

R. H. STEVENS.  
LADLE CONSTRUCTION.  
APPLICATION FILED APR. 30, 1909.

934,946.

Patented Sept. 21, 1909.  
2 SHEETS—SHEET 1.

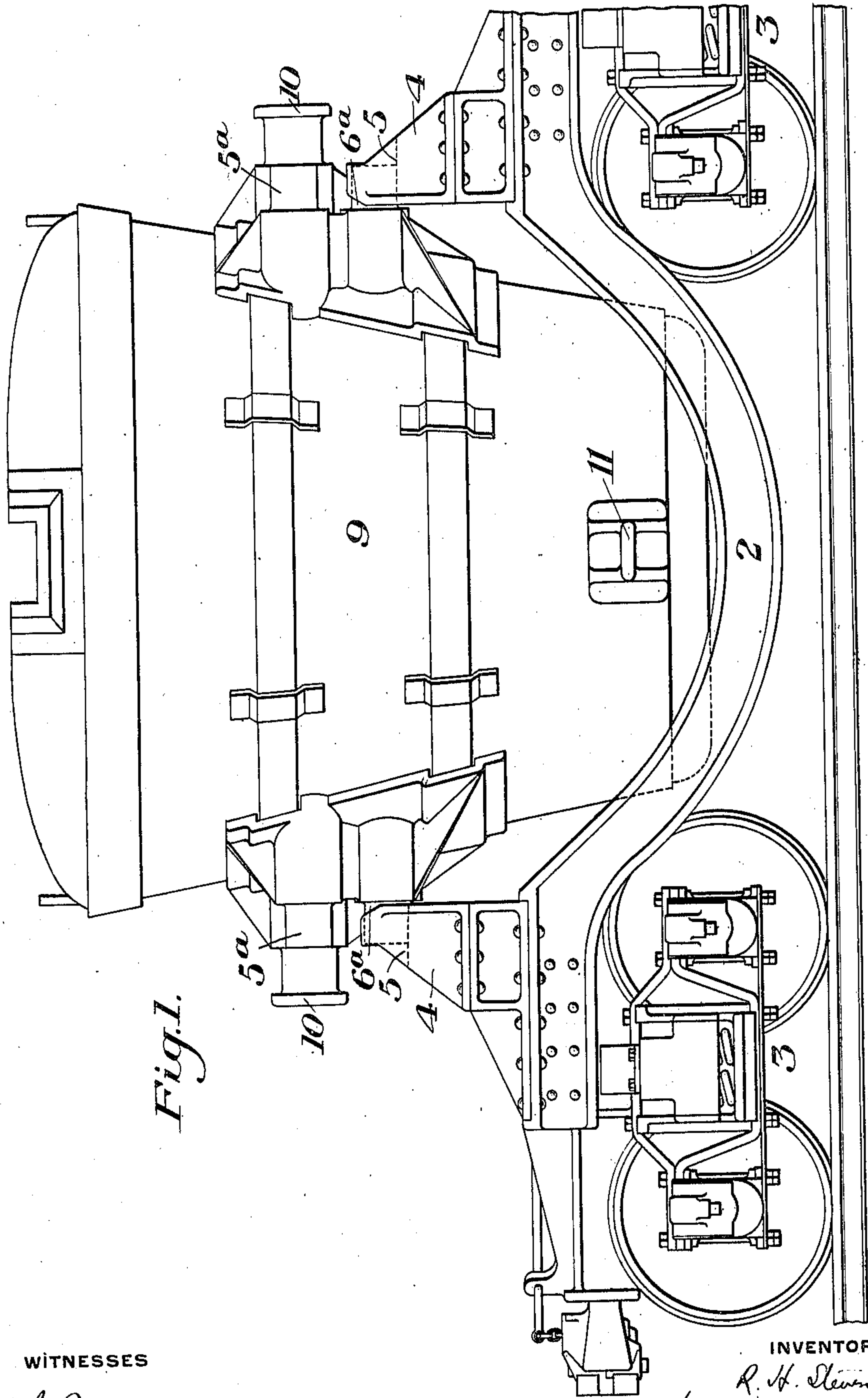


Fig. 1.

