Sept. 9, 1924. 1,508,123

E. RAMSAY

MINE CAR

Filed Oct. 21, 1921 4 Sheets-Sheet 1

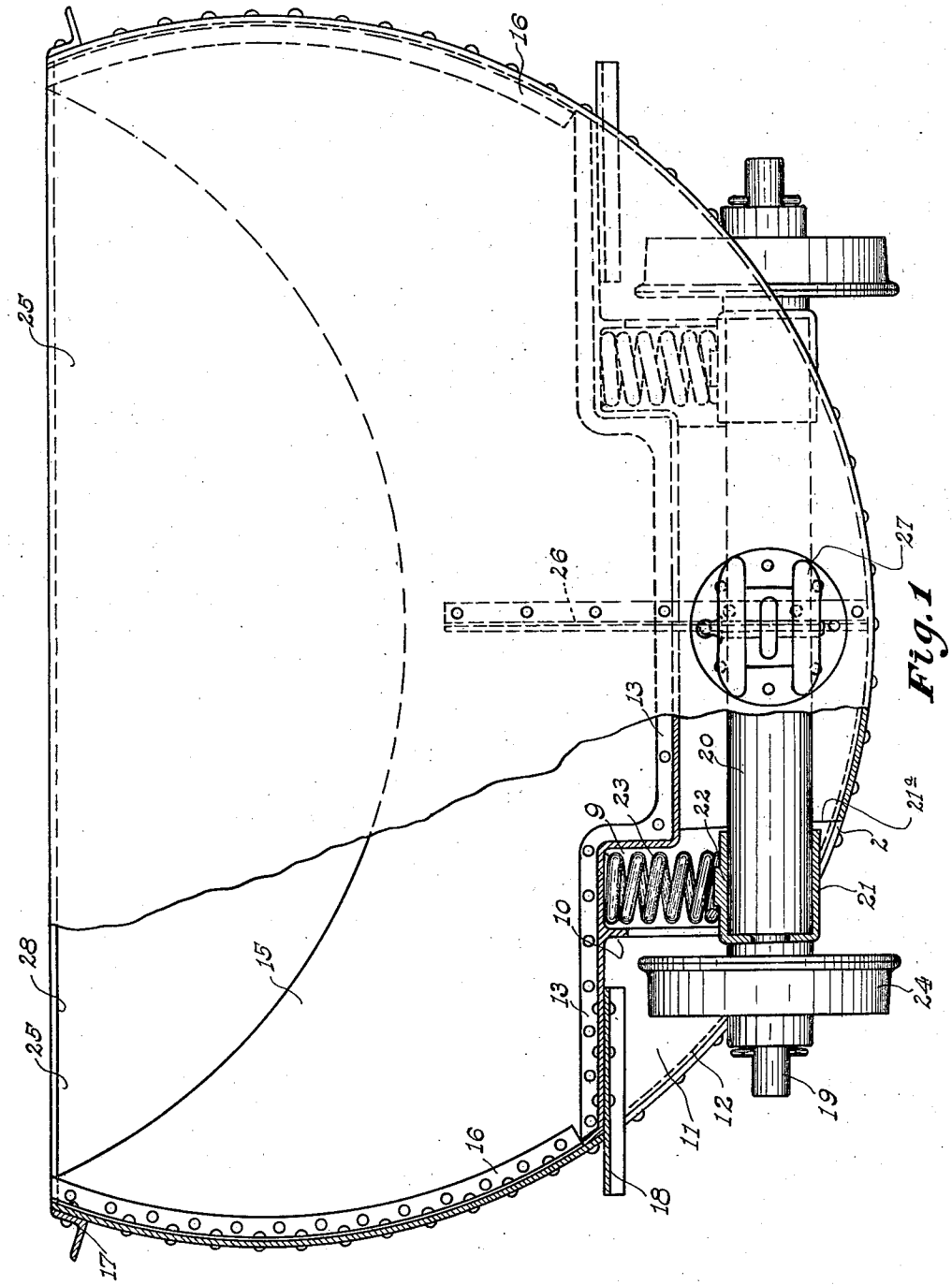



Fig. 1

INVENTOR
Erskine Ramsay.

