

No. 726,169.

PATENTED APR. 21, 1903.

W. F. KIESEL, JR.
STEEL CAR CONSTRUCTION.
APPLICATION FILED DEC. 27, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

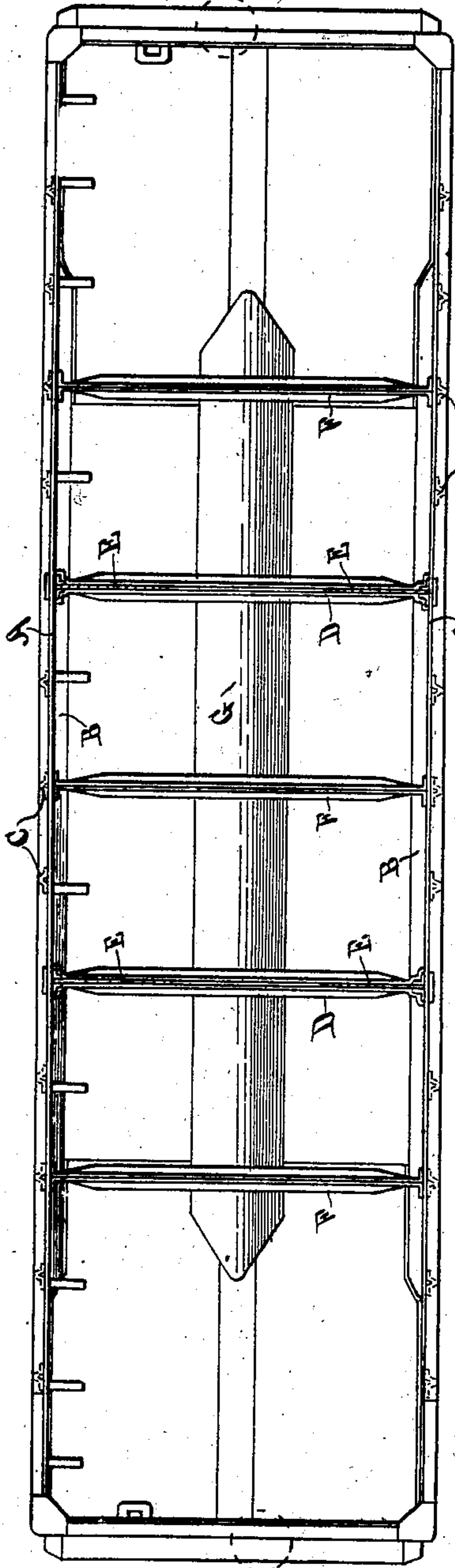


Fig. 1.

