No. 655,163. Patented July 31, 1900.

P. F. POORBAUGH.

STEEL CAR CONSTRUCTION.

(Application filed Dec. 18, 1899.)

(No Model.)

Fig. 1.

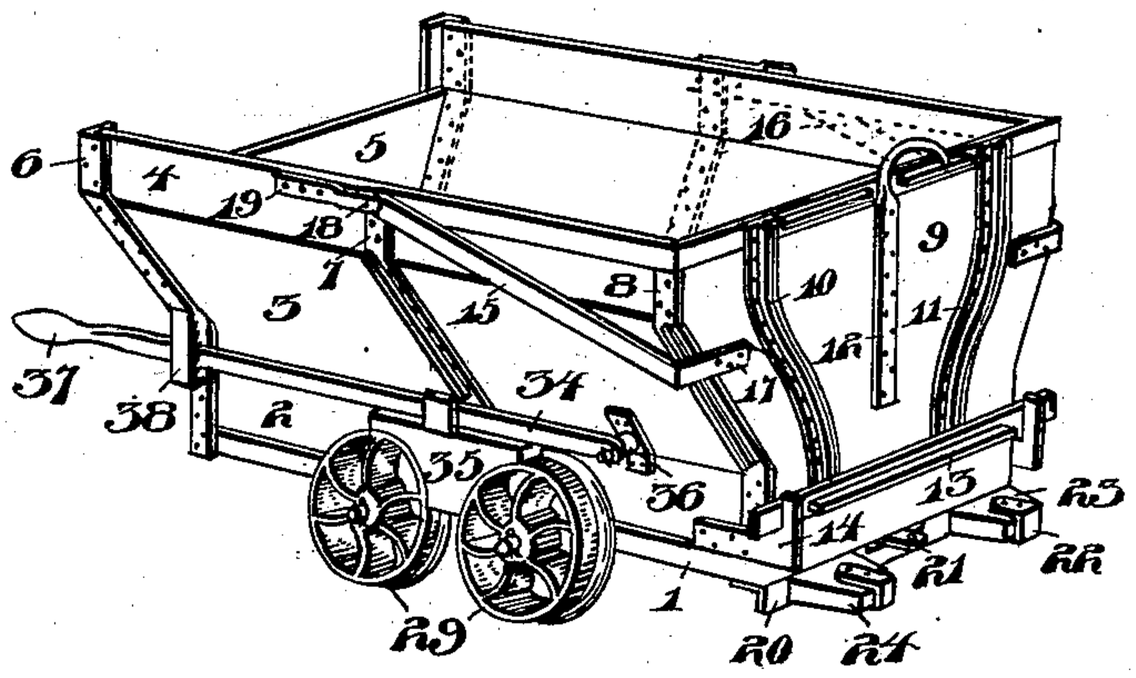


Fig. 2.

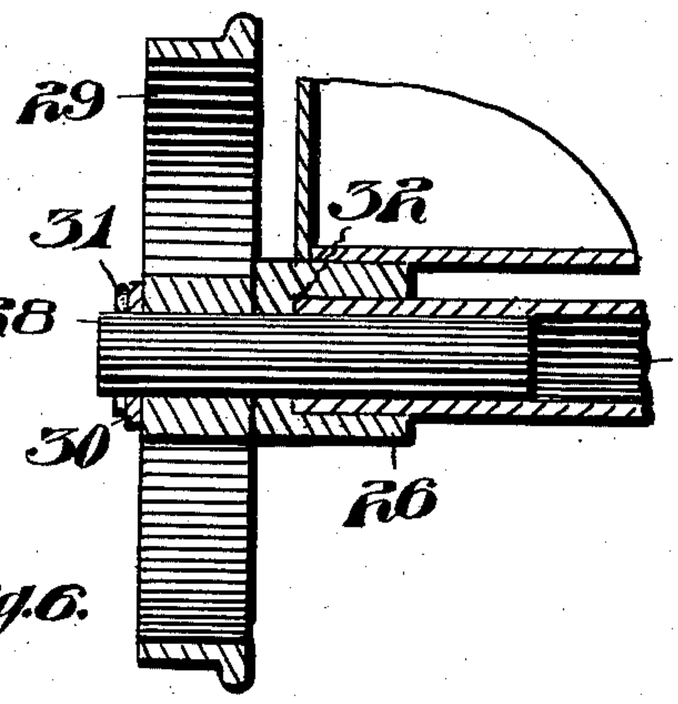


Fig. 3.

