

F. S. INGOLDSBY.

DUMP CAR.

APPLICATION FILED MAY 16, 1907.

998,967.

Patented July 25, 1911.

2 SHEETS—SHEET 1.

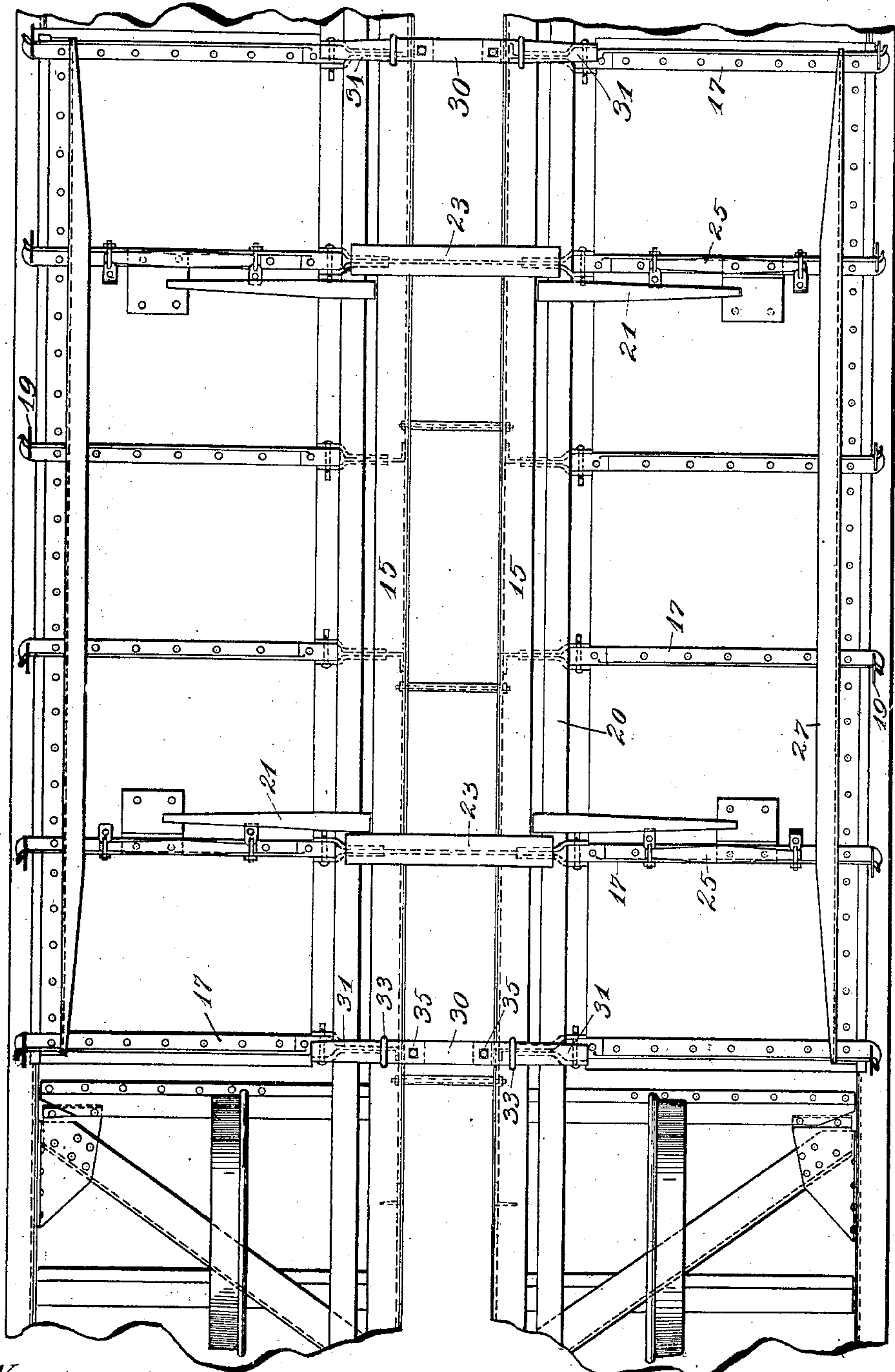


FIG. 1

