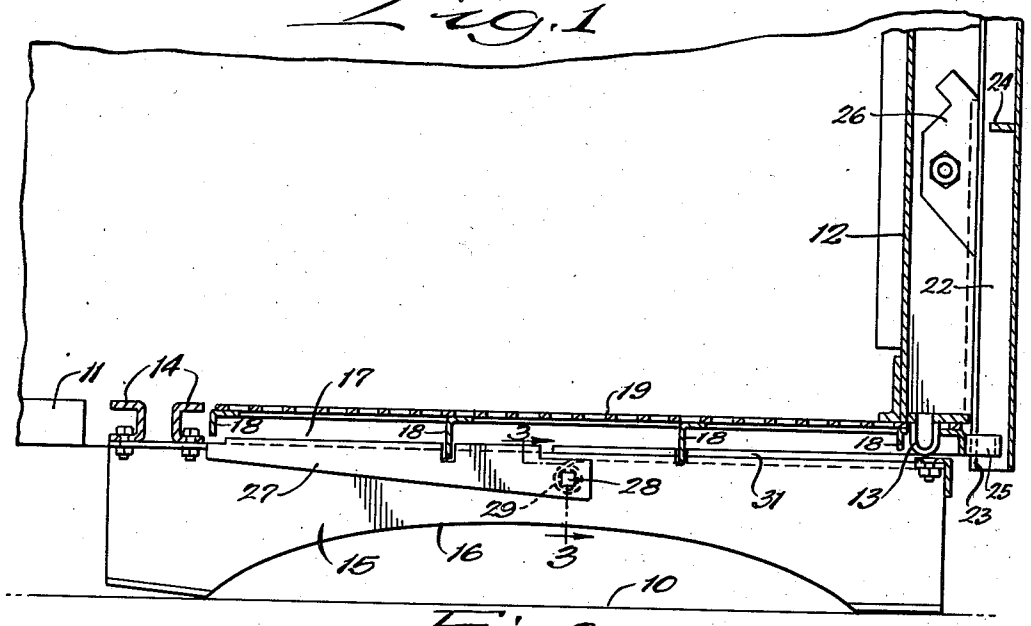


Fig. 2

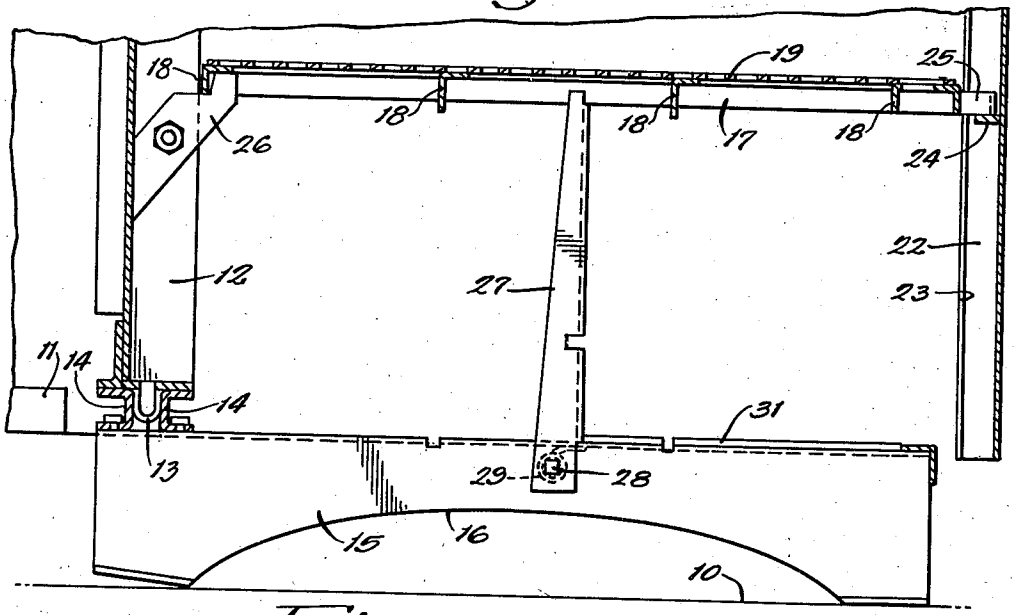
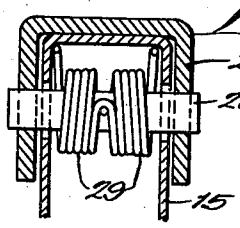


Fig. 3



Inventor:
Charles L. Moorman,
By Dawson, Brittingham & Spangenberg,
Attorneys.

