

No. 684,574.

Patented Oct. 15, 1901.

F. S. INGOLDSBY.
DUMPING BOX CAR.

(Application filed Mar. 2, 1900.)

(No Model.)

2 Sheets—Sheet 1.

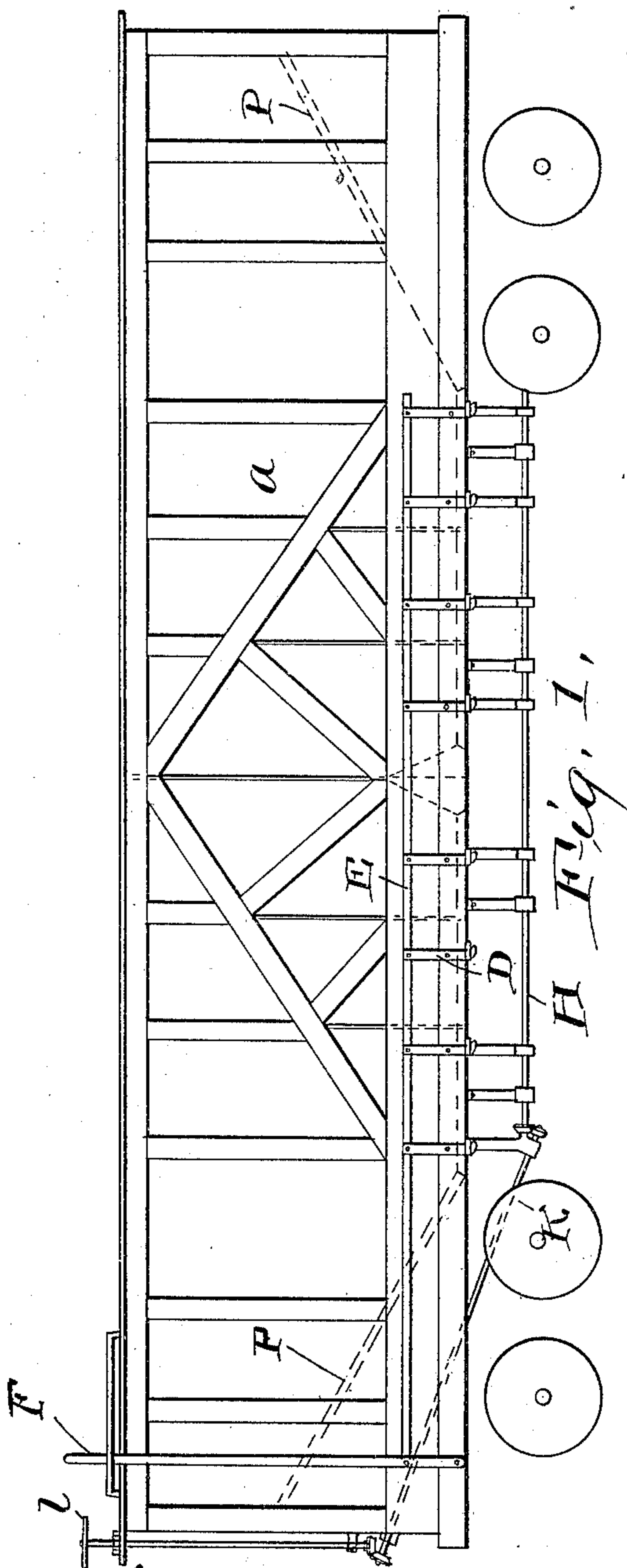


Fig. 1.

