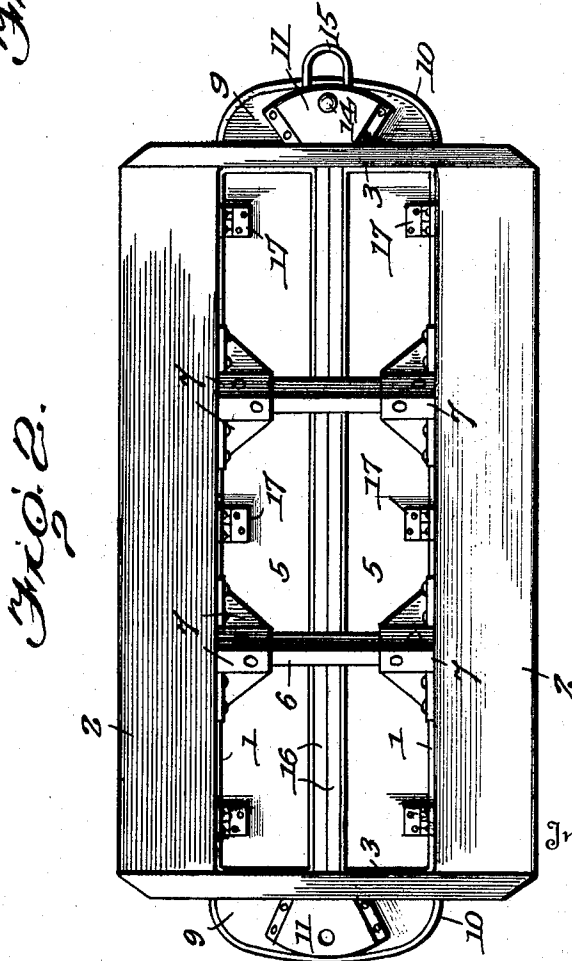
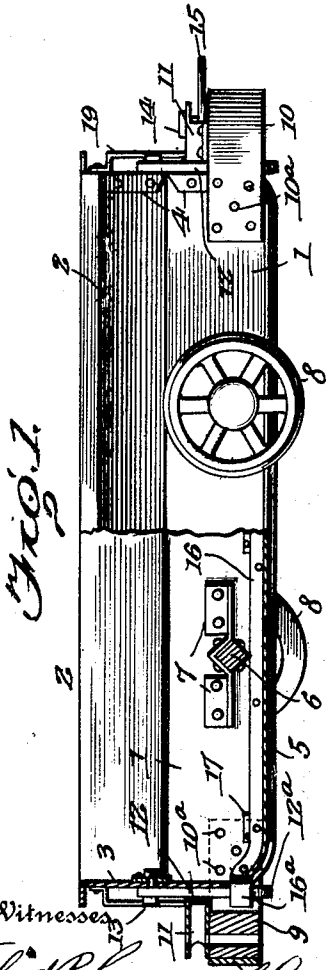
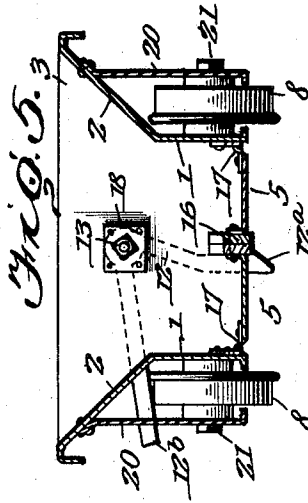
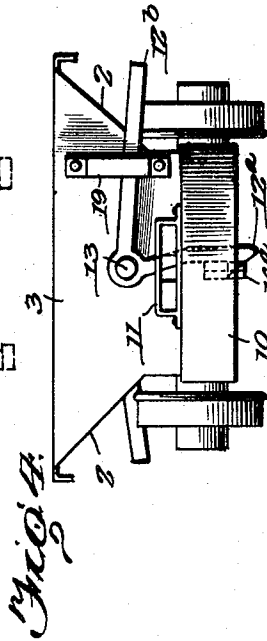
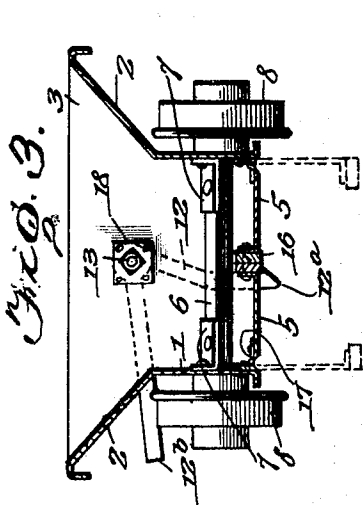


O. G. PETERSEN.
 BOTTOM DUMP CAR,
 APPLICATION FILED JULY 3, 1916.

1,263,283.