Oct. 21, 1947. C. L. MOORMAN 2,429,274

END ICE BUNKER CAR

Filed Jan. 19, 1946 2 Sheets-Sheet 2

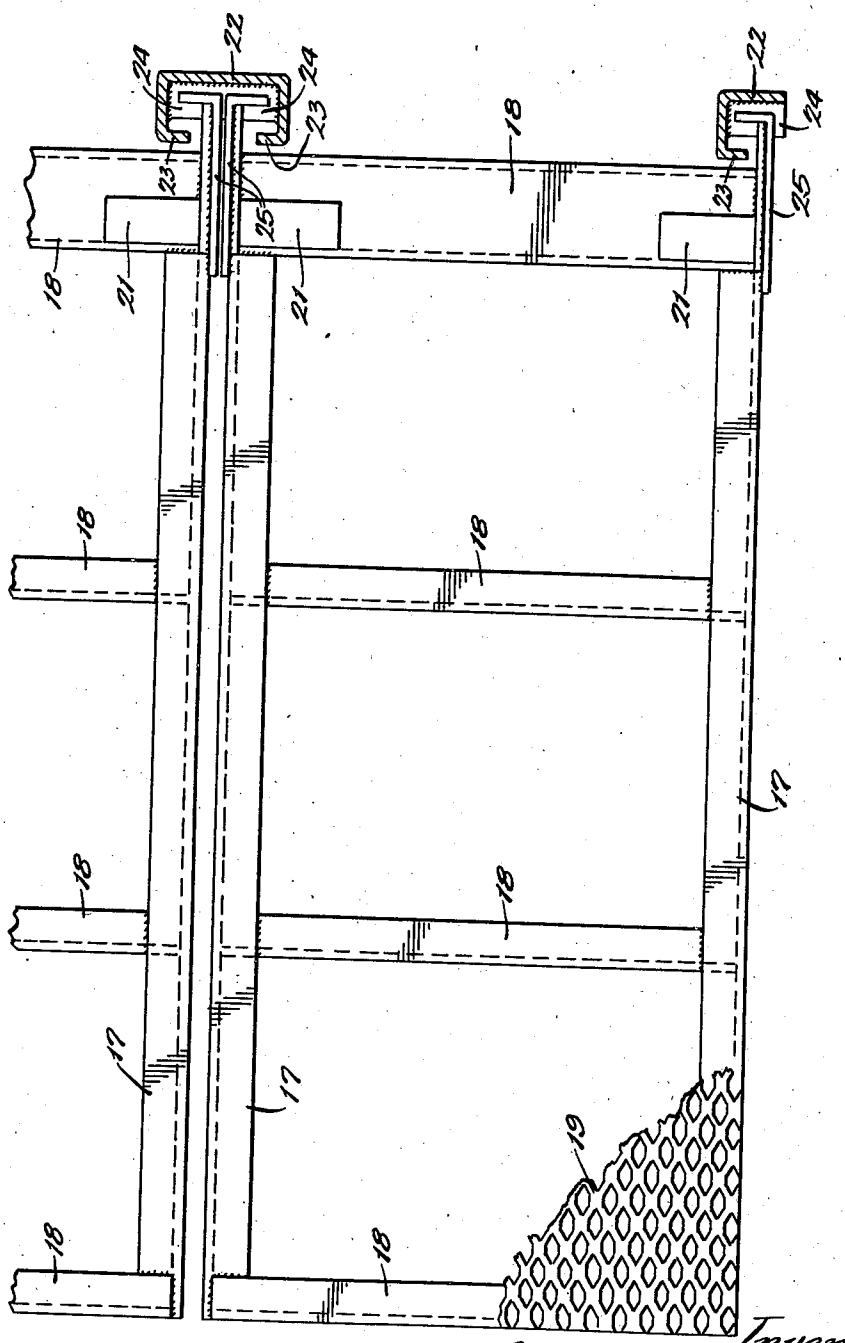


Fig. 4

Inventor:
Charles L. Moorman,
By Dawson, Booth and Spangenberg,
Attorneys.