a²

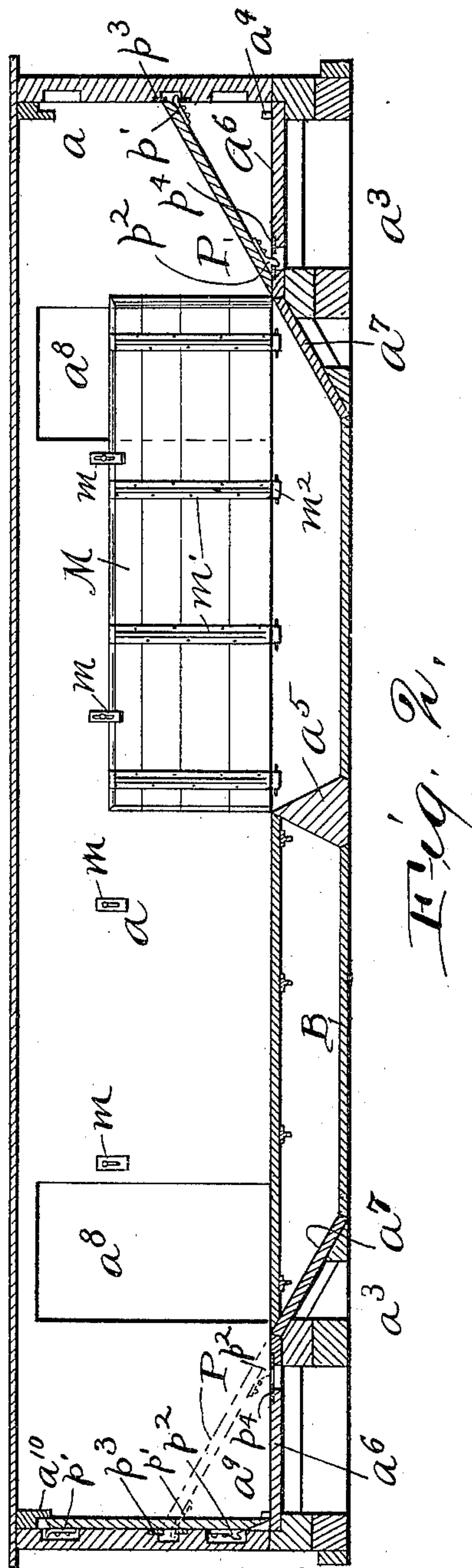


Fig. 2.

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No. 684,574.