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Nathan F. Fretter

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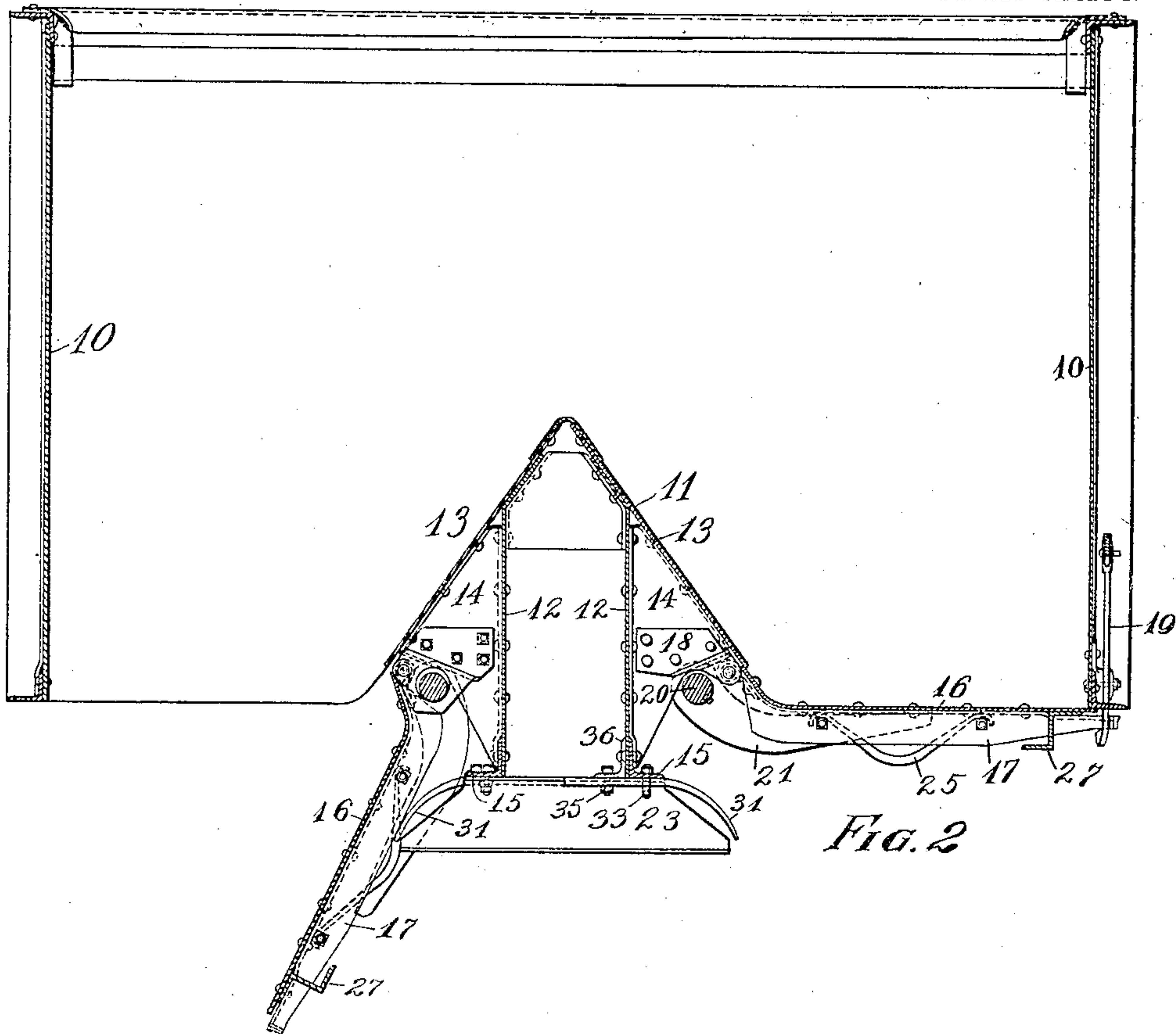