Patented Oct. 21, 1947

2,429,274

UNITED STATES PATENT OFFICE

2,429,274

END ICE BUNKER CAR

Charles L. Moorman, Millington, Ill., assignor to Union Asbestos & Rubber Company, a corporation of Illinois

Application January 19, 1946, Serial No. 642,201

19 Claims. (Cl. 62—19)

1

This invention relates to refrigerator cars and more particularly to grates for use with refrigerator cars of the type having movable bulkheads therein.

One of the objects of the invention is to provide a refrigerator car in which a single grate structure serves both as an extension of the lading rack when the bulkhead is retracted and as an elevated ice grate when the bulkhead is extended.

Another object is to provide a refrigerator car in which a lever pivoted adjacent the floor of the car is movable to an upright position to engage and support the grate when it is elevated to act as an ice grate.

Still another object is to provide a refrigerator car in which the grate is formed to support the bulkhead and hold it against movement in the car when it is retracted.

A further object is to provide a refrigerator car in which the bulkhead carries a movable supporting member which is adapted to engage the grate and hold it in elevated position.

The above and other objects and advantages of the invention will be more readily apparent from the following description when read in connection with the accompanying drawings, in which—

Figure 1 is a partial longitudinal section through a refrigerator car embodying the invention with the bulkhead in retracted position;

Figure 2 is a view similar to Figure 1 with the bulkhead in extended position;

Figure 3 is a partial section on the line 3—3 of Figure 1; and

Figure 4 is a partial plan view of the grate.

As shown in Figure 1, the refrigerator car floor is indicated generally at 10 and the car is provided with the usual lading rack 11 spaced above the floor of the car. The car contains a bulkhead indicated generally at 12 which may be supported on tracks adjacent the top of the car for movement from a retracted to an extended position. As shown, the bulkhead is formed at its lower part with downwardly extending locking projections 13 which are adapted to hold the bulkhead in either its extended or retracted position, the bulkhead being raised to release the locking projections when it is desired to move it.

When the bulkhead is in its extended position, as shown in Figure 2, the locking projections fit between channel beams 14 so that the bulkhead will be held against movement. The channel beams 14 are adapted to be supported by a plurality of longitudinally extending beams 15 which

2

extend from the beams 14 to the end of the car. As best seen in Figure 3, the beams 15 are of inverted channel formation, although beams of other types could be employed if desired. Preferably, the beams 15 are cut out in the intermediate portions as indicated at 16 to provide for free circulation of air through and around them.

A movable grate is adapted to be supported on the beams 15 to close the space between the beams 14 and the end of the car. The grate is preferably made up of a plurality of identical sections, each of which includes a frame having longitudinally extending side members 17 connected by cross members 18. The side members 17 are preferably so spaced that they will register with adjacent beams 15 so that when the grate is lowered, as shown in Figure 1, the side frame members will rest directly on the beams. The grate frame is covered by a screen 19, shown as being formed of expanded metal, although other types of screen structures could be employed if desired. When the bulkhead is retracted, as shown in Figure 1, the grate rests on top of the beams 15 with its upper surface substantially flush with the top of the lading racks 11 so that the grate sections form extensions of the lading racks. To hold the bulkhead in its retracted position adjacent the end of the car, the outer cross member 18 of the grate frame is formed with openings 21 through which the locking projections on the bulkhead may extend, as shown. At this time the grate holds the bulkhead against longitudinal movement in the car so that the full floor area of the car is available for lading.

When the car is to be used as a refrigerated car, the grate is adapted to be elevated, as shown in Figure 2, to serve as an elevated ice grate for the car. At this time the grate is supported by the channel beams 22 at the car end wall and the bulkhead. As best seen in Figure 4, the channel beams 22 intermediate the sides of the car are full channels and have their edges turned in as indicated at 23 to form flanges lying substantially parallel to the end of the car. The outermost channels, as shown at the bottom of Figure 4, are similar except that they are only half channels. Within each of the channel beams a supporting plate 24 is fastened as by welding and terminates short of the turned over edges 23. The outer ends of the grate sections are formed with hooked extensions 25 hooking over the inwardly turned edges 23 of the channels and adapted to rest on the supporting plates 24 when the grate is elevated. For raising and lowering the grate, it may be moved slightly forward to

permit the ends of the extensions **25** to pass between the plates **24** and the turned over edges **23** at which time the grate sections can be swung vertically and can be slid up and down in the beams to move from the lowered to the elevated position.

