

No. 766,871.

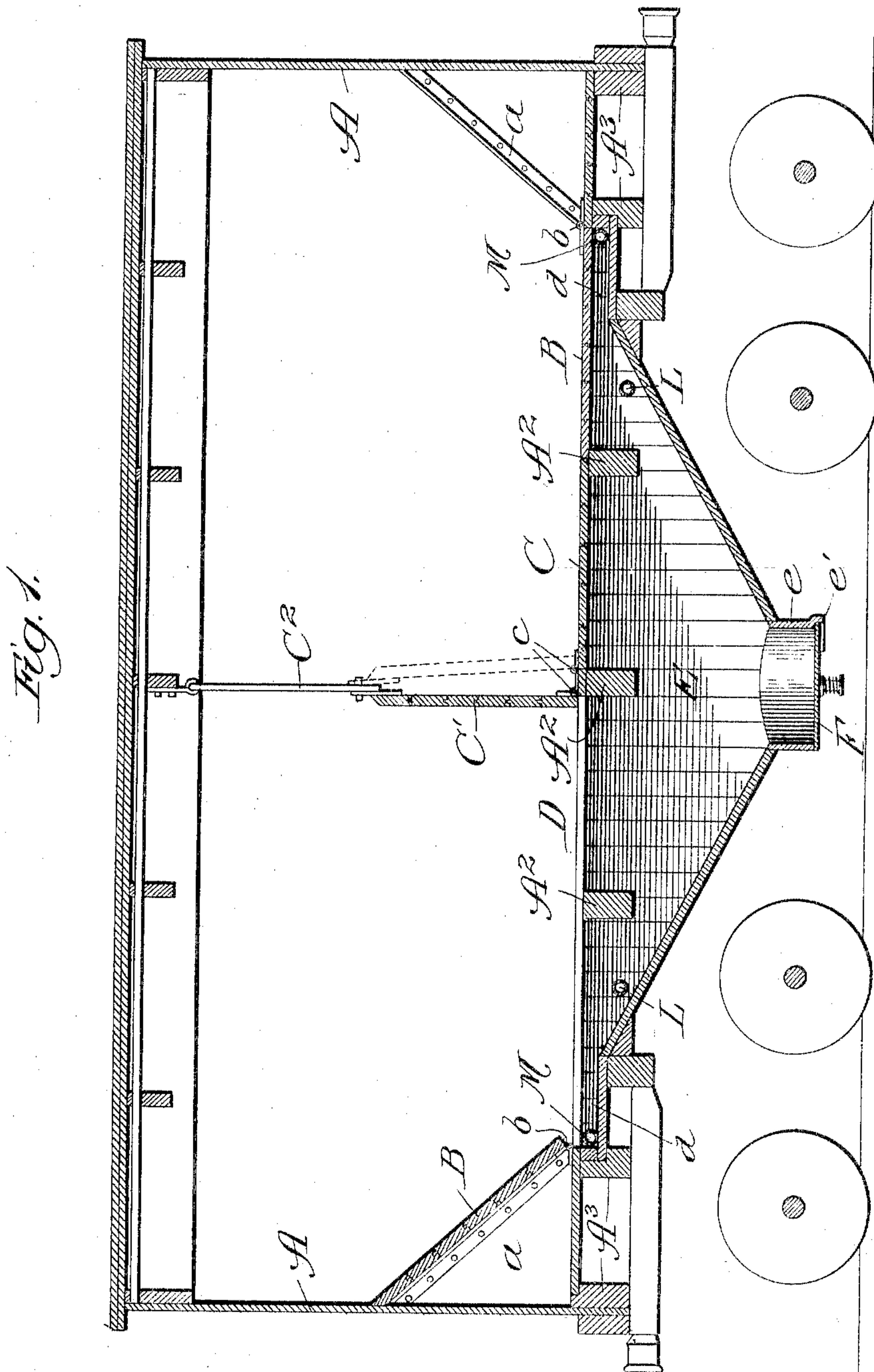
PATENTED AUG. 9, 1904.

M. BROSNAN.
GRAIN CAR.

APPLICATION FILED JULY 27, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:
John Enders
Ed. O. Gannon.

Inventor:
Michael Brosnan,
By Thomas P. Sheridan,
Attorney.