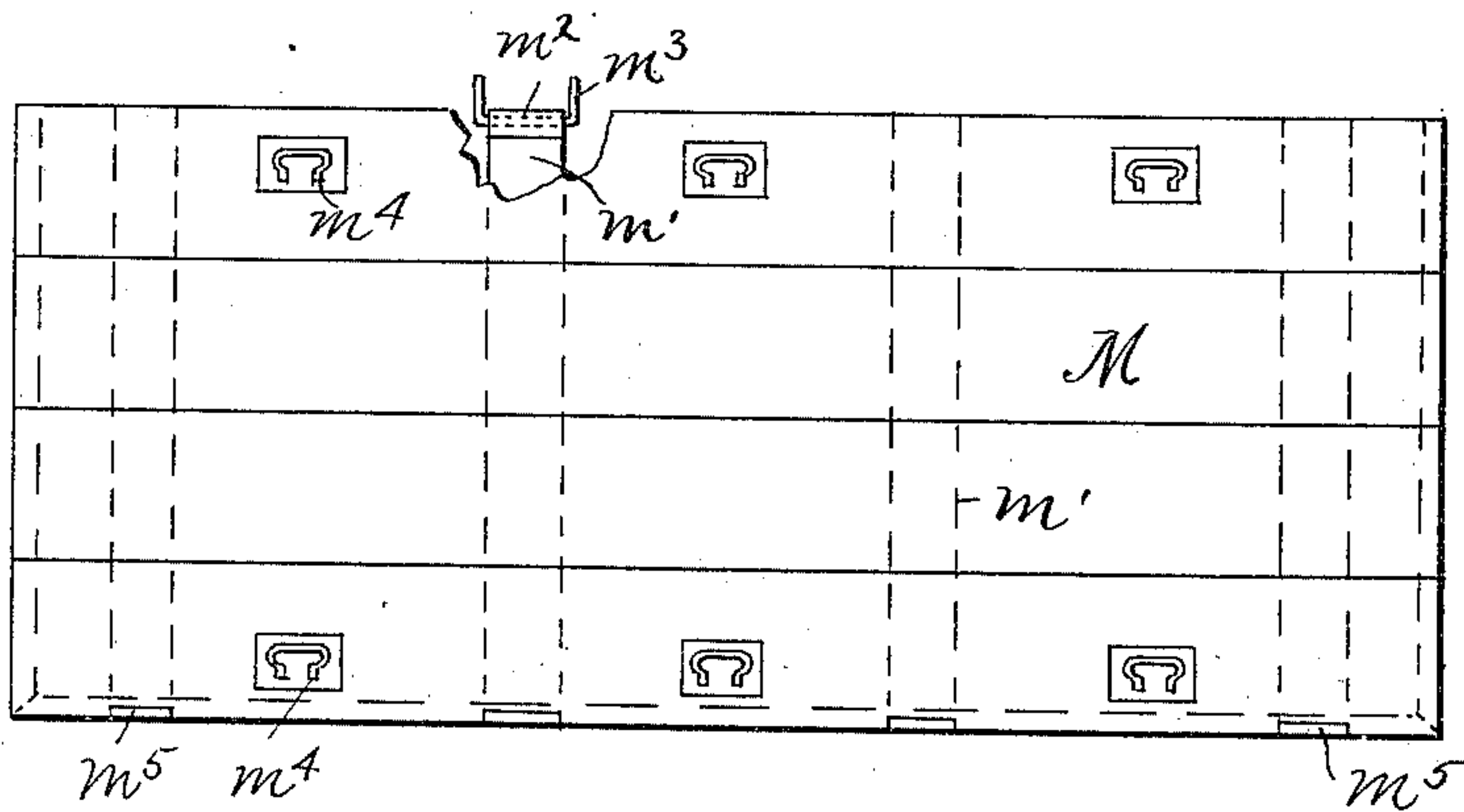
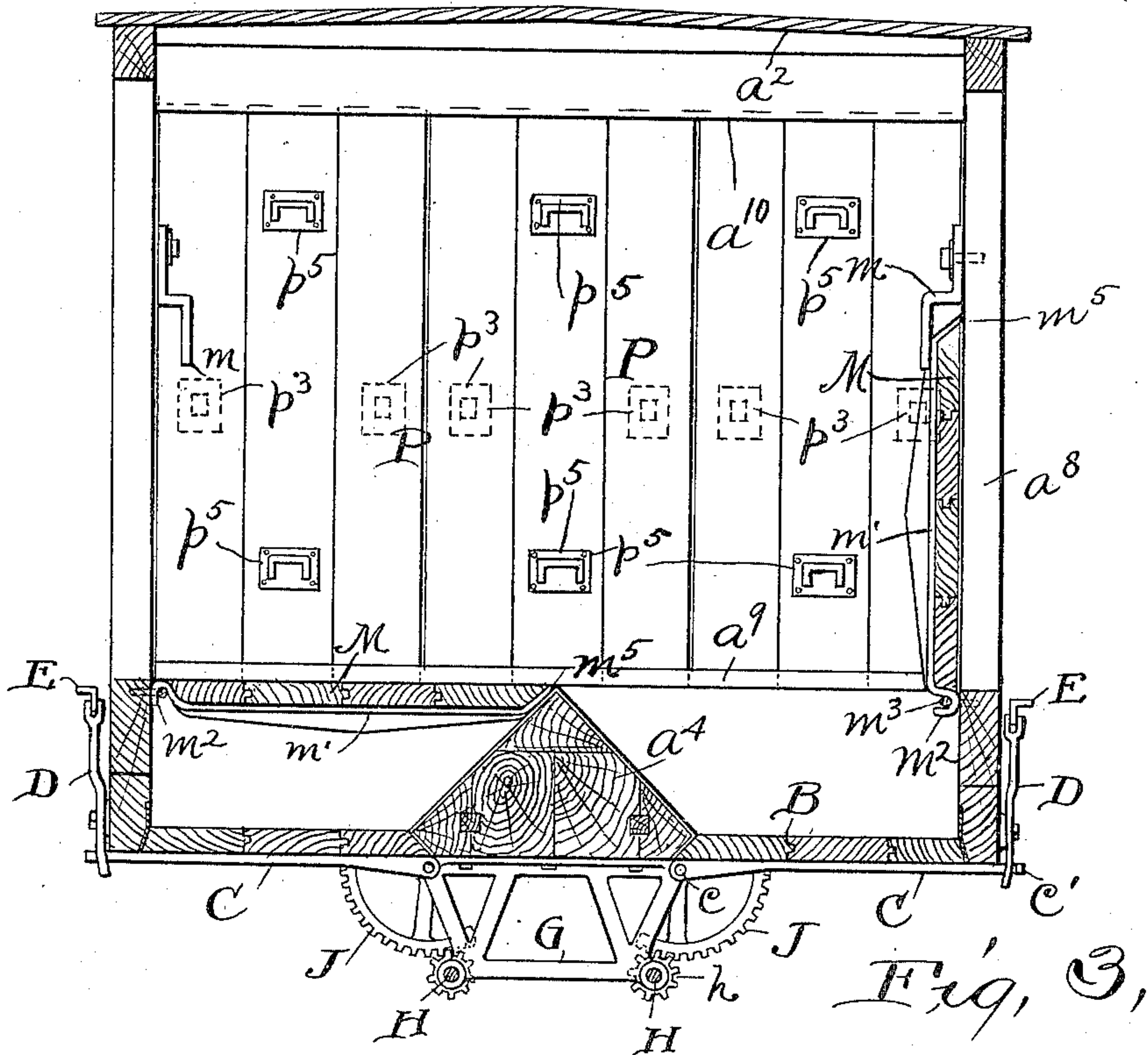
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UNITED STATES PATENT OFFICE.

