No. 734,977. PATENTED JULY 28, 1903.

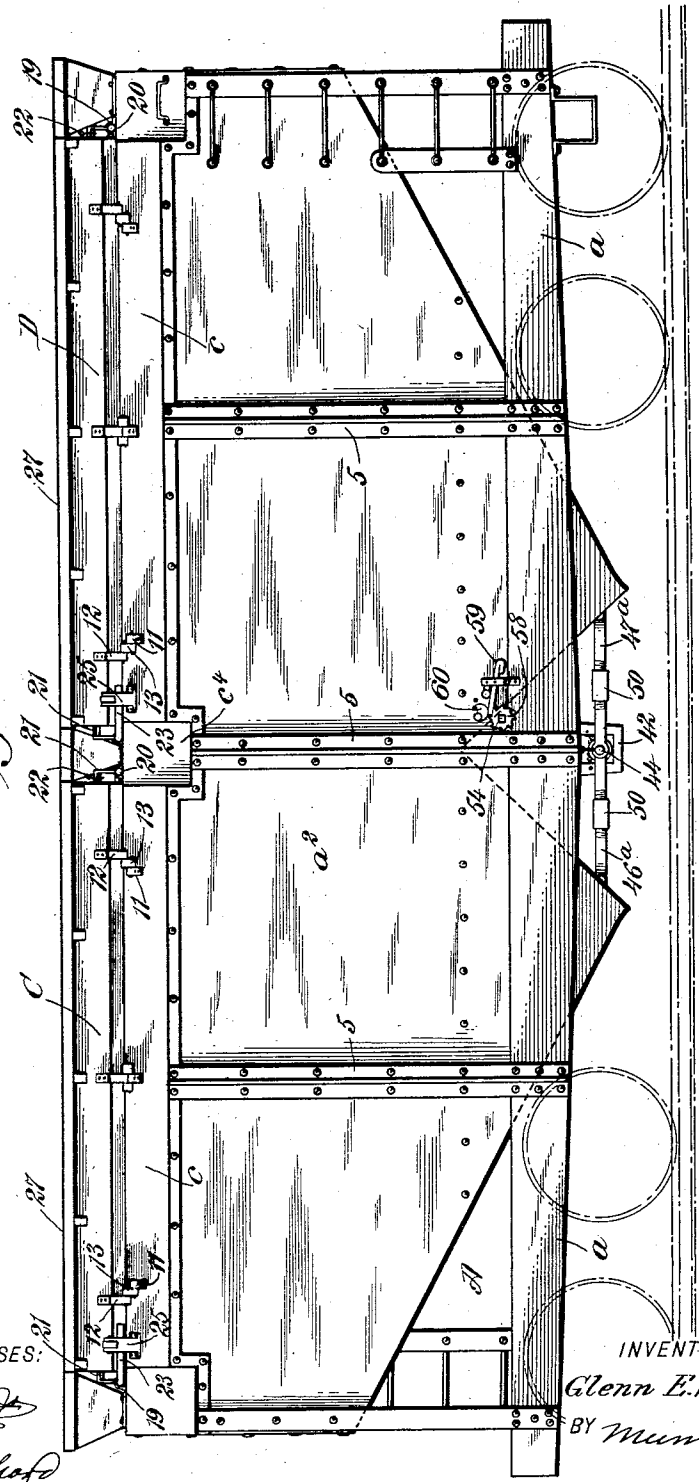
G. E. SIMONTON.

DUMPING BOX CAR.

APPLICATION FILED AUG. 15, 1902.

NO MODEL. 6 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

A. R. Appleman Jr.

W. C. Beuchop

INVENTOR

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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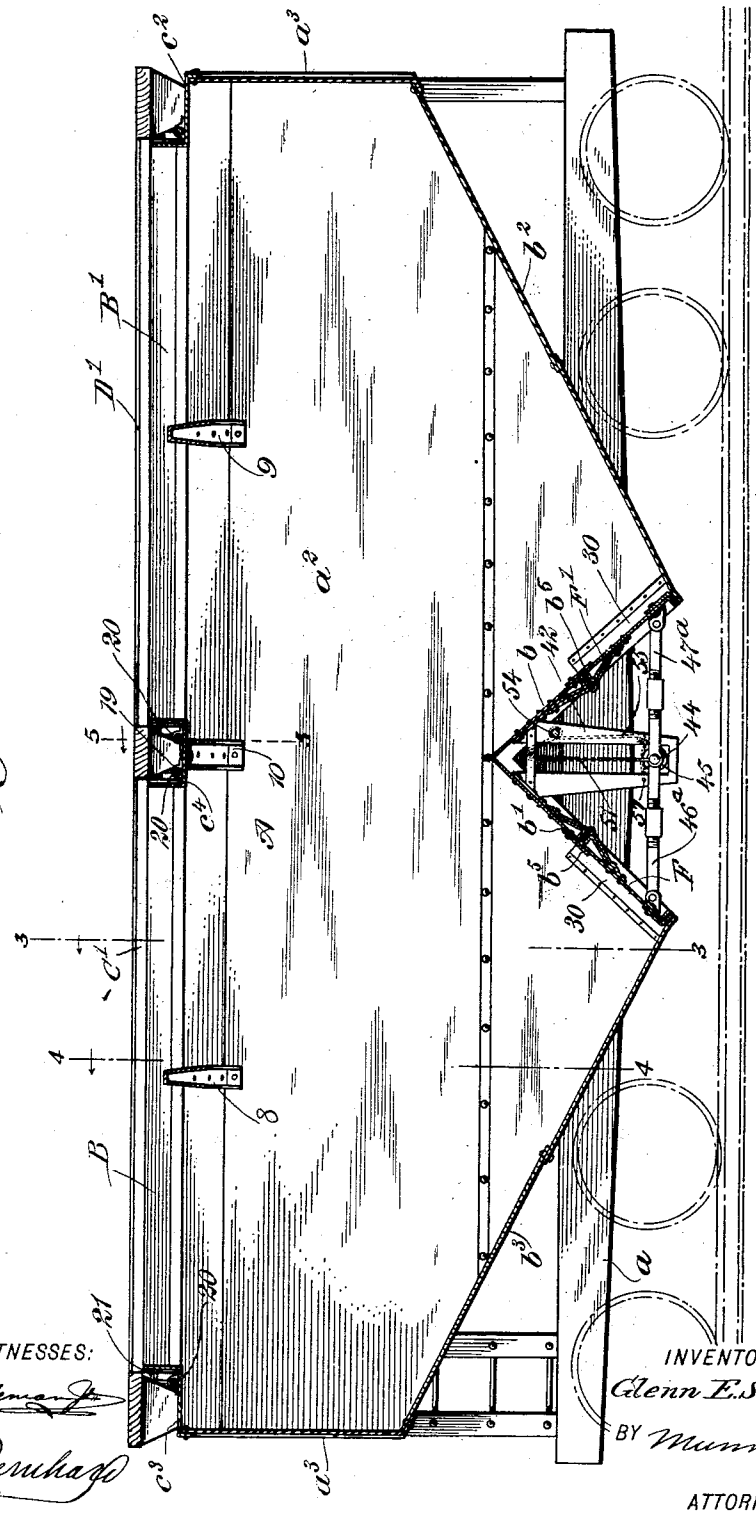
G. E. SIMONTON.