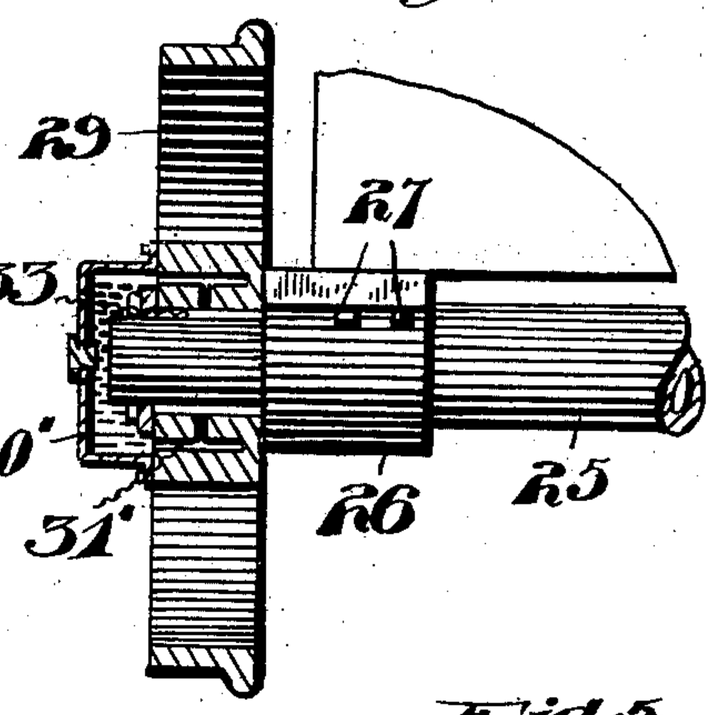


Fig. 6.

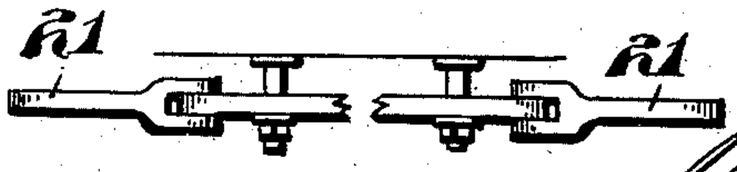


Fig. 4.

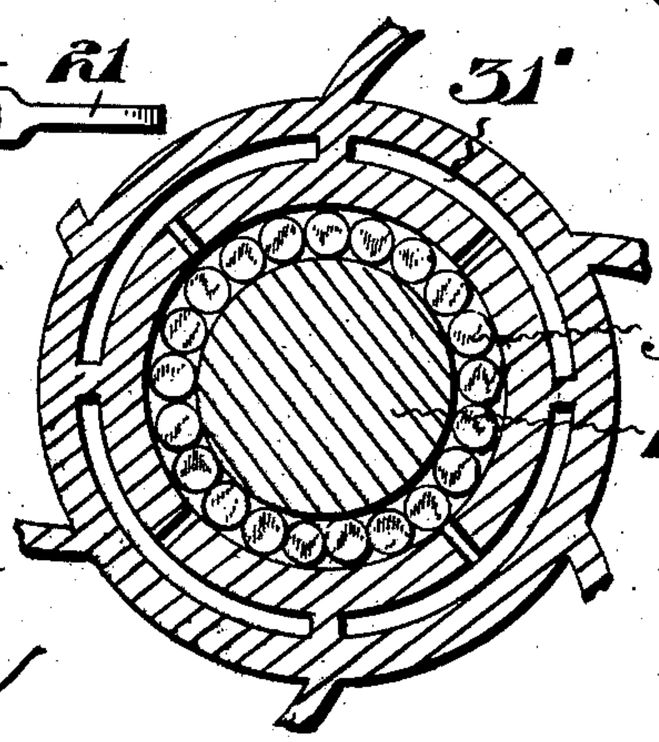
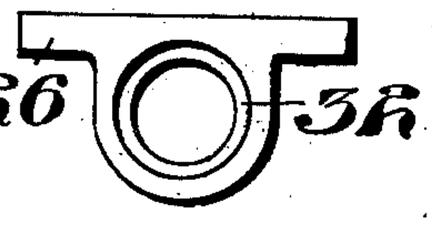