Patented Apr. 16, 1918.



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BOTTOM-DUMP CAR.

1,263,283.

Specification of Letters Patent. Patented Apr. 16, 1918.

Application filed July 3, 1916. Serial No. 107,295.

To all whom it may concern:

Be it known that I, OLUF G. PETERSEN, a citizen of the United States, and resident of Somerset, county of Pulaski, and State of Kentucky, have invented certain new and useful Improvements in and Relating to Bottom-Dump Cars, of which the following is a specification.

This invention relates to certain improvements in bottom dump cars; and the nature and objects of the invention will be readily understood by those skilled in the art in the light of the following description of the accompanying drawings illustrating what I now believe to be the preferred embodiment or mechanical expression of my invention from among other forms, constructions and arrangements within the spirit and scope thereof.

An object of this invention is to provide a bottom dump mine car embodying certain improvements whereby the car can be most advantageously employed with mechanism for automatically opening and closing the bottom doors of the car.

A further object of the invention is to provide a bottom dump mine car embodying certain improvements whereby the clearance between the bottom doors of the car and the roadbed is reduced to the minimum and the car is of maximum lading capacity.

A further object of the invention is to provide a bottom dump car wherein the sides of the car form the longitudinal opposite side car sills and wherein the bottom doors of the car form the lading and carrying car floor and are arranged below the horizontal plane of the axes of the car supporting wheels.

A further object of the invention is to provide a bottom dump car having an improved arrangement of exterior end transverse car sills and wherein the car sides form opposite longitudinal car sills.

A further object of the invention is to provide certain improvements in arrangements of parts and details of construction for the production of an efficient advantageous mine car.

The invention consists in certain novel features in construction and in combinations and arrangements as more fully and particularly set forth and specified hereinafter.

Referring to the accompanying drawings:—

Figure 1, shows a car embodying my invention partially in side elevation and partially in vertical longitudinal section.

Fig. 2, is a top plan view.

Fig. 3, is a cross section, dotted lines showing the bottom doors open.

Fig. 4, is an end view.

Fig. 5, is a cross section showing the car wheels provided with short shafts or axles that do not extend into the interior of the car.

In the particular example illustrated, I show a mine car having its body formed by opposite longitudinal vertical side wall plates 1, top overhanging flares formed by flare plates 2, inclined upwardly and outwardly from and rigid with the vertical plates 1, and at their upper outer longitudinal edges preferably stiffened by rolling or flanging; and fixed end closures formed by transverse vertical end plates 3, stiffened at their top edges by flanging and at their end edges having flanges 4, fitting the outer surfaces of the plates 1 and 2, at both sides of the car and securely riveted thereto.

The opposite ends of the car are provided with fixed transverse exterior end sills formed by heavy vertically thick timbers or blocks 9, arranged horizontally throughout the full lengths of the lower portions of the fixed gates or closures 3, and with their ends projecting laterally beyond the vertical planes of the side plates 1. These heavy blocks or timbers project horizontally beyond the fixed end gates 3, approximately in longitudinal continuation of the car body and at their outer sides are preferably longitudinally rounded or reduced toward their opposite ends to form the end bumpers of the car.

The outer surfaces of these blocks 9, are faced by heavy metal plates 10, rigidly secured to said blocks and extending over the ends thereof and longitudinally of the opposite sides of the lower portions of the car body to which they are rigidly secured by rivets 10^a, or in any other suitable manner. The end sill blocks 9, are fixedly and rigidly secured to the car ends in any suitable manner and by any suitable means, but the securing and arrangement is such that the longitudinal side walls of the car form the car sills that receive and sustain the pull and compression strains and stresses to which the

end sills 9, 10, are subjected when the car is being moved and during coupling and uncoupling operations.

