

March 6, 1934.

H. J. HICK

1,950,175

CAR FOR MINES AND THE LIKE

Filed March 6, 1933

2 Sheets-Sheet 1

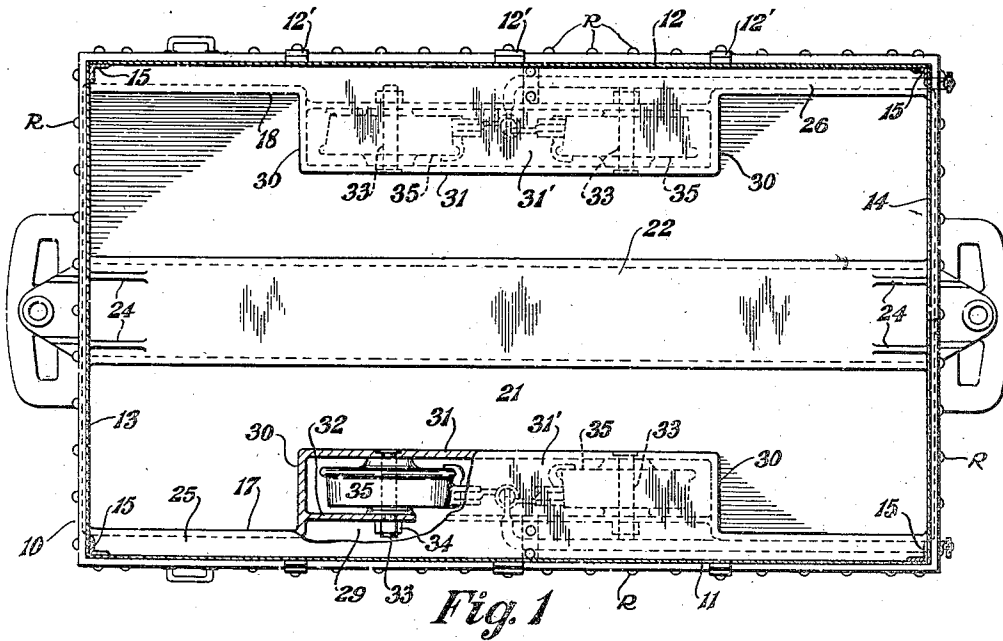


Fig. 1

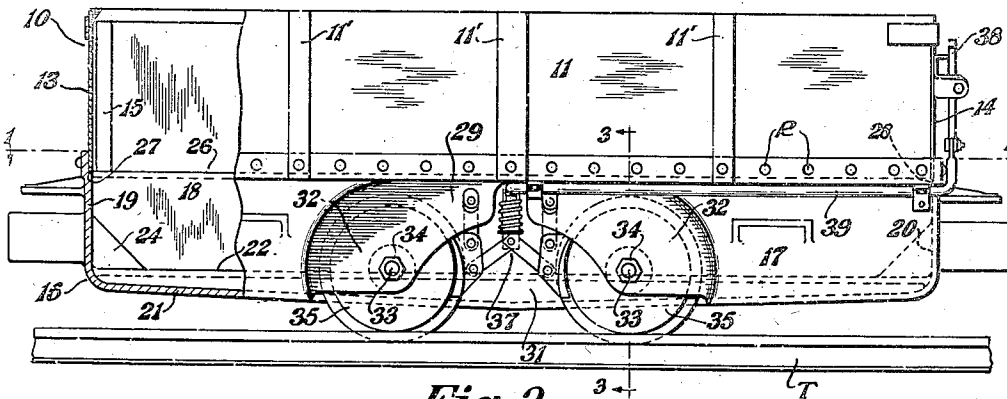


Fig. 2

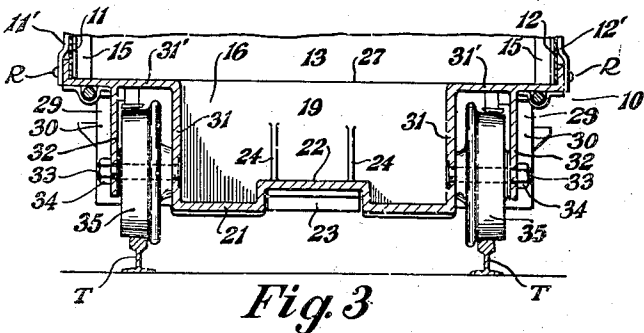


Fig. 3

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2 Sheets-Sheet 2

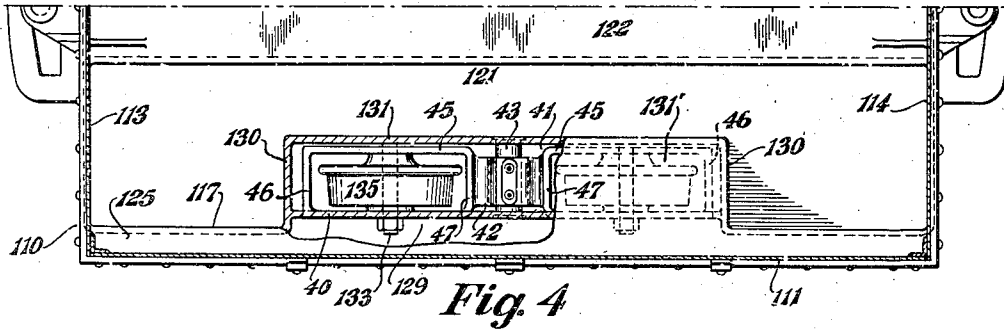


Fig. 4

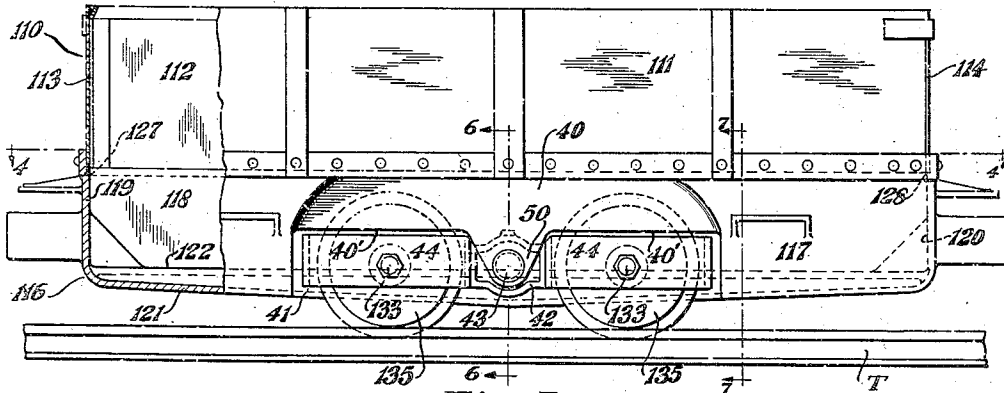


Fig. 5

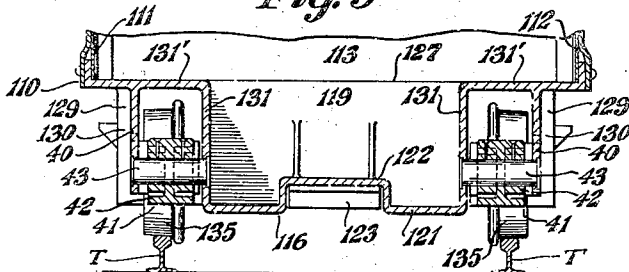


Fig. 6

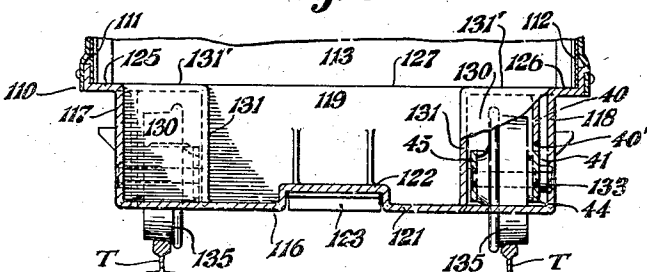


Fig. 7

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1,950,175

CAR FOR MINES AND THE LIKE

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Application March 6, 1933, Serial No. 659,678

4 Claims. (Cl. 105—364)

The invention relates to cars for transporting heavy material, and more particularly to mine cars and the like, the overall dimensions of which are limited by the passageways through which the cars pass.