DUMPING BOX CAR.

APPLICATION FILED AUG. 15, 1902.

NO MODEL. 6 SHEETS—SHEET 2.

Fig. 2.



WITNESSES:

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NO MODEL. 6 SHEETS—SHEET 3.

Fig. 3.

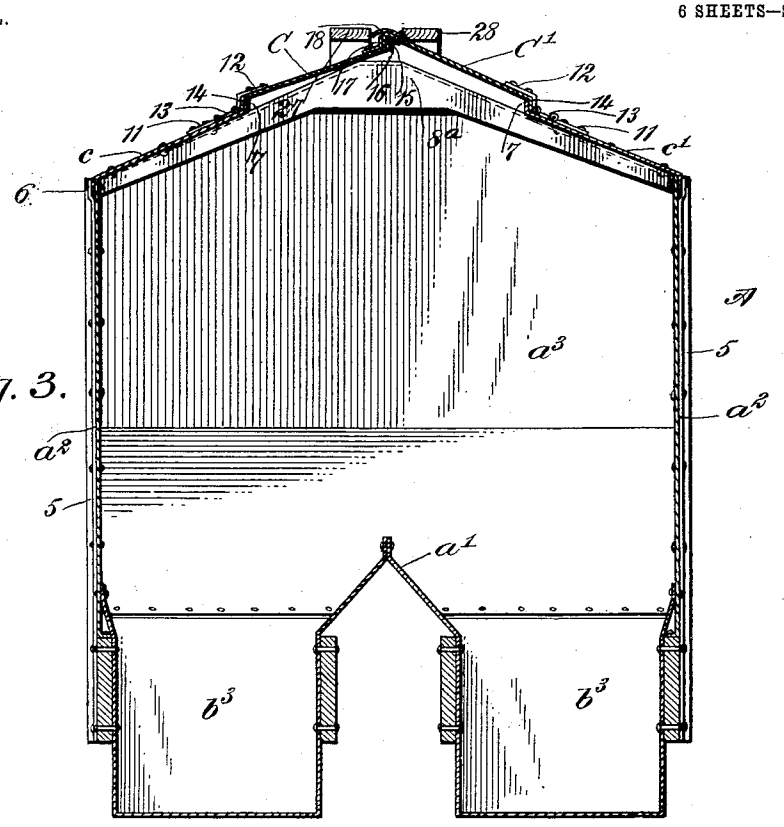
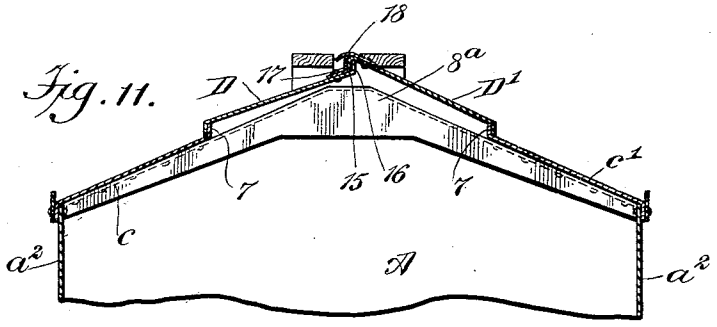


Fig. 11.



WITNESSES:

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DUMPING BOX CAR.

APPLICATION FILED AUG. 15, 1902.

NO MODEL. 6 SHEETS—SHEET 4.

Fig. 4.

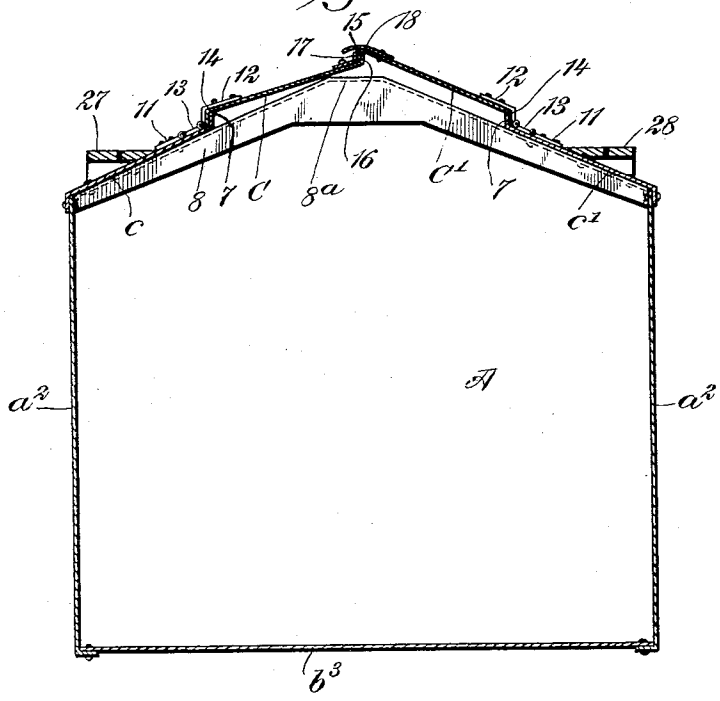
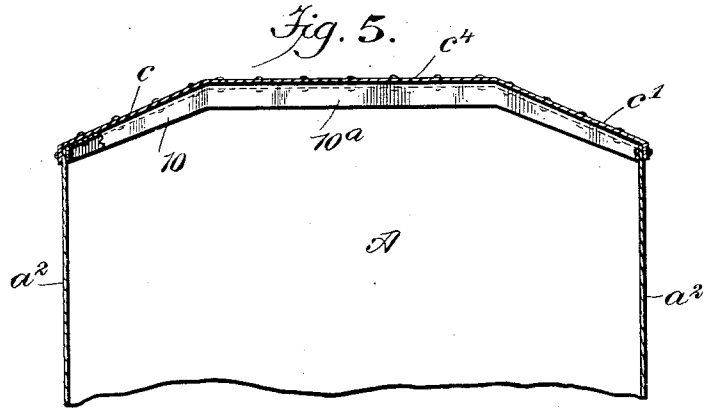