In the particular example illustrated, the 5 couplings whereby the car can be joined to other cars, are applied to the end sills 9, 10, through the medium of metal sockets or housings 11, arranged centrally of the car on the top sides of the sill blocks 9; and rigidly fixed thereto. Each housing is, formed 10 with a vertical hole for a coupling pin 14, and these holes are usually extended down through the blocks 9, and each housing forms an outwardly flared open-end socket 15 to detachably receive any suitable coupling member, such as detachable loop 15, which is confined in the housing by removable pin 14. These loops 15, couple adjacent cars together as will be readily understood by those 20 skilled in the art. It will be noted that the blocks 9, receive the pulling strains of the couplings and transmit the same to the opposite sides of the car through the plates 10, which inclose the outer sides and ends of the 25 blocks and have their ends rigidly secured to the car sides. Furthermore, these plates and blocks receive the compression shocks and blows of adjacent cars and transmit such shocks to the car sides. Furthermore, these 30 wide flat plates 10, are arranged to prevent car ends riding up on each other or telescoping.

It will also be noted that these end sills 9, 10, are designed to relieve the end closures 35 3, of shocks and blows delivered by one car against another and from draft strains.

The car is preferably provided with a bottom discharge opening in length and width approximately equal to the distance between 40 the end closures 3, and the side wall plates 1, and this bottom is normally closed by any suitable arrangement of drop or other discharge doors designed to form the bottom lading carrying floor of the car body, and to 45 open to discharge said lading when and as desired.

In the particular example illustrated, I show a pair of vertically swingable longitudinal drop doors 5, for this purpose but 50 do not wish to so limit all features of my invention.

The outer longitudinal edges of these doors are pivotally coupled to the lower longitudinal edge portions of car sides 1, by 55 hinges 17, so that the doors swing vertically on horizontal axes arranged longitudinally of the car. The doors extend throughout the length of the bottom opening of the car body and at their free edges meet approximately along the longitudinal center line of the bottom discharge opening of the car 60 body, so as to form an approximately horizontal lading carrying floor.

Any suitable means can be employed for 65 holding these doors in elevated closed posi-

tion and for releasing the same for dumping, although in this instance, I show the free end corners of the doors provided with rigid longitudinal projections or keepers 16^a, arranged to engage and be upheld by swingable latches arranged at the car ends. 70

The longitudinal free meeting edges of the doors 5, are stiffened and reinforced by rigid bars 16, extending throughout the length thereof and rigidly fixed thereto, and 75 the opposite ends 16^a, of these bars are extended longitudinally beneath the car end plates 3, and into vertical slots or recesses in the rear or inner faces of the blocks 9, and are offset upwardly, about as shown, to 80 form the keepers or door supporting projections herein before mentioned.

Vertically disposed laterally swingable latches 12, are arranged at the outer side faces of the end closure plates 3, and these 85 latches are carried by, depend from and swing on horizontal strong rigid fulcrum pins or studs 13, fixed to and carried by said plates. If so desired, the portions of plates in which said studs are secured can be 90 braced and stiffened by reinforcing plates 18. The latches depend at the outer sides of plates 3, and between the same and the rear or inner faces of the blocks 9, which can be 95 recessed for this purpose if need be to permit the required free movement of the latches.

The lower end of each latch is formed with a hooked, shouldered and downwardly tapered head 12^a, providing an approxi- 10 mately straight lateral edge or shoulder of a length to receive and uphold both arms 16^a, of the adjacent door ends, and a beveled or inclined edge leading up to said shoulder. The latch is also offset laterally so 10 that when the dump doors are in closed position with their arms 16^a, resting on and upheld by the shoulder of the latch head, said arms will be directly below and in the central vertical longitudinal plane of the 11 car in which the studs 13 are approximately located, whereby the weight of the doors and the lading upheld thereby will not tend to swing the latches to release the doors, see Fig. 4, and any tendency of the latches to 11 accidentally open is furthermore guarded against by the opposing arrangement of the latches at opposite ends of the car. In other words, the door arm upholding shoulders of the two latches are arranged at opposite 12 edges thereof, so that one latch must be swung to the right to release the door arms upheld thereby while the other latch must be swung to the left to release the door arms it upholds, as indicated by dotted lines 12 Figs. 3 and 4.