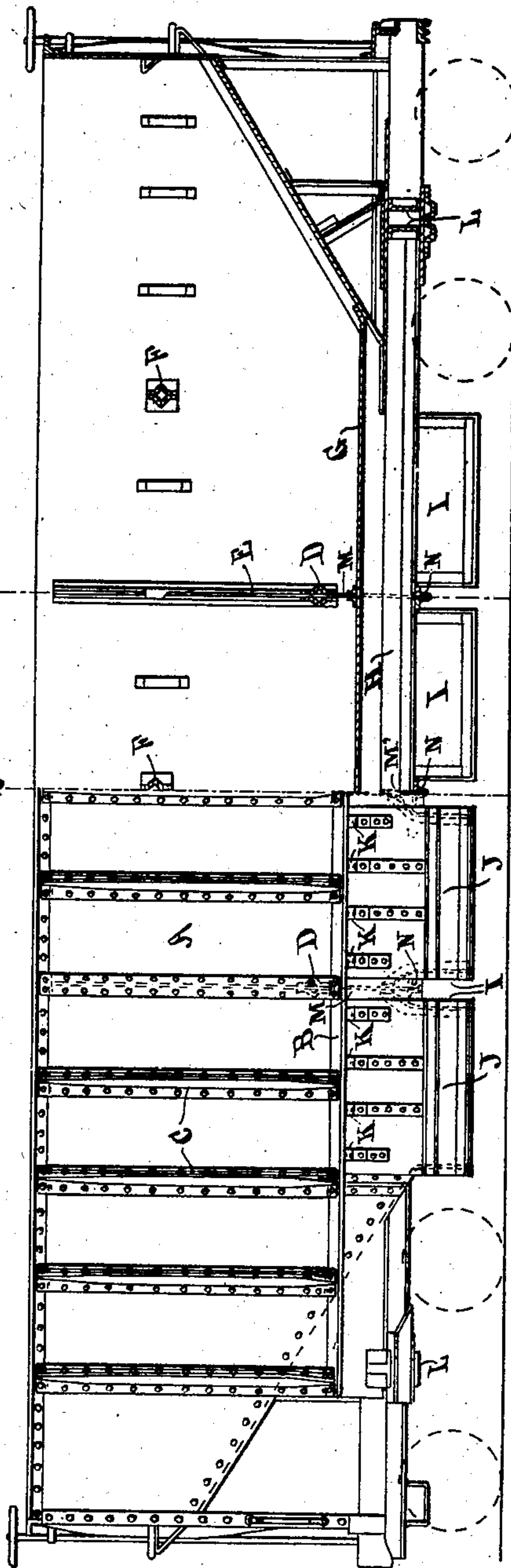


Fig. 2.

WITNESSES:

M. L. Beck
M. E. Verbeck.

INVENTOR

William F. Kiesel, Jr.
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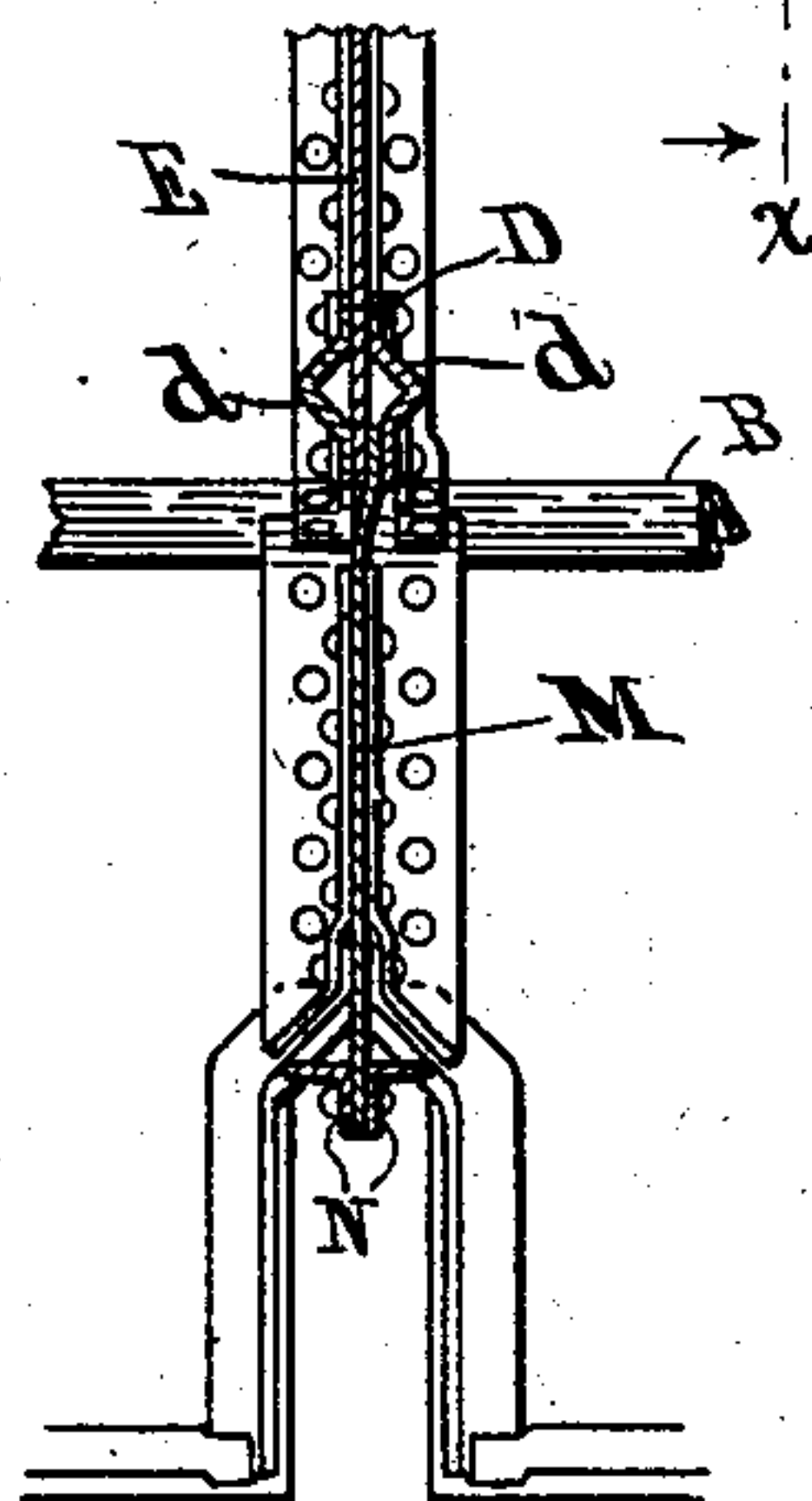