Fig. 5.



WITNESSES:

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DUMPING BOX CAR.

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NO MODEL. 6 SHEETS—SHEET 5.

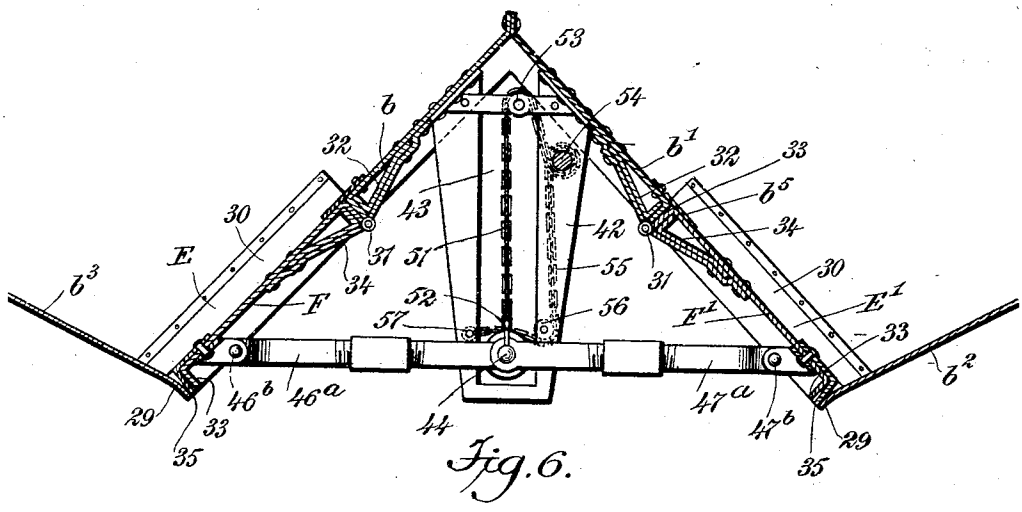


Fig. 6.

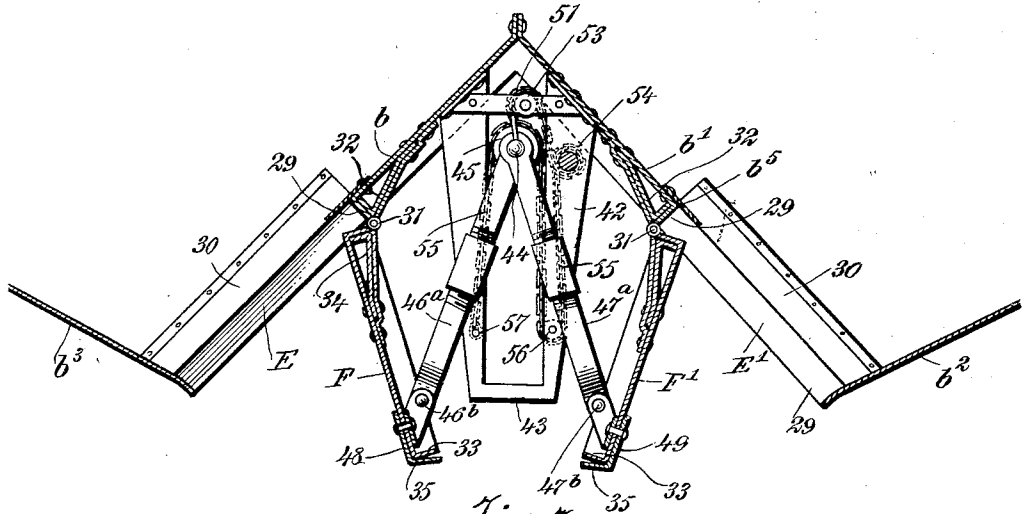


Fig. 7.

WITNESSES:

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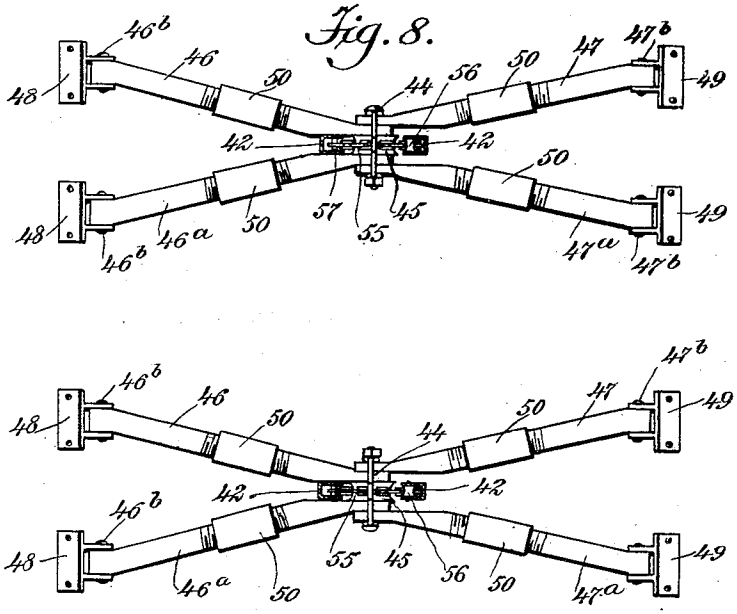
G. E. SIMONTON.