Fig. 2

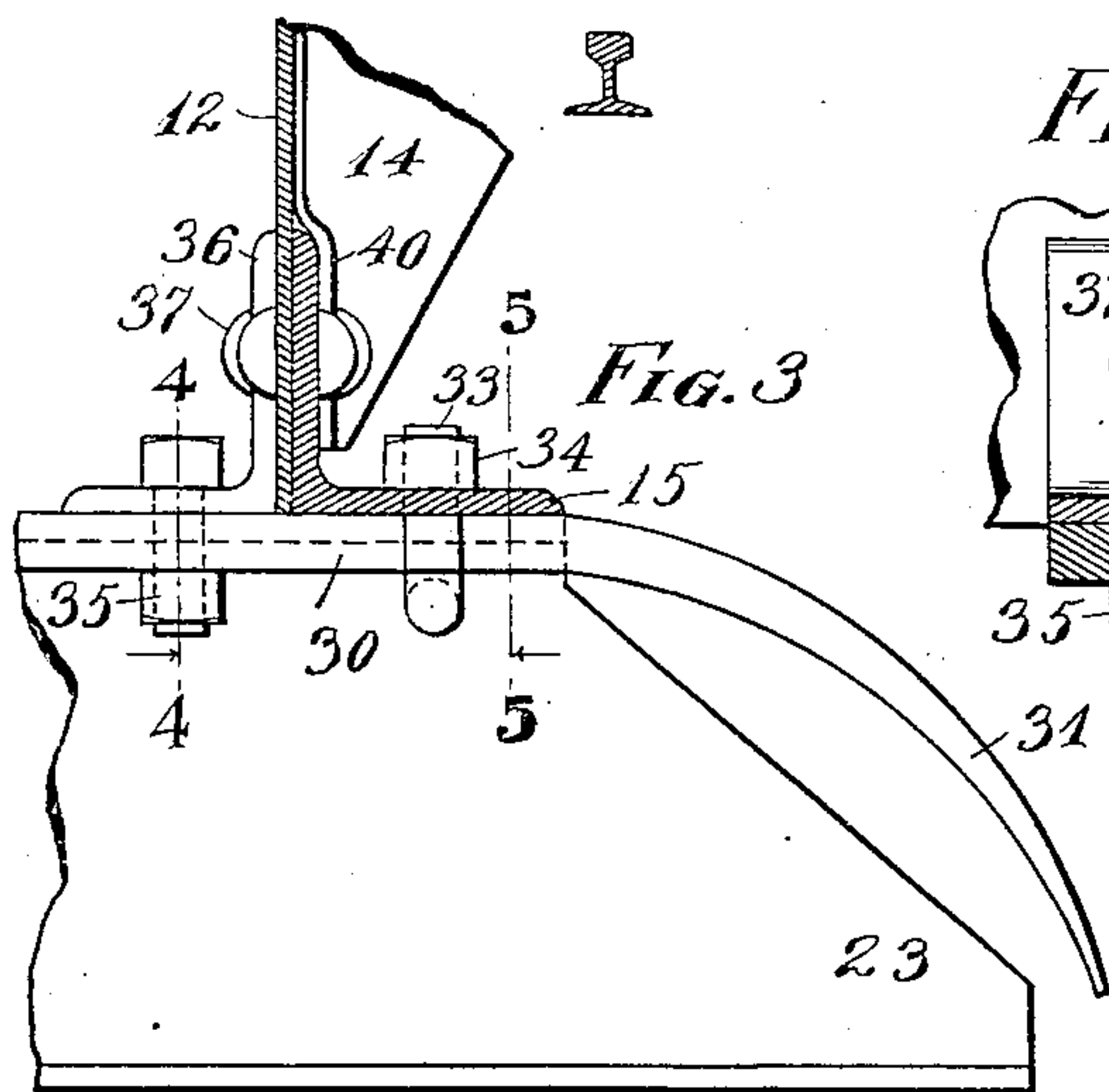