As an example of means that can be employed for controlling and swinging the latches, I show each latch formed rigid with a laterally extending operating arm 12^b, 13

swingable vertically in stop and guiding loop 19, and having its free end projecting laterally beyond a side of the car and beyond the vertical plane of the supporting wheels at that side of the car. These arms are rigid

5 with the upper ends of the latches, and the arms of the two latches project in opposite directions, one latch projects laterally beyond one side of the car and the other laterally beyond the other side of the car. The free ends of these arms must be elevated to swing the latches to release the door arms, whereupon the weight of the doors or of the lading thereon will cause the doors to drop to vertical completely opened positions. The weight of the arms 12^b, will cause the latches to immediately return to normal upright door supporting positions. When the doors are swung up to closed position, by any suitable means (not shown) the door arms 16^a, will engage the tapered or beveled lower edges of the heads 12^a, of the latches and thereby swing the latches laterally to permit the continued upward movement of said arm, and when the doors reach closed position and their arms 16^a, have passed upwardly beyond said heads, the latches will automatically swing back to normal positions with the top straight edges or shoulders of their heads under the door arms which will thereafter settle down thereon and be upheld thereby.

This car is particularly designed for use on a mine track system wherein a pocket is arranged below the track to receive the lading discharged from the car bottom on the opening of the bottom doors, and wherein automatic dumping apparatus is arranged along said track to engage the arms 12^b, of both latches of the loaded car and simultaneously swing said latches to release the bottom doors as the car approaches said pocket so that the lading will be deposited therein, and wherein apparatus is arranged along said track to swing said doors back to closed position, as the emptied car passes from dumping position. As before explained, when the doors are forced up to closed position, the latches automatically lock the same in such position.

50 It will be noted that the latch and door arm arrangement is approximately duplicated at opposite ends of the car and that the car can be dumped and the doors restored to closed position when moving either end foremost.

The bars 16, extending throughout the lengths of the doors and forming the door upholding arms, are also designed to cooperate with means along the track causing a gradual opening movement of the doors after they have been released by the latches, to prevent a too sudden drop of the entire load, and also to cooperate with said door closing means in gradually closing the doors as the car progresses.

The car is carried and supported by wheels 8, arranged at the outer sides of the side walls 1, and below the overhanging flares, and mounted on axes arranged a distance above the horizontal plane of the car bottom floor formed by the closed dump doors.

I prefer to mount these wheels on the outer ends of fixed long axles 6, that extend through the wall plates 1, and traverse the interior space of the car body.

I show two axles 6, traversing intermediate portions of the car and projecting at their opposite ends at the exterior of the car to receive the car wheels. I utilize these axles to stiffen the car and brace and tie the car sides together and against spreading by rigidly securing each car side 1, to the adjacent portions of the axles. For instance, I show two angle braces or flanged plates 7, for each axle at their intermediate portions fitted down on and riveted or bolted to the end portions of the axle within the car body and having vertical flanges fitting and riveted to the inner surfaces of the body side walls 1. The brace plates are arranged at the inner sides of the opposite car sides 1, where the axles pierce said sides.

In Fig. 5, I show the car of my present invention, provided with short shafts or axles 21, for the car wheels 8, to avoid entrance of the axles into the lading receiving space of the car body. In this modification the longitudinal sides of the car are stiffened and strengthened by exterior depending stiff plates 20, arranged longitudinally of the car, parallel with and spaced outwardly from walls 1, and at their top longitudinal edges rigidly secured to the flare plates 2.

The side walls 1, flare plates 2, and walls 20, form channel structures along the car body sides in which the wheels 8, are located with the short axles 21, traversing said channels and at their ends fixed in the opposite walls thereof. The car of Fig. 5, in other respects embodies the structures and features of the car of the remaining figures of the drawing.

It is evident that various changes, modifications and departures might be resorted to, that features might be omitted or elements added, without departing from the spirit and scope of my invention, and hence I do not wish to limit myself to the exact disclosures hereof.

What I claim is:—

1. A bottom-dump mine car without frame beams forming longitudinal sills, comprising a body having side plates forming the longitudinal side walls of the body and vertical end plates fixed to said side plates and forming permanent closures at both ends of the body, said body having a bottom discharge opening in length and width approximately equal to the distances between said end closures and said side

walls, drop doors hinged to said side walls and forming the lading sustaining floor of said body, means for upholding and releasing said doors, supporting wheels for said body, said doors being arranged below the axes of said wheels, and transverse exterior opposite-end bumper-forming and coupling-receiving sills arranged at the exterior of said end closures and permanently fixed and secured to said opposite longitudinal side plates, whereby said side plates form longitudinal sills receiving the pull and compression stresses and strains to which the end sills are subjected.