BY

ATTORNEY

Sept. 9, 1924. 1,508,123

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Filed Oct. 21, 1921 4 Sheets-Sheet 2

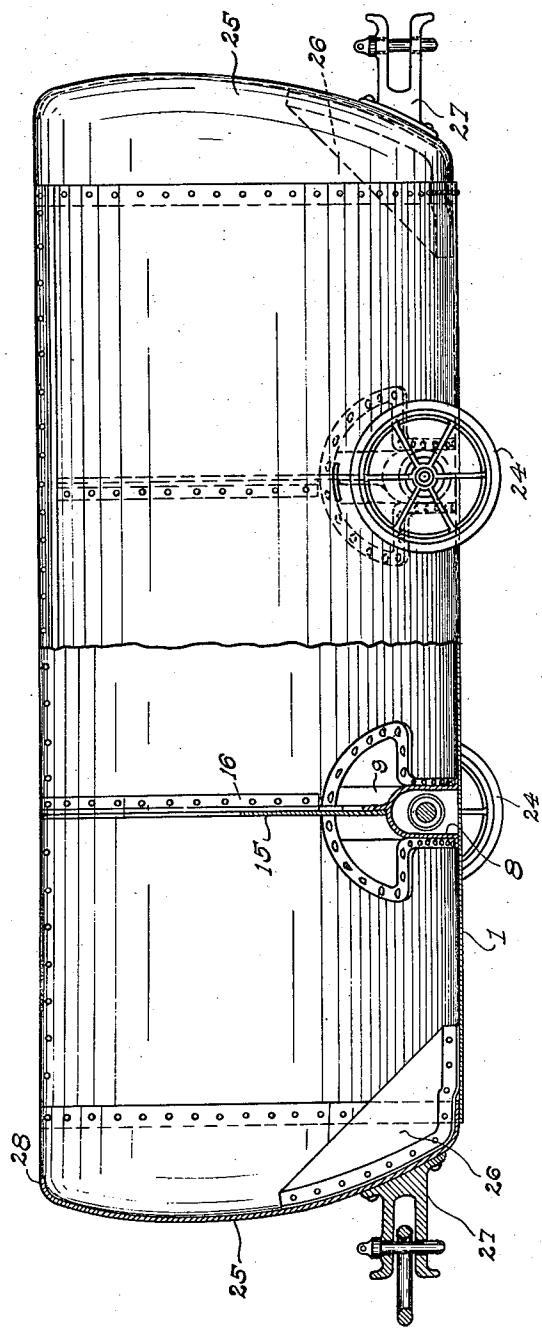



Fig. 2

INVENTOR
Erskine Ramsay.
BY
ATTORNEY