Fig. 3

Fig. 4

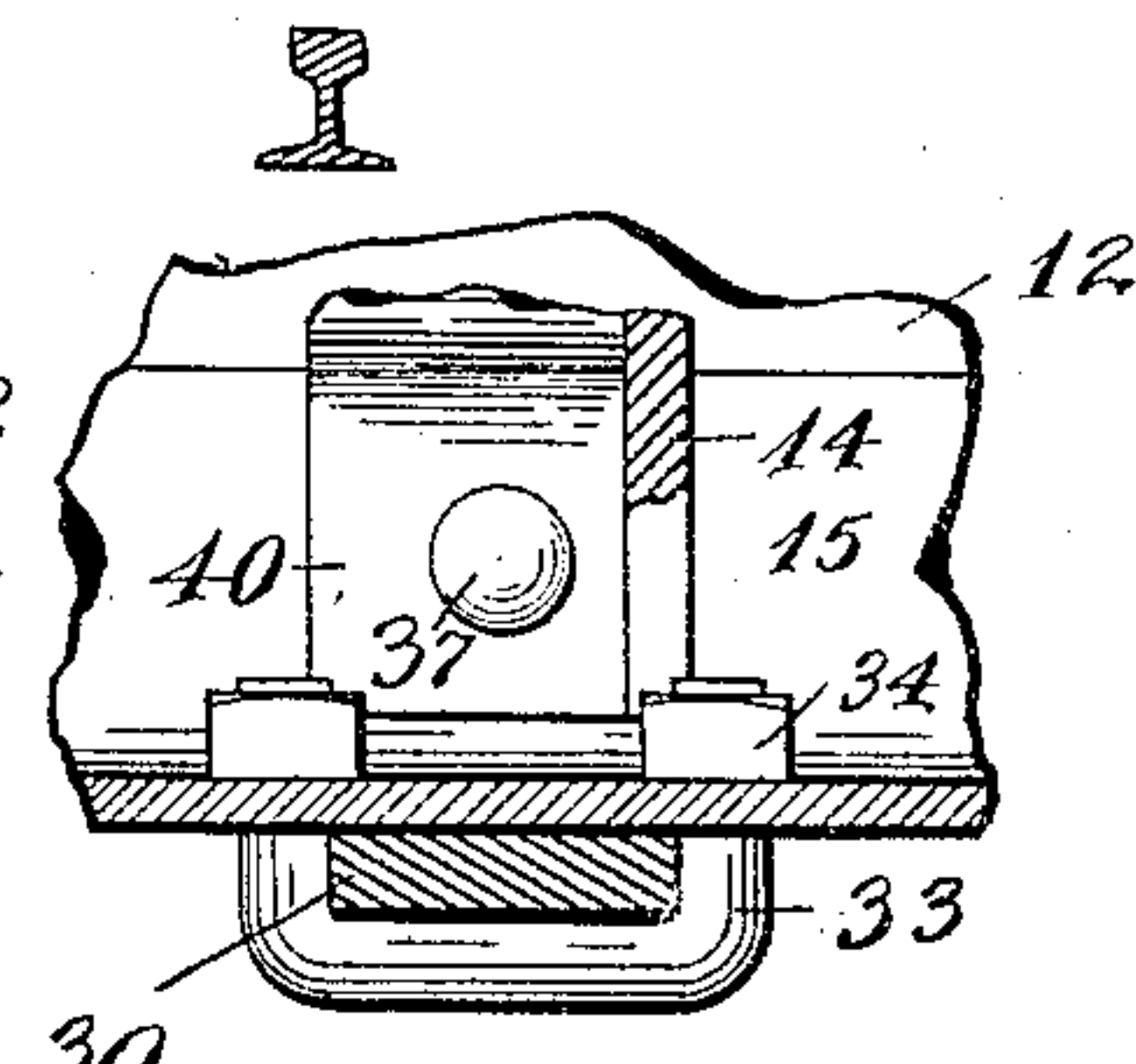