The usual type of mine car embodies a number of heavy members fastened together usually by rivets, and has its center of gravity located relatively high above the axles of the car wheels. This type of car has given difficulty because the heavy loads imposed thereon have caused displacement of the members, and strain and sometimes failure in the rivet connections thereof, resulting in a relatively high maintenance cost.

Due to the relatively high center of gravity, tipping or derailment of this type of car frequently occurs, and the capacity per pound of car weight is relatively low.

It is an object of the present invention to provide a car having a combined frame and hopper bottom made in a single integral piece, thereby eliminating rivet or other connections and providing for increased strength and extremely low maintenance cost.

Another object is to provide a one-piece truck frame and hopper bottom having a very low center of gravity.

A further object is to provide a one-piece truck frame and hopper bottom which has a maximum capacity per pound of car weight without increasing the prescribed overall dimensions of the car.

A still further object is to provide an integral truck frame and hopper bottom adapted for being supported by car wheels journaled on stub axles.

Another object is to provide a mine car of increased capacity and stability having a compensating mounting for the car wheels enabling them to follow track irregularities without materially affecting the position of the car body.

And finally, it is an object of the present invention to embody all of the foregoing advantageous features in a strong and stable construction, simple in design and economical of fabrication, and which rolls easily and is easily kept in repair.

These and other objects are accomplished by the improvements comprising the present invention, which are hereinafter pointed out in detail and defined in the appended claims.

In general terms, the invention includes a one-piece frame and hopper bottom which may be an integral steel casting substantially U-shaped in cross section, there being recesses centrally of

the sides in which the car wheels are located and journaled on stud axles, the bottom wall of the hopper between the wheels and crosswise of the lower end quadrants of the wheels at each end of the car being spaced below the axes of the wheels, and the side walls of the hopper extending upwardly from the bottom wall about the wheels.

Referring to the drawings forming part thereof,

Figure 1 is a plan sectional view of one embodiment of the improved mine car, as on line 1—1, Fig. 2;

Fig. 2 is a side elevational view thereof partially in section;

Fig. 3 is a fragmentary cross sectional view taken on line 3—3, Fig. 2;

Fig. 4 is a half plan sectional view taken on line 4—4, Fig. 5, of a modified form of the improved mine car having a compensating mounting for the car wheels;

Fig. 5 is a side elevation thereof, partially in section;

Fig. 6 is a fragmentary cross sectional view as on line 6—6, Fig. 5; and

Fig. 7 is a fragmentary cross sectional view taken substantially on line 7—7, Fig. 5.

Similar numerals refer to similar parts throughout the several views.

One embodiment of the improved mine car is indicated generally at 10 in Figs. 1 to 3 inclusive, and preferably includes an upper body portion comprising side walls 11 and 12 and end walls 13 and 14, which may be of heavy gauge sheet metal. The side and end walls may be strengthened at the corners by means of angles 15 in a usual manner.

The lower body portion of the improved mine car comprises a one-piece combined truck frame and hopper bottom indicated generally at 16. The one-piece truck frame and hopper bottom 16 is preferably an integral steel casting, substantially U-shaped in transverse cross section as best shown in Fig. 7, the car 110 shown in Figs. 4 to 7 inclusive being identical with the car 10 with the exception of the wheel mounting structure.

The one-piece frame and hopper bottom 16 may include side walls 17 and 18, end walls 19 and 20, and a bottom wall 21.

The bottom wall 21 is preferably provided between its sides with a central longitudinally extending upwardly crowned or offset portion 22, and a conveyor-engaging bar 23 may be secured within the under trough of the crown or offset

22 for engaging a conveyor and the like for driving the car.

The combined frame and hopper bottom 16 may be provided between the offset portion 22 and each of its end walls 19 and 20 with angular strengthening ribs 24.

Adjacent their upper ends the side walls 17 and 18, of the combined frame and hopper 16 are provided with offset or shoulder abutments 25 and 26 respectively which form supports for the bottom ends of the side walls 11 and 12 respectively, of the upper body portion.

Similarly, the combined frame and hopper bottom 16 is provided at the upper ends of its end walls 19 and 20 with shoulder abutments 27 and 28 respectively, for supporting the end walls 13 and 14 respectively of the upper body portion.