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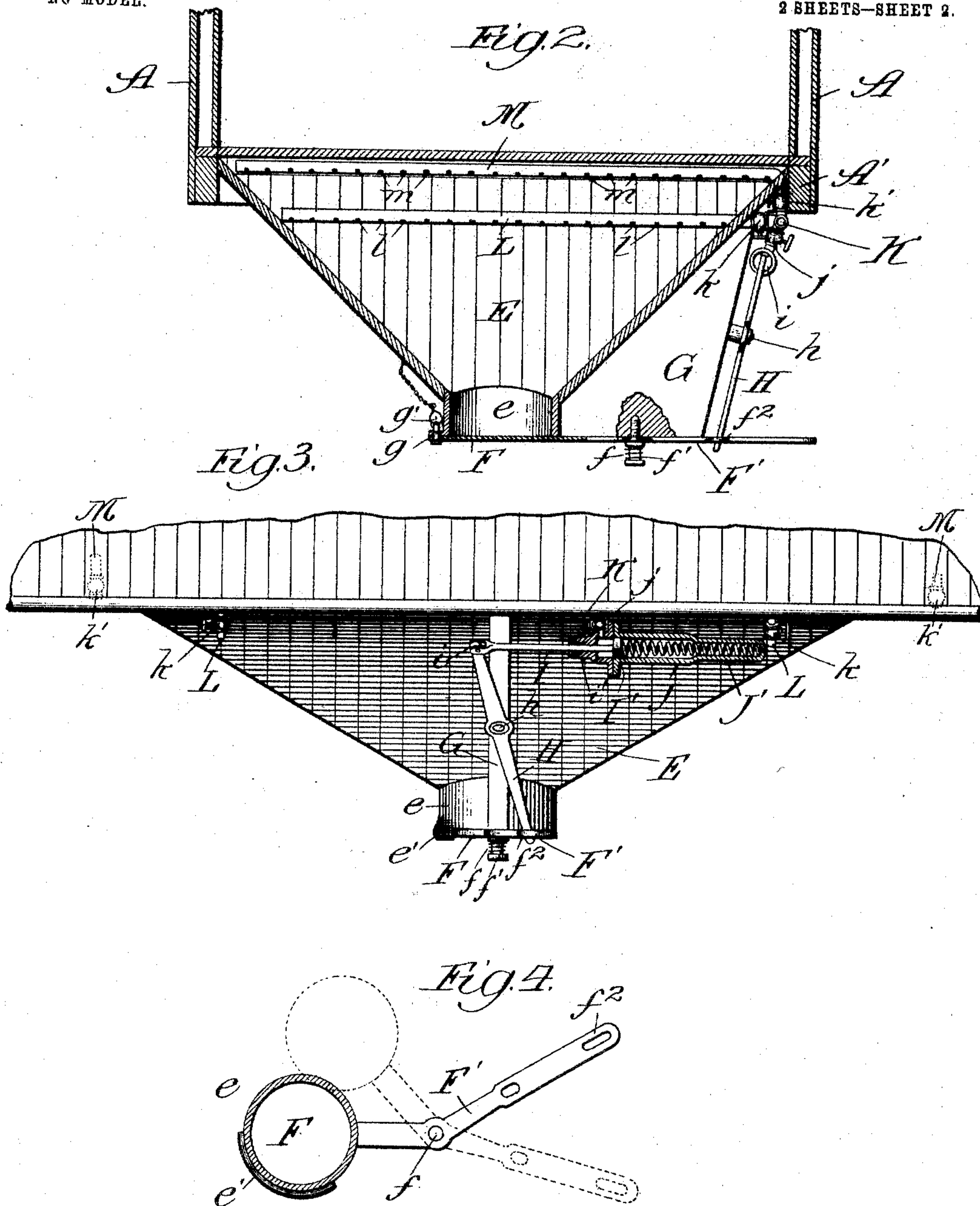
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Witnesses:
John Enders
Geo. C. Dawson,

Inventor:
Michael Brosnan,
By Thomas F. Sheridan,
Att'y.

UNITED STATES PATENT OFFICE.

MICHAEL BROSAN, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
LEON GARROW, OF CHICAGO, ILLINOIS.

GRAIN-CAR.

SPECIFICATION forming part of Letters Patent No. 766,871, dated August 9, 1904.

Application filed July 27, 1903. Serial No. 167,173. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL BROSAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Grain-Cars, of which the following is a specification.

My invention relates to that class of railroad-cars used in the transportation of grain or cereals and which are also adapted for use and are used for the transportation of general merchandise and other freight without change in the general construction of such cars except as required for the different uses.