2. A bottom dump car having drop lading sustaining doors forming the bottom floor of the car, exterior end sills traversing the end closures of the car body and rigidly secured to the opposite longitudinal side wall plates of the car body to transmit thereto the pulling and compression stresses and strains to which said sills are subjected, and to relieve said floor and end closures from said stresses and strains, and means whereby the couplings to adjacent cars are applied to said sills.

3. A bottom dump car, without frame beams constituting longitudinal sills having a body comprising longitudinal side wall forming plates and transverse end closure walls fixed to the side walls, drop means forming the bottom lading sustaining floor of said body, bumper and sill forming rigid members arranged at the exterior of said end closures and traversing the ends of the car and rigidly fixed to said longitudinal side wall-forming plates of the car to relieve said floor and the end closure walls of the pulling and compression strains and stresses to which said sills are subjected, and whereby said side wall-forming plates of the body form the longitudinal side sills of the car.

4. A bottom dump car, without frame beams constituting longitudinal sills having bumper and sill forming blocks arranged at the exterior of and traversing its ends, and plates longitudinally traversing the outer sides and ends of said blocks and extending longitudinally onto and rigidly secured to the plates forming the opposite longitudinal side walls of said car, to relieve the car body end walls and lading sustaining bottom from the stresses to which said blocks and the plates traversing the same are subjected, and whereby said side walls of the car body form the longitudinal side sills of the car.

5. A bottom dump mine car having longitudinally arranged drop doors adapted to meet at their longitudinal free edges approximately along the longitudinal center line of the bottom of the car, said longitudinal free edges provided with rigid stiffening bars projecting at their ends beyond the doors to form door supporting arms, and

latches arranged at the ends of the car to engage said arms to uphold the doors in closed position.

6. A bottom dump mine car having depending vertical swingable headed latches at its opposite ends, said latches being provided with laterally projecting operating arms projecting in opposite directions at opposite sides of the car, and drop doors adapted to be upheld and automatically dropped and locked by said latches, substantially as described.

7. A bottom dump mine car having end exterior sills and bottom drop doors, said doors provided with projecting end arms at the ends of the car and protected by said sills when the doors are in closed position, latches at the exterior of the car ends and adapted to engage said arms and uphold the doors in closed position and to be engaged by said arms when the doors are being closed and to automatically lock the doors in closed position, said latches being protected by said sills, said latches automatically assuming locking position, and means for operating the latches to release the doors.

8. A bottom dump mine car having a body with a bottom opening in length and breadth approximately equal to the length and breadth of the body, drop doors for closing said bottom opening, car wheels at the exterior of the opposite sides of the body, axles for said wheels extending through and across the body above said doors, and flanged bracing plates within the body and fixed to the axles and rigidly secured to the side walls of the body.

9. A bottom-dump mine car, without longitudinal frame beams, having plates forming the longitudinal side walls of the car body and vertical transverse plates fixed to said side walls and forming the permanent end walls of the body, transverse blocks arranged at the exteriors of said end walls, plates facing the outer edges of said blocks and having their ends extended longitudinally onto said side walls and riveted thereto, a drop bottom to close the bottom opening of the car body, supporting wheels having their axes arranged above said bottom, and means fixed to and stiffening said side walls and providing the wheel mountings.

10. A bottom-dump mine car, without longitudinal frame beams constituting sills, having flanged longitudinal plates forming the opposite side walls of the car body and vertical end plates forming the end closures of the body and having edge flanges lapping the side faces of said side walls and riveted thereto, transverse opposite-end bumper forming sills arranged outside of said end closures and projecting beyond the side edges thereof and longitudinally onto said side walls and fixed thereto, and a drop bottom for said body normally closing the space

bounded by the lower edge portions of the side walls and end closures and arranged below the horizontal plane in which the axes of the car supporting wheels are located.

5 11. A mine car having longitudinal plates forming the opposite longitudinal side walls of the car body and vertical transverse plates lapping and fixed to said side walls and permanently closing the ends of said body, 70
10 transverse sills outside of said ends and each comprising a heavy bumper forming plate having its opposite ends extended back beside said opposite side walls and fixed thereto, said car body having a drop bottom in length approximately equal to the length of 15
the car body and in width approximately equal to the distance between said side walls, and supporting wheels at the exterior of said body, said drop bottom being located 20
below the horizontal plane in which the axes of said wheels are located.