The lower portions of the side walls 11 and 12 and end walls 13 and 14 may be secured to the upper end portions of the integral casting 16 by means of rivets R, and vertical straps 11' and 12' may be riveted to the upper end portions of the casting 16 for strengthening said walls.

The side walls 17 and 18 of the combined frame and hopper bottom 16 are provided at their longitudinally central portions with outwardly opening recesses indicated generally at 29. Each recess 29 is formed by walls 30 extending inwardly of and integral with the side walls and parallel to the end walls of the hopper bottom 16, a longitudinally extending wall 31 parallel to the side walls and connecting the walls 30, and a top wall 31' extending inwardly from one of the shoulder abutments 25 or 26, respectively, and connecting with the respective walls 30 and 31.

The lateral width of each recess 29 is sufficient to contain standard size car wheels entirely there-within. Preferably, the combined frame and hopper bottom 16 is provided at each side with integral depending flanges 32 spaced slightly inwardly of side walls 17 and 18 and extending downwardly across the outer opening of one of the recesses 29. Longitudinally spaced stub axles 33 are secured each at one end in the wall 31 of one of the recesses 29 and each at the other end in the adjacent depending flange 32, as by nuts 34 screwed on the outer ends of the stub axles. Standard size car wheels 35 are journalled on the axles 33 for rotation each between one of the flanges 32 and the adjacent wall 31 of one of the recesses, and for rolling upon the rails T of a standard track.

The bottom wall 21 between laterally opposite wheels 35 is spaced below the stub axles 33, or below the axes of the wheels 35, and at the ends of the car, the bottom wall 21 is spaced below the stub axles 33 and extends laterally across the lower end quadrants of the wheels 35 at each end of the car.

The bottom wall 21 may slope slightly downwardly from the ends toward the middle as indicated in Fig. 2 of the drawings.

By locating the wheels in recesses in the side walls of the improved frame and hopper bottom 16, and by locating the bottom wall 21 thereof below the axes of the wheels, between the wheels, and extending across the lower end quadrants of the wheels at each end of the car, the center of gravity of the car is made very low and the capacity thereof is increased to a maximum per pound of car weight.

Any well known form of brake means as indicated generally at 37 may be provided for the wheels 35, and preferably includes an operating

handle 38 operatively connected to the brake means 37 by means of a rod 39.

The fact that the combined frame and hopper bottom 16 may be integrally cast of steel eliminates all rivet or other connections therefor, and thereby provides for increased strength and rigidity, simplifies the fabrication of the mine car, and greatly reduces the maintenance cost of the car.

The stub axles provide for an extremely low hopper bottom and insure easy rolling of the car, as well as quick installation or replacement.

A modified form of the improved mine car is indicated generally at 110 in Figs. 4 to 7 inclusive, and preferably includes the upper body portion comprising side walls 111 and 112, and end walls 113 and 114.

The lower body portion of the car 110 comprises a one-piece combined truck frame and hopper bottom indicated generally at 116. The one-piece truck frame and hopper bottom 116 is preferably an integral steel casting, substantially U-shaped in transverse cross section, as best shown in Fig. 7, and may include the side walls 117 and 118, end walls 119 and 120, and a bottom wall 121.

The bottom wall 121 is preferably provided between its sides with a central longitudinally extending upwardly crowned or offset portion 122 having the conveyor engaging bar 123 secured within its under trough.

The combined frame and hopper bottom 116 is provided with shoulder abutments 125 and 126 at the upper ends of the side walls 117 and 118, forming supports for the bottom ends of the side walls 111 and 112 respectively of the upper body portion, and is provided adjacent the upper ends of its end walls 119 and 120 with shoulder abutments 127 and 128 respectively, for supporting the end walls 113 and 114 of the upper body portion.

The side walls 117 and 118 are provided at their longitudinally central portions with outwardly opening recesses indicated generally at 129. Each recess is formed by walls 130 extending inwardly of and integral with the side walls and parallel to the end walls 119 and 120, a longitudinally extending wall 131 parallel to the side walls and connecting the walls 130, and a top wall 131' extending inwardly from one of the shoulder abutments 125 or 126 respectively, and connecting with the respective walls 130 and 131.