The object of the invention is to construct such cars so as to provide for a rapid and economical discharge of the load of grain or cereals and to have the car of the full capacity when the discharging means are placed thereon.

The invention consists in the features, combinations, and details of construction hereinafter described and claimed.

In the drawings, Figure 1 is a central longitudinal section of a car constructed in accordance with my improvements; Fig. 2, a central transverse section of the parts shown; Fig. 3, an end elevation showing a portion of the body of a car and the discharging-hopper and operating mechanism for opening and closing the door or cover of the hopper mouth or discharge, and Fig. 4 a section on line 4 4 of Fig. 3 looking down.

In the art to which this invention relates it is well known that the unloading of grain-cars, especially in long trains, is very laborious and expensive, and various arrangements and constructions of unloading means have been devised for the purpose of facilitating the unloading of such cars.

The principal object of my invention is to construct a grain-car in which the unloading can be very quickly and economically accomplished and so that one or all of the cars of a train, as desired, may be unloaded automatically and efficiently at one and the same time, all of which will be more fully hereinafter described.

In illustrating and describing my invention I have only illustrated and will describe such

parts of the car as I deem new when taken in connection with so much of the car that is old as will properly disclose the invention to others and enable those skilled in the art to construct and practice the same, leaving out of consideration old and well-known forms, which if described herein would only tend to confusion, prolixity, and ambiguity.

In constructing a car in accordance with my invention I make a car-body A of the usual and well-known form of construction of grain and freight cars having side sills A', intermediate cross-sills A², and end cross-sills A³ for supporting the body of the car and the bottom thereof. At each end of the car is a folding or hinged bottom section B and B', each hinged at b, so as to be raised or lowered, and when raised rest on supports a, formed of pieces of angle-iron or other suitable material bolted to the sides of the car. The sections B B' when down rest on the intermediate cross-sills A² and constitute a portion of the car-bottom. At the center of the car-body and lengthwise thereof are hinged at c two sections C and C', constituting when down the remaining portion of the car-bottom over the discharge-hopper. As shown in Fig. 1, the right-hand end of the car has the hinged sections B and C down for forming the bottom of the car, and the left-hand end of the car has the hinged sections B' and C' raised so as to leave an opening D leading into the discharge-hopper, a similar opening being formed when the sections B and C are raised. The sections C' can be held when elevated by means of a rod C², depending from the top of the car and adapted for attachment to the sections, such rod being swung up out of the way when the car is used for carrying general freight.

Below the opening D of the car-bottom when the sections are raised is located the hopper E, in which the grain or cereal lies, and, as shown, in order to give the proper pitch or incline for the ends of the hopper a longitudinal end d is provided, so as to shorten the length of the hopper longitudinally, and thereby give an increased pitch; but this is not essential, as the pitch can be

extended to the limit of the hinging of the sections B B', if so desired. The hopper E at the apex of the inclines of the sides and ends has a mouth or discharge *e*, and the incline for the hopper sides is one sufficient to cause the grain or cereal to flow readily toward the mouth or discharge, and, if desired to facilitate the flow, the interior of the hopper can be lined with sheet-tin or other material.

The mouth or discharge *e* is controlled by a cover or door F, pivotally supported or attached at one side, so as to swing laterally on its pin or pivot *f*, and to facilitate the return of the cover or door a coiled spring *f'* may be located around the pin or pivot, one end of such spring being secured to the cover or door and the other to the pivot.

The cover or door has an arm or extension F', with an opening *f''*, into which is entered the lower end of a lever H, pivoted at *h* to a supporting-piece G, which piece also carries the pin or pivot of the cover or door. The lever H swings on its pivot, so as to laterally swing the door or cover, and for the purpose of operating the lever its upper end is pivoted in a fork or head *i* of a piston-rod I, such rod passing through a stuffing-box *i'* on a cylinder J and having a piston I' traveling in the cylinder. The cylinder receives air or fluid under pressure from a pipe K, extending beneath the car, which pipe has communication with the cylinder through a valve *j*, arranged to be operated by hand or otherwise. The pressure of the air or fluid advances the piston, and such advance movement swings the lever H on its pivot to open the discharge or mouth of the hopper by withdrawing the cover or door therefrom, and with the release of pressure in any usual and well-known manner a spring J' in the cylinder J returns the piston to its normal position, sending the lever back and closing the cover or door. It will thus be seen that in order to open the door or cover of the hopper mouth or discharge all that is necessary is to open the valve *j* and admit fluid-pressure to the cylinder, advancing the piston and operating the lever, and to close the hopper opening or mouth all that is necessary is to shut off the pressure by closing the valve, allowing the cylinder-spring to act and return the lever to its normal position.