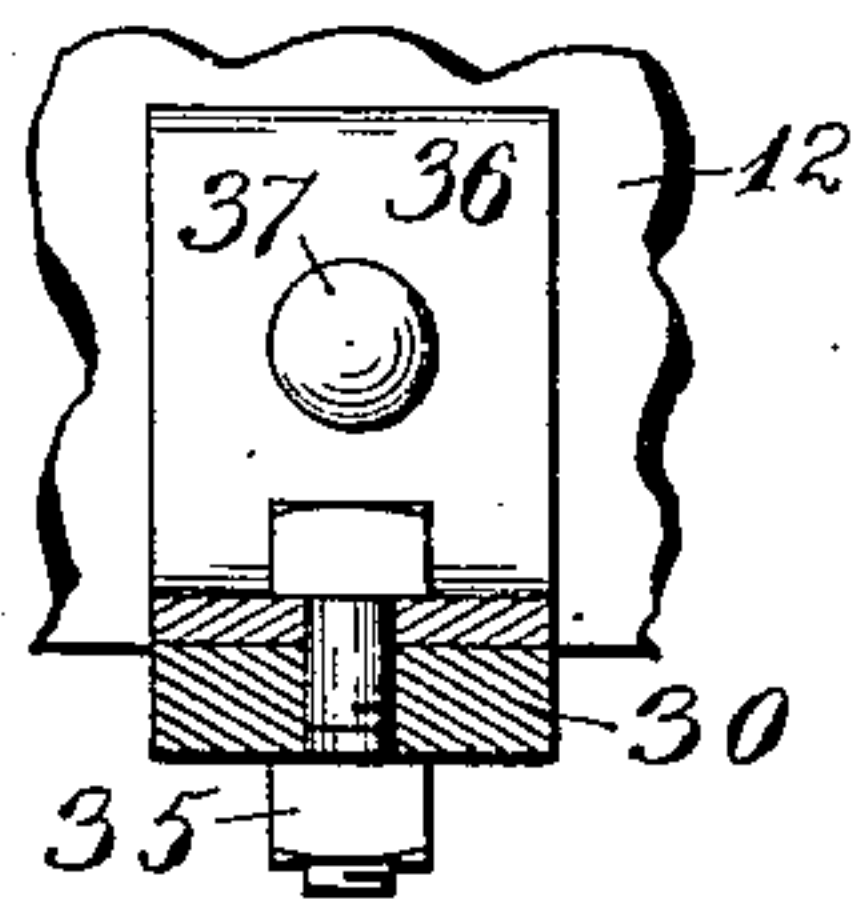