FRANK S. INGOLDSBY, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE
INGOLDSBY AUTOMATIC CAR COMPANY, OF ST. LOUIS, MISSOURI,
A CORPORATION OF WEST VIRGINIA.

DUMPING BOX-CAR.

SPECIFICATION forming part of Letters Patent No. 684,574, dated October 15, 1901.

Application filed March 2, 1900. Serial No. 7,078. (No model.)

To all whom it may concern:

Be it known that I, FRANK S. INGOLDSBY, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented
5 a certain new and useful Improvement in Dumping Box-Cars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of this invention is to combine
10 into one structure a car which may be used as a dump-car (suitable for carrying wheat, for example) or for ordinary package freight. In accomplishing this I provide a car having trap-doors in its bottom, which may be low-
15 ered to dump the contents, and above these doors a false bottom, which may be turned up along the side of the car to convert the car into a dump-car or may be lowered to cover over the trap-doors, converting the car into what
20 is commonly known as a "box" or "furniture" car.

The invention consists of a car having these features and includes the more specific adaptation thereof hereinafter described, and definitely set out in the claims.

In the drawings which clearly disclose my invention, Figure 1 is a side elevation of the car. Fig. 2 is a vertical longitudinal section thereof. Fig. 3 is a transverse section, and
30 Fig. 4 is a plan of one of the floors which constitute the false bottom. The last two figures are on a scale twice the first two.

The same letters of reference designate the same part in each figure.

35 The car-body includes the longitudinal sides a , each of which may be trussed and may have one or more openings or doors a^8 , the roof a^2 and the floor-framing consisting of the end structure a^3 and the central longitudinal and cross beams a^4 and a^5 , respectively.
40 All of these floor members have their sides inclined, as shown, the end frames a^3 having their upper surfaces, composed of the horizontal sheathing a^6 and the inclined sheathing a^7 , supported by suitable sills or beams.
45 The space between the various floor members is adapted to be closed by the trap-doors B. These doors are constructed and operated substantially as shown in my prior patents,
50 No. 551,319, No. 613,279, and No. 632,650, issued, respectively, December 10, 1895, Novem-