12. A mine car having a body without supporting sill-forming frame beams, said body comprising longitudinal flanged and 25
flaring plates forming the longitudinal side sills of the car and the opposite side walls of the body and flanged vertical transverse plates lapping the outer sides of and fixed to said longitudinal plates and forming the end 30
walls of the body, and transverse sills extending substantial distances beyond the ends of the body and protecting said end walls and each comprising a heavy bowed bumper-forming plate having its opposite ends extended back beside said opposite side walls 35
and permanently fixed thereto, substantially as described.

13. A mine car having a body with overhanging sides and without supporting sill-forming frame beams, said body comprising 40
longitudinal plates forming the side walls of the body that constitute the longitudinal side sills of the car, and vertical flanged transverse end plates fixed to said side plates 45
and closing the ends of the body, and transverse bumper-forming end sills projecting substantial distances beyond and protecting said end plates and at their ends permanently fixed to said longitudinal plates to 50
transmit thereto the compression and pulling strains to which said sills are subjected and to relieve said transverse plates and the lading supporting floor of the body from said strains.

55 14. A mine car having the plates that form the side walls of the car body also constituting the longitudinal side sills of the car, transverse plates fixed to said walls and closing the ends of the body, projecting 60
transverse bumper-forming sills at the outer ends of the car and having projecting ends fixed to said side wall plates to directly transmit thereto the compression and pulling strains and stresses to which said sills 65
are subjected and to relieve said transverse

plates and the lading supporting floor of the body from said strains and stresses, supporting wheels for said car, and mountings for said wheels fixed to said side wall plates and by which said body is supported on 70
the wheels, the lading supporting floor of the body being arranged below the horizontal plane in which the axes of said wheels are located.

15. A mine car having rigidly connected 75
side and end plates forming the end and side walls of the car body, said body having a bottom opening in length and width equal approximately to the length and width of the body, longitudinal drop doors forming 80
the lading supporting floor of said body, said doors approximately meeting at their inner longitudinal edges, means hinging the outer longitudinal edges of the doors to the lower edge portions of said side walls, 85
door upholding and releasing means at both ends of the body, operating arms at the car ends for said means, said arms projecting laterally beyond the car in opposite directions, supporting wheels for the body, said 90
doors arranged below the horizontal plane in which the axes of said wheels are located.

16. A bottom dump mine car having end exterior sills and bottom drop doors, said doors provided with projecting end arms at 95
the ends of the car and protected by said sills when the doors are in closed position, and latches at the exterior of the car ends and adapted to engage said arms and uphold the doors in closed position. 100

17. A mine car having rigidly connected side and end plates forming the end and side walls of the car body, said body having a bottom opening in length and width equal approximately to the length and 105
width of the body, longitudinal drop doors forming the lading supporting floor of said body, said doors approximately meeting at their inner longitudinal edges, means hinging the outer longitudinal edges of the doors 110
to the lower edge portions of said side walls, and door upholding and releasing means at both ends of the body.

18. A mine car having a lading supporting drop bottom in length and width approximately equal to the length and width 115
of the car body, said bottom composed of longitudinal drop doors approximately meeting at their longitudinal edges when closed, latches at both ends of the car body 120
for upholding and releasing said doors, and operating means for said latches arranged at both ends of the car and similarly projecting laterally at both sides of the car, whereby said means can be operated to 125
release said doors when the car is arranged either end foremost.

19. A bottom dump mine car having a bottom opening in length and width approximately equal to the length and width of the 130

car body, a lading-supporting drop bottom for said opening comprising drop doors arranged to approximately meet at their free edges, said doors provided with stiffening bars fixed thereto along said edges and projecting at both ends of each door to form door supporting arms, and latches arranged at the exterior of the car body to engage said arms and uphold the doors in closed position.

20. A bottom dump mine car having lading supporting bottom drop doors arranged

to approximately meet at their free edges when closed, each door at both ends having projecting arms, the projecting arms of one door being arranged closely adjacent to the corresponding arms of the other door when the doors are closed, and latches mounted on the car to engage said arms to uphold and release the doors, each latch arranged to operatively receive the adjacent arms of both doors.

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