The opposite ends of the grate sections are supported on the bulkhead by pivoted supporting members **26**. When the bulkhead is retracted, the members **26** pivot to a position where they lie between the outer surfaces of the bulkhead so that they do not prevent it from being collapsed completely against the car end wall. When the bulkhead is extended, the members **26** can swing to the position shown in Figure 2 in which they project beyond the bulkhead surface to engage and support the inner end cross member **18** of the grate frames.

Further to strengthen and support the grate sections when they are elevated, the beams **15** carry pivoted levers **27** which are preferably channel sectioned to straddle the beams as shown in Figure 3. The levers are pivoted to the central portions of the beams by transverse pivot pins **28** and are normally urged to upright positions, as shown in Figure 2, by springs **29** wound around the pivot pins **28** within the beams. When the levers are lowered, as shown in Figure 1, the grate side members **17** rest directly on them and filler strips **31** may be provided on the portion of the beams not covered by the levers to present a smooth upper surface. As the grate sections are raised, the levers **27**, will move to their upright positions, as shown in Figure 2, to engage the frame side members **17** centrally of their lengths to reinforce and strengthen them. It will be noted that with the channel lever construction, as shown, the levers may be cut out adjacent their pivots so that when they swing to their upright positions the lower edges of the lever webs will rest directly on the beams to carry the weight of the grates so that no load is imposed on the pivot pins **28**.

With the present invention the same grate construction can be employed to serve as an extension of the lading racks and as elevated ice grates. The grate sections can be raised easily from their lowered to their elevated positions simply by sliding the outer ends thereof up until they rest on the supporting plates **24** and thereafter rest the opposite end of the grate section on the supporting members **26** on the bulkhead. Due to the springs **29** the levers **27** will automatically raise themselves to their upright positions as the grate sections are raised to engage and reinforce the central portions of the grate sections.

While one embodiment of the invention has been shown and described in detail, it will be understood that this is illustrative only and is not intended as a definition of the scope of the invention, reference being had for this purpose to the appended claims.

What is claimed is:

1. In a refrigerator car having a movable bulkhead therein and a lading rack above the floor of the car, a grate, means for supporting the grate adjacent one end of the car in line with the lading rack to form a continuation of the lading rack when the bulkhead is moved to a position adjacent the end of the car, and supporting means on the end of the car and on the bulkhead spaced vertically above the level of the floor rack to hold the grate in an elevated position to serve as an ice grate when the bulkhead is moved to a position spaced from said end of the car.

2. In a refrigerator car having a movable bulkhead therein and a lading rack above the floor of the car, a grate, means for supporting the grate adjacent one end of the car in line with the lading rack to form a continuation of the lading rack when the bulkhead is moved to a position adjacent the end of the car, supporting means on the end of the car and on the bulkhead spaced vertically above the level of the floor rack to hold the grate in an elevated position to serve as an ice grate when the bulkhead is moved to a position spaced from said end of the car, and a lever pivoted on the first named supporting means and movable to an upright position to engage and support the grate when the grate is in said elevated position.

3. In a refrigerator car having a bulkhead therein movable from a position adjacent one end of the car to a position spaced from the end of the car and a lading rack above the floor of the car, a grate, a plurality of longitudinally extending supporting beams in the car adjacent said end thereof to support the grate in line with the lading rack to form a continuation of the lading rack, supporting means on the end of the car and the bulkhead to hold the grate in an elevated position when the bulkhead is spaced from the end of the car, and a lever pivoted on one of the beams for movement to an upright position in which it engages and supports the central part of the grate when the grate is in its elevated position.

4. In a refrigerator car having a bulkhead therein movable from a position adjacent one end of the car to a position spaced from the end of the car and a lading rack above the floor of the car, a grate, a plurality of longitudinally extending supporting means in the car adjacent said end thereof to support the grate in line with the lading rack to form a continuation of the lading rack, supporting means on the end of the car and the bulkhead to hold the grate in an elevated position when the bulkhead is spaced from the end of the car, a lever pivoted on one of the beams on a horizontal axis, and a spring normally urging the lever to an upright position in which it engages and supports the central part of the grate.

