

A. B. BULLOCH.

CAR DOOR.

APPLICATION FILED JULY 30, 1909.

955,755.

Patented Apr. 19, 1910.

2 SHEETS—SHEET 1.

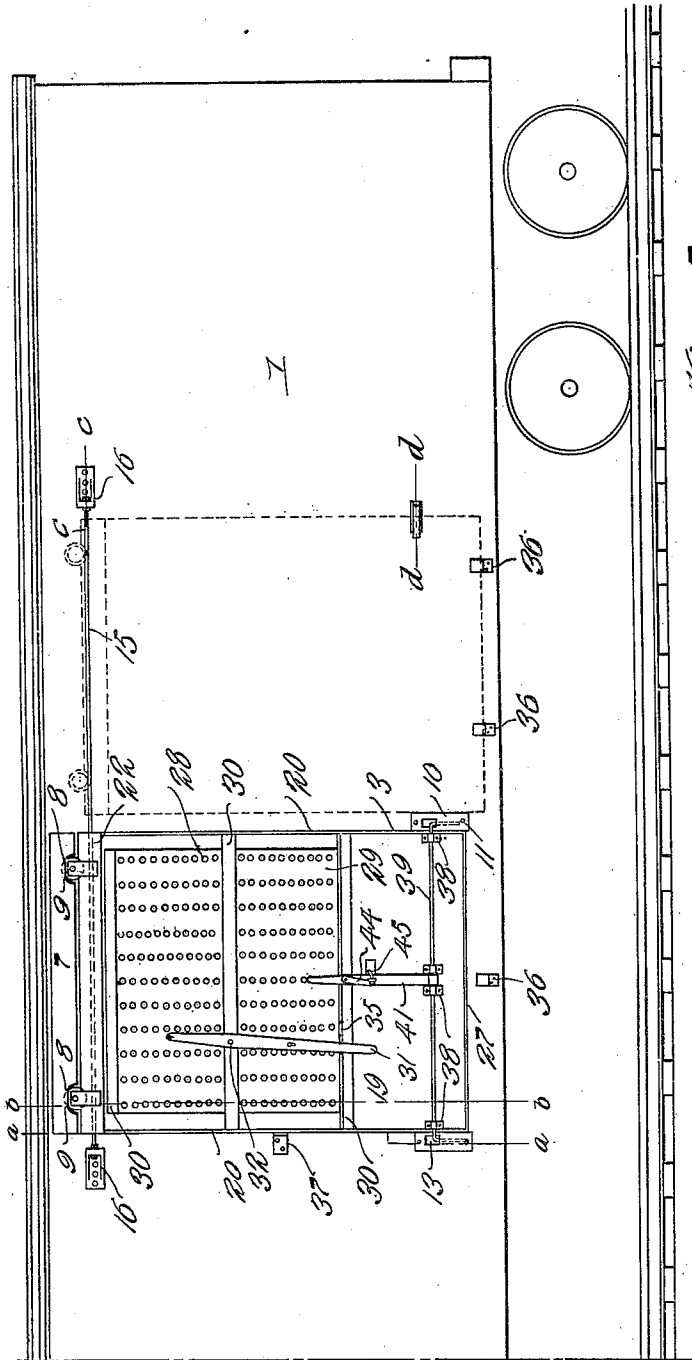
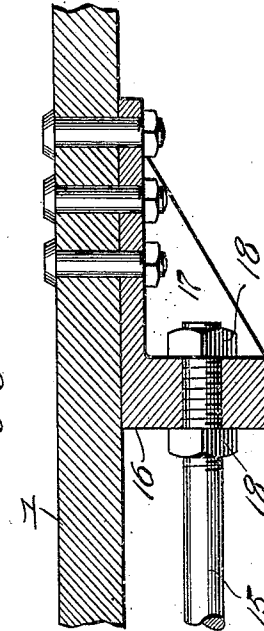
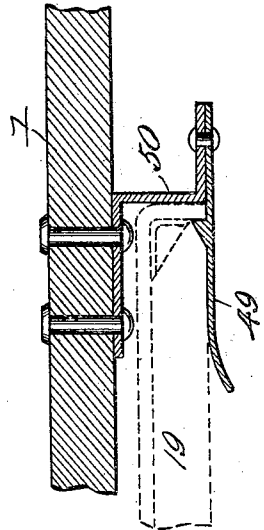


Fig. 1.