Fig. 5.



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UNITED STATES PATENT OFFICE.

PHILLIP F. POORBAUGH, OF ALLEGHENY, PENNSYLVANIA, ASSIGNOR TO THE PITTSBURG COAL MINE SUPPLY COMPANY, OF PENNSYLVANIA.

STEEL-CAR CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 655,163, dated July 31, 1900.

Application filed December 18, 1899. Serial No. 740,731. (No model.)

To all whom it may concern:

Be it known that I, PHILLIP F. POORBAUGH, a citizen of the United States of America, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Steel-Car Construction, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in steel-car construction, and more particularly to that class known as "pit-cars."

One of the objects of my invention is to lessen the weight of material used in the construction of cars of this kind, as well as increase the durability of the same, lessening the length of the car without decreasing its carrying capacity, and thereby overcoming such objectionable features heretofore in the wooden and heavy steel pit-cars now in use.

A further object of my invention lies in my improved hollow axle used in the construction of the car and adapted to receive a stub upon which the wheel is mounted, the stub being shrunk into the end of the axle, securely holding the same in position. By this arrangement the following advantages are obtained: The axle will wear better. It will be lighter and stronger, and its use in the manner set forth materially lessens the weight of the car, and also by the use of the stub the same when worn can be easily replaced within the axle without entirely or partly destroying the same.

A further object of my invention lies in my improved end-gate or door used in the construction of the car and which is so arranged as to be lifted from the end of the car when the same is tilted and when so lifted being entirely out of the way of the moving coal. This prevents the pounding or breaking of the end-gate to pieces, as is usually the case in pit-cars now in use. Furthermore, I provide the car with means for securely locking the end-gate or door thereto when the car is not tilted, the importance of which can be very readily seen, particularly in the use of such cars for shaft-mines.

A further object of my invention lies in constructing a car with a draw-bar on the underneath face of the bottom, the movement thereof not being hampered by the coal resting upon the same, obtaining by such construction a decreased draft when a train of cars are rounding a curve.

A further object of my invention lies in constructing a car in such a manner as to bring the body thereof closer to the rails and at the same time provide a car with supporting-wheels of larger diameter and a heavier flange. This is obtained by a bearing-sleeve for the axle arranged in the manner herein described.

My invention consists in the novel construction, combination, and arrangement of parts to be hereinafter more fully described, and specifically pointed out in the claims.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and wherein like numerals of reference indicate corresponding parts throughout the several views, in which—

Figure 1 is a perspective view of my improved car when set up. Fig. 2 is a cross-sectional view thereof, partly broken away, through one of the axles. Fig. 3 is an end view, partly broken away, the wheel being in section, showing the hub of the same of a greater diameter to receive roller-bearings when mounted on the stub. Fig. 4 is a vertical sectional view, the wheel partly broken away, showing the arrangement of the roller-bearings and a self-oiling means. Fig. 5 is a side view of the bearing-sleeve. Fig. 6 is a perspective view of the draw-bar partly broken away.

Referring to the drawings by reference-numerals, 1 indicates the bottom of the car, which is substantially rectangular and upon which is mounted a vertical section 2, forming the lower part of the sides. Mounted upon the sections 2 is the intermediate section 3 of the sides, these intermediate sections flaring outwardly or arranged at an inclination, as shown, and are adapted to support the top vertical section 4.