ber 1, 1898, and September 5, 1899. Briefly, the mechanism is as follows: Each door B is beveled at its edges and adapted to thus make
55 a tight contact with corresponding bevels along the sides, ends, and central beam of the car. The doors are supported by straps C, secured to their upper side, which are pivoted at c beneath the central longitudinal beam and have their outer ends extending in the
60 form of beveled hooks c' beyond the edge of the car. These hooks are engaged by cooperating beveled hooks on the lower ends of levers D, pivoted to the side of the car and connected together by a link E, connected to the
65 operating-lever F. Thus when this lever is thrown forward the hooks of the levers D are released from the hooks of the straps C and the doors fall by gravity.

The pivots c of the door-straps are in the
70 upper corners of struts G, secured to the under side of the central longitudinal beam, and in these struts are journaled operating-shafts H, which carry pinions h , meshing with segments J, secured to the under side of the
75 doors. The shafts H are geared to two diagonal shafts K, which in turn are geared to the vertical shafts L, adapted to be rotated by the hand-wheels l at the top of the car. Thus the
80 rotation of either hand-wheel rotates the corresponding pinions h , which, operating on the segments J, elevate the doors on that side of the car, and when elevated the doors are tightly locked in place by the cooperating bevels of the levers D and the straps C, as
85 stated.

Now within the car, hinged to its sides, are floors or doors M, which may constitute a false bottom or be turned up against the sides
90 of the cars, being there held by suitable means, as the buttons m , carried by these sides. The upper surface of the end framing a^3 beyond the ends of these doors is flat, as shown at a^6 ; but suitable end floors P are adapted to occupy an inclined position above the part a^6
95 in the car, continuing the incline a^7 of this end framing. Thus when the floors M are turned up out of the way, as shown in the right-hand half of Fig. 2, and the end floors P are spread down the car is converted into
100 a dump-car. On the other hand, when it is desired to convert the car into an ordinary

box or furniture car the end floors P are moved into a vertical position, as shown at the left-hand end of Fig. 2, being held in this position by suitable means, (as the cleats a^9 and a^{10} , extending across the car at the floor and near the roof at the end,) and the floors M are lowered, resting at their ends on the end frame a^3 and the cross-beam a^5 and at their free edge along the longitudinal beam a^4 . Thus a car is provided with a flat continuous floor adapted to satisfy the uses of the ordinary box or furniture car.

The end floors P are preferably three in number at each end of the car, so that their position may be changed by one man. They have on the under or outer sides lugs p' and p^2 , which in the inclined position of the floors take into socket-plates p^3 and p^4 , set into the end of the car and the floor-surface a^6 , respectively. These socket-plates are of an ordinary form, having, preferably, a rectangular opening for the reception of the lug. Suitable countersunk handles p^5 are provided on the face of the doors for conveniently raising and lowering them. When the car is to be converted into a box-car, the doors are simply lifted up into the vertical position by these handles, the upper edge passing behind the rabbeted cleat a^{10} and lower edge being lifted over the floor-cleat a^9 and set down behind it, the lugs p' p^2 taking into recesses provided for them in the end of the car. The floors M are also removably secured to the sides of the car. These floors are constructed of suitable planking supported on their under sides by deck-beams m' . The webs of these deck-beams merge into their base-plates near their ends, and these ends are countersunk into the edges of the planking. Thus along the free edge of this floor the countersunk ends are seen at m^5 , while at the opposite edge they are bent into the hooks m^2 , which take into staples m^3 in the side of the car. When the floor is horizontal, the hooks may be removed from these staples by elevating the outer edge of the floor. As soon as the elevation of the inner edge is begun, however, in the swinging up of the floor the hinging becomes positive. Suitable countersunk elevating-handles m^4 may be provided near the edges of the floor to turn it up on its hinge to convert the car into a dump-car and to provide for the convenient removal of the floor altogether when desired.

By bending the base of the deck-beams m' up along the front edge of the floor at one end and into the countersunk pivoting-hook at the other I not only make a very cheap construction, but supply a very rigidly-braced floor and provide the pivot thereof near the upper edge of the floor, whereby it may be also near the side of the car. Thus a very efficient hinge is provided.