Fig. 4.



Witnesses

Frank B. Hoffman.
Geo. Garner

Fig. 1.

By

Alva B. Bulloch
Victor J. Evans

Attorney.

A. B. BULLOCH.

CAR DOOR.

APPLICATION FILED JULY 30, 1909.

955,755.

Patented Apr. 19, 1910.

2 SHEETS—SHEET 2.

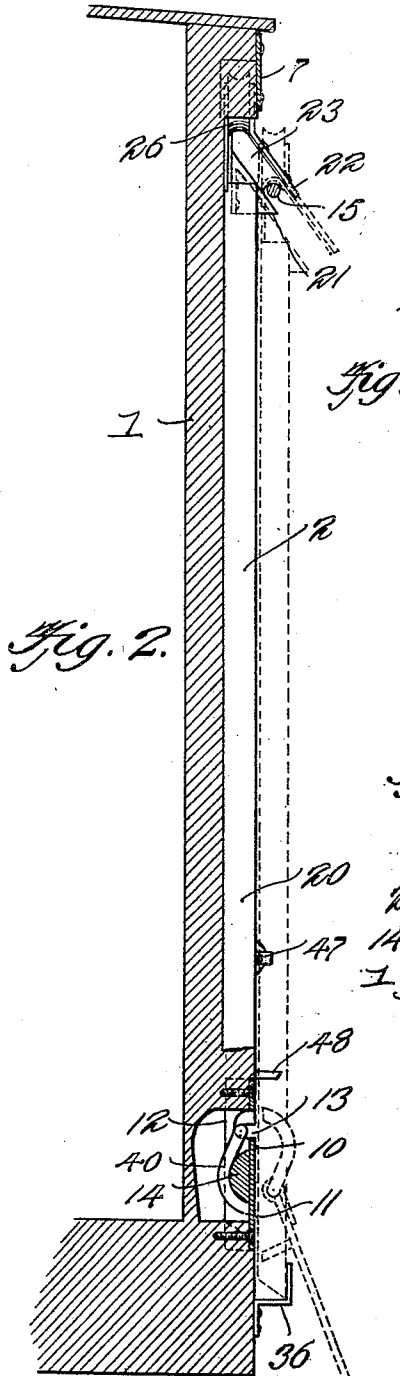


Fig. 2.

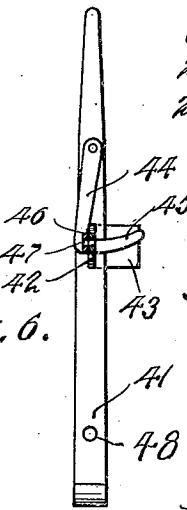


Fig. 3.

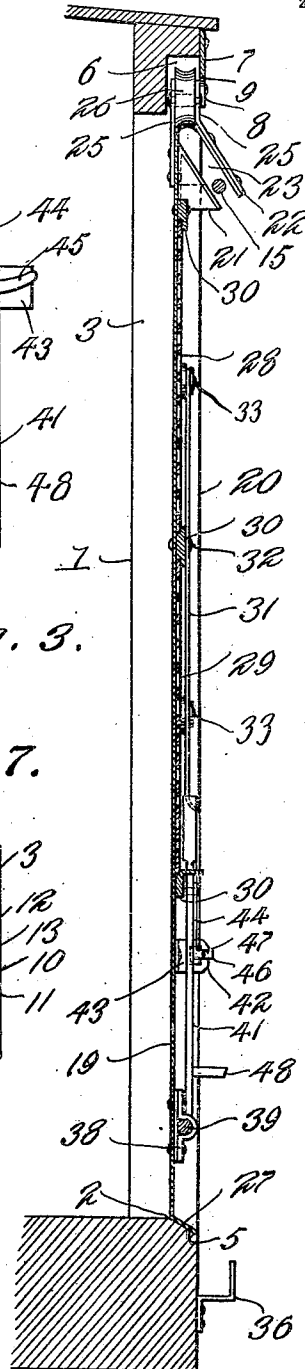


Fig. 7.