DUMPING BOX CAR.

APPLICATION FILED AUG. 15, 1902.

NO MODEL. 6 SHEETS—SHEET 6.

Fig. 8.



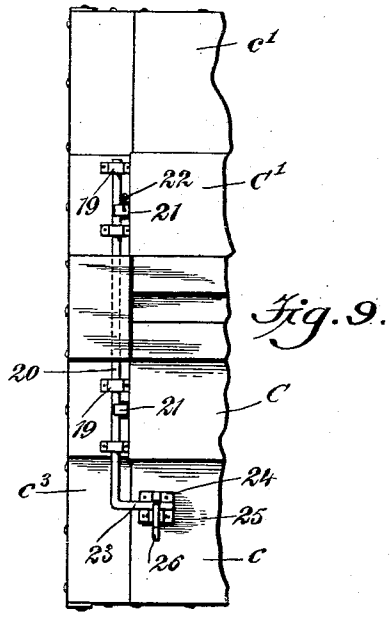
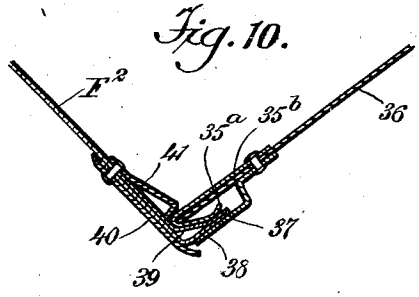


Fig. 9.

Fig. 10.



WITNESSES:

A. R. Applemanjr.

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No. 734,977. Patented July 28, 1903.

UNITED STATES PATENT OFFICE.

GLENN E. SIMONTON, OF VANWERT, OHIO.

DUMPING BOX-CAR.

SPECIFICATION forming part of Letters Patent No. 734,977, dated July 28, 1903.

Application filed August 15, 1902. Serial No. 119,793. (No model.)

To all whom it may concern.

Be it known that I, GLENN E. SIMONTON, a citizen of the United States, and a resident of Vanwert, in the county of Vanwert and State of Ohio, have invented a new and Improved Dumping Box-Car, of which the following is a full, clear, and exact description.

My invention relates to improvements in dumping box-cars especially adapted for the transportation of materials in bulk, such as coal and grain, although the car may be used for carrying coke, ore, and any other loose dumpable material.

The primary object of the present invention is to produce a twin or double hopper dumping-car with means for securely closing the filling or loading openings in the roof for the purpose of excluding rain and the weather from the grain or other bulky material loaded into the car. The roof-doors are constructed to open freely in order to fully expose the filling or loading openings, and they are arranged to fold snugly over said openings to effectually close them, special provision being made to thoroughly close the joint between the meeting edges of the doors for the more perfect exclusion of the weather.

A further object of the invention is the provision of novel hopper-doors especially designed to securely close the discharge-openings against the leakage of grain or other loose bulky material loaded into the car, said doors adapted when opened to assume positions which permit the granular material to discharge freely and practically without obstruction from the doors. The inward movement of each door when closed is arrested by a stop, the latter being fashioned to allow the free passage of the granular material, so that it will not lodge against the stop.

A further object of the invention is to provide a door-actuating mechanism for the series of hopper-doors, said actuating mechanism serving to hold the hopper-doors securely locked in their closed positions and said mechanism being operable to easily open all the doors of the group simultaneously.

A further object is to provide means for locking the roof-doors in their closed positions, said locking devices being held when adjusted in operative engagement with the doors by detents or catches which are automatically effective on the adjustment of said locking devices.

A further object of the invention is to construct the car in a manner to secure strength and stability throughout the several parts, particularly at the roof thereof, such roof-rafters or "carlines" being fashioned at points where they are exposed through the filling or loading openings in a manner as to prevent lodgment of the granular material.

I shall hereinafter describe the car as constructed of metallic plates and beams or stays; but while metal of a suitable nature may be advantageously used in the construction it is evident that wood or other appropriate materials may be employed.

To the accomplishment of these ends the invention consists in the novel construction, arrangement, and combination of parts, which will be hereinafter fully described, and the actual scope of the invention will be defined by the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a dumping box-car constructed in accordance with my invention. Fig. 2 is a vertical longitudinal sectional elevation taken centrally through the improved car. Fig. 3 is a vertical transverse section on the line 3 3 of Fig. 2. Fig. 4 is another vertical transverse section through the car, taken in the plane of the dotted line 4 4 of Fig. 2. Fig. 5 is another vertical transverse section with the lower part of the car broken away, the plane of the section being indicated by the dotted line 5 5 of Fig. 2. Figs. 6 and 7 are vertical sectional elevations, on an enlarged scale, illustrating two of the hopper-doors and their actuating mechanism, Fig. 6 showing the doors in their closed positions, while in Fig. 7 the doors are shown in their open positions. Fig. 8 is a detail plan view of the hopper-door-actuating mechanism, the hopper-doors being omitted and the hangers being shown in transverse section. Fig. 9 is a detail plan view of a portion of the roof or deck of a car, illustrating the means for locking the roof-doors in their closed positions. Fig. 10 is an enlarged detail fragmentary vertical section through another embodi-

ment of means for securing a tight joint between the hopper and its door, and Fig. 11 is a vertical sectional view through a portion of the roof or deck of a car and illustrating another embodiment of means for adjusting the roof-doors.

