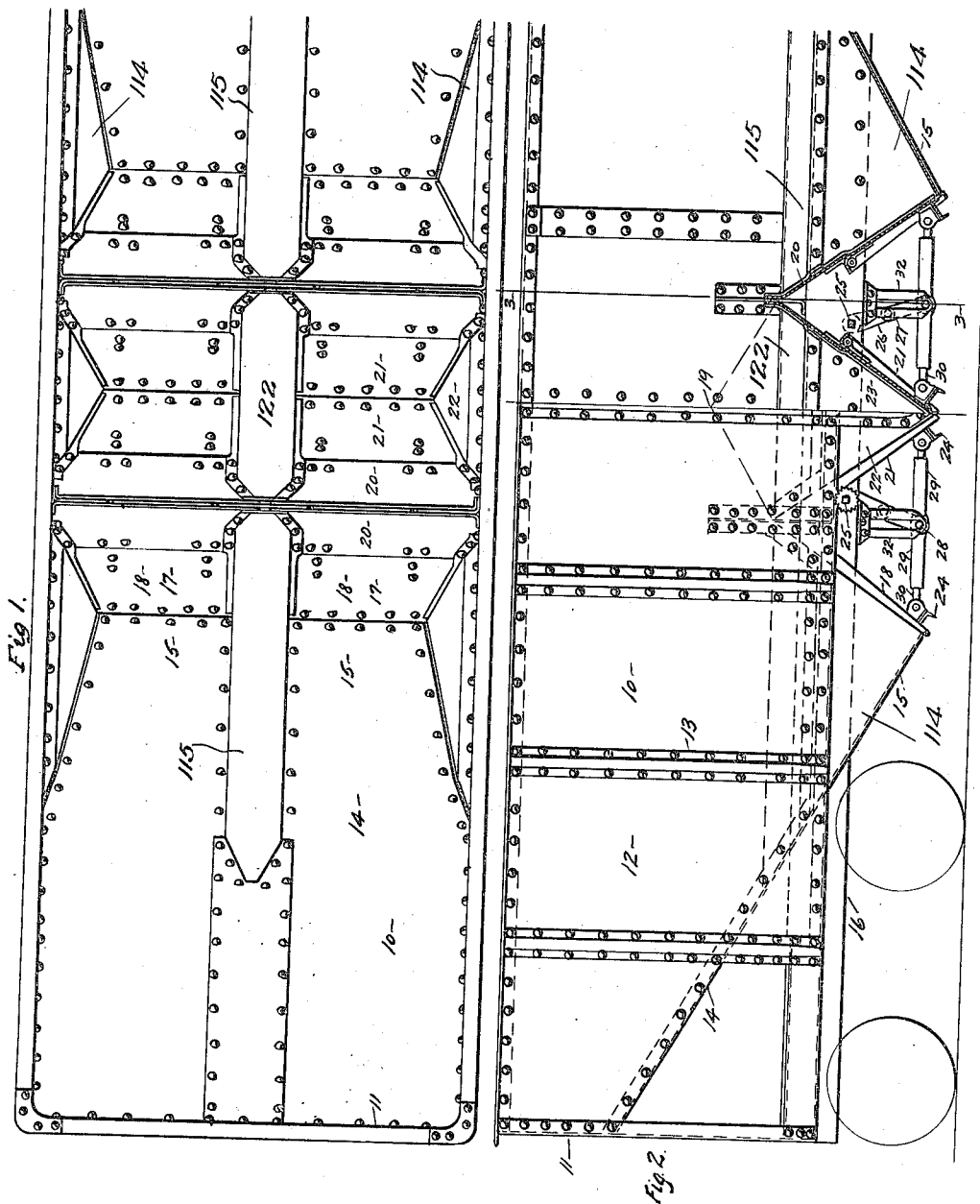


1,062,384.

A. CAMPBELL.
HOPPER BOTTOM CAR.
APPLICATION FILED APR. 5, 1912.

Patented May 20, 1913.

2 SHEETS-SHEET 1.



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2 SHEETS—SHEET 2.



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Angyle Campbell

Monday. ^{BY} Grants, Adcock & Clark.
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UNITED STATES PATENT OFFICE.

ARGYLE CAMPBELL, OF CHICAGO, ILLINOIS, ASSIGNOR TO ENTERPRISE RAILWAY EQUIPMENT COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

HOPPER-BOTTOM CAR.

1,062,384.

Specification of Letters Patent.

Patented May 20, 1913.

Application filed April 5, 1912. Serial No. 688,591.

To all whom it may concern:

Be it known that I, ARGYLE CAMPBELL, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Hopper-Bottom Cars, of which the following is a specification.

This invention relates to improvements in hopper bottom cars.

10 The objects of my invention are to utilize space heretofore lost in the central portion of the well known W type of hopper bottom cars; increase the door opening area; lower the center of gravity of the car and the load; and so arrange the hoppers or chutes that the car will be entirely self-clearing and prevent the bridging or arching of the material forming the load, when the doors are opened.

20 My invention further consists in improvements in parts and devices and in the novel combinations of the parts and devices shown, described or claimed.

25 In the drawings forming a part of this specification, Figure 1 is a plan view of a portion of a hopper bottom car embodying my improvements. Fig. 2 is a side elevation of the structure shown in Fig. 1, part of the view being in section to more clearly illustrate the construction, and Fig. 3 is a transverse sectional view, upon an enlarged scale, taken substantially on the line 3—3 of Fig. 2.