It will be noticed that when the floors M are vertical they extend across the entrance or openings a^8 through the sides of the car, and

thus no additional guard is necessary to close these openings when the car is being loaded with grain or other material which would press against and prevent the closing or opening of the outer doors of the car. The base of the car in this position consists (by reason of the inclined walls of its openings) virtually of four hoppers, open above and closed below. When the floors M are let down, these hoppers are closed above on a line with the permanent horizontal flooring of the car.

The bevel on the longitudinal edge of the floors M not only coöperates with the inclined upper surface of the central beam, but when the floors are turned up prevents lodgment of material on the edge. When the floors are turned up, the exposed under beams m' being vertical, of course form no lodging-place for material, while as to the end floors P it is to be noticed that the same surface is always exposed to the load, so that whether these floors are inclined or vertical no obstruction results.

Having described my invention, I claim—

1. In a car, the combination with the sides of a car and an intermediate longitudinal beam, of lower doors hinged to said beam and adapted to swing downward, upper doors hinged to the side of the car and adapted to swing upward, substantially as described.

2. In a car, the combination, with the sides and ends of a car, of an intermediate longitudinal beam, trap-doors closing the space between the lower edge of said beam and the sides of the car, and a false floor consisting of doors hinged to the side of the car and adapted to rest their free edges on said intermediate beam or be turned up vertically against the sides of the car out of the way, substantially as described.

3. In a car, the combination with the car sides and ends, of a base divided by a beam having inclined upper sides into a plurality of hoppers, lower doors hinged to said beam and adapted to swing downward, and upper doors adapted to swing upward or lie horizontally resting on said beam, substantially as described.

4. A car having a lower bottom and a false upper bottom, said upper bottom including a hinged floor, combined with a beam having an inclined upper edge extending substantially from one bottom to the other when they are both horizontal and thus adapted to divide the space between the two bottoms into hoppers and adapted also to support the upper false bottom when in horizontal position, substantially as described.

5. In a car, a lower bottom and a false upper bottom consisting of hinged doors with beveled edges combined with supports for said upper bottom, which supports have upper inclined faces adapted to coöperate with said inclined edges, and means for fastening said upper bottom out of operation as a bottom and vertically against the sides of the

car whereupon the beveled edges prevent lodgment of material thereon, substantially as described.

6. A car having an upper and a lower bottom, and hoppers therebetween, a beam lying between said hoppers, said beam having an inclined upper face, said upper bottom including hinged covers with beveled edges cooperating with said inclined faces, substantially as described.

7. The combination, with the sides of a car and an intermediate longitudinal beam having a downwardly-sloping upper side, of floors hinged at one edge to the sides of the car and having their opposite edges beveled, said opposite edges being adapted to engage said intermediate beam when the floors are turned down into a horizontal position, and means for holding the floors in a vertical position against the sides of the car, and other doors for closing the space between the longitudinal beam and the sides of the car, substantially as described.

8. The combination, with a car having openings in its base, of means for closing the lower part of said openings and a false floor for closing the upper part of said openings consisting of doors hinged at their outer edges parallel with the sides of the car, said doors being adapted to occupy a horizontal or a vertical position, and means for holding them against the sides of the car in the latter position, and movable end floors adapted to occupy an inclined position and reach continuously from the ends of the openings through the base to the ends of the car, and means for holding said end floors in such inclined position or vertically against the ends of the car, substantially as described.

9. In a car, a base including a plurality of hoppers, a permanent horizontal flooring beyond the upper ends of said hoppers, false floors adapted to cover the hoppers at their upper ends, and movable end floors formed of separate longitudinal panels adapted to lie side by side lengthwise of the car at an angle over said permanent horizontal part of the floor and continue the hoppers above the same, and means for holding said end floors vertically against the ends of the car, substantially as described.