The inclination of the hopper is sufficient ordinarily for the discharge of heavy grain or cereals; but in the event of a failure in this respect and for the purpose of discharging light grain additional means are provided in the form of blowpipes L, one located at each end of the hopper a sufficient distance above the hopper-incline for the passage of grain or cereals beneath them and on the side toward the discharge or mouth. Each of these pipes is provided with a series of holes *l* for projecting jets of air in the direction of the dis-

charge for such air to carry with it and force the light grain or cereal rapidly to the point of discharge. The air or pressure for each pipe L is admitted thereto and controlled therefor by a valve *k*, which can be operated by hand or otherwise, furnishing communication with the train-pipe K.

It is evident that where a flat end *d* is provided for the hopper the grain or cereal would be liable to be held thereon, and to avoid this and insure the discharge of the entire load a blowpipe M, controlled by a valve *k'*, is provided for each end *d*, each blowpipe having a series of holes *m* on the inner side which project jets of air inward, forcing the grain or cereal from the ends, so as to pass down the hopper to the mouth or discharge thereof.

The end sections B B' should be made to fit tightly against the end of the car-body when raised, and for this purpose the edge of each which abuts against the end of the car is formed so that when the section is raised a tight joint will be provided between the section and the end of the car. By this arrangement no grain can pass into the space below the section when raised and the entire load will be held in the body of the car between the end sections, so as to pass downward into the hopper when the discharge or mouth is open. The capacity of the car as to the load of grain will not be effected by having the end spaces, because the hopper capacity more than offsets the space taken up at the end of the car when the sections B B' of the floor are raised.

The sections of the floor are to be raised in the position shown on the left-hand side of Fig. 1, so as to leave a free communication through the opening D between the body of the car and the hopper, and the grain or cereal is filled into the car in this condition. When the car is to be used for carrying freight or merchandise, all that is required to change the car from a grain-car into a freight-car is to drop the bottom sections into the position shown on the right-hand side of Fig. 1, which forms a closed bottom for the body of the car for the reception of general merchandise and other freight.

A single car can be unloaded when filled with grain, or a number of such cars can be unloaded at the same time, and all that is necessary for this purpose is to connect the train-pipe K of the car, which may be the ordinary brake train-pipe, with an air-compressor or other pressure-supply means and then open the valve *j*, so that the pressure will operate the lever H through the piston and rod and open the cover or door for the grain to pass down and out through the mouth or discharge of the hopper, and when the car is emptied the shutting off of the pressure permits the spring J' to act and return the parts, closing the cover or door. When the car is filled and the cover or door F closed, it can be

held and locked in its closed position by a bolt *g* passing through the door and a flange on the mouth or discharge *e* and then securing the bolt in position by means of a suitable lock *g'*, attached by a chain or otherwise to the hopper, and in order to limit the return movement of the cover or door and insure its proper position to close the mouth or discharge a stop *e'* can be provided on the mouth or discharge, against which the edge of the cover or door strikes on the return movement.

The hopper, located below the bottom of the car and constituting a portion of the body for receiving grain or cereals, furnishes a ready, quick, and economical means for discharging a load of grain in connection with the lateral swinging door or cover, and the fluid-cylinder and piston, with the operating-lever, furnish a means for operating the door or cover; but it is to be understood that the door or cover is capable of being operated by hand or otherwise through its arm *F'*, as by taking hold of such arm and pushing or pulling thereon the cover or door can be swung on its pivot to open the discharge or mouth, and instead of a door or cover operating laterally a door or cover operating on the side of the discharge or mouth can be provided, so as to open one side of the mouth or discharge for the grain to pass out. It is to be understood also that in the event the bottom or floor sections *B B'* and *C C'* are not sufficient to fully fill the space or opening *D* when down instead of single central sections two sections can be provided, if required, to furnish the necessary bottom or floor to fill the space, such intermediate sections being suitably hinged, so as to be raised and lowered.

I claim—

1. In a car of the class described, the combination of a floor or bottom composed of hinged sections at each end adapted to be raised and stand inclined at a sharp angle extending from the end wall of the car downward to the hopper, a plurality of intermediate hinged sections adapted to be raised and stand vertically transversely of the body of the car, and swinging downward from such position in opposite directions from their pivotal points to horizontal position into engagement with the edges of the swinging end sections, respectively, and a hopper located beneath the floor or bottom sections and extending the full length of the car from the hinging-point of the end sections and having communication with the body of the car when the sections of the floor or bottom are raised and provided with a discharge or mouth controlled by a swinging cover or door, substantially as described.