WITNESSES

*R. A. Balderson.*  
*G. L. Winters.*

INVENTOR

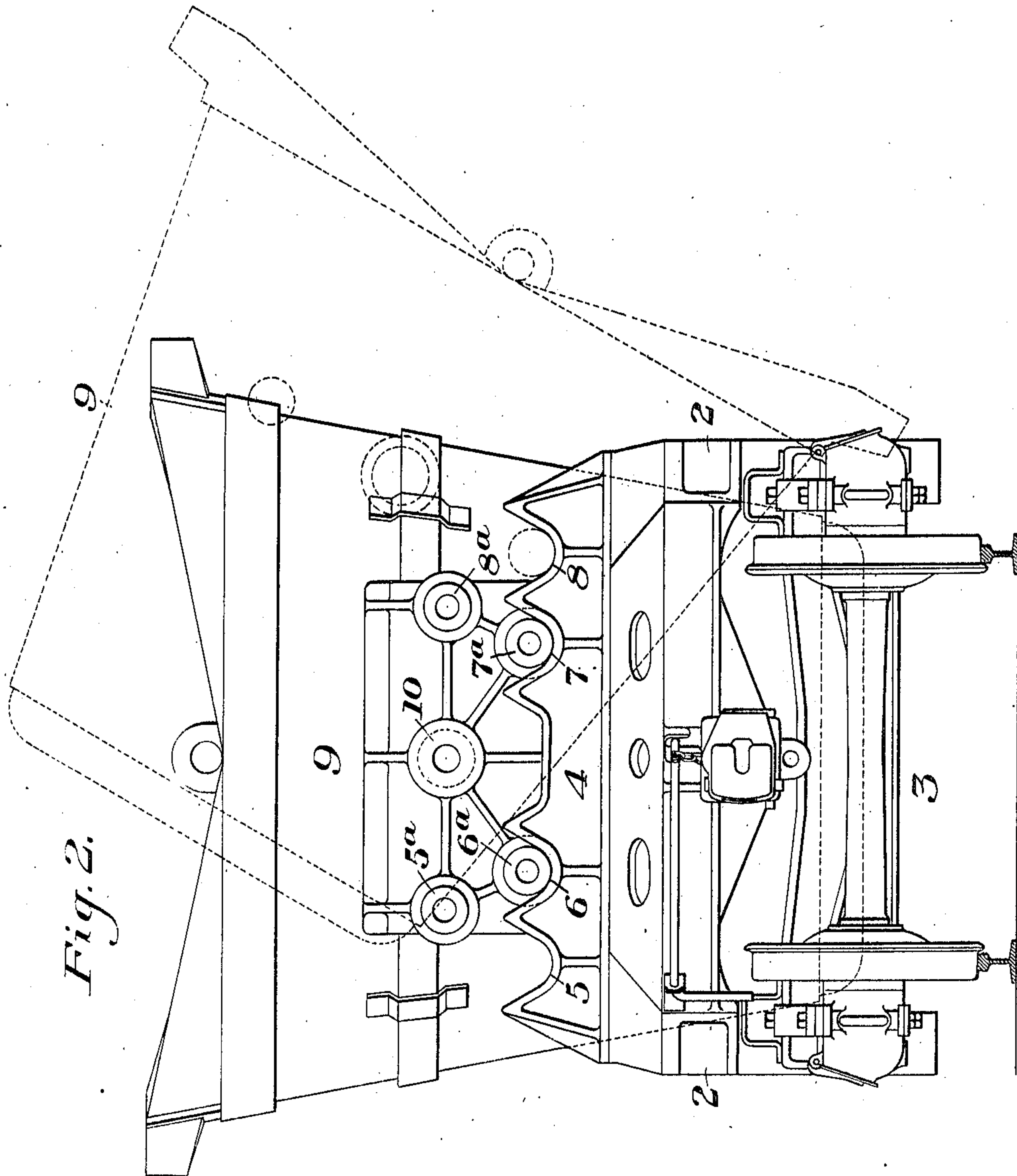
*R. H. Stevens*  
*by Nathaniel Dymally & Partners*  
*his attys*

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# UNITED STATES PATENT OFFICE.

RICHARD H. STEVENS, OF MUNHALL, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO  
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## LADLE CONSTRUCTION.

934,946.

Specification of Letters Patent. Patented Sept. 21, 1909.

Application filed April 30, 1909. Serial No. 493,106.

To all whom it may concern:

Be it known that I, RICHARD H. STEVENS, of Munhall, Allegheny county, Pennsylvania, have invented a new and useful Ladle Construction, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal side elevation of a ladle car having a ladle and ladle supports constructed and arranged in accordance with my invention; Fig. 2 is an end elevation of the same showing the arrangement of the trunnions and trunnion supports, and showing the lifting means by which the ladle is handled in being removed from and placed on its supports.

My invention relates to the construction of ladles used in handling molten materials such as molten iron and blast furnace cinder, and it more particularly relates to ladles which are arranged to be tipped or tilted in emptying them of their contents.