10. In a car, a base consisting of a plurality of hoppers, a permanent horizontal flooring beyond the upper ends thereof, hinged floors adapted to cover the hoppers at their upper ends and opening upward to uncover them, adjustable end floors adapted to stand at an angle over said permanent horizontal part of the floor and continue the hoppers above the same and lugs carried by said adjustable end floors, said permanent floor having recesses into which said lugs take, substantially as described.

11. In a car, a base consisting of a plurality of hoppers, a permanent horizontal flooring beyond the upper ends thereof, means for closing the lower ends of the hoppers, hinged

floors adapted to cover the hoppers at their upper ends and opening upward to uncover them, adjustable end floors adapted to stand at an angle over said permanent horizontal part of the floor and continue the hoppers above the same, and lugs carried at each end of said floors, the permanent floor and end of said car having recesses into which said lugs take, substantially as described.

12. In a dumping box-car having a hopper-like bottom, the combination of stationary horizontal end floors, and rigidly-continuous bodily-movable end floors above the stationary floors, said movable floors being adapted to form in one position substantially a continuation of the hopper at that end and reach continuously from the hopper to the end of the car, and adapted to have their upper ends moved upward whereby their whole length may be held against the end of the car, and means for so holding them, substantially as described.

13. The combination, with the sides and intermediate longitudinal beam of a car, of floors adapted to close the space between said sides and beam, said floors consisting of planking supported by metal beams beneath the planking and having upturned ends countersunk in the edges of the outer planks, said beams taking into staples along the side of the car, substantially as described.

14. In a dumping box-car having a hopper-like bottom, the combination of stationary horizontal end floors, and bodily-movable end floors above the stationary floors, said movable floors being adapted to form in one position substantially a continuation of the hopper at that end, and adapted also to be held against the end of the car, and means for so holding them, substantially as described.

15. In a car, the combination of the sides and ends of the car, of a floor-framing carrying a hopper-like opening, floors hinged at the sides of the car and adapted to occupy a horizontal position closing said opening or a vertical position against the sides of the car, said car having horizontal end floors beyond the opening, and movable end floors adapted to occupy an inclined position over the horizontal end floors and thus lead to the hopper and adapted to be moved into a vertical position with their same surface exposed to the load as was exposed in the inclined position, there being means for holding said floors in either position, substantially as described.

16. In a car, the combination with the sides and ends of the car, of a floor-framing which includes end frames having a horizontal surface adjacent to the ends of the car and then inclined toward the transverse central line thereof, bodily-movable end floors within the car adapted to occupy an inclined position above said horizontal surface and adapted to be held vertically against the end of the car, and the other floors suitably hinged and adapted to be turned into a vertical position or into a horizontal position which is a con-

tinuation of the horizontal part of the end framing, and means for closing the openings at the base of the car, substantially as described.

- 5 17. In a car, in combination, a base consisting of a central longitudinal beam inclined downwardly on its upper edges and end framing carrying a horizontal surface substantially on a line with the highest point of the
10 longitudinal beam and carrying inclined surfaces extending continuously from said horizontal surface to the bottom of the frame, whereby a hopper is provided within the floor-framing of the car and utilizing substantially the whole depth thereof, hinged floors
15 for closing said space at its upper edge adapted to swing upward which floors have inclined edges corresponding to the incline of said beam and said floor-framing, and trap-doors
20 hinged to the under side of the car and opening downward but closing the lower end of said hopper, substantially as described.

18. In a dumping box-car, the combination of a hopper-like base, a horizontal end floor beyond the same, a movable end floor above 25 the horizontal floor, and means for holding said movable floor in an inclined position and for holding it in a vertical position at the end of the car, substantially as described.

19. In a dumping box-car, having a hopper- 30 like bottom, a movable floor, adapted to form a continuation of the hopper at the end of the car, lugs on the under side of said floor near each end thereof, and socket-plates in the bottom and end of the car into which said 35 lugs may respectively take, substantially as described.

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

FRANK S. INGOLDSBY.

Witnesses:

DANIEL N. KIRBY,
CHAS. H. MEYER.