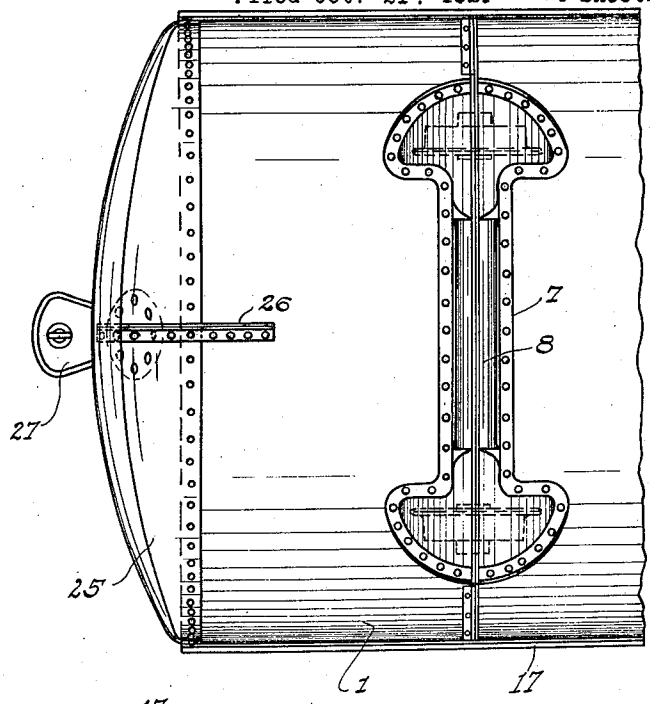
Sept. 9, 1924. 1,508,123

E. RAMSAY

MINE CAR

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Fig. 3



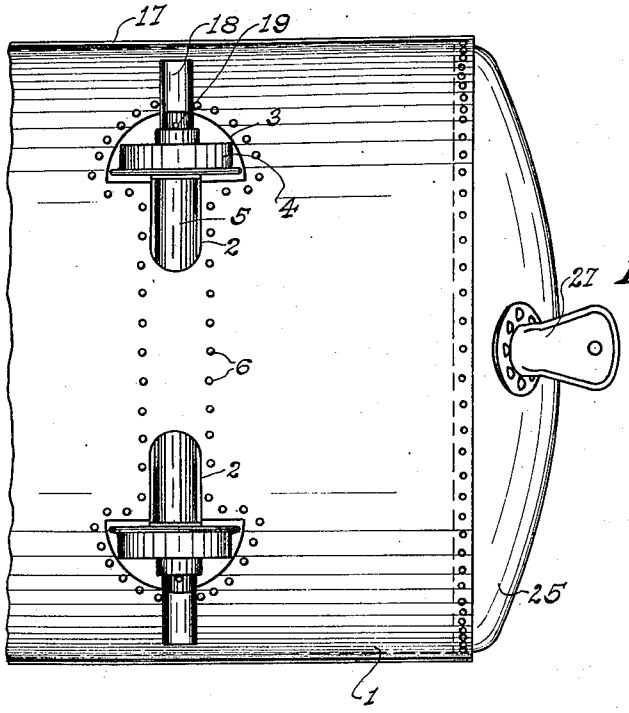




Fig. 4

INVENTOR
Erskine Ramsay.

BY Robert D. Johnston.