Fig. 5

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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.

DUMP-CAR.

998,967.

Specification of Letters Patent.

Patented July 25, 1911.

Application filed May 16, 1907. Serial No. 374,077.

To all whom it may concern:

Be it known that I, FRANK S. INGOLDSBY, a citizen of the United States, residing at St. Louis and State of Missouri, have invented a certain new and useful Improvement in Dump-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 provide simple and efficient means for receiving the impact of dropping doors in dump cars, preventing any distortion thereof.

The invention is well adapted for cars of the Ingoldsby type, wherein there is a central longitudinal member, to the opposite edges of which are hinged doors normally horizontal when closed, but which swing downward at their outer edges to discharge the load. In such cars, I have customarily provided a pair of bumpers to receive the door as it drops, these bumpers being conveniently located a suitable distance inward from the end of the door. These bumpers have engaged springs carried on the under side of the door by the next to the end floor beams thereof. With such arrangement I have found there is a tendency of the extreme corner of the door to bend downward from successive impacts.

The present invention is designed primarily to prevent the downward bending at the corner of the door. It provides a spring extending crosswise of the car carried by the central structure and adapted to receive the doors on its opposite sides. This spring is shown as located in position to engage the end floor beam and thereby support the corners of the doors,—the spring being used in addition to the usual bumpers and door springs. In some classes of cars, however, my new spring carried by the car structure may be used in place of the bumpers and floor springs, and thus receive and support the whole impact of the dropping door. My spring also has the advantage of acting as a strut-tie across the bottom of the central structure of the car. These features, and other features involved in the securing of the spring, will be hereinafter more fully explained, and the essential characteristics set out in the claims.

In the drawings Figure 1 is a bottom plan of a portion of a car embodying my invention. Fig. 2 is a cross section of such car. Fig. 3 is a detail in the same plane with Fig.

2, showing a portion of the spring and bumper. Fig. 4 is a vertical cross section on the line 4—4 of Fig. 3 looking toward the right, and Fig. 5 is a cross section on the line 5—5 of Fig. 3, looking toward the left.

Referring by reference numerals to the embodiment shown in the drawings, 10 represents sides of the car, shown as plate girders, and 11 a central longitudinal member which is shown as a built-up structure comprised of the vertical plates 12, a surmounting ridge 13, the cross-bracing plates 14 between the outer sides of the vertical plates and the under side of the projecting ridge, and the through angle bars 15, extending along the lower portions of the plates 12 at their outer sides, being riveted to them.

16 indicates dumping doors which are hinged at their inner ends by means of floor beams 17 which are connected by hinge pin-tles to the straps 18 secured to the cross plates 14. The outer ends of the doors 16 abut the lower edges of the car side, where they are supported by suitable hooks 19 on the sides of the car engaging beneath the projecting ends of the floor beams. The floor beams extend through the Z-bar 27, the purpose of which is to stiffen the outer edge of the door.

20 indicates rock shafts supported by some of the straps 18, and 21 indicates arms on these rock shafts adapted to engage the under sides of the doors and raise them when the shafts are properly rocked.

23 represents a suitable I-beam extending crosswise of the car beneath the angles 15 and riveted thereto. This I-beam is cut off diagonally as shown, and the end of its lower flange and the lower portion of its web forms a bumper adapted to engage a leaf spring 25 carried on the under side of the door. These leaf springs are shown as carried by the floor beams 17 which are next to the end floor beams of the doors, as seen in Fig. 1, and the bumpers are correspondingly located.

The construction so far specifically described is employed in cars I have heretofore devised, and which are the subject of various prior applications. In those applications, the construction of the center member, the doors, the door raising mechanism and the bumper and springs are set out and claimed. The present application relates particularly to my new bumping spring car-

ried by the center member, which will now be described.

My new bumping spring consists of a substantially rectangular bar 30 extending crosswise of the car beneath the angles 15 and curving downward near its ends, as shown at 31. This spring is shown as so located that its curved portion receives the vertical web of the endmost floor beam 17 of the door. The left hand half of Fig. 2 shows this floor beam 17 engaging the spring. The spring is supported first by shackles 33 which extend around it, and project upwardly through openings in the horizontal flange of the angle 15, nuts 34 screwing onto such projecting ends of the shackle. This supports the spring without in any manner weakening it at its point of flexure. To prevent the spring shifting longitudinally, however, I pass a bolt 35 through it, which extends into the horizontal flange of a small angular piece 36 riveted to the inner side of the plate 12. The opening through the spring bar for this bolt is located far enough back from the point of flexure so that it does not weaken the spring. One of the same rivets 37 which secures the angle 15 to the plate 20 may also secure the piece 36. This same rivet may likewise pass through the flange 40 of the cross plate 14.

It will be seen that the spring bar 30 is, by the construction described, held rigidly in place, while its ends are in position to receive the doors and prevent any distortion of the same. The intermediate portion of the spring bar acts also as a strut-tie across the center member, binding together the two plates 12 with their angles 15 and assisting in bracing the center member.