Witnesses

Frank B. Hoffman
J. W. Garner

Inventor

Alva B. Bulloch

By Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

ALVA B. BULLOCH, OF IRONDALE, ALABAMA, ASSIGNOR OF TWENTY-FOUR AND ONE-HALF ONE-HUNDREDTHS TO THOMAS J. ALLEN, JR., OF WOODLAWN, ALABAMA, AND TWENTY-FOUR AND ONE-HALF ONE-HUNDREDTHS TO JOHN L. PARKER, OF BIRMINGHAM, ALABAMA.

CAR-DOOR.

955,755.

Specification of Letters Patent.

Patented Apr. 19, 1910.

Application filed July 30, 1909. Serial No. 510,366.

To all whom it may concern:

Be it known that I, ALVA B. BULLOCH, a citizen of the United States, residing at Iron-
dale, in the county of Jefferson and State
5 of Alabama, have invented new and useful
Improvements in Car-Doors, of which the
following is a specification.

This invention relates to improvements
in doors for freight and refrigerator cars
and in door hanging and door locking
means, the said invention consisting in the
construction, combination and arrangement
of devices hereinafter described and claimed.

One object of my invention is to effect im-
15 provements in the means for hanging the
door.

Another object is to provide improved
means for moving the door vertically and
laterally so as to place the same in a posi-
20 tion flush with the outer surface of the wall
of the car so that the door will be entirely
out of the way when closed or to lower the
door out of the doorway in position for
movement longitudinally of the car in order
25 to permit the door to be opened.

A further object is to provide improved
means for locking the door in closed posi-
tion.

A further object is to provide improved
30 means for locking the door in open position.

In the accompanying drawings:—Figure
1 is a side elevation of a portion of a freight
car provided with a door constructed in ac-
cordance with my invention, the door being
35 shown closed and locked in full lines and
being shown in lowered or open position in
dotted lines. Fig. 2 is a vertical sectional
view of the same on the plane indicated by
the line *a—*a** of Fig. 1, the door being shown
40 in closed position in full lines and in lowered
position in dotted lines. Fig. 3 is a similar
view taken on the plane indicated by the
line *b—*b** of Fig. 1. Fig. 4 is a detail hori-
zontal section on the plane indicated by the
45 line *c—*c** of Fig. 1. Fig. 5 is a similar view
on the plane indicated by the line *d—*d** of
Fig. 1, the door being indicated as open and
locked. Fig. 6 is a detail elevation of the
lever arm for the door operating and locking
50 shaft, and also of the catch pivotally mount-
ed on said lever arm and the staple with

which said catch co-acts to lock said lever
arm to the door. Fig. 7 is a detail sectional
view of one of the keepers, showing the same
in place at one side of the doorway.

The side wall 1 of a car provided with my
improved door has a rabbet or recess 2
around the sides of the doorway 3 so that the
door, when the same is closed, is recessed in
the outer side of the car wall or side and does
60 not project therefrom. The lower side 5
of the doorway is inclined downwardly and
outwardly as shown. Recesses 6 are made in
the upper side of the doorway and above the
doorway is a reinforce or stop plate 7 which
65 is made of sheet or plate metal of suitable
thickness and is provided in its lower side
near its ends with recesses 8 which register
with the recesses 6, that portion of the said
stop plate which forms the upper sides of
70 the said recesses 8 constituting stop flanges
9 on the outer side of and below the upper
sides of the recesses 6.

At the lower side of the doorway on op-
posite sides thereof are keepers 10 which are
75 placed in mortises in the sides of the door-
way, each keeper having a wing 11 flush
with the outer surface of the side wall of
the car and the wing 12 at right angles
thereto and forming a portion of one of the
80 jambs. In angle between the wings 11 and
12 at a suitable distance from the upper end
of each keeper, the same is provided with
an opening 13 and below the said opening
is a semi-circular inwardly extending cam
85 or boss 14.

The supporting track rod 15 has its ends
which are screw threaded extended through
openings in supporting and stop brackets
16 which are secured on the outer surface
90 of the wall of the car at a suitable height,
one near one side of the doorway and the
other at a suitable distance therefrom. The
longitudinal and transverse wings of the
said brackets are connected by triangular
95 reinforce wings 17 as shown, such construc-
tion greatly strengthening the said brackets.
Nuts 18 are on the screw threaded ends of
the track rod and bear against the outer
sides of the transverse portions of said
100 brackets and are tightened so as to hold the
track rod at the requisite tension.