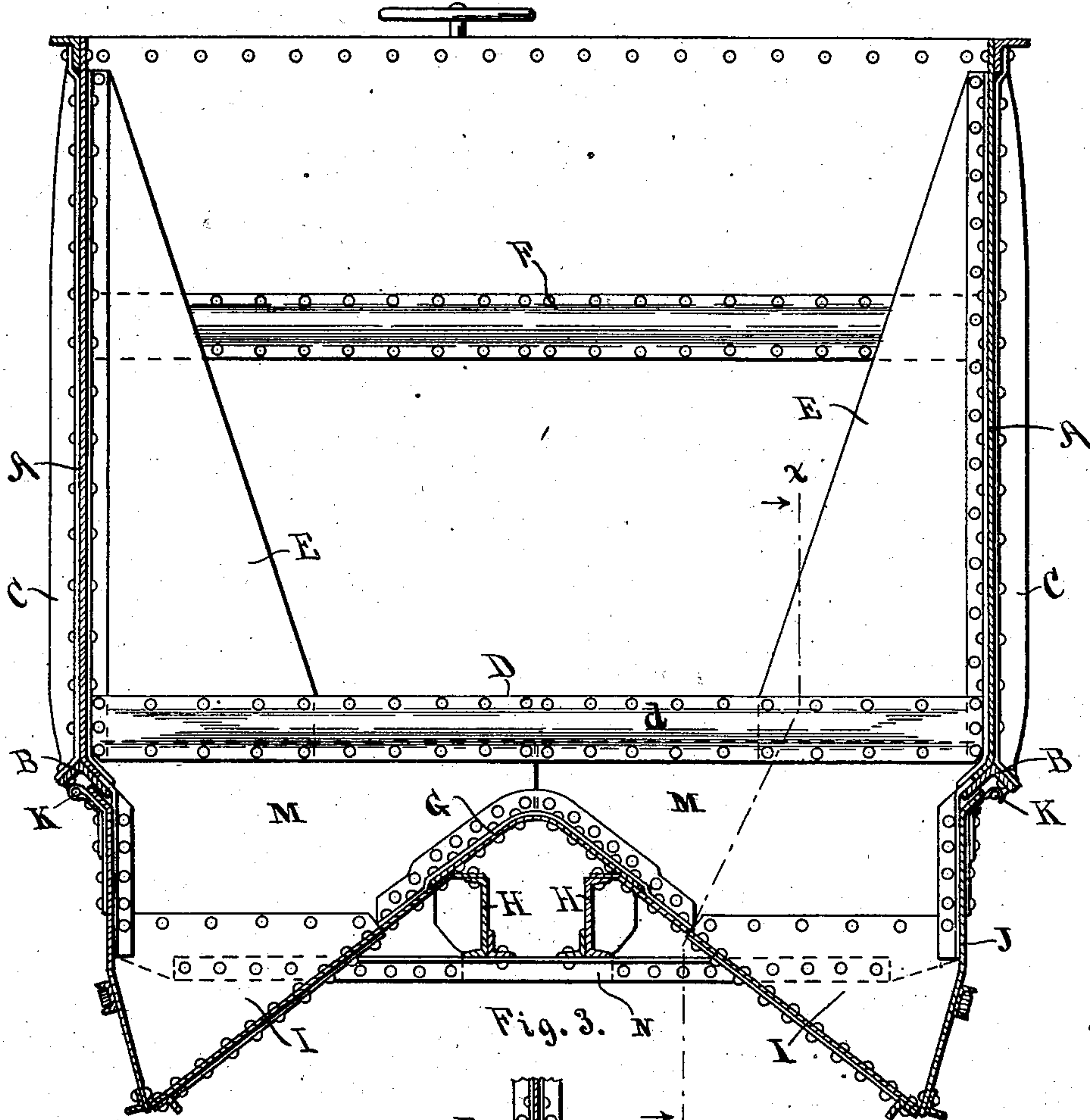
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3 SHEETS—SHEET 2.