Having thus described my invention, I claim:

1. In a dump car, the combination of a center member, dumping doors hinged thereto, and a spring carried by the center member and having projecting ends adapted to engage the doors when dropped.

2. In a dump car, the combination of a center member, dumping doors hinged thereto, a spring bar carried by the center member and having projecting portions bending downward with free ends adapted to engage the doors when dropped.

3. In a dump car, the combination with a dumping door, of a downwardly extending leaf spring carried by a rigid part of the car and adapted to engage on the under side of the door.

4. The combination, in a dump car, of a dumping door that is horizontal when closed, of a leaf spring having a free end carried by a rigid part of the car, and adapted to engage the under side of the door when it drops.

5. The combination in a dump car of a dumping door that is horizontal when

closed, a leaf spring having a free end carried by a rigid part of the car and adapted to engage the web of one of the floor beams of the door when it drops.

6. In a dump car, the combination of a longitudinal center member, dumping doors hinged thereto, and a spring bar extending across the center member and acting immediately as a tie, and having its ends acting as springs.

7. In a dump car, the combination of a door supporting member, a dumping door hinged thereto, and a spring bar carried by the supporting member and adapted to engage the door, the spring bar being held by a shackle embracing the bar.

8. In a dump car, the combination of a door supporting member, a dumping door hinged thereto, a spring bar carried by the supporting member and adapted to engage the door, the spring bar being held by a shackle embracing the bar near its point of flexure, and by a bolt passing through the bar inward of said point.

9. In a dump car, the combination of a center member having a pair of longitudinal members with flanges near their lower edges, and a bar extending crosswise of the center member and secured to said flanges and having its ends acting as springs.

10. In a dump car, the combination of a center member including a pair of plates with reinforces extending along their lower edges, a spring bar extending across the center member beneath said reinforces, and shackles embracing the bar and passing through the horizontal flanges of said reinforces.

11. In a dump car, the combination of a center member including a pair of vertical plates with angles extending along their lower edges on the outer side, a spring bar extending across the center member beneath said members, and shackles embracing the bar and passing through the horizontal flanges of said angles.

12. In a dump car, the combination of a center member including a pair of vertical plates with angles extending along their lower edges on the outer sides, a spring bar extending across the center member beneath said members, shackles embracing the bar and passing through the horizontal flanges of said angles, an angle piece on the inner side of said vertical plates, and bolts passing through said angle pieces and through the body of the spring bar.

13. In a car, the combination of a dumping door, a bumper for receiving the impact thereof, a spring on the door to cooperate with the bumper, and an additional spring carried by a rigid part of the car and adapted to engage and assist in receiving the impact of the door.

14. In a dump car, the combination of the

longitudinal center member, dumping doors hinged thereto on its opposite sides, a bumper beam carried on the under side of the center member and extending crosswise and adapted to receive the impact of the dropping doors, and a spring bar extending crosswise of the center member and adapted to engage the dropping doors near their corners.

10 15. In a dump car, the combination of dumping doors, means for receiving the impact of the doors intermediately of their ends, and additional means adapted to engage the doors substantially at such ends
15 and assist in receiving their impact.

16. In a dump car, the combination of a dumping door, means for receiving the impact thereof intermediate of the ends of the door, and means for supporting the corners
20 of the door.

17. In a dump car, the combination with a dumping door, of means for supporting

the same when dropped both intermediately and at its corners.

18. In a dump car, the combination with 25 a dumping door, of spring means for supporting the same when dropped and another spring means for also supporting the corners of the door.

19. In a dumping car, the combination 30 with a dumping door, means for limiting the amount of travel of the door, and means for cushioning the impact.

20. In a dumping car, the combination with a dumping door, of a fixed resilient 35 member, and a moving resilient member for receiving the impact thereof.

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

FRANK S. INGOLDSBY.

Witnesses:

MARY D. WHITCOMB,
J. THELMA KNUDSON.