ATTORNEY

Sept. 9, 1924. 1,508,123

E. RAMSAY

MINE CAR

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Fig. 5

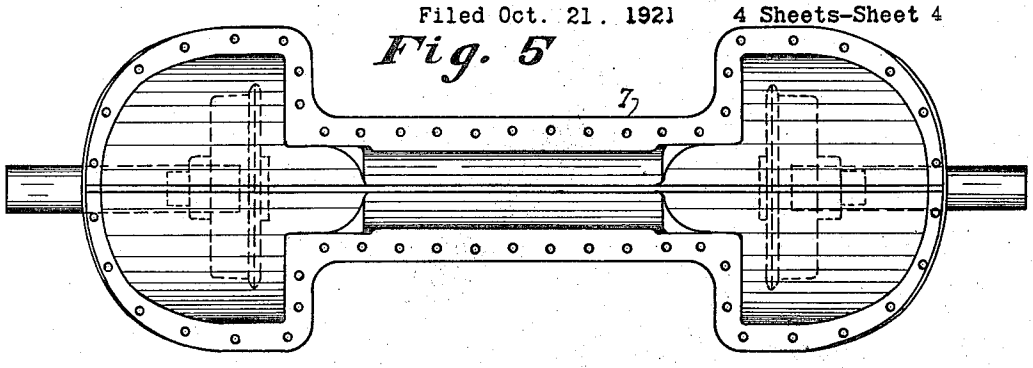



Fig. 6

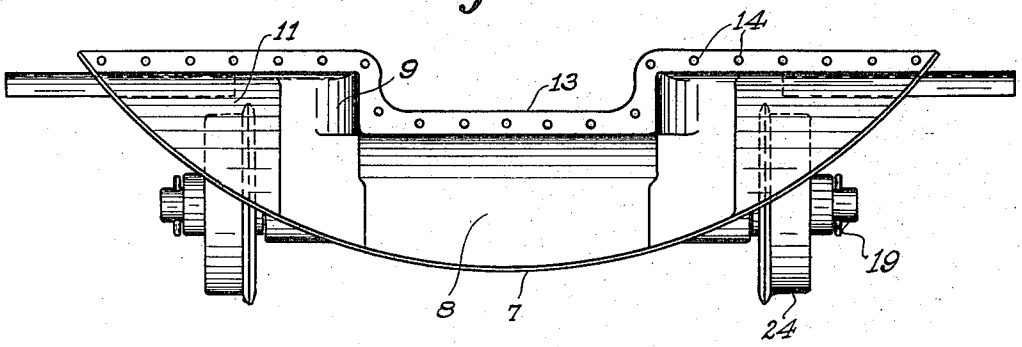



Fig. 7

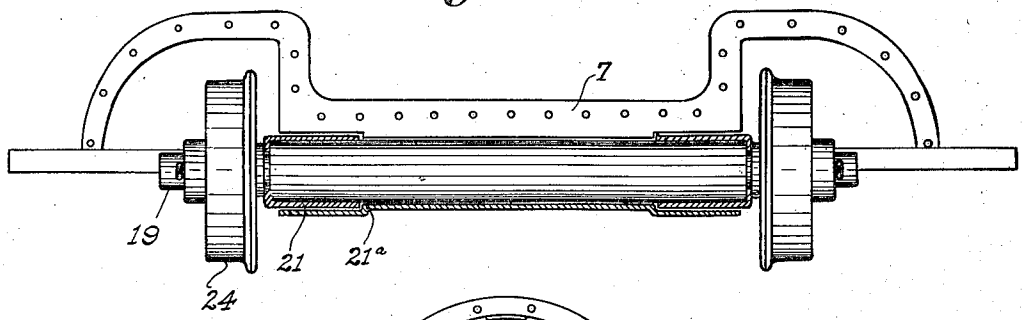
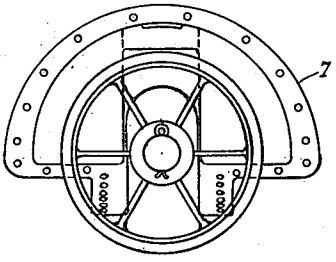



Fig. 8




INVENTOR
Erskine Ramsay

BY W. D. Ramsay

ATTORNEY

Patented Sept. 9, 1924. 1,508,123

# UNITED STATES PATENT OFFICE.

ERSKINE RAMSAY, OF BIRMINGHAM, ALABAMA.

## MINE CAR.

Application filed October 21, 1921. Serial No. 509,436.

*To all whom it may concern:*

Be it known that I, ERSKINE RAMSAY, a citizen of the United States of America, residing at Birmingham, in the county of Jefferson and State of Alabama, have invented certain new and useful Improvements in Mine Cars, of which the following is a specification.

My present invention relates to an improvement in the design and construction of cars and particularly of mine cars wherein it is of importance to obtain the maximum capacity for a permissible height of the car with a minimum head room requirement for the operation of the car.

With these objects in view I have conceived that the most desirable car will be obtained if its center of gravity can be brought as low as possible and to do this I provide novel means for mounting the running gear so that it is possible for the bottom of the car to be dropped as far as permissible by track conditions below the level of the axles. My preferred arrangement for accomplishing this purpose is the provision of wheel openings in the car bottom which are closed preferably by wheel housings disposed transversely of the bottom of the car and functioning as pedestals for the guiding of the axle journals and as housings for the springs (when springs are used) which support the car on the axle.

A further distinctive feature of my invention is the formation of the car in a simple and inexpensive manner from rolled plates which are punched prior to assembly to receive the axle and wheel housings, thus permitting the car to be shipped collapsed and the plates bolted up, after which the housings can be set in and bolted to the body and the running gear set in the housings.

A further object of my invention is to provide the car with transverse braces formed both by the housings and by plates which are preferably bolted both to the axle housings and to the car body so as to form a most rigid structure.