Preferably, the combined frame and hopper bottom 116 is provided at each side with an integral depending flange 40 spaced slightly inwardly of the side wall and extending downwardly across the outer opening of each recess 129. The distance between each flange 40 and the wall 131, and between the walls 130 of each recess 129 is such that a truck indicated generally at 41, and having a pair of car wheels journalled therein, may be located therein.

Each truck 41 may include a central bearing portion 42 in which a shaft 43 is journalled, and the ends of the shaft 43 are secured respectively in one of the flanges 40 and in the adjacent recess wall 131, so that each truck 41 is pivotally mounted on the combined frame and hopper bottom 116 in one of the recesses 129.

At each end, each truck 41 is preferably provided with laterally spaced longitudinally extending walls 44 and 45 and longitudinally spaced transverse walls 46 and 47 adapted to entirely engirdle a car wheel 135, and the walls 47 are preferably secured to or integral with the central

bearing portion 42. A stub shaft 133 is secured at its ends in the laterally opposite walls 44 and 45 respectively, at each end of each truck 41, and a truck wheel 135 is journaled upon each shaft 133 within the engirdling truck walls.

The transverse walls 46 at the ends of the truck 41 are spaced inwardly of the walls 130 of each recess 129, and the inner longitudinally extending walls 45 of each truck are spaced slightly inwardly of the adjacent wall 131 of the recess.

The outer walls 44 of the truck may be in the same vertical plane as the depending flange 40, and the walls 44 are spaced slightly below the bottom ends 40' of the flange 40.

The bearing portion 42 of each truck is reduced in width, and each flange 40 is provided at its central portion with a depending portion 50 extending downwardly below the bottom ends 40' thereof. The depending portion 50 of each flange 40 is pivotally connected with the shaft 43 upon which one of the trucks 41 is journaled, so that each truck is pivotally mounted upon one of the recess walls 131 and the adjacent depending flange 40 of the combined truck and hopper bottom 116.

The bottom ends 40' of each depending flange 40 act as stops for engaging the outer walls 44 of each truck to limit the pivotal movement or rocking motion of the car 110 about the shafts 43. By means of this structure, irregularities in the track are compensated for so that the load of the car may be carried substantially uniformly by all four wheels.

The bottom wall 121 between the recess walls 131 and extending laterally across the lower end quadrants of the wheels at each end of the car, is spaced below the axes of the wheels 135.

This construction provides for locating the center of gravity of the car very low or relatively close to the track, and for increasing the capacity of the car per pound of car weight to a maximum.

Although no brake means has been illustrated in connection with the form of car shown in Figs. 4 to 7 inclusive, it will be understood that any suitable brake means may be employed, without departing from the scope of the invention.

I claim:

1. A car for mines and the like including a one-

piece truck frame and hopper bottom substantially U-shaped in cross section and having side walls and a bottom wall, each side wall having a recess in its longitudinally central portion, a car truck located in each recess and pivotally connected to said frame and hopper bottom, car wheels journaled in each truck, and said bottom wall being located below the axes of said wheels.

2. A car for mines and the like including a one-piece truck frame and hopper bottom substantially U-shaped in cross section and having side walls, each side wall being provided with a recess in its longitudinally central portion, a depending flange integral with said frame and hopper bottom and extending downwardly across the outer opening of each recess, a car truck located in each recess between the flange and the adjacent side wall, wheels journaled in each truck, and means pivotally connecting each truck with the adjacent depending flange and side wall.

3. A car for mines and the like including a one-piece truck frame and hopper bottom substantially U-shaped in cross section having side walls, each side wall being provided with a recess in its longitudinally central portion, a depending flange integral with said frame and hopper bottom and extending downwardly across the outer opening of each recess, a car truck located in each recess between the flange and the adjacent side wall, stub axles mounted in the trucks, car wheels journaled on said stub axles and located within the recesses, and means pivotally connecting each truck with the adjacent depending flange and side walls.

4. A car for mines and the like including a one-piece truck frame and hopper bottom substantially U-shaped in cross section and having side walls and a bottom wall, each side wall having a recess in its longitudinally central portion, a car truck located in each recess, stub axles mounted in the trucks, car wheels journaled on said axles within the recesses, means pivotally connecting said trucks with said frame and hopper bottom, and said bottom wall between the wheels and crosswise of the lower end quadrants of the wheels at each end of the car being located below said stub axles.

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