5 indicates the front end of the car and is arranged between the sides, as shown, and supported on the bottom. This front end is constructed of a shape formed by the lower two and intermediate flaring or inclined section 3, so that the end 5 will fit neatly be-

tween the sides formed by the sections. The bottom, sides, and top are formed of suitable steel plates.

The bottom 1, sides, and front end 5 are secured together by means of the angle brace-iron 6, bent to conform to the outline of the car and secured to the outer face of the end 5, sections 2 3 4, and to the side edge of the same, as shown. The sides and bottom are also secured together by the T brace-irons 7 8, the brace 7 arranged centrally of the outer face of the car and the brace 8 at the rear end of the sides. These brace-irons, as well as the brace-iron 6, are secured to the car by any desirable fastening means.

9 indicates my improved end-gate or door for the car and is of such shape as formed by the rear edges of the sections forming the sides and rests at its lower end upon the bottom 1, which projects for that purpose. The end-gate or door 9 is provided with a pair of strengthening studs or braces 10 11, suitably secured to the outer face thereof and having arranged between the same a hook-rod 12, the upper end thereof being formed in a curvilinear manner and projecting above the door or end-gate 9. The lower portion of the outer face of the end-gate or door 9 has suitably secured thereto a transversely-extending fastening-bar 13, projecting outwardly on each side thereof, and which is adapted to engage the L-shaped irons 14, one of which is secured to the lower rear corner of the sections 2 and projects slightly therefrom, so that the upwardly-extending end of the iron 14 will form a means for retaining the end-gate or door in a closed position—that is, against the rear end of the car. The end-gate or door 9 is pivotally connected to the sides of the car by means of the hanger-rods 15 16, one edge of which is bent at an angle and secured to the end-gate or door, as at 17, and the opposite end pivotally connected, as at 18, to the keeper 19, secured to each side of the section 3 of the sides.

20 indicates an angle-iron secured to the bottom 1, as shown, and supports a draw-bar 21, which is suitably secured therein, as well as supporting the projecting irons 22 for buffers 23 24. The draw-bar 21 is formed in three sections, the central section being secured to the bottom of the car and the end sections swivelly connected to the central section.

My improved axles 25 for the car are constructed in a hollow manner, as shown, and arranged in close relation to the underneath face of the bottom 1. Each end of the axles 25 is supported in a bearing-sleeve 26, secured to each side of the underneath face of the bottom, as at 27.

28 indicates a solid-metal stub upon which is mounted the wheel 29 and retained in position thereon by means of a washer 30 and cotter-pin 31. The stub 28 is of a slightly-greater diameter than the opening in the axle 25 and is shrunk within the same for the purpose of securely holding the stub in position. To prevent a lateral movement of the stub and axle in either direction, I provide the opening in the bearing-sleeve of two different diameters, forming an offset or shoulder 32, against which the ends of the hollow axle abut, so that when the same is in position it is fixed. In case it is desirable to use roller-bearings 33 for the stub the wheel or hub of the wheel is made of a greater diameter than the stub 28, so that the bearings can be placed between the stub and hub, as will be seen in Fig. 4. These bearings are retained in position by means of the washer 31 on one side and the outer face of the bearing-sleeve 26 on the opposite side.

In Fig. 3 I have shown an oil-cap 30′ mounted on the end of the stub 28 and secured to the wheel, which is provided with a suitable lubricant, and in Fig. 4 I show a series of recesses 31′ arranged in the wheel 29 to receive the lubricant. By this arrangement the roller-bearings always lie within a lubricating material—for example, the lubricant being supplied to the cap the same will pass into the hub and up into the recesses 31′, which will permit of the roller-bearings being lubricated at all times, these recesses 31′ forming storage-chambers for the lubricant.

34 indicates a brake-rod carrying a brake-shoe 35, which operates between the wheels 29 and against the tread of the same. The rod 34 is pivotally secured at one end to the car, as at 36, and at its opposite end is provided with a suitable handle 37.

38 denotes a supporting-rack for the rod and permits of the adjusting of the brake-shoe in relation to the tread of the wheel.

It is thought that the advantages from the use of the hollow axle and stub, together with means for preventing the lateral movement of the axle, can be readily understood from the foregoing description.