A further feature of my invention relates to the design of a one piece axle housing which projects into the car body and at its ends is enlarged to receive the wheels so that this housing forms both a transverse brace member and a cover for the openings required for the wheels and for portions of the axle when the car body is underhung below the axle.

My invention further comprises the novel details of construction and arrangements of parts, which in their preferred embodiment only are illustrated in the accompanying drawings, in which:—

Fig. 1 is an end elevation of my improved type of car partly broken away to show one end of the housing in section and one wheel and part of the axle in elevation.

Fig. 2 is a side elevation of the car with one end broken away in vertical central transverse cross section.

Fig. 3 is a top plan view of one end of the car; and

Fig. 4 is a bottom plan view of the other end of the car.

Fig. 5 is a top plan view; and

Fig. 6 is a side elevation of the wheel housing with the running gear in position therein.

Fig. 7 is a bottom plan view of the housing with one-half thereof broken away in horizontal cross section.

Fig. 8 is an end elevation of Fig. 6.

Similar reference numerals refer to similar parts throughout the drawings.

In the embodiment of my invention illustrated I have selected a car body having preferably a curved cross section with its bottom under maximum load conditions designed to approach closely the top level of the track rails. It is to be understood however that this particular design is illustrative merely and may be widely varied to suit different operating conditions but without however departing from the spirit of my invention.

As shown, the body of the car is made of a single metal sheet 1 adapted to be bent or rolled to form a concavo-convex (or rectangular) body and having opposite the points for the reception of the wheels and axles, slots punched in the plate of the character more clearly illustrated in Fig. 4, each slot having a narrow extension 2 opening into an enlarged opening 3 which is intended for the reception of a car wheel 4. The slot extensions 2 are in transverse alignment and overlie the ends of the axles 5, being of such length as to permit the requisite vertical play for the axles, as is more clearly indicated in the cross sectional portion of Fig. 1. Preferably, at the same time that the open-

ings 2 and 3 are punched in the sheet, the bolt holes 6 are also punched extending from side to side of the car and about the openings 3, and it is by bolts or rivets inserted through these openings that I attach the housing 7 for each axle and its respective wheels. Each housing comprises a narrow transverse central portion 8 which is U-shaped in cross section and open at the bottom, as will be seen more clearly in Fig. 2. This portion has its bottom edges struck on a curve or other shape to conform to the bottom portion of the car between the adjacent ends of the slots 2, and it has out-turned bottom flanges which are bolted to the car body through the bolt holes 6. At each end this narrow bottom 8 has an offset shoulder 21ª and, where springs are used, the housing has at each end a spring chamber 9 which is provided with an internal flange 10 relatively narrow and adapted to define the outer margin of the spring chamber. Beyond this spring chamber at each end the housing flares into a wheel housing chamber 11, the outer wall 12 of which is also struck on a curve or shape corresponding to the car body and is attached to the same by bolts or rivets passed through the holes 6 surrounding the wheel holes 3. A wheel housing thus forms an upwardly and inwardly projecting closure for the wheel opening and for the axle opening 2, both of which housings are curved transversely overhead and are of ample depth to permit the normal vertical play of the loaded car under running conditions. Along the top of the housing portions 8, 9 and 11, I provide a central vertical web or flange 13 which extends continuously from end to end of the housing and is provided with bolt apertures 14 for the reception of bolts by means of which a transverse crescent shaped reinforced plate 15 is bolted in place, the edges of this plate above the housing ends being bolted to angles 16 which extend upwardly from each housing in line with the flange 13 to the top edges of the car, which are preferably braced by longitudinal external side angles 17. I prefer a crescent shaped plate as it is not necessary to bring the top level of this cross bracing plate at its center to the level in the body, but being disposed transversely of the car to allow for loading line timber, etc., and it will present no interference to the dumping of the car's contents when the car is tilted laterally, as is now the general practice for dumping.