5. In a refrigerator car having a bulkhead therein movable from a retracted position adjacent one end of the car to an extended position spaced from the end of the car and a lading rack above the floor of the car, a grate, a plurality of inverted channel beams extending longitudinally adjacent said end of the car to support the grate in line with the lading rack, supporting means on the end of the car and the bulkhead to hold the grate in an elevated position when the bulkhead is in its extended position, a channel shaped lever straddling one of the beams and pivoted thereto on a horizontal axis, and a spring in the beam urging the lever to an upright position in which it engages and supports the central part of the grate when the grate is in its elevated position.

6. In a refrigerator car having a bulkhead therein movable from a retracted position adjacent one end of the car to an extended position spaced from the end of the car and a lading rack above the floor of the car, a grate, a plurality of inverted channel beams extending longitudinally adjacent said end of the car to support the grate in line with the lading rack, the grate having

side frame members to register with and rest on the beams, supporting means on the end of the car and the bulkhead to hold the grate in an elevated position when the bulkhead is in its extended position, and levers pivoted on the beams and movable to upright positions in which they engage and support the central parts of the side frame members when the grate is in its elevated position.

7. In a refrigerator car having a bulkhead therein movable from a retracted position adjacent one end of the car to an extended position spaced from the end of the car and a lading rack above the floor of the car, a grate, a plurality of inverted channel beams extending longitudinally adjacent said end of the car to support the grate in line with the lading rack, the grate having side frame members to register with and rest on the beams, supporting means on the end of the car and the bulkhead to hold the grate in an elevated position when the bulkhead is in its extended position, channel shaped levers straddling and pivoted to the beams, and springs urging the levers to upright positions in which they engage and support the central parts of the side frame members when the grate is in its elevated position.

8. In a refrigerator car having an end wall formed with vertically extending beams having flanges at their inner edges lying substantially parallel to the end wall, a bulkhead movable in the car from a retracted position adjacent the end wall to an extended position spaced from the end wall, a grate, means to support the grate in the car below the bulkhead, the grate having hook members thereon to hook over the beam flanges, supports on the beams above the bottoms thereof to engage the hook members to hold one end of the grate in an elevated position, and supporting means on the bulkhead to hold the other end of the grate in an elevated position when the bulkhead is in its extended position.

9. In a refrigerator car having an end wall formed with vertically extending beams having flanges at their inner edges lying substantially parallel to the end wall, a bulkhead movable in the car from a retracted position adjacent the end wall to an extended position spaced from the end wall, a grate, means to support the grate in the car below the bulkhead, the grate having hook members thereon to hook over the beam flanges, supports on the beams above the bottoms thereof to engage the hook members to hold one end of the grate in an elevated position, and supporting members pivoted on the bulkhead to move to an operative position to engage and support the other end of the grate in an elevated position when the bulkhead is in its extended position.

10. In a refrigerator car having an end wall formed with vertically extending channels opening toward the interior of the car with their edges turned inward at substantially right angles, a bulkhead movable in the car from a retracted position adjacent said end wall to an extended position spaced from said end wall, a grate having hook like extensions at one end hooking over the edges of the channels, supporting plates secured to the channels and spaced from the inwardly turned edges to hold said end of the grate in an elevated position, and supports on the bulkhead to hold the other end of the grate in an elevated position when the bulkhead is in its extended position.

11. In a refrigerator car having an end wall formed with vertically extending channels opening toward the interior of the car with their edges turned inward at substantially right angles, a bulkhead movable in the car from a retracted position adjacent said end wall to an extended position spaced from said end wall, a grate having hook like extensions at one end hooking over the edges of the channels, supporting plates secured to the channels and spaced from the inwardly turned edges to hold said end of the grate in an elevated position, supports on the bulkhead to hold the other end of the grate in an elevated position when the bulkhead is in its extended position, and a pivoted lever in the car movable to an upright position in which it engages and supports the central part of the grate when the grate is in its elevated position.

12. In a refrigerator car, a bulkhead movable from a retracted position adjacent one end of the car to an extended position spaced from said end of the car, means in the car engageable with the lower end of the bulkhead to hold it in its extended position, a grate, means to support the grate adjacent the end of the car below the bulkhead, the grate being formed to engage the lower end of the bulkhead to hold it in its retracted position, and means on the end of the car and the bulkhead to hold the grate elevated above the bottom of the bulkhead when the bulkhead is in its extended position.

