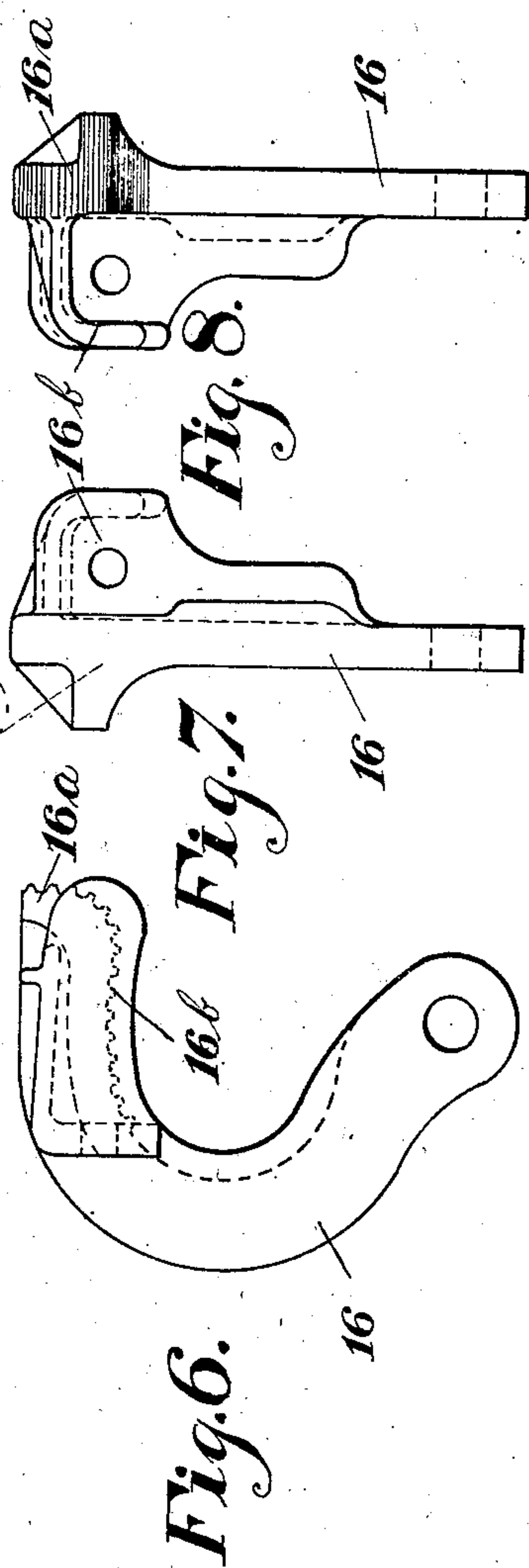
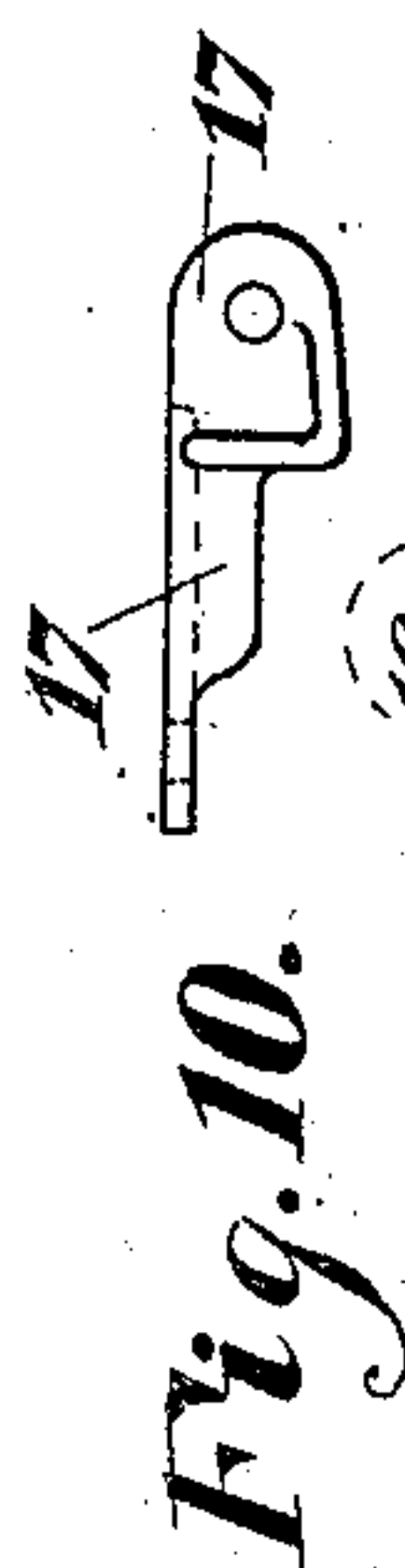
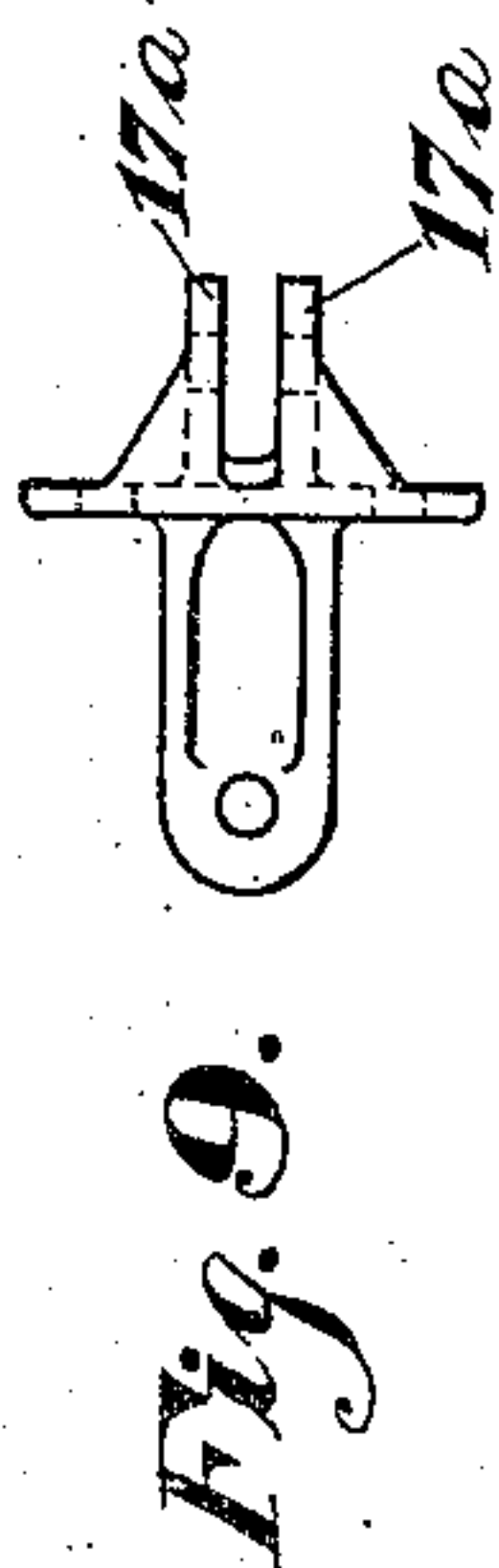
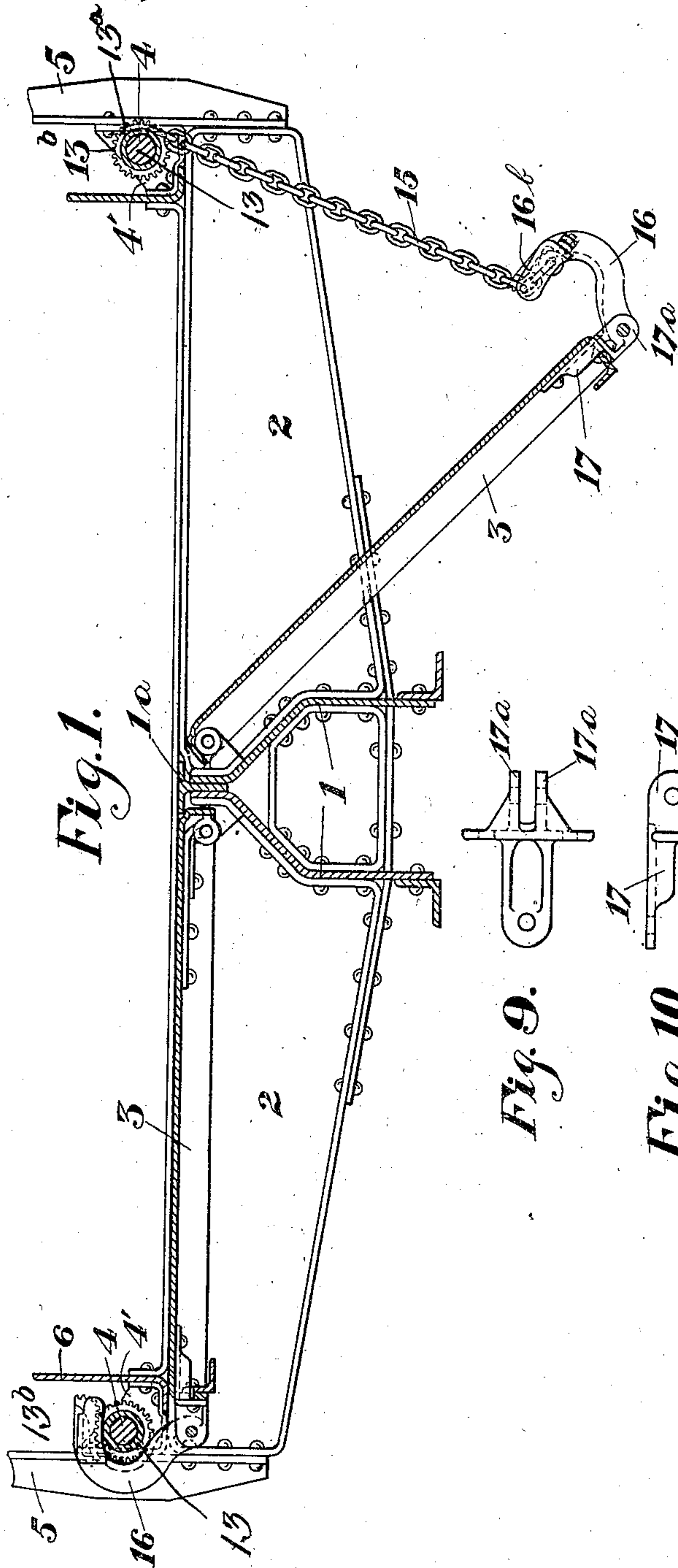


H. ALLEN.
CAR DOOR GEAR.
APPLICATION FILED JAN. 7, 1909.

929,268.

Patented July 27, 1909.

3 SHEETS—SHEET 1.



Witnesses

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3 SHEETS—SHEET 2.

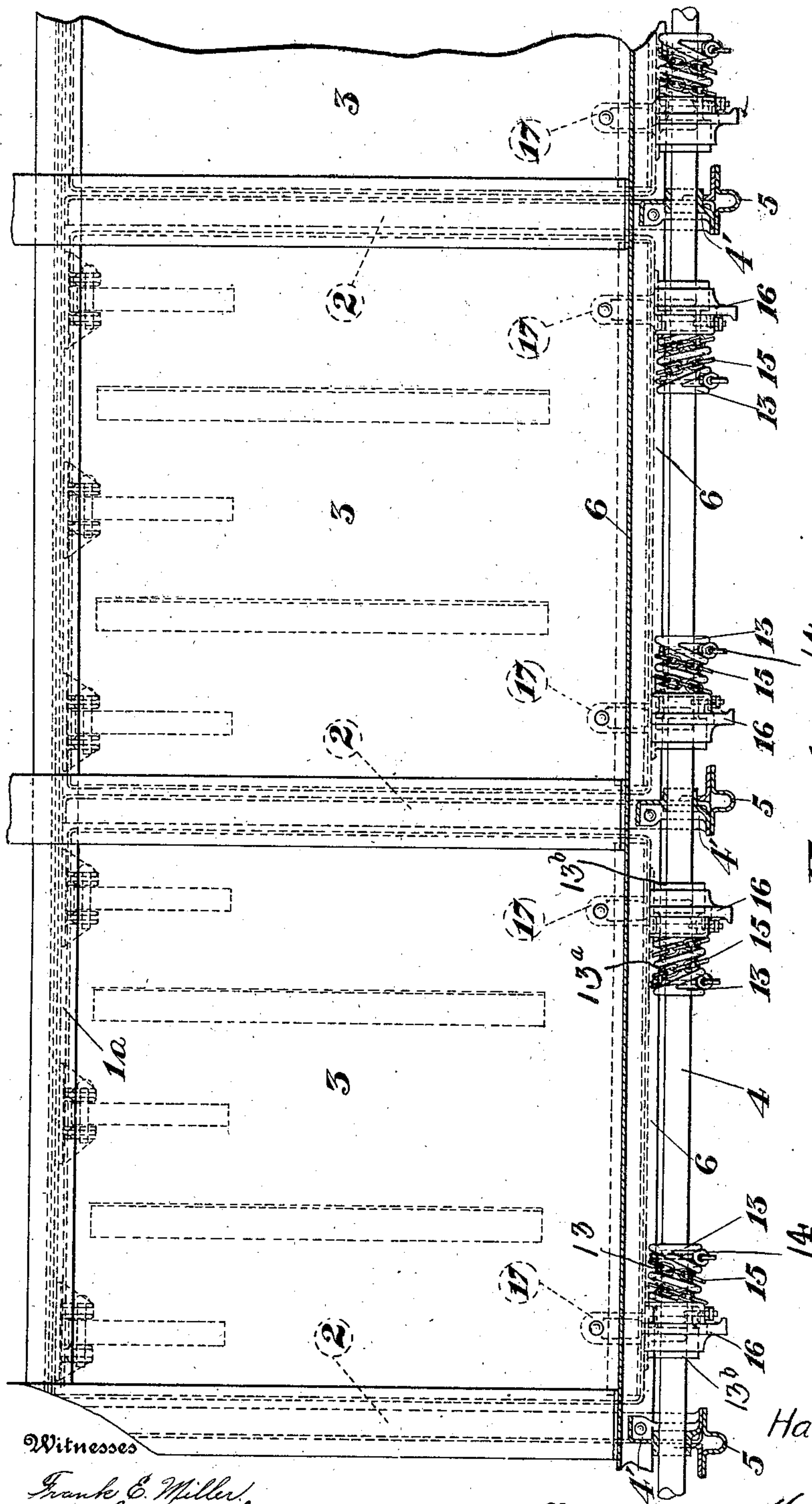


Fig. 1a.

Witnesses

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334

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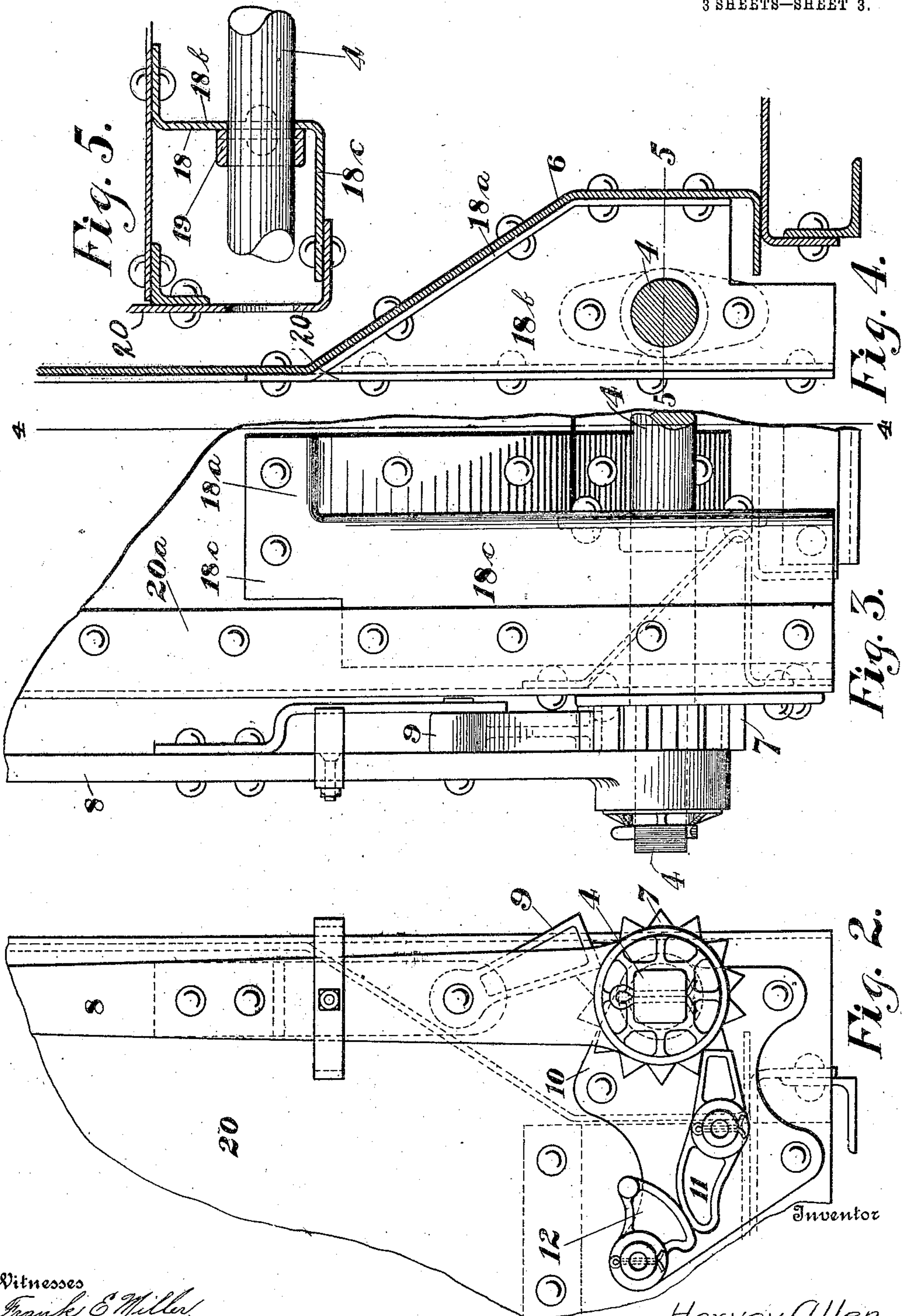
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3 SHEETS—SHEET 3.

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UNITED STATES PATENT OFFICE.

HARVEY ALLEN, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO PRESSED STEEL CAR COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

CAR-DOOR GEAR.

No. 929,268.

Specification of Letters Patent.

Patented July 27, 1909.

Application filed January 7, 1909. Serial No. 471,107.

To all whom it may concern:

Be it known that I, HARVEY ALLEN, a citizen of the United States, residing at Pittsburg, (Northside,) in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Car-Door Gears, of which the following is a specification.

An object of the present invention is to provide improvements in dump cars of the type employing drop doors and has special relation to the operating mechanism for said drop doors.

A specific object of the present invention is to provide an improved drop door operating mechanism in which the doors will be securely supported in their closed positions in such a manner that the load will be taken off of the door-raising mechanism.

A further object of the present invention is to provide specific improvements in car construction, especially adapting a car to the specific use of the mechanism hereinafter shown and described.

Referring now to the drawings in which like reference characters refer to like parts, and in which—Figure 1 shows a transverse section through a flat bottom gondola car with its bottom comprising drop doors; Fig. 1^a is a plan view of a portion of one-half of said car; Fig. 2 is an end elevation of one corner of said car; Fig. 3 is a side elevation of the same; Fig. 4 is a section on the line 4—4, Fig. 3, of the same looking toward the end of the car; Fig. 5 is a horizontal section on the line 5—5, Fig. 4; Figs. 6, 7 and 8, respectively, side, rear and face views of the door-supporting hook forming a part of the mechanism, and Figs. 9 and 10 are bottom and side views, respectively, of the supporting bracket to which the door-supporting hook is connected.

For the purpose of illustration, this mechanism is described in connection with a flat bottom gondola car having inwardly sloping side sheets and drop doors adapted to close flush with the car bottom, but it will be understood that in so far as the drop door mechanism is concerned the same may be used wherever it is desired to close a drop door and hold same securely in closed position.

There are several details in the car construction which are especially adapted for use of the particular door-operating mechanism herein shown and described the details of which will be hereinafter described.

Referring now in detail to the drawings, 1 represents the center sill construction of suitable formation, said construction having its upper surface 1^a on a plane flush with the upper surface of the doors when closed.

2 are the cross-bearers of suitable shape, 3 are the drop doors of suitable shape, preferably hinged on center sill construction 1.

4 are the door operating shafts of suitable number, there being preferably four shafts per car of the type described, each shaft being operated at the end of the car and extending substantially one-half the length of the car (not shown). As shown in the drawings, shafts 4 are suitably journaled through means of brackets 4' in the space between the car side stakes 5 and the inwardly-extended portion 6 of the car side, which also perform the function of stiffening or spacing stakes 5 and side sheeting 6. Such shafts 4 are operated through means of ratchet wheels 7, located at the car ends, levers 8 and pawls 9 carried by levers 8.

10 is a ratchet and dog frame having pivotally mounted thereon a ratchet 11 and a ratchet safety cam or dog 12. Ratchet 11 is so located on frame 10 that it engages the teeth of the ratchet wheel 7 on the underside and for this purpose ratchet 11 has a lever or arm extended beyond its pivot and weighted to hold the ratchet tooth normally in engagement with ratchet wheel 7. The object of thus mounting ratchet 11 is to locate the same where it will not be in the way of the operation of the pawl 9 and the lever 8, such ratchets having been formerly mounted to engage the teeth of ratchet wheel 7 on the upper right side of the wheel and depending upon their weight to hold them in engagement. The cam or dog 12 engages the upper side of ratchet 11 or the same side as the ratchet tooth is on, but it engages the opposite end of the ratchet beyond the pivot so that it swings the ratchet about its pivot into engagement with the ratchet wheel.

Each of the shafts 4 is provided with one or more collars 13 secured thereon and formed with spiral guide-ways 13^a and serrated rollers 13^b integral therewith. Collars 13 are secured on shafts 4 through means of eye-bolts 14 which pass through perforations in collars 13 and perforations in shaft 4, and in the eyes of which are secured one end of door-raising cables 15, the opposite end of said

cable 15 being secured to door-supporting hooks 16, pivotally mounted at the outer ends of hook-supporting brackets 17 which are riveted to the undersides of the doors 3.

5 The collar 13, the cable 15, the hook 16 and the bracket 17, therefore, constitute a connection between shaft 4 and the door 3, and there may be one or more such connections between each door and its respective

10 operating shaft, two of such connections being preferred and so located that the serrated portions of the collars 13 are toward the sides of the door, that is, nearest the cross-bearers interposed between the adjacent doors. The object of this arrangement

15 is to transfer the load weight of the closed door to the cross-bearer in the shortest possible line. It will be understood, therefore, that the winding chains 15 are secured to

20 collars 13 at points nearest the center of the free edge of the door and that during the closing operation these chains wind on said collars 13 toward the nearest cross-bearers of the car until the door-supporting hook 16 is

25 carried outwardly slightly beyond the vertical plane of the upper portion of the car side sheeting or the flange of the car side stake, and then inwardly into engagement with the serrated portion 13^b of the collar 13.

30 Door-supporting hooks 16 are formed with serrations 16^a on their under faces, which serrations extend in a curved line over the inwardly facing nose of the hook, the upper portion of said serrations being substantially vertical when the door is in closed

35 position. These serrations 16^a are located to one side of the upper portion of the hook 16 and are adapted to strike the serrated roller 13^b when the doors are raised, the

40 teeth of the roller 13^b engaging the teeth 16^a causing hook 16 to feed inwardly toward the center of the car past the vertical plane of the flange of the stake 5 and the upper portion of the side 6 until the pivot of the

45 hook 16 and the bracket 17 are in the same vertical plane with the center of the shaft 4, so that the load weight of the door 3 is transmitted vertically onto the shaft 4.

On the side of the hook 16, opposite to the

50 teeth 16^a, is formed a cable housing 16^b having its end wall perforated to receive an eye-bolt to which the cable 15 is secured. The hook-supporting bracket 17 is provided with a pair of parallel projecting legs 17^a which

55 are perforated to receive a pivot on which the hook 16 is pivoted. Hooks 16 and brackets 17 are suitably ribbed to reinforce them.

At the end of the car I provide a combined

60 brace plate and journal bracket 18 which is substantially Z-shaped in section, the inner leg 18^a of which is riveted to the inwardly bent portion of the car side walls 6 and extends parallel to said side walls 6, the web

65 18^b of which is vertical and forms a support

for the bearing 19 for shaft 4, and the outer leg 18^c of which is riveted to the turned edge 20^a of the car end wall or sheeting 20. The upper portion of the leg 18^c and the upper portion of leg 18^a are in the same vertical

70 plane. This brace plate 18 is preferably formed of pressed metal and tends to stiffen the side construction at its end and give a substantial and finished appearance, so that

75 side sills in the car may be completely dispensed with, the car side construction including side sheeting, the stakes and the stiffening plates 18, just described, constituting load-carrying members. The lower portions

80 of the side sheeting 6 being bent inwardly to form a combined shedding surface and edge plate for the car, a suitable location is thus provided for the door-winding shaft where it will not project outwardly beyond the car

85 side construction, and hence will not increase the width of the car.

The hooks 16 in operation pass but slightly beyond the outer line of the car stakes, and this is only momentarily while they are being operated to either open or closed positions.

90

With the location of the shaft as shown and covered by this invention, it is not necessary to perforate the cross-bearers or end sills of the car for the shaft, and the shaft is up out of the way of the discharge of the

95 lading and yet in proper position to most satisfactorily perform its function.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:—

100

1. In a dump car, the combination with a pair of cross-bearers, a drop door hinged therebetween, vertical side stakes rising from the outer ends of said cross-bearers, car side sheeting supported by said stakes and cross-

105 bearers and inclined inwardly along its lower portion, in combination with a winding shaft located between said stakes and side sheeting, a cable adapted to wind on said shaft and a hook-shaped link interposed between

110 said cable and door and adapted to be drawn upwardly by said cable to a position on top of said shaft to support the door in closed position.

2. In a dump car, a cross bearer, a side

115 stake, a side sheet spaced from said stake and a door, in combination with a shaft located between said cross bearer, said stake and said sheet, a cable winding over the outside of said shaft and a hook interposed be-

120 tween said cable and said door.

3. In a dump car, a cross bearer, a side stake and a side sheet spaced from said stake, in combination with a combined brace plate and shaft bearing interposed between said

125 stake and sheet and secured to said stake and cross bearer, a shaft journaled in said plate and a connection between said shaft and said door.

4. In a dump car, a cross bearer, a side

130

stake and a side sheet spaced from said stake, in combination with a combined brace plate and shaft bearing interposed between said stake and sheet and secured to said cross
5 bearer and said sheet, a shaft journaled in said plate and a connection between said shaft and said door.

5. In a dump car, a cross bearer, a side stake and a side sheet spaced from said
10 stake, in combination with a combined brace plate and shaft bearing interposed between said stake and sheet and secured to said stake, said sheet and said cross bearer, a shaft
15 journaled in said plate and a connection between said shaft and said door.

6. In a dump car, a beam, a stake and a wall sheet, in combination with a flanged combined brace plate and shaft bearing secured by its flanges to said stake, said beam
20 and said sheet, a shaft journaled in said plate, a door and a connection between said shaft and door to operate the latter by the former.

7. In a dump car, the combination with a car side sheeting inclined inwardly along its
25 lower portion and a car end sheeting projecting beyond said inwardly inclined portion of the car side sheeting, of a brace plate extending between and riveted to said inclined portion of the car side sheeting and
30 the outer edge of said end sheeting.

8. In a dump car, the combination with a car side sheeting inclined inwardly along its lower portion and a car end sheeting projecting beyond said inwardly inclined
35 portion of the car side sheeting, of a modified Z-section brace plate extending between and riveted to said inclined portion of the car side sheeting and the outer edge of said end sheeting.

40 9. In a dump car, the combination with a car side sheeting inclined inwardly along its lower portion and the car end sheeting flanged vertically and extending beyond the inclined portion of said side sheeting, of a
45 modified Z-section brace plate riveted to the inclined portion of said side sheeting and to the flange of said end sheeting.

10. In a dump car, the combination with a

car side sheeting inclined inwardly along its lower portion and a car end sheeting flanged
50 vertically and extending beyond the inclined portion of said side sheeting, of a modified Z-section brace plate riveted to both the inclined and vertical portions of said side
55 sheeting and to the flange of said end sheeting.

11. In a dump car, the combination with a side sheeting inclined inwardly along its lower portion and end sheeting extending
60 beyond the said side sheeting, a brace plate extending between the end sheeting and the inclined portion of the side sheeting and a door-operating shaft journaled in said brace
plate.

12. In a car door-operating mechanism,
65 the combination with a door-operating shaft, a ratchet wheel for operating said shaft and a weighted ratchet adapted to engage the underside of said ratchet wheel.

13. In a car door-operating mechanism,
70 the combination with a door-operating shaft, a ratchet wheel for operating said shaft, a weighted ratchet adapted to engage the underside of said ratchet and a safety cam adapted to engage the weighted portion of
75 said ratchet.

14. In a car door mechanism, a drop door having a reinforcement extending parallel to its free edge, a bracket secured to said reinforcement and extending therethrough and
80 secured directly to said door and means connected to said bracket for raising said door.

15. In a car door mechanism, a drop door having a reinforcement extending parallel to its free edge, a bracket having laterally
85 extending wings secured to said reinforcement and a leg extending through said reinforcement and secured to the underside of said door and means secured to said bracket for raising the door.

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

HARVEY ALLEN.

Witnesses:

FRANK E. MILLER,
GUY AGNEW.