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Fig. 4.

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3 SHEETS—SHEET 3.

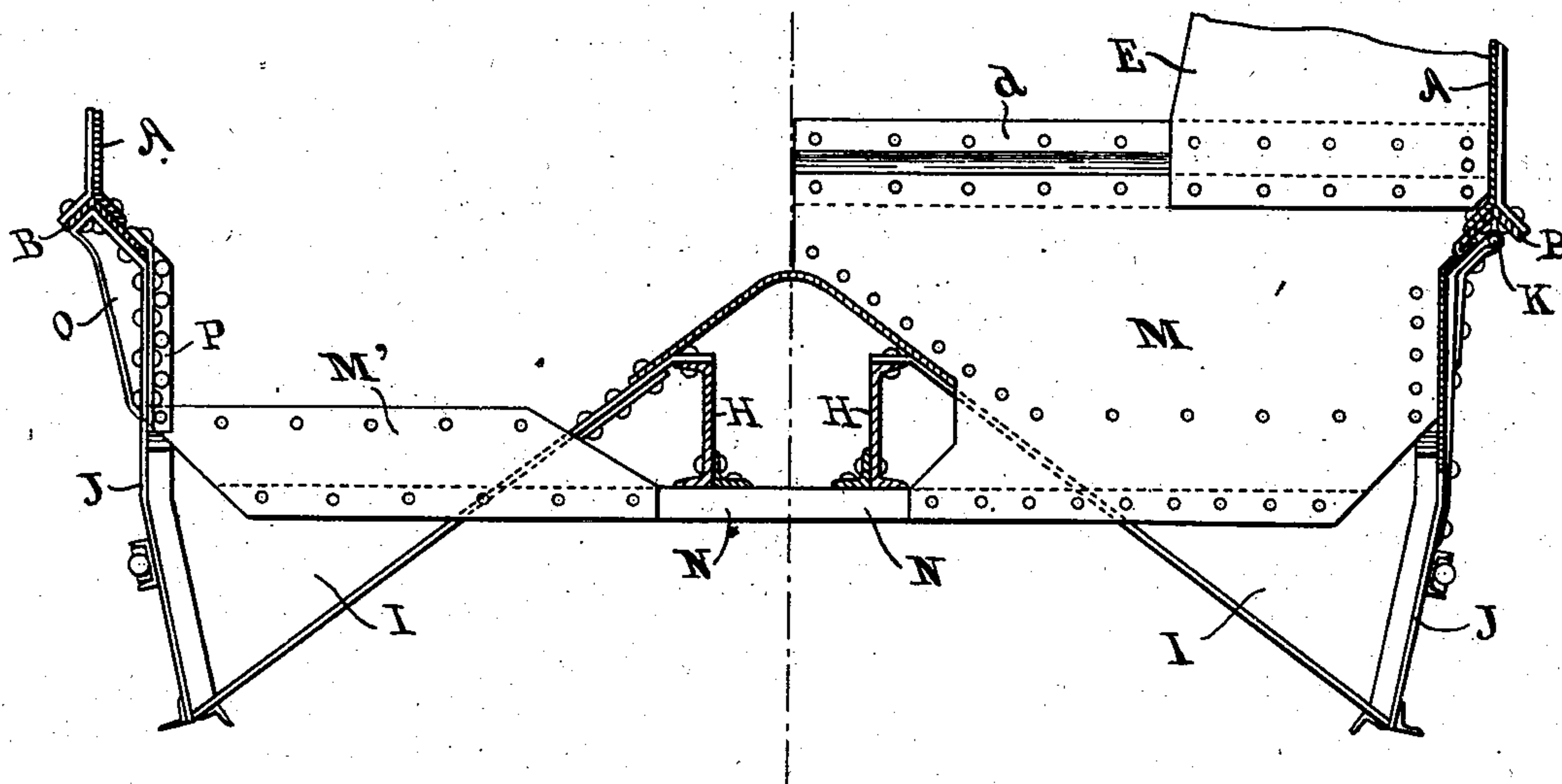


Fig. 5.

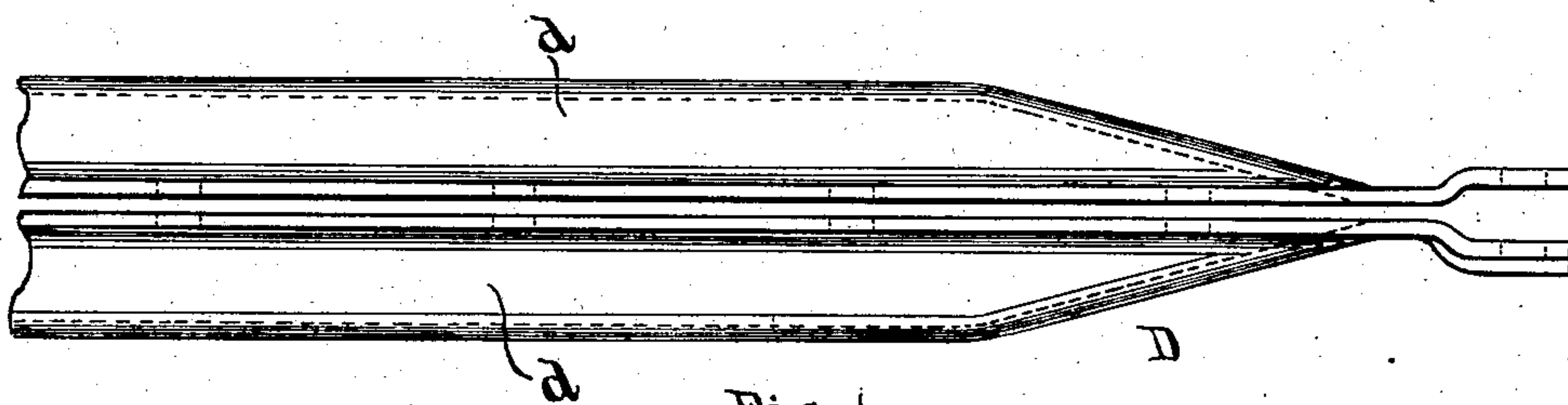


Fig. 6.