The body A is carried by the longitudinal sills *a*, adapted to be mounted on a running-gear of any suitable character. As is usual in twin or double bottom dumping-cars, the body is divided, as at *a'* in Fig. 3, such division lying at the middle portion of the bottom. The bottom of the car-body takes the shape shown more clearly by Fig. 2, by reference to which it will be seen that the bottom consists of the outwardly and downwardly inclined members *b b'* and the downwardly and inwardly inclined members b^2 b^3, such inwardly-inclined members being much longer than the outwardly-inclined members *b b'* and the members meeting in pairs in a manner to form the twin or double hoppers. The sides and ends a^2 a^3, respectively, are preferably made of metal plates joined together in any usual or preferred manner—as, for example, by riveting the parts—and the sides of the car-body are reinforced by the provision of a series of vertical stays 5, the latter being riveted to the outside of the walls and consisting of angle-irons. As shown by Fig. 1, the angle-iron stays are united to the longitudinal sill *a;* but this is optional.

The roof or deck of the car-body consists of the longitudinal side plates *c c'*, the end cross-plates c^2 c^3, and the middle cross-plate c^4. The side plates are arranged in the inclined positions shown more clearly by Figs. 3, 4, and 5, so that they slope downwardly and outwardly, and these side plates preferably extend throughout the length of the car. The side plates are provided at their outer lower edges with downwardly-extending flanges 6, arranged to overlap the upper edges of the side walls a^2, and these side walls and the side plates of the deck or roof are united by riveting them together. The inner edges of the inclined side plates forming a part of the deck or roof do not meet with one another; but they are separated and provided with upwardly-extending flanges 7. The middle cross-plate c^4 of the deck or roof extends across the opening between the upwardly-flanged inner edges 7 of these side plates *c c'*, and the end plates c^3 are disposed to also extend across the opening provided by the flanged edges 7, said transverse plates c^2, c^3, and c^4 being riveted or otherwise united to the side plates of the deck or roof. The end plates c^2 c^3 are also flanged and riveted to the end walls a^3 of the car-body. From this description it will be seen that the inner edges of the side plates *c c'* and the transverse plates c^2 c^3 c^4 provide in the deck or roof two longitudinal filling or loading openings B B', the same being separated by the flanged middle cross-plate c^4.

The roof or deck formed by the metallic plates just described is reinforced by the employment of a series of transverse rafters or carlines 8, 9, and 10. (See Figs. 2, 3, 4, 5, and 11.) Each rafter or carline is made in a single piece of channeled metal, preferably from pressed steel, and said rafter or carline has inclined members joined by a central crest member. The rafters (indicated at 8 and 9) extend across the loading-openings B B', and these rafters are pointed, as at 8^a in Figs. 3, 4, and 11, said pointed parts of the rafters minimizing the lodgment of material when it is being loaded into the car through one of the filling-openings. The other rafter (indicated at 10) lies beneath the middle transverse plate c^4 of the deck or roof, and it is provided with a long horizontal portion 10^a. (Shown by Fig. 5.) The rafters are securely riveted to the side members *c c'* of the deck, and at their end portions they are united to the vertical stays 5 on the side walls, such union between the stays and the rafters being preferably effected by the employment of rivets, which pass through the upper ends of the stays, the side walls of the car-body, and the end portions of the rafters. It will be seen that the side walls and the deck or roof are stayed and reinforced by a metallic skeleton framework consisting of the series of vertical stays and the series of rafters, thus materially increasing the strength and stability of the car-body.

The filling or loading openings B B' are adapted to be tightly closed by the employment of doors in order to protect the material loaded in the car from the action of the weather. I have preferably arranged these doors in pairs, (indicated at C C' and D D'.) The doors C C' are adapted to close the opening B, while the other pair of doors serve to close the other filling-opening B'. These doors are preferably arranged to swing inwardly toward each other, although, if desired, the doors may be mounted on the roof-plates *c c'* to slide thereon, as in Fig. 11. The swinging doors are connected to the roof-plates *c c'* by hinges, which are of the class known as "link-hinges," in order that the doors may swing outwardly from the flanged edges 7 of the deck-plates in a manner to fully expose or open the loading-openings B B'. The detailed construction of these hinges is shown more clearly by Fig. 1, from which it will be seen that each hinge consists of a member 11, adapted to be fastened to the deck-plate, another member 12, fastened to one of the doors, and a link 13, which is pivoted to the members 11 12. A series of these hinges, preferably two in number, is employed to connect each door to the deck-plate, and the hinges thus provide two points on which the door can swing or turn on horizontal axes. Each door is provided with a downwardly-extending flange 14 at its outer edge, said flange arranged to overlap the upwardly-extending flange 7 of the deck-plate. The door C' or D' of each pair is provided at its inner free edge

with the downwardly-extending lip or flange 15, while the companion door C or D of the pair is provided at its inner edge with an upwardly-extending lip 16 and with a supplemental or auxiliary lip 17, said lips 16 and 17 being disposed in parallel relation, so as to form a channel or trough adapted to receive the downwardly-extending lip 15 of the first-mentioned door. This construction requires that the door C or D shall first be closed over the filling-opening in a position to present an open channel or gutter to the flange 15 of the other door C′ or D′. The door which is provided with the single lip or flange 15 is equipped with a shield 18, the latter being united in any suitable way to the outside of the door C′ or D′ and arranged to extend beyond the flange 15, said shield adapted to extend over the joint between the flanged edges of the doors when closed, thereby effectually excluding rain or snow at the channel or gutter on the door C or D. From this description it will be seen that the doors are hinged to the deck or roof in a manner to closely fit around the flanges 7, and the meeting edges of the doors are securely closed by the flange 15 entering the channel or gutter between the flanges 16 17 and by the shields extending over the joints.