The door 19 which is of a size and shape adapting it to fit snugly in the rabbet or recess formed in the outer side of the doorway is made of sheet metal and its vertical side edges are out-turned to form side flanges 20 which when the door is in place in the doorway snugly engage the jambs and prevent sparks or rain from entering. At the upper ends of the said flanges 20 are formed outwardly extending arms 21, the upper edges of which are inclined at an angle of about forty-five degrees. At the upper end or side of the door is a downwardly and outwardly inclined hood 22 which is here shown as formed integrally with the door and the ends of which are placed above the inclined upper edges of the arms 21 and coact therewith to form inclined guide-ways 23 which extend laterally from the outer side of the door and the width of which is sufficient to enable them to clear the track rod. On the upper side of the door at suitable distances from the ends thereof are pairs of upwardly extending ears 25. Rollers 26 are mounted between the said pairs of ears and are peripherally grooved to enable them to receive and operate on the track rod, so as to suspend the car door from the track rod when the car door is out of the doorway and spaced somewhat from one side of the car wall and is in lowered position. The lower side of the door has a downwardly and outwardly inclined flange 27 which, when the door is in place in the doorway bears snugly upon the inclined lower side of the doorway.

The door is provided at suitable points in its upper portion with series of openings. Ventilating slide plates 28—29 are disposed on the outer side of the door and are respectively supported in guide-ways which are formed by flange bars 30 that are secured on the door. The said ventilating slide plates have openings which by longitudinal movement of said slide plates may be disposed in or out of register with the ventilating openings in the door so as to cause the said slide plates to open or close the ventilating openings as will be understood. A lever 31 is fulcrumed as at 32 on the central flange bar and has openings which are engaged by studs 33 that project outwardly from the slide plates. The lower flange bar is provided with notches 35 and the lever which operates the slide plates simultaneously in reverse directions when turned and which is made of spring metal may be engaged with either of said notches so as to lock the slide plate in open or closed position as may be required. It will be seen that the operating lever of the slide plates is disposed near one side of the door.

Guide keepers 36 are secured on the outer surface of the car wall at a suitable dis-

tance below the plane of the bottom of the doorway and serve to engage the lower side of the door when the latter is unseated from the doorway and lowered and to also guide the door and prevent the lower side thereof from swinging toward and from the side of the car. Stops 37 are also secured on the outer surface of the car wall at suitable points to limit the longitudinal movement of the car door.

The door is provided with bearings 38 which project from its outer side. A door operating and locking shaft 39 is mounted in the said bearings and is provided at its ends with curved locking and cam arms 40 which are disposed just beyond the vertical sides of the door in position to enter the openings 13 of the keepers and engage the cams or bosses 14 thereof. The said locking and door operating shaft is provided with a lever arm 41 which also forms a hasp adapted when turned in upright position to engage a staple 42 which projects from a base plate 43 which is secured on the outer side of the door. The length of the said arm is such that its upper portion when in an upright position extends some distance above the staple and to the said arm is secured a pivotally mounted catch 44 which hangs from its pivot and is provided with an arm 45 adapted to engage the staple so as to secure the said arm 41 thereon. It will be understood that this catch maintains its engagement with the staple by gravity so that it is not liable to become detached therefrom by the motion of the car. The catch has an outwardly extending stud 46 provided with an opening for the reception of a seal wire and the staple also has at its outer end an additional opening 47 for the reception of the seal wire, so that the catch may be readily secured and sealed when in engagement with the staple. A stop stud 48 projects from the arm 41 at a suitable distance from the lower end thereof and bears against the outer side of the door when said arm is down-turned and prevents the said arm from getting in such position as to strike either of the guide keepers when the door is moved to open or closed position. A spring catch 49 is mounted on one side of the car at a suitable distance from the doorway as at 50 and when the door is open engages one of the out-turned side flanges 20 thereof to lock the door in such position. Prior to moving the door to closed position, the said catch must be manually disengaged from the door as will be understood.