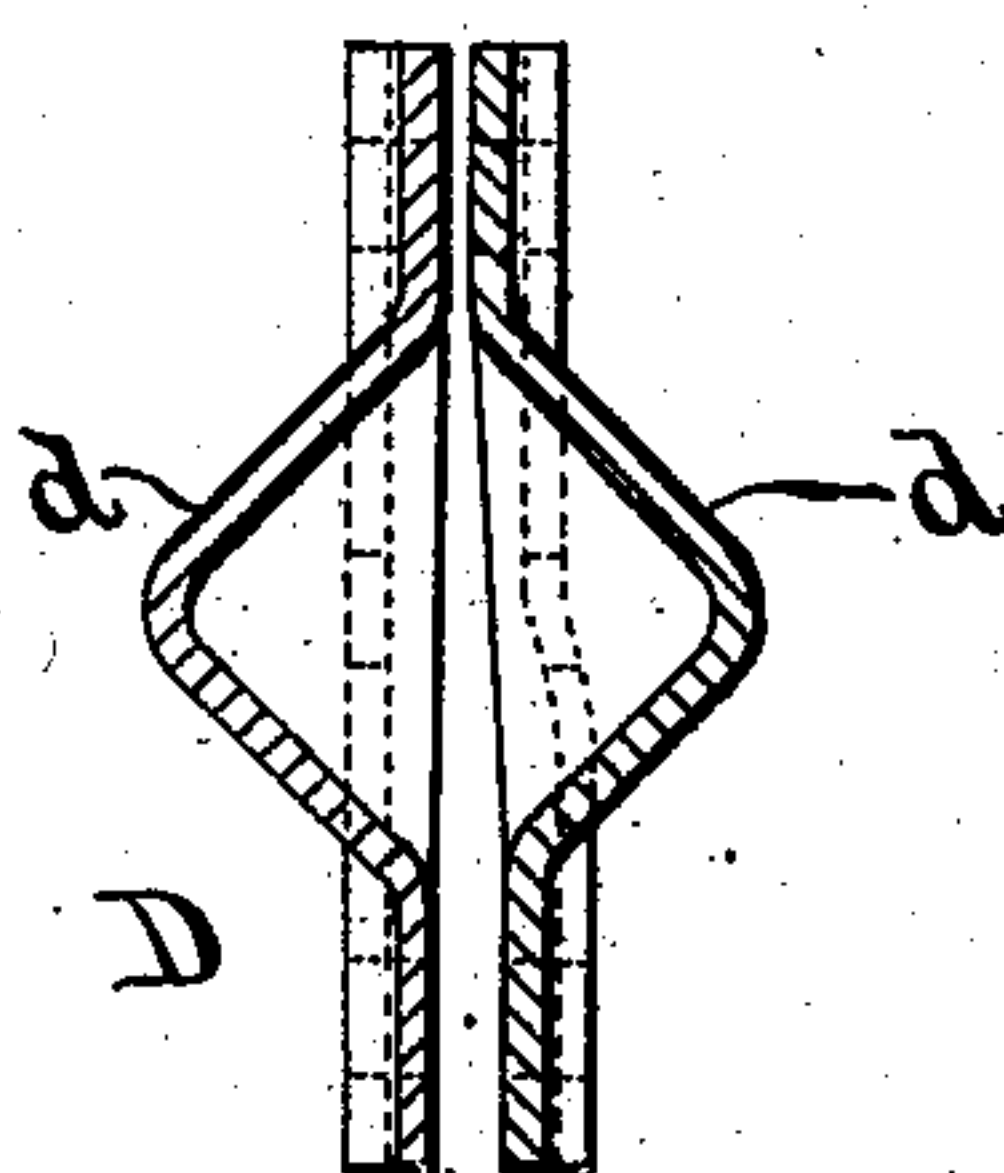


Fig. 7.

WITNESSES:

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INVENTOR

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UNITED STATES PATENT OFFICE.

WILLIAM F. KIESEL, JR., OF ALTOONA, PENNSYLVANIA.

STEEL-CAR CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 726,169, dated April 21, 1903.

Application filed December 27, 1902. Serial No. 136,857. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. KIESEL, Jr., a citizen of the United States, residing at Altoona, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Steel-Car Construction, of which the following is a specification.

My invention relates to improvements in the construction of steel cars intended for the transportation of coal, coke, ores, and like materials. Heretofore cars of this type have usually been built with drop-doors in the bottom, in which form of construction the floor to a great extent counteracts the side strain of the coal, &c., upon the sides of the car.

My invention relates more particularly to cars which are dumped from chutes at the bottom leading to the sides of the car, in which form, the floor being cut away from the sides, there is an absence of this strengthening effect; and the object of my improvements is to provide means for stiffening the sides of the car to supply this deficiency and to prevent bulging when under the severest load strains, and in so doing to so construct the parts that the cars will clear themselves both when dumping through the side doors and also when they are inverted in the upsetting machines now in use at shipping-ports.