30 In the drawing, 10 denotes the body of the car, the same comprising upright ends 11, 11, sides 12, 12, the latter being provided with the usual stakes 13, 13, sloping bottoms 14, 14, each of said bottoms in conjunction with other hopper sheets hereinafter described forming at its lower end, a chute 15, it being apparent that these chutes are symmetrically arranged on opposite sides of the center sills 16 of the car underframe. Each end chute 15 comprises end-hopper triangular-shaped side and center hopper-sheets 114 and end-hopper central, longitudinal hopper sheets 115, the hopper-sheets 114 being more clearly shown in Fig. 2 and the central, longitudinal hopper-sheets 115 in Fig. 1. Each chute 15 is provided at its lower end with a door opening 17, each of said door openings being adapted to be closed by an end hinged door 18 pivoted at its upper edge to an end, transversely extending, hopper

sheet 20, each of said doors being arranged substantially at right angles to the cooperating bottom of its hopper. 55

Hitherto in hopper bottom cars of the type to which this improvement relates, *i. e.*, those in which the sloping bottoms extend to the extreme ends of the car and terminate in chutes between the trucks and called W hopper bottom cars, it has been customary to form raised central bottom portions terminating in a line above the normal floor line of the car as indicated by the dash lines and the reference numeral 19 in Fig. 2. In order, however, to accomplish the objects of this invention enumerated, heretofore, I omit these raised central portions of the bottom of the car, indicated in the drawing by dash lines, and substitute therefor a pair of V-shaped chutes or hoppers, one on each side of the center sills, each of said chutes or hoppers being formed by a pair of pivotally swinging doors 21, each pivoted at its upper edge to an intermediate, transversely extending hopper sheet 20, triangular-shaped side hopper sheets 22, triangular-shaped center hopper sheets 23 and central, longitudinal hopper sheets 122 (see Fig. 1). As will be obvious, with this construction, the capacity of the car is increased by the volume included between the dash lines shown at Fig. 2 and the V-shaped hoppers or chutes formed by the members 20, 21, 22, 122 and 23, the center of gravity of the empty or loaded car is lowered, the door area is doubled and the entire structure so arranged that possibility of bridging of the material forming the load, is practically eliminated. 90

Each pair of doors 18 is connected by a cross bar 24 so that they are opened and closed simultaneously. Each pair of doors 21, is similarly provided with a cross bar 24 and each set of oppositely swinging pairs of doors 21 and 18 is operated from a transversely disposed shaft 25, suitably mounted in bearings in the car structure and having secured thereto a crank arm 26, pivotally connected to links 27 mounted on a pivot pin 28, the latter having mounted also pivotally thereon toggle members 29, each of the toggle members 29 having mounted adjustably therein at its outer end an eye bolt 30, pivotally connected to the cross bars 24. Each of the pivot pins 28 has its ends ex- 101

tended to engage with vertical guiding members 31 and 32 secured to the center sills of the car.

As clearly shown in Fig. 3 of the drawing, the distance between the outer side of one hopper and the outer side of the corresponding hopper is at all points greater than the distance between rails, whereby to preserve the wide door openings, or, in other words, the hoppers of applicant's car are substantially the same width from top to bottom and extend over and beyond the wheels of the truck, as contradistinguished from hoppers which are narrowed in order to be accommodated between the wheels of the truck, and which consequently have a small door opening area. It will also be noted from an inspection of Figs. 2 and 3, that the central, longitudinal hopper sheets are all disposed in planes below the top edges of the sides and are placed directly above the center sills as is customary in this type of hopper bottom cars.

The W type of hopper bottom car, to which applicant's invention relates, has hitherto had a capacity for coal of approximately one hundred thousand pounds, and the ratio of the over-all inside length of the car to the height of the tops of the sides above the rails approximates 3 to 1; and it will be noted that applicant has increased the capacity of this type of car and still maintained said approximate ratio of length to height.

I claim:—

A hopper car of the character described, having vertical end walls; sides; inclined bottoms sloping from said end walls toward the center of the car and passing over the trucks to points therebetween, the distance between the outer side sheets of the hoppers on one side of the car and the outer side sheets of the hoppers on the other side of the car being greater than the distance between

the rails; end-hopper triangular-shaped side and center hopper-sheets, transverse hopper sheets, and end-hopper central, longitudinal hopper-sheets disposed in planes below the level of the tops of the car sides and adjacent the car center sill, said bottoms and end-hopper hopper-sheets coöperating to form four end hoppers, a pair at each end of the car, said end hoppers being disposed below the level of the tops of said central, longitudinal hopper-sheets; end-hopper doors on each side of the car center sill hinged along their upper edges to said transverse hopper-sheets and adapted to close the lower ends of said end hoppers; supplemental V-shaped hoppers on each side of the car center sill intermediate the end hoppers, said supplemental-hoppers being formed by supplemental-hopper, longitudinal hopper-sheets disposed in planes below the level of the car sides, supplemental-hopper triangular shaped side and center hopper-sheets, supplemental-hopper transverse hopper-sheets and supplemental-hopper swinging doors hinged along their upper edges to said last named transverse hopper-sheets, the supplemental-hoppers being disposed below the level of the tops of said last named central, longitudinal hopper-sheets; and mechanism for operating and closing all of said doors, including transversely arranged operating shafts, all of the end and supplemental-hoppers being arranged so as to obtain a low center of gravity for the load, increased capacity, larger door opening area, and the transverse hopper-sheets meeting at their upper edges at acute angles to thereby prevent bridging of the load, substantially as specified.

ARGYLE CAMPBELL.

Witnesses:

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