The operation of my invention is as follows:—When the door is in fully closed position in the recess or rabbet in the outer side of the doorway and with the outer edges of its vertical side flanges flush with the outer surface of the car wall, the supporting

wheels or rollers are elevated above the track rod entirely out of engagement therewith and within the recesses 6 of the doorway and with their upper sides in engagement with the inner sides of the stop flanges 9 of the plate 7 and coacting with said stop flanges of said plate to lock the upper side of the door in place, the track rod being near the lower end of the inclined guide-ways of the door as shown in full lines in Fig. 3. While the door is in this position, the lever arm 41 of the door operating and locking shaft 39 is upturned and in engagement with the staple, and the cam arms 40 of said shaft are downturned and are in engagement with the cams 14 of the keepers so that the door has its lower portion locked in place within the recess or rabbet of the doorway. In order to open the door the catch must be first disengaged from the staple and the said arm 41 turned downwardly thus causing the shaft 39 to partly turn and in so doing causing the curved cam arms 40 of said shaft to coact with the keepers to move the lower side of the door downwardly and outwardly. The initial downward movement of the door disengages the supporting rollers from the stop flanges 9 and as the door continues to be lowered, the guide-ways coact with the track rod to cause the upper side of the door to be lowered and to move outwardly from the car and this continues until the rollers bear on the track rod and coact therewith to support the door in the position indicated in dotted lines in Fig. 2. The door may be then moved to fully open position to one side of the doorway as indicated in dotted lines in Fig. 1 and is there engaged by the catch 49 and locked in such open position. In order to close the door, it is first moved opposite the doorway and the lever 41 is then turned up so as to cause the curved cam arms 40 of the shaft 39 to engage the keepers, such movement of said cam arms of said lock shaft coacting with the cams 14 of the keepers to move the door upwardly and laterally toward the car and keep the door snugly in the recessed doorway, after which the door is fastened by means of the catch carried by the lever 41.

It will be understood from the foregoing that the shaft 39 of my car door coacts with the cams of the keepers not only to fasten the door in closed position but also to raise and lower the door and move it laterally into and out of the doorway.

It will be understood that when the door is in fully closed position in the doorway, the weight thereof is entirely removed from the track rod so that the latter is subjected to no stress whatever.

What is claimed is:—

1. In combination with a car wall having

a recess in its outer side and a track rod, a door to fit in said recess and having supporting means in engagement with and to disengage said track rod and further provided with guiding means to coact with said track rod to impart vertical and lateral movement to the door and cause the latter to move into and out of said recess.

2. In combination with a car door of the class described, supporting rollers carried thereby, a laterally extending inclined guide element on the outer side of said door and a supporting track element for the door, said guide element of the door coacting with said supporting track element, to cause the door to move laterally and to also move vertically so that when the door is lowered, the supporting rollers thereof bear on said track element.

3. In combination with a car wall, having a door opening, and a track element spaced from the outer side of said wall, a door to close in said opening and having supporting means to engage and disengage said track element and guiding means to coact with said track element to guide the door vertically and laterally, keepers secured to the car wall on opposite sides of the door opening, pivotally mounted locking arms carried by the door to coact with said keepers to impart lateral movement and also vertical movement to the door, and means to operate said pivotally mounted arms.

4. In combination with a wall and a track element spaced therefrom, a sliding door movable vertically and also movable laterally toward and from said wall, said door having rollers to bear on the track element when the door is lowered and also having a guide element coacting with the track element to cause the door to move outwardly from said wall as said door is lowered and thereby direct said rollers into engagement with said track element.

5. A sheet metal door of the class described having its upper portion out-turned to form a hood, a structure having a doorway, a track element extending across and spaced laterally from the doorway, in combination with a door having inclined lateral guiding devices for engagement with said track element, means to raise and lower the door and by so doing cause said track element and said inclined guiding devices to move the door laterally, supporting means carried by the door for engagement with the track element when the door is lowered and means for engagement by said supporting means when the door is raised to prevent lateral movement of the door.

6. A door of the class described having a hood at its upper side and laterally inclined guides under the hood in combination with a track element engaged by said guides and

over which the hood extends when the door
is lowered, means to raise and lower the
door and by so doing cause the track ele-
ment and the laterally inclined guides to
5 also move the door laterally and means on
the door for engaging the track element
when the door is lowered.

In testimony whereof I affix my signature
in presence of two witnesses.

ALVA B. BULLOCH.

Witnesses:

SAMUEL P. MILLER,
J. W. GARNER.