I attain my object by means of the construction and arrangement of the several parts of the car as illustrated in the accompanying drawings, in which—

Figure 1 represents a plan view of my improved car; Fig. 2, a side elevation of the same, partly in section; Fig. 3, a vertical transverse section through the body of the car; Fig. 4, a detail showing a section on the line $x x$ in Fig. 3; Fig. 5, right and left sections on lines $y y$ and $z z$ in Fig. 2; and Figs. 6 and 7 details showing my tie-beam structure.

Like letters of reference designate like parts in the several views.

A represents the side plates of the car, which are riveted at the bottom to longitudinal angle-plates B, which form, in effect, the side sills of the car. These angle plates or bars in the car illustrated are four by six by five-eighths inches in cross-section, and are placed with the legs of the angle inclined

downwardly at an angle of about forty-five degrees. The side sills so formed run along the sides of the cars from points at each end over the body-bolsters L, by which the under-frame of the car-body is supported on the trucks; and the function of these angle side sills is to stiffen the bottom of the side plates so as to resist the lateral pressure of the load thereon and also to constitute the lower or tension members of the sides, considered as plate-girders, to resist vertical loads. The side plates are united and reinforced at proper intervals by the vertical stiffening bars or stakes C, which are preferably pressed into a truss-like formation to give additional strength.

Running across the car from side to side are the transverse tie-beams D, made up of two plates or bars $d d$, pressed into V-shaped cross-section and riveted face to face. (See Figs. 6 and 7.) In the car illustrated there are two of these tie-beams D, spaced at suitable distances from the center and ends of the car. Gusset-plates E have their lower ends riveted in between the plates of these trussed tie-beams D and their vertical edges attached to the side plates A by angles, as indicated, to strengthen and stiffen the sides at these points. Transverse plates M pass across the car from side to side with their upper edges riveted in between the plates of the tie-beams D, as indicated more clearly in Figs. 4 and 5, their lower inward edges being fastened across the longitudinal bottom or floor plate G, which rests upon the center sills H of the car-frame running between the body-bolsters L and the lower outward edges of the plates M, being riveted between the angles N, which pass across beneath the center sills. The plate G is bent upward along the center, so that the bottom of the car slopes downward toward each side to the delivery-chutes. By this construction it will be seen that at the two points indicated the lateral stresses due to the load against the sides of the car are counteracted by the tie-beams D, and the side sills B are strongly braced and stiffened at points spaced a sufficient distance apart to prevent their bulging outward when the car is loaded to its fullest capacity. The center sills H are also strengthened and supported by the transverse trusses formed by the tie-

beams D, the cross plates or webs M, and the angles N, which latter pass across between the chutes forming the tension members of these trusses upon which the center sills rest.

5 These transverse trusses transmit the vertical stresses upon the center sills to the side plate-girders already described, which girders are supported at their ends upon the body-bolsters L, to which they are fastened, as shown
10 in Fig. 2. At intermediate points between these combined tie-beams and truss-plates and between them and the ends of the cars are similar tie-beams F, formed of V-shaped plates riveted together and passing across the
15 car near the upper portion thereof.

At the center of the car narrow transverse plates M' rise from the angles N and are connected to the side sills B through brackets O and angles P, (see Fig. 5,) thereby forming a
20 central tie between the side sills to relieve the outward bending strains on the angles B at this point and to prevent them from bulging between the tie-beams D.

Between the transverse plates M and M' are
25 located the inclined chutes I, which have their outlets at the sides of the car, these outlets being closed by the doors J, which are hinged at K in brackets depending from the angles B and protected thereby. The plates M and
30 M' form supports or hangers for the chutes I, the sides of which are riveted to these plates at the upper row of holes (see Figs. 3 and 5) and are sprung to the front and rear at an angle to allow for the passage between the
35 chutes of the angles N, (see Fig. 4,) the inclination of the sides of the chutes at this point preventing the lodgment of the contents of the car thereon when dumping.