The object of my invention is to provide a ladle having novel supporting means by which the ladle is maintained in its vertically upright position while being handled in carrying materials from place to place, and by which the ladle is advanced sidewise during the dumping operation.

A further object of the invention is to provide improved means for handling the ladle in removing it from and replacing it upon the ladle supports on which the ladle rests during the dumping operation.

In the drawings, 2 represents the frame of a ladle car having the usual wheeled trucks 3. The frame 2 of the car is provided with the ladle support 4 having a plurality of trunnion bearings 5, 6, 7 and 8. The ladle 9 of the car is provided with a plurality of trunnions 5<sup>a</sup>, 6<sup>a</sup>, 7<sup>a</sup>, and 8<sup>a</sup>, which engage with and seat themselves in the several bearings 5, 6, 7 and 8 during the tilting of the ladle on the ladle support 4. The ladle 9 is also provided with lifting arms 10, which project horizontally beyond the supporting trunnions 5<sup>a</sup>, 6<sup>a</sup>, 7<sup>a</sup> and 8<sup>a</sup>, the lifting arms 10 being employed to handle the ladle when the ladle is removed from its supports to be filled or emptied or to be repaired.

By extending the arms beyond the supporting trunnions, the lifting mechanism for

handling the ladle is easily and quickly secured in place, and is removed after placing the ladle in place on the trunnion supports.

A lug 11 is provided on each side of the ladle, to which any suitable tilting device may be secured when tilting or dumping the car in the ladle supports 4 on the car body.

In dumping the ladle on the car, a chain hook or other device is attached to one of the lugs 11, and the ladle is tipped forwardly in either direction. At the beginning of the tipping operation, the ladle is supported by the trunnions 6<sup>a</sup> and 7<sup>a</sup> in the seats 6 and 7 on the opposite ends of the car. The ladle is tipped about the axis of the trunnion 6<sup>a</sup> or 7<sup>a</sup> until the trunnion 5<sup>a</sup> or 8<sup>a</sup>, depending on the direction in which the ladle is being tipped, engages with its trunnion seat 5 or 8, and on continuing the dumping operation the ladle is then tipped about the axis of the trunnions 5<sup>a</sup> or 8<sup>a</sup>.

After the ladle is emptied, the direction of movement is reversed and the ladle again assumes the position shown by full lines in Fig. 2. When in this position, the ladle is supported on the car frame by the trunnions 6<sup>a</sup>, 7<sup>a</sup> in the bearings or seats 6 and 7. The bearings are separated and form a rigid support while the ladle is being transferred from place to place on the tracks of the railway, and there is no tendency of tipping or tilting, which might cause damage and accidents, or loss of materials contained in the ladle.

By providing the arms 10 on the ladles, which extend horizontally beyond the vertical plane of the ends of the trunnions 5<sup>a</sup>, 6<sup>a</sup>, 7<sup>a</sup> and 8<sup>a</sup>, and the trunnion supports, the ladle is easily and quickly lifted from the ladle car by any suitable lifting mechanism. This is of importance, where the ladles are filled at one point and are then dumped at points which require their being removed from the ladle car in some cases and again require them to be dumped from the car body.

The advantages of my invention will be apparent to those skilled in the art. The apparatus is simple, and is easily kept in repair. The usual rack and pinion employed for supporting and tilting the cars, together with the locking means for holding the cars in their vertical upright position are dispensed with.



Modifications in the construction and arrangement of the parts may be made without departing from my invention.

I claim:—

- 5 1. A ladle having a plurality of separated supporting trunnions on which the ladle turns in dumping, supporting bearings for said trunnions, and lifting arms by which said ladle is handled in removing and re-  
10 placing it on said supports, said arms projecting horizontally beyond the ends of said trunnions, the axes of the trunnions on which said ladle turns being in different horizontal planes; substantially as described.
- 15 2. A ladle having a plurality of separated supporting trunnions on which said ladle turns in dumping, the axes of said trunnions being in different horizontal planes, coaxing bearings for said trunnions, and independ-

ent lifting arms by which said ladle is han- 20  
dled in removing and replacing the ladle on said supports, said arms projecting horizontally beyond the ends of the trunnions; substantially as described.

3. A ladle having a plurality of separated 25  
supporting trunnions, a ladle support having bearings with which said trunnions engage, and lifting arms by which said ladle is han-  
dled in removing and replacing it on said supports, said lifting arms projecting hori- 30  
zontally beyond the ends of said trunnions; substantially as described.

In testimony whereof, I have hereunto set my hand.

RICHARD H. STEVENS.

Witnesses:

W. H. CORBETT,  
J. A. HAMILTON.