To the underside of the top portion of each wheel housing 11 I attach a hold-down plate 18 which projects substantially beyond the sides of the car and the ends of the axle 19. These plates are adapted to engage suitable hold-downs in the dump by means of which the car can be held on the track while being inverted for dumping. The angles 17 and the axles 19 may be used separately or jointly to engage elements on the dump and assist in holding the car in place. The axle is shown mounted in a sleeve 20 containing any suitable antifriction bearing and having mounted at each end a sleeve bearing 21 the outer ends of which are inturned to leave a restricted central opening for the passage of the axle 19. On the top of each bearing 21 I provide a boss 22 forming a centering bottom seat for a coil spring 23 which is mounted in the spring housing 9 and engages the top of the housing. Where the narrower central portion of the housing merges into the spring chamber I provide vertical offset shoulders 21ª which engage the inner ends of the bearing sleeves 21 and thus hold the axle against lateral displacement. The shoulders 21ª are vertically extended so as not to interfere with the free normal vertical play of the axle. The side walls of the flanges 10 form in effect pedestals in the ends of the housings which guide the vertical play of the bearings 21 responsive to track inequalities and keep the springs 23 in place. Wheels 24 are suitably mounted on the ends of the axles 19.

The ends of the cars are formed by plates 25 which are preferably bellied and are bolted or riveted to the ends of the main body plate 1. I provide a suitable brace 26 for each end plate opposite the point of attachment thereto of the coupler 27 which may be of any suitable character and which, if desired, may be located at a suitable point on the end of the car which will be on the axis of the rotary dump to permit dumping uncoupling the car frame. To further brace the ends, their tops are bent over sufficiently to form an overhung flange 28, which is seen more clearly in Fig. 2.

In assembling my improved type of car, the body plate 1 can be punched and shipped flat along with the end plates 25 and these plates with the housings form the complete collapsed car structure. In assembling the car, the body plate 1 is rounded or shaped to the desired curve or other form, the ends 25 and their braces 26 are bolted in place. The axles 19 are inserted transversely of the car through the wheel openings 3 in the body 1, and the housings 7 are then lowered into position over the axles and riveted or otherwise attached to the inside surface of the car bottom so as to close the openings 2 and 3. The hold-downs 18 are then applied to the housings, the springs 23 are slipped into the spring chambers through the opening left in the flanges 10, the wheels are mounted on the axles, and the car is complete except for the attachment of the angles 16 to the body and the cross brace plates 15 to the angles 16 and the housings 7. The assembling is thus simple and inexpensive, the car has no draw

bar, the coupling thrust and pull being transmitted through the ends 25 to the entire body 1 which gives a rigid construction, and the running gear is spring mounted and therefore free to follow all inequalities of the track which keeps the car wheels on the track and avoids the usual rigidity of running gear mounting on mine cars.

The extent to which the opening 2 approaches the longitudinal center line of the body determines the extent below its normal level that the axle can drop without engaging the body. The intervening web stiffens the body 1 and forms a stop to limit the down movement of the axle in the car. This web, as seen in Fig. 1, leaves a clearness which is ample to care for the normal vertical play of the car body which is shown in Fig. 1 in its loaded position with the springs 23 under normal compression. The center of gravity of the loaded car will be abnormally low and its carrying capacity abnormally high for its height.

The method of mounting the axles and running gear gives great body strength to the car which is further increased by the use of the transverse brace plates 15. The angles 17 and flanges 28 gives the necessary rigidity to the top edges of the car and the whole forms a comparatively light, inexpensive, highly efficient and durable car, capable in its preferred form of collapsed shipment.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A car body provided with wheel receiving openings in the bottom thereof, and bracing members extending transversely of the bottom and forming coverings for said openings, substantially as described.

2. A car body provided with wheel receiving openings in the bottom thereof, and hollow metallic bracing members extending transversely of the bottom, and forming covers for said openings, substantially as described.

3. A car body provided with wheel receiving openings in the bottom thereof, and hollow metallic bracing members extending transversely of the bottom, said bracing members having enlarged end portions forming housings for the wheel openings, substantially as described.