In operating the end-gate or door of the car the same is run up to the tilting-point and the end of the hook 12 is engaged by a suitable bar or rod. The car is then tilted. As the car is tilting, the end-gate or door will be lifted free from the same in a vertical manner until the coal is discharged therefrom and the car righted.

By forming the sides of the car in the manner shown the length of the car can be lessened without decreasing its carrying capacity.

It is thought that the many advantages of my improved construction relative to cheapness, durability, and strength can be readily understood from the foregoing description, taken in connection with the accompanying drawings, and it will be noted that various changes may be made in the details of construction without departing from the general spirit of my invention.

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

1. In a steel pit-car, the combination with

the body of a car provided with an end-gate or door, of a pair of bearing-sleeves suitably secured thereto, a hollow axle mounted in said sleeve so as to prevent the lateral motion thereof, a stub shrunk in each end of the said axle, and a wheel suitably mounted upon said stub, substantially as set forth.

2. In a steel pit-car, the combination with the body of a car provided with an end-gate or door, of a pair of bearing-sleeves suitably secured thereto, a hollow axle mounted in said sleeve so as to prevent the lateral motion thereof, a stub shrunk in each end of the said axle, a wheel suitably mounted upon said stub, and roller-bearings interposed between the hub of said wheel and said stub, substantially as described.

3. In a steel pit-car, a bottom, sides mounted on the said bottom and consisting of an upper and lower vertical section and inclined or flared intermediate sections, a front end 5, means for securing the bottom, sides and end 5 together, separate means for securing said sides and bottom together, an end-gate suitably connected to said sides, and adapted to operate in a vertical manner when the car is tilted, and a draw-bar formed of a series of sections swivelly connected together having the central section rigidly secured to the underneath face of the said bottom, substantially as set forth.

4. In a steel pit-car, a bottom, sides mounted on the said bottom and consisting of an upper and lower vertical section and inclined or flared intermediate sections, a front end 5, means for securing the bottom, sides and end 5 together, separate means for securing said sides and bottom together, an end-gate suitably connected to said sides, and provided with an upwardly-extending hook for operating the gate or door in a vertical manner when the car is tilted, and means for securing said gate to said car when the same is not tilted, substantially as described.

5. The combination with the body portion of the car, of an end-gate provided with a hook, a fastening-bar connected to said gate, a pair of L-shaped irons secured to the body portion of the car and adapted to receive the ends of said fastening-bar for retaining the door in a closed position, means connected to said body portion of the car and to said gate or door and adapted to permit of a vertical motion of the end-gate when the said car is tilted.

6. The combination with the body portion of a steel pit-car, of a pair of bearing-sleeves suitably secured thereto and having the opening thereof of two different diameters forming an offset or shoulder, a hollow axle having each end thereof mounted in one of the said sleeves and arranged in close relation to the body portion of the car, said ends abutting against the said offset or shoulder and preventing a lateral movement of the axle, a solid-metal stub shrunk within each end of the axle and extending outwardly therefrom, and a wheel mounted on each of the said stubs.

7. The combination with the body portion of a steel pit-car, of a pair of bearing-sleeves suitably secured thereto and having the opening thereof of two different diameters forming an offset or shoulder, a hollow axle having each end thereof mounted in one of the said sleeves and arranged in close relation to the body portion of the car, said ends abutting against the said offset or shoulder and preventing a lateral movement of the axle, a solid-metal stub shrunk within each end of the axle and extending outwardly therefrom, a wheel mounted on each of the said stubs, and roller-bearings interposed between the hub of said wheel and said stub.

8. The combination with the body portion of a steel pit-car, of a suitable end-gate or door, a pair of hanger-rods connected at one end to said door and at their opposite end pivotally connected to the body portion, means for securing said door to said body portion, and an upwardly-extending hook carried by said door and adapted to cause a vertical movement of the door when said body portion is tilted, substantially as described.

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

PHILLIP F. POORBAUGH.

Witnesses:
JOHN NOLAND,
E. W. ARTHUR.