No. 870,542. PATENTED NOV. 12, 1907.

E. C. & F. L. CALLAHAN.

MINE CAR.

APPLICATION FILED APR. 6, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

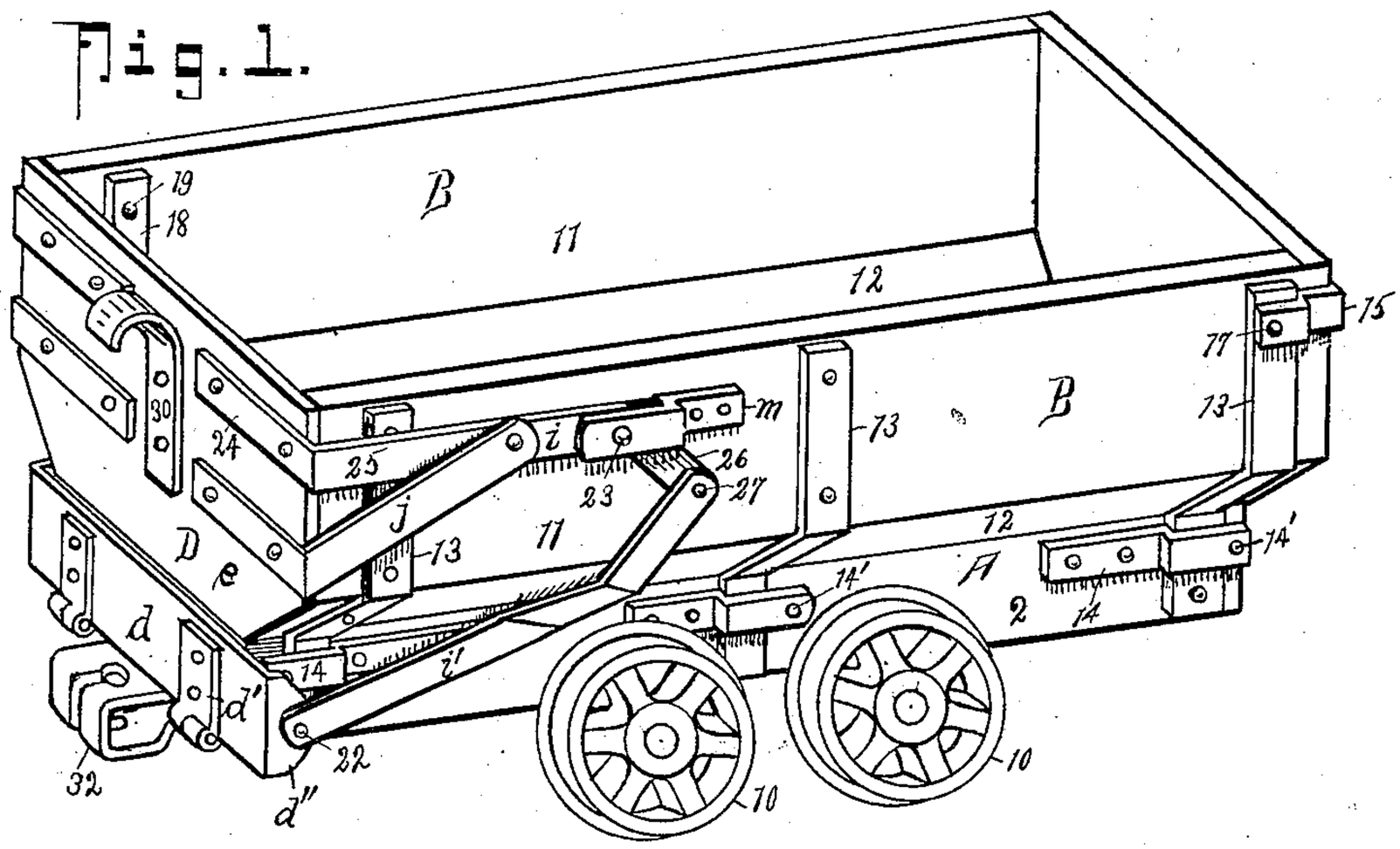
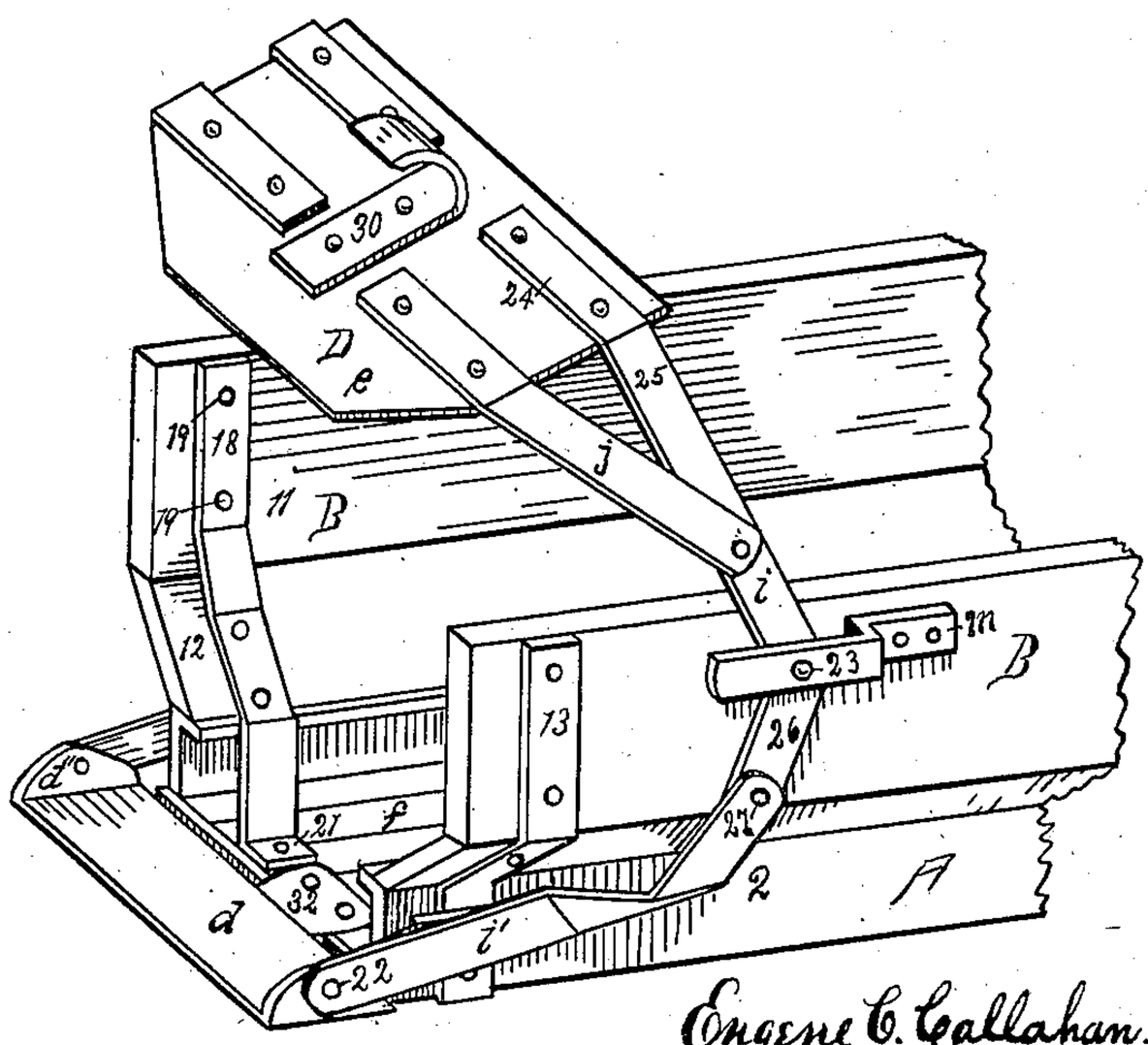