4. A car body provided with wheel receiving openings in the bottom thereof, bracing members extending transversely of the bottom and forming coverings for said openings, and bracing plates co-operating with said members, substantially as described.

5. A car body having wheel receiving openings in the bottom thereof, and housing members co-operating with said openings, the housing members on opposite sides of the car body being connected by transversely extending bracing members, substantially as described.

6. A car body having spaced transversely opposite openings in its bottom, axles extending transversely above the bottom and projecting through said openings, and internal members forming coverings for said openings, and housings for said axles.

7. A car body with opposite pairs of side openings in its bottom, axles passing above the bottom and projecting through said side openings, wheels on the axles, and housings attached within the car and forming coverings for said openings, and housings for the wheels and axles.

8. A car body provided with pairs of transversely opposite spaced openings in its sides and bottom, the side openings being enlarged for the reception of the wheels, axles inserted above the bottom and through said side openings, wheels on the axles projecting upwardly into the car body, and transverse housing members mounted in the car and forming coverings for said openings.

9. A car body formed of a metal sheet having spaced pairs of openings flared at their outer ends, end members for the body, axles inserted through the car body and having their ends projecting through the enlarged wheel openings, wheels mounted on the axles and projecting into the car body through the flared ends of said openings, and transverse housings shaped to conform to the bottom of the body and mounted therein to form coverings for the openings and housings for the axles and wheels.

10. A mine car having its body converted into a truck by the provision of opposite side openings, transverse housings covering opposite pairs of said openings and having their ends enlarged to form wheel housings and pedestals, axles passing through the car and mounted in said housings and having bearings free to play in said pedestals, and springs interposed between the housings and bearings, substantially as described.

11. A mine car having its body proper formed of a single sheet of metal shaped to the desired body form and having opposite pairs of openings punched therein for the reception of the car axles, ends for the body, and bottom transverse housings for the axles, each forming a closure for the openings provided for its respective axle.

12. A car body formed by a plate shaped to conform to the desired cross section of the car body and having bottom wheel openings, means to mount wheels to project upwardly into said openings, transverse housings mounted in the car to cover said openings, and a transverse crescent shaped brace plate attached to the sides of the car and to the top of a housing.

13. In combination with a car body hav-

ing openings for the wheels to project thereinto, of a transverse integral casting forming a housing for an axle and its wheels, the casting at its center being restricted to form a vertical U-shaped guide for the axle and at each end being enlarged to form a housing to close the wheel opening, the bottom edge of the casting being shaped to conform to the inside face of the car bottom to which it is connected.

14. A car body having a wheel and axle housing as described in claim 13, in which hold-downs are attached to the outer ends of the wheel housings and project beyond the same, as and for the purposes described.

15. A wheel and axle housing for a car body comprising a casting U-shaped in cross section and open at its bottom, the housing being narrowest at its center where it forms a guide for the axle, being expanded near each end to form a spring chamber, and being further expanded beyond the spring chamber to form a wheel housing, the casting having its car engaging portions shaped to conform to the bottom portion of the car and adapted to be attached thereto, substantially as described.

16. The combination with a car body, of a wheel and axle housing mounted in said body, the housing comprising a narrow intermediate portion vertically elongated and forming a guide for the axle, there being an offset shoulder near each end of said narrow portion adapted to engage spring seats fast on the axle and hold the axle against endwise play in the housing, said housing beyond said shouldered portion being vertically extended to form spring chambers having spring insertion openings for the outer wall of the chambers, and said housing being enlarged laterally beyond said spring chamber to form transversely arched housings which overhang the wheels.

17. In a mine car, a body formed of sheet metal having ends attached to the body, internal braces connecting the ends to the body, couplings connected to the ends in line with the braces and adapted to transmit their full thrust and pull through the body free of any draw bar connection.

18. In a mine car as described in claim 17, the end plates being bellied and having the coupling mounted at an intermediate point thereon opposite to the braces.

In testimony whereof I affix my signature.

ERSKINE RAMSAY.

Witness:

NOMIE WELSH.