I have also provided a novel locking contrivance for holding the pairs of doors in their closed positions, one of these locking contrivances being located at the ends of the pairs of doors, as shown by Fig. 1. The contrivance which I prefer to employ consists of the rock-shaft 20, arranged transversely across the deck or roof at the middle portion thereof, said rock-shaft being journaled in bearings or straps 19, which are attached to the end plates c^2 or c^3 or to the middle cross-plate c^4. (See Figs. 1, 2, and 9.) The rock-shaft is provided at points intermediate of its length with the lips or studs 21, arranged to overlap projections on the end portions of the doors, and one of these lips may be provided with an aperture adapted to receive a seal 22, the wire of which seal may pass through a projection on one of the doors, as indicated substantially by Fig. 9. The rock-shaft 20 is also provided at one end portion with a crank-arm 23, which is arranged to turn downwardly between a pair of plates or standards 24 25, the latter being secured firmly to one of the deck-plates, as *c*. These standards are spaced far enough apart to receive a crank-arm of the rock-shaft, and on one of the standards is mounted an automatic latch 26. I prefer to pivot the latch to the standard 25 and to arrange the short arm of said latch in the path of the crank-arm on the rock-shaft, whereby the latch is adapted to be turned on its pivot when the rock-shaft is turned into locking engagement with the doors, said latch being adapted to automatically engage with the crank-arm and to return to its raised position by gravity, the outer longer end of said latch bearing against the deck-plate in order to hold the latch normally in its operative position.

It will be seen that the rock-shafts may be easily manipulated to withdraw the lips or studs 21 from engagement with the doors, it being necessary to first release the latches from the crank-arms 23, whereby the doors may be released and thrown to their open positions in order to expose the loading-openings; but when it is desired to close the openings, the doors should be folded inwardly and the rock-shaft should be turned in a direction which will bring its lips or studs 21 into engagement with the doors and its crank-arm 23 into engagement with the latch 26.

The deck of the car is provided with running-boards, as indicated at 27 28. As shown by Figs. 1, 2, 3 and 4 of the drawings, these running-boards may be fastened to the doors which close the filling-openings, so that the running-boards may be adjusted out of position when the doors are open; but I do not desire to limit myself to the employment of the running-boards on the doors, because I am aware that the running-boards may be secured to the inclined side members *c c′* of the deck or roof, as shown by Fig. 4.

The members *b b′* of the bottom are provided with the discharging-openings E E′, each member *b b′* being provided with an outwardly-extending flange 29, which surrounds the discharging-opening. The members *b b′* are also provided with the stop strips or blocks 30, the same being secured to the hopper-bottom within the discharging-opening. Each stop strip or block is made from a single piece of angle-iron and secured within the hopper-bottom, so as to present a sloping face to the material, while an abrupt shoulder or ledge is formed in the path of the hopper-doors F F′. It will be understood that the hopper-bottom is provided with four discharge-openings, two of which are in the members *b b′* on one side of the division *a′*, while the other discharge-openings are in the members *b b′* on the opposite side of the division *a′*. The hopper-doors F F′ are connected in pairs with an actuating mechanism, to be presently described, and the hopper-doors are hinged individually to the members *b b′*, such hinges being indicated at 31 and located at the upper edges of the doors. The hinges may be of any substantial construction approved by those skilled in the art, and they serve to fasten the hopper-doors directly to the members *b b′* of the hopper-bottom. These members are also provided with reinforcement-plates 32, which are preferably of angle-iron and riveted to the members along the upper flanged edge 29 thereof and adjacent to the points where the hinges 31 are fastened, said stays serving to reinforce that part of the hopper-bottom to which the doors are hung, because the hinges 31 are fastened to the stays as well as to the hopper-bottom.

Each door F F′ is provided with a marginal

flange 33, and the upper edge of the door is reinforced by a stay 34, similar to the stay 32 on the hopper-bottom, thus making provision for the substantial attachment of one leaf of the hinge 31 to the hopper-door. The hopper-doors F F′ are arranged to close inwardly within the flange 29 of the discharge-opening, and the joint between the lower edge of the flanged door and the flanged discharge-opening is adapted to be securely closed by yieldable members, which may be provided either on the free edge of the door or on the lower flanged edge of the discharge-opening. In Figs. 6 and 7 of the drawings the yieldable members are represented in the form of metallic plates 35, which are bent or doubled, so as to overlap the inner face of the door and provide an edge for the passage of rivets by which the bent plate may be securely attached to the door. The angular free portion of the plate forming the yieldable member is disposed in opposing relation to the flange 33 of the door, and it lies at an incline or angle thereto, whereby the yieldable member is adapted to frictionally engage with the flange 29 of the discharge-opening. If desired, this yieldable member may be extended or carried around three of the side edges of the door; but in Figs. 2, 6, and 7 I have shown the yieldable member at the free edge only of the swinging hopper-door.

In Fig. 10 of the drawings I have illustrated another embodiment of means by which the tight joint between the door and the hopper-bottom may be secured. In this figure of the drawings the section 36 of the hopper-bottom is provided with an offset keeper-flange 37, which is applied to the outer or under face of said plate 36, while the yieldable member 35^a is bent so as to lie within the space formed between the keeper-flange and the hopper-section 36, said yieldable member having an edge portion 35^b extended over the upper inner face of the hopper-section 36, whereby the keeper-flange and the yieldable member may be riveted by a single row of rivets to the hopper-section 36. The door F^2 is bent at its lower edge to form the flange 38, which is reinforced by a stay-plate 39, and against the under face of the door F^2 is applied a shield-plate 40, the lower edge of which is extended or prolonged beyond the flanged edge 38 of said door. A stop-strip 41 is fitted over the stay-plate 39, and this stop-strip, the stay-plate, and the shield-plate are united to the door by a single row of rivets. The stop-strip 41 is made of angular iron or plate metal, and it is attached to the door within the back portion of the stay-plate 39 and the flange 38, whereby the door when closed is arranged to receive the doubled edge of the yieldable member 35^a between the stop-strip 41 and the stay-plate, while the flange 38 and the off-standing portion of the stay-plate are adapted to enter into the space between the keeper 37 and the yieldable member 35^a. This makes the yieldable member engage frictionally with the stay-plate, while the door-flange 38 engages in a similar way with the keeper 37, and the edge of the shield-plate extends beyond the overlapping frictional joint between the hopper-bottom and the door, whereby the escape of material is effectually prevented through the door-opening of the hopper-bottom.

It will be seen that the joints between the hopper-openings and the doors are effectually closed by the provision of yieldable members, and in order to prevent leakage of material between the upper hinged edge of the hopper-doors I prefer to extend the sections $b\ b'$ of the hopper-bottom across the joint at the upper edge of the door-opening, such extensions being indicated at b^5 in Figs. 6 and 7.