13. In a refrigerator car, a bulkhead movable from a retracted position adjacent one end of the car to an extended position spaced from said end of the car, downwardly extending locking projections on the bottom of the bulkhead, means in the car to engage said locking projections when the bulkhead is in its extended position, a grate, means to support the grate adjacent the end of the car below the bulkhead, the grate having openings therein to receive the locking projections when the bulkhead is in its retracted position, and means on the bulkhead and the end of the car to hold the grate in an elevated position above the bottom of the bulkhead when the bulkhead is in its extended position.

14. In a refrigerator car, a bulkhead movable from a retracted position adjacent one end of the car to an extended position spaced from said end of the car, downwardly extending locking projections on the bottom of the bulkhead, means in the car to engage said locking projections when the bulkhead is in its extended position, a grate, means to support the grate adjacent the end of the car below the bulkhead, the grate having openings therein to receive the locking projections when the bulkhead is in its retracted position, means on the bulkhead and the end of the car to hold the grate in an elevated position above the bottom of the bulkhead when the bulkhead is in its extended position, and a lever pivoted in the car for movement to an upright position to engage and support the grate when it is in its elevated position.

15. In a refrigerator car having a movable bulkhead therein and a lading rack above the floor of the car, a grate, means for supporting the grate adjacent one end of the car in line with the lading rack to form a continuation of the lading rack when the bulkhead is moved to a position adjacent the end of the car, supporting means on the end of the car vertically above the level of the floor rack to engage the adjacent end of the grate to hold it in elevated position, and a lever pivoted in the car for movement to an upright position to engage the grate at a point spaced from the end

of the car to assist in holding the grate in said elevated position.

16. In a refrigerator car having a movable bulkhead therein and a lading rack above the floor of the car, a grate, a plurality of longitudinally extending supporting beams adjacent one end of the car to support the grate in line with the lading rack, supporting means on the end of the car above the level of the floor rack to support the adjacent end of the grate in an elevated position, and a lever pivoted on one of the beams at a point spaced from the end of the car for movement to an upright position in which it engages the grate to assist in holding it in said elevated position.

17. In a refrigerator car having an end wall formed with vertically extending beams having flanges at their inner edges lying substantially parallel to the end wall, a bulkhead movable in the car from a retracted position adjacent the end wall to an extended position spaced from the end wall, a grate, the grate having hook members at one end to hook slidably over the beam flanges whereby the grate can be moved vertically adjacent said one end of the car but cannot be moved horizontally away from said one end of the car, means to support the grate in the car below the bulkhead, supports on the beams above the last-named means to hold the adjacent end of the grate in an elevated position, and supporting means engageable with the grate at a point spaced from said end to assist in holding the grate in said elevated position.

18. In a refrigerator car having an end wall formed with vertically extending beams having flanges at their inner edges lying substantially parallel to the end wall, a bulkhead movable in the car from a retracted position adjacent the end wall to an extended position spaced from the end wall, a grate, the grate having hook members at one end to hook slidably over the beam flanges whereby the grate can be moved vertically adjacent said one end of the car but cannot be moved horizontally away from said one end of the car, means to support the grate in the car below the bulkhead, supports on the beams above the last-named means to hold the adjacent end of the grate in an elevated position, and supporting means engageable with the grate at a point spaced from said end to assist in holding the grate in said elevated position, the last-named means including a lever pivoted in the car at a point spaced from said end thereof and movable to an upright position in which it engages the grate.

19. In a refrigerator car having an end wall formed with vertically extending beams having flanges at their inner edges lying substantially parallel to the end wall, a bulkhead movable in the car from a retracted position adjacent the end wall to an extended position spaced from the end wall, a grate, the grate having hook members at one end to hook slidably over the beam flanges whereby the grate can be moved vertically adjacent said one end of the car but cannot be moved horizontally away from said one end of the car, a plurality of longitudinally extending supporting beams adjacent said end of the car to support the grate below the bulkhead, supports on the first-named beams above the bottom thereof to hold the adjacent end of the grate in an elevated position, and a lever pivoted on one of the supporting beams at a point spaced from said end of the car and movable to an upright position in which it engages the grate when the grate is in said elevated position.

CHARLES L. MOORMAN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,014,093	Possom	Jan. 9, 1912
1,268,566	Hall	June 4, 1918