Fig. 2.



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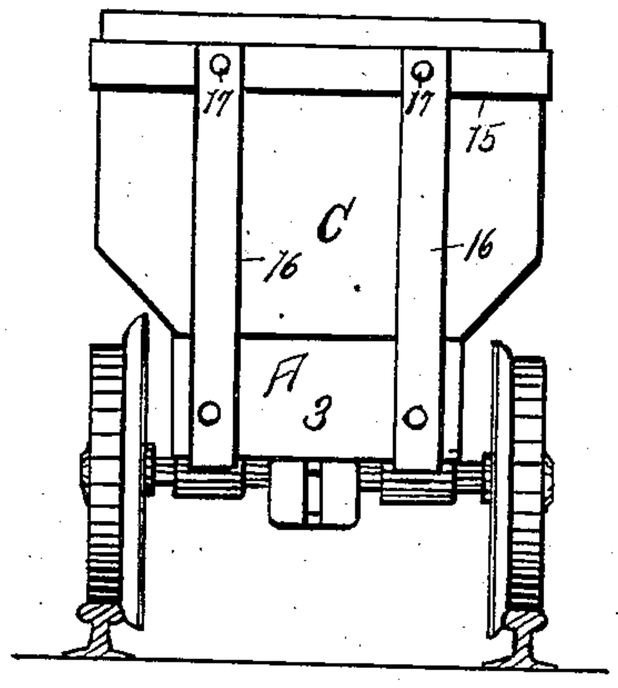
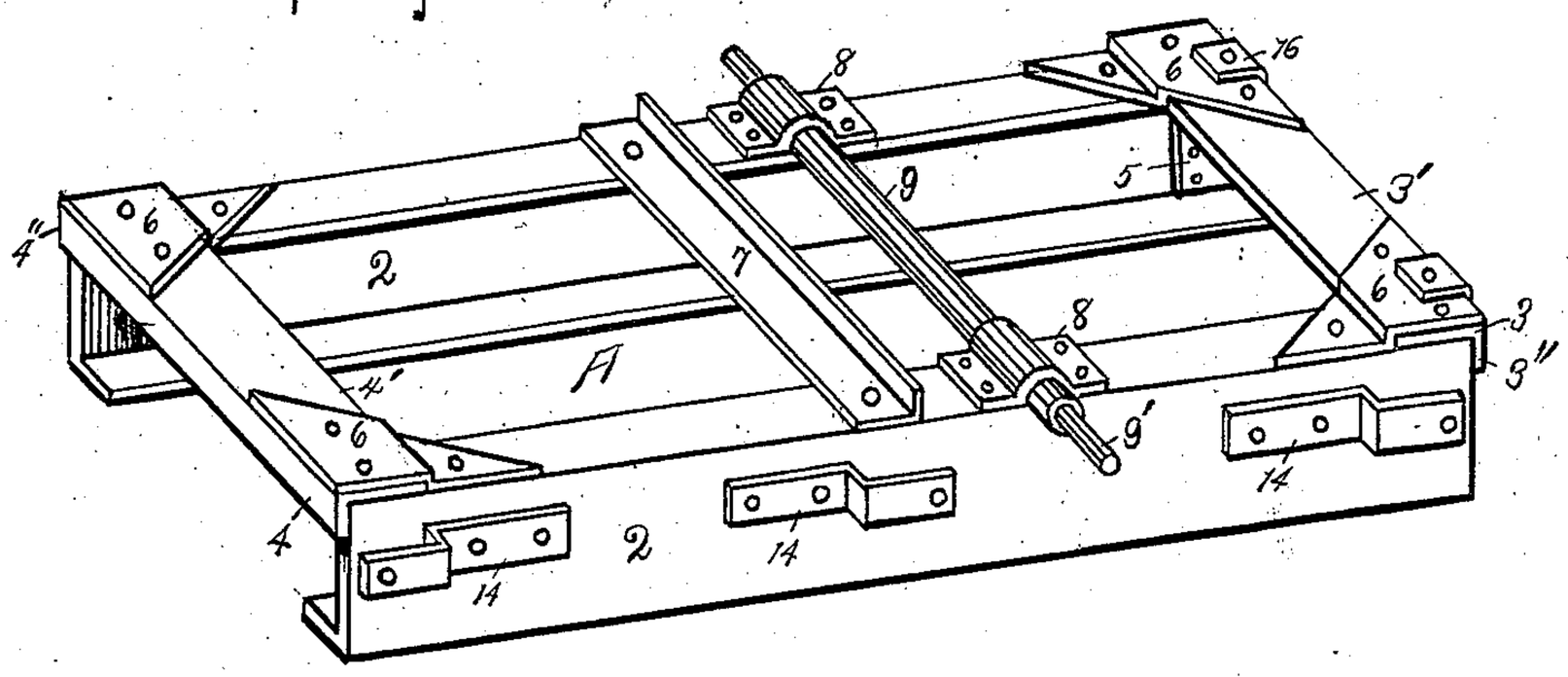