42 indicates the hangers, which are firmly secured to the inclined sections $b\ b'$ of the hopper-bottom, said hangers being located on opposite sides of the division a' in the car-bottom. Each hanger is constructed of channeled metal in the form of a stirrup or yoke, as shown more clearly by Figs. 6 and 7, and said hanger being flanged at its ends for secure attachment to the hopper-bottom. The hanger is provided with a vertical slot 43, through which passes a shiftable bolt or spindle 44, the latter carrying an idle chain-wheel or grooved pulley 45. This pulley or chain-wheel is loosely mounted on the bolt or spindle, and it is arranged to travel with said spindle freely through the slot 43 in a vertical direction when the door-actuating mechanism is operated.

The bolt or spindle 44 serves to pivotally connect the inner ends of two pairs of links, (indicated at 46 46^a and 47 47^a.) One pair of links, 46 46^a, is pivotally attached, as at 46^b, to angle-plates 48, firmly secured to the under face of one of the doors F, while the other pair of links, 47 47^a, are similarly pivoted at 47^b to other angle-plates 49, secured firmly to the other door F′. (See Figs. 6, 7, and 8.) The links forming each pair are disposed in converging relation, as shown by Fig. 8, in order to bring the inner ends of the two pairs of links into overlapping order and compactly dispose them with relation to the bolt 44 and the chain-wheel 45, whereby the inner ends of the two pairs of links may be united pivotally by a swinging bolt or spindle. I prefer to make each link 46 46^a 47 47^a in sections and to thread the inner ends of the link-sections in a manner to receive a coupling-sleeve 50, the latter being interiorly tapped with right and left hand threads adapted to engage with similar threads on said link-sections and to be rotated thereon in one direction or the other for the purpose of lengthening or shortening the link, whereby the series of four links may be extended or contracted to secure nicety in the adjustment of the door-actuating mechanism, so as to firmly close the two doors of the pair.

51 designates a bolt-lifting chain which is connected by a loop or clevis 52 to the spindle

or bolt 44, said chain passing upwardly from the bolt and over a guide wheel or roller 53, mounted in the upper part of the hanger 42, after which the lifting-chain 51 is extended to a winding-shaft 54, said end of the chain 51 being coiled in one direction around said shaft and attached thereto in any suitable way. Another chain, 55, is employed to lower the spindle or bolt 44, said chain being coiled on the shaft 54 in an opposite direction to the chain 51. The lowering-chain 55 is carried in a downward direction from the shaft 54, and it passes beneath a guide roller or sheave 56, the latter being mounted in the hanger 42 near its lower end. This chain 55 is carried across and in engagement with the shiftable chain wheel or pulley 45 on the arbor or bolt 44, and the free end of said lowering-chain is made fast to the hanger by means of a bolt 57, the latter being secured in the lower part of the hanger and on the opposite side from the lower guide wheel or sheave 56.

The winding-shaft 54 extends through the two hangers 42 and through the inclined middle portion of the hopper-bottom, and this shaft 54 has attached to it the winding-chains 51 and 55, which are associated with the two pairs of hopper-doors, whereby one shaft 54 is adapted to operate the actuating mechanisms for the series of four hopper-doors. Any suitable means may be adopted for locking the winding-shaft 54 against accidental rotation, and in Fig. 1 of the drawings I have shown this shaft as provided at one end with a ratchet 58, with which is adapted to engage a pawl 59, that is held in its operative position by a detent 60. It will be understood, however, that any suitable form of locking device may be provided for the winding-shaft.

In Figs. 2 and 6 of the drawings the hopper-doors are shown in their closed positions, and the spindle or bolt 44, together with the shiftable sheave or chain-wheel 45, lies at the lower part of the slot 43 in the hanger. To open the hopper-doors, the operator turns the winding-shaft 54 by a wrench or other suitable implement, and thereby winds the chain 51 on the shaft and at the same time unwinds the other chain 55 from the shaft. This operation of winding the chain 51 lifts the bolt 44 and the chain-wheel 45, and the upward movement of said bolt draws the pairs of links inwardly and upwardly to the positions shown by Fig. 7, whereby the doors F F′ are swung to their open positions, the chain 55 taking the position shown by Fig. 7. The material can now be discharged freely through the openings E E′ in the hopper-bottom, but before the car is again loaded it is necessary to close the doors. This can be easily accomplished by turning the shaft 54 in a reverse direction, so as to uncoil the chain 51 and to coil the chain 55 on the shaft. This chain 55 pulls downwardly on the shiftable bolt 44, because one end of the chain is fastened at 57 to the hanger and said chain passes under the lower guide-sheave 56. The pull of the chain 55 is exerted on the shiftable pulley or chain-wheel 45 so as to force the bolt 44 downwardly, and the bolt thus acts to press the links in opposite directions, and thereby close the doors F F′ within the flanged discharge-openings E E′, the joints between the door-openings and the doors being securely closed by the yieldable members and by the extended lower edges of the sections *b b′* of the hopper-bottom.

I do not wish to limit myself to this form of device for operating the hopper-doors, as, if desired, any other suitable device may be employed for the purpose.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a dumping box-car, a roof or deck comprising a series of rafters, longitudinal side plates having upstanding flanges at their inner edges, transverse plates extending in a direction across the side plates and forming therewith a series of longitudinal filling-openings in the deck or roof, and doors connected with the side plates, said doors being flanged to coöperate with the flanges of said side plates and arranged to securely close the filling-openings in the roof.

2. In a dumping box-car, a deck or roof comprising permanent longitudinal and transverse plates relatively arranged to produce a series of longitudinal filling-openings, and a series of rafters supporting said plates, one of said rafters consisting of a single length or piece having a pointed crown portion extending across a filling-opening in said deck or roof.

3. A dumping box-car having a roof or deck formed by a series of rafters, side plates attached to inclined portions of the rafters, and transverse plates attached to the side plates and forming therewith longitudinal filling-openings, one of said rafters extending below the central transverse plate and other rafters having pointed middle portions extending across the filling-openings.