By an inspection of the several views it will
40 be seen that by reason of the inclination of the angled side sills B, the doubly-inclined sides of the tie-beams D and F, and the inclined sides of the chutes there are no ledges formed to catch and retain the contents of the
45 car whether said contents be dumped from the bottom through the chutes or out of the top of the car when inverted in an upsetting-machine, and, furthermore, that without unnecessary weight and bulk of materials used
50 in construction the sides of the car are strongly braced and stiffened and the entire car-body thoroughly trussed throughout, so as to resist all strains to which the car is subject when filled to utmost capacity.

55 The mechanism for operating the doors J is described in a separate application filed of even date herewith, and is therefore not described in connection with the subject-matter of this invention.

60 Having thus described my improvements and pointed out the features of novelty connected therewith, what I claim as my invention, and desire to secure by Letters Patent, is—

65 1. In a steel car-body, the combination with the side plates, of angle plates or bars running along and riveted to the bottom of said

plates, the legs of the angle being inclined downwardly, substantially as and for the purpose set forth.

2. A steel car-body having its sides in the form of plate-girders resting at or near the ends upon the body-bolsters, the lower or tension member of the girders consisting of an angle plate or bar placed with the legs of the
70 angle inclined downwardly.

3. In a steel car-body, the combination with the side plates, of angle plates or bars running along the bottom of said plates, with the legs of the angle inclined downwardly, and
80 transverse tie-beams between the sides made up of plates having doubly-inclined sides.

4. In a steel car-body, the combination with the side plates, of a doubly-inclined central bottom plate, vertical transverse plates having their lower edges attached to the bottom
85 plate and to transverse bars running across beneath the bottom plate, and their outer ends secured to the side plates, and side delivery-chutes hung between the transverse
90 plates.

5. In a steel car-body, the combination with the side plates, of a doubly-inclined central bottom plate, transverse tie-beams between the side plates above said bottom plate, vertical transverse plates having their lower
95 edges riveted to the bottom plate and to transverse bars running across beneath the bottom plate, and their upper edges riveted to the tie-beams, vertical gusset-plates projecting
100 inwardly from the side plates with their lower ends attached to the tie-beams, and side delivery-chutes supported by the transverse plates.

6. A steel car comprising body-bolsters
105 near the ends, center sills running between the body-bolsters, a central doubly-inclined bottom plate resting upon the center sills, plate-girders forming the sides of the car supported at or near each end upon the body-bolsters, vertical transverse plates and tie-beams
110 uniting the sides and bottom plate, transverse bars running across beneath the center sills and riveted to the bottom of the transverse plates, and side delivery-chutes hung
115 between and supported by said plates.

7. In a steel car-body, the combination with the plate-girder sides and center sills, of a transverse truss to support the center sills consisting of a tie-beam having its ends attached to the side girders, a cross-bar upon
120 which the center sills rest, and a plate or web uniting the tie-beam and cross-bar.

8. In a steel car-body, the combination with the plate-girder sides and center sills, of a tie-beam between the side girders made up of two plates having a V-shaped cross-section, a pair of angle-bars running across beneath the center sills, and a vertical plate or web having its upper and lower edges riveted between the members of the tie-beam and the
130 angle-bars.

9. In a steel car-body, the combination with the plate-girder sides and the doubly-inclined

central bottom plate resting upon center sills, of a plurality of transverse tie-bars running across beneath the center sills, vertical plates uniting said bars to the side girders, and a
5 plurality of outwardly-inclined chutes hung between said vertical plates, the sides of said chutes being sprung to the front and rear to allow for the passage between them of said tie-bars.
10 10. In a steel car-body, the combination with the side plates, of angle plates or bars running along their bottom edges, the legs of the angle being downwardly inclined, side delivery-chutes opening below said side plates,
15 and closures for said chutes hung by hinges from brackets located in the angle of said angle-bars.

11. In a steel car-body, the combination with the side plates, of transverse trussed tie-beams composed of two plates or bars of approximately V-shaped cross-section with their
20 bases flanged outward and riveted together face to face with the lines of union in a vertical plane, said plates being gradually flattened at the ends and provided with out-
25 turned flanges for attachment to the side plates.

In testimony whereof I have affixed my signature in presence of two witnesses.

WILLIAM F. KIESEL, JR.

Witnesses:

R. M. SNYDER,

E. M. JONES.