Fig. 4.

Fig. 3.



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MINE-CAR.

No. 870,542. Specification of Letters Patent. Patented Nov. 12, 1907.

Application filed April 6, 1907. Serial No. 366,725.

To all whom it may concern:

Be it known that we, EUGENE C. CALLAHAN and FRANK L. CALLAHAN, citizens of the United States, residing at Terre Haute, in the county of Vigo and State of Indiana, have invented new and useful Improvements in Mine-Cars; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to that class of cars which are used in mines, quarries and other similar places, for the purpose of removing coal, stone and other similar products; and the objects of the invention are; first, to provide a car for such purpose which will by reason of its peculiar construction be much stronger and more durable than cars used heretofore; second, to provide such a car which can be easily unloaded by means of the peculiarly designed and automatically working end-gate described; third, to provide such a car which can be knocked down or assembled, at will, without trouble, expense or injury to the car; and fourth, to provide a car which by reason of its peculiar structure and durability will be more economical and convenient than cars used heretofore for similar purposes. These objects I attain by means of the mechanism illustrated in the accompanying drawings in which:

Figure 1 is a perspective view of the car taken from the front. Fig. 2 is a perspective view of the front end of a car showing the end-gate open. Fig. 3 is a detail of the metallic frame of the car showing the bottom uppermost. Fig. 4 is a view of the rear end of the car.

Similar letters of reference refer to similar parts throughout the several views.

The letter A. indicates the main frame of the car which is constructed entirely of iron, steel or other strong material in a manner insuring a maximum of strength and durability. The frame A as shown in Fig. 3 is composed of two channel-iron sides 2, an angle-iron 3, forming the rear end of the frame with its horizontal portion 3′ lapping under the extreme rear ends of the sides 2 and with the perpendicular portion 3″ extending upward as high as the sides 2 and abutting against the rear ends thereof, an angle-iron front end 4, with its horizontal portion 4′ lapping under the ends of the sides 2 and the perpendicular portion 4″ abutting against the forward ends thereof and extending upward only the height of the flooring *f* of the car, the corner angle-irons 5, fitting into the corners formed by the sides 2 and the rear-end 3, the corner-plates 6, adjusted upon the under side of the frame at each corner, and the angle-iron brace 7. attached, transversely of the frame, to the bottom of the two sides 2. The component parts of the frame A, assembled as shown and described, are firmly bolted or riveted together, respectively. Four strap-hangers 8 are bolted to the bottom of the sides 2, respectively, and support hollow axle-sleeves 9, through which metallic axles 9′ pass and project at either end. Strong metallic car-wheels 10 are mounted upon the projecting ends of the axles 9′.

Strong side-boards B are mounted upon the channel-iron sides 2 and consist of the perpendicular boards 11 and the inwardly inclined boards 12, which together form the hopper-like side of the car. The different sections of the side-boards are fastened together with metallic standards 13 which follow the outer contour of the side-boards to which they are firmly bolted and which project downward for the purpose of engaging at their lower ends in the clips 14, respectively, which are mounted upon the outer sides of the frame A therefor.

The rear end-gate C consists of heavy timber which fits snugly between the extreme rear ends of the side-boards B and rests upon the upper edge of the angle-iron 3 forming the rear end of the frame. The rear end-gate C is held in place by means of a strong metallic binder 15, which consists of a flat bar bolted to and extending across the upper face of C and having its two ends angled to fit around the corners of the side-