4. In a dumping box-car, the combination of a side plate, a rafter, a deck-plate, and a stay secured to the side plate and united firmly to an end portion of the rafter and to the deck-plate, whereby the car is prevented from bulging at the line of union between the described parts.

5. In a dumping box-car, the combination of a rafter, a deck-plate having a flange overlapping the end portion of the rafter, a side plate overlapping the joint between the deck-plate and the rafter, and a stay attached to the side plate and united to overlapping portions of the deck-plate and rafter.

6. A dumping box-car having its roof or deck provided with flanged filling-openings disposed longitudinally thereof, and doors hinged in pairs to the deck or roof and arranged to fold inwardly toward each other, said doors being flanged to embrace the flanged edges of said filling-openings.

7. A dumping box-car provided in its roof or deck with flanged filling-openings ranging longitudinally thereof, and doors connected to the deck or roof by link-hinges and arranged to fold inwardly toward each other and to embrace said flanged edges of the filling-openings.

8. In a dumping box-car, the combination with a roof or deck having a filling-opening, of a pair of doors for closing said opening, one of said doors being provided at its inner edge with a longitudinal channel, and the other door having an angular flange adapted to occupy said channel when the doors are brought together.

9. In a dumping box-car, the combination with a roof or deck having a filling-opening, of a pair of doors for closing said opening, one of said doors having a longitudinal channel, the other door provided with a flange, and a member arranged to lie over the joint formed by the coöperating flange and channel.

10. A dumping box-car provided with a longitudinal filling-opening in its deck or roof, and a pair of hinged doors, one of said doors having a channel or trough formed by parallel flanges on the free edge thereof, and the other door provided with a flange adapted to occupy said channel when the two doors are closed.

11. A dumping box-car having its roof provided with a longitudinal filling-opening, and a pair of doors, one of which is formed with a channel, and the other is provided with a flange adapted to occupy the channel, and with a projecting shield.

12. In a dumping box-car, a roof provided with permanent side members having flanges at their adjacent edges, and doors flanged at their outer edges to coöperate with said flanges on the roof members, one of said doors having at its inner edge a longitudinal channel, and the other door provided at its inner edge with a flange to coöperate with said channel.

13. A dumping box-car provided with a filling-opening in the roof thereof, hinged doors for closing said opening, and a locking device having a rock-shaft arranged to engage with said doors.

14. A dumping box-car having a filling-opening in the deck or roof thereof, doors for closing said opening, a rock-shaft having means for engagement with said doors and provided with a crank-arm, and an automatic latch disposed in the path of said crank-arm and adapted to engage therewith.

15. A dumping-car having a discharge-opening, a door to close said opening, and a yieldable joint member arranged to be compressed between the coöperating edges of the door-opening and the door for tightly closing the joint.

16. A dumping box-car having a hopper-bottom provided with discharge-openings, hinged doors for closing said openings, and yieldable members arranged to fit between the discharge-openings and the edge portions of said doors.

17. A dumping-car having a hopper-bottom provided with a discharge-opening, a hinged door, and a yieldable stop member having an inclined free portion to be deflected on the closure of the door.

18. A dumping box-car having a hopper-bottom provided with discharge-openings, an angular stay fastened to the bottom, a door hinged to the bottom and the stay, another stay fastened to the door at its hinged edge, and yieldable members arranged to fit between the edge of the door and the discharge-opening.

19. A dumping box-car having a hopper-bottom provided with a discharge-opening, a swinging door, a yieldable member arranged to fit between the edge of the door and said discharge-opening, and an inclined stop-strip attached to the door and presenting a sloping surface which obviates the lodgment of material against the door.

20. A dumping box-car having a hopper-bottom provided with a discharge-opening, a hinged door, and a yieldable stop member doubled around the edge of one of said parts and adapted to be compressed on the closure of the door.

21. A dumping box-car having a hopper-bottom provided with a discharge-opening, a door, and yieldable member bent at its free edge and having its other edge secured to one of said parts, said free bent edge of the member arranged to be compressed by the coöperating edges of the hopper-bottom and the door.

22. The combination with oppositely-movable doors, of a shiftable member, extensible links each provided with members united by a coupling, and each link having a pivotal connection with one door and the shiftable member, and means for positively moving said member in a path between the doors.

23. The combination with hinged doors, of a shiftable member, links pivoted to said doors and the member and each link having threaded members united by an intermediate coupling-sleeve for relative endwise adjustment, and means for moving the shiftable member in a path at an angle to the movement of the doors.

24. The combination with hinged doors, of a stationary guide, a member slidable in said guide and linked to said doors, a lifting-chain connected to said member, a guide shiftable with said member, and a lowering-chain attached to the stationary guide and fitted to said guide on said shiftable member to positively depress the latter.

25. The combination with hinged doors, of a single winding-shaft, a shiftable member linked to said doors, a lifting-chain connected to the shiftable member and coiled on the shaft, and a lowering-chain having one end fixed and its other end coiled on the shaft in

an opposite direction to the lifting-chain, said lowering-chain having slidable engagement with the shiftable member.

26. In a metallic car, a hopper-bottom, a flanged hinge-plate fastened to said hopper-bottom, and a flanged door pivoted to the hinge-plate, the axis of said pivot being located at the outer edges of the flanges on the plate and the door, whereby said flanges may have lateral abutting engagement on the closure of the door.

27. In a dumping box-car the combination with a pair of doors, of a shiftable bolt or spindle, links pivoted to the doors and said spindle, a winding-shaft, a lifting-chain coiled on said shaft and connected to the bolt or spindle, and a lowering-chain having a fixed point of attachment at one end and coiled on said shaft, said lowering-chain passing around the bolt or spindle and beneath a fixed guide.

28. In a dumping box-car, the combination with a pair of doors, of a slotted hanger, a winding-shaft, a shiftable bolt or spindle fitted to said hanger, extensible links pivoted to the doors and to said bolt or spindle, and chains coiled on said shaft and fitted to said bolt or spindle for positively moving the same in a vertical direction.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GLENN E. SIMONTON.

Witnesses:
F. H. SWEET,
DETE DOWNING.