2. In a car of the class described, the combination of a car-body, a floor or bottom composed of hinged sections adapted to be raised and lowered, an opening in the car-bottom

formed by raising the hinged sections, a hopper located beneath the floor or bottom in line with the opening and provided with a mouth or discharge, a movable cover or door for the mouth or discharge, and a blowpipe at each end of the car for forcing the material inward to be discharged at the mouth or discharge, substantially as described.

3. In a car of the class described, the combination of a car-body, a floor or bottom composed of hinged end sections, a plurality of transverse central sections pivotally mounted intermediate the swinging end sections movable into upright position and each movable downward from such position in opposite directions from their pivotal points into horizontal position and into engagement with the edges of the swinging end sections, respectively, an opening in the car-bottom formed when all the hinged sections are raised, a hopper located beneath and in line with such opening and provided with a mouth or discharge, a movable cover or door for the mouth or discharge and a lever engaged with the cover or door and operative to move the cover or door and open and close the mouth or discharge, substantially as described.

4. In a car of the class described, the combination of a car-body, a floor or bottom composed of hinged end sections and hinged central sections adapted to be raised and lowered, an opening in the car-bottom formed when the hinged sections are raised, a hopper located beneath and in line with such opening and provided with a mouth or discharge, a movable cover or door for the mouth or discharge, a lever engaged with the cover or door and operative to move the cover or door and open and close the mouth or discharge, and a fluid-pressure cylinder having a piston and rod with the rod connected with the lever and operating to move the cover or door and open and close the mouth or discharge, substantially as described.

5. In a car of the class described, the combination of a car-body, a floor or bottom composed of hinged end sections and hinged central sections adapted to be raised and lowered, an opening in the car-bottom formed when the hinged sections are raised, a hopper located beneath and in line with such opening and provided with a mouth or discharge, a movable cover or door for the mouth or discharge, a lever engaged with the cover or door and operative to move the cover or door and open and close the mouth or discharge, a fluid-pressure cylinder, a piston traversing the cylinder, a piston-rod connected with the lever and a spring in the cylinder for operating the lever to open and close the cover or door, substantially as described.

6. In a car of the class described, the combination of a car-body, a floor or bottom composed of hinged end sections and hinged central sections adapted to be raised and lowered,

an opening in the car-bottom formed when the hinged sections are raised, a hopper located beneath and in line with such opening and provided with a mouth or discharge, a movable
 5 cover or door for the mouth or discharge, a lever engaged with the cover or door and operative to move the cover or door and open and close the mouth or discharge, a fluid-pressure cylinder, a piston traversing the cylinder, a
 10 piston-rod connected with the lever, a spring in the cylinder for operating the lever to open and close the cover or door, and a fluid-pressure pipe connected with the cylinder for operating the piston and moving the lever to
 15 open and close the cover or door, substantially as described.

7. In a car of the class described, the combination of a car-body, a floor or bottom composed of hinged end sections and hinged central sections adapted to be raised and lowered,
 20 an opening in the car-bottom formed when the sections are raised, a hopper located beneath and in line with such opening and a blowpipe located at each end of the hopper above the
 25 incline thereof, for forcing the material downward and out at the discharge of the hopper, substantially as described.

8. In a car of the class described, the combi-

nation of a car-body, a floor or bottom composed of hinged end sections and hinged central sections adapted to be raised and lowered,
 30 an opening in the car-bottom formed when the sections are raised, a hopper located beneath and in line with such opening and a blowpipe located at the extreme upper portion of the
 35 hopper at each end for forcing the material inward at the ends to be discharged from the hopper, substantially as described.

9. In a car of the class described, the combination of a car-body, a floor or bottom composed of hinged end sections and hinged central sections adapted to be raised and lowered,
 40 an opening in the car-bottom formed when the sections are raised, a hopper located beneath and in line with such opening, a blowpipe located at each end of the hopper above the
 45 incline thereof, and a second blowpipe located at each end of the hopper above the first blowpipe, both pipes to act and force the material downward and out at the discharge of the hop-
 50 per, substantially as described.

MICHAEL BROSNAN.

Witnesses:

HARRY IRWIN CROMER,
 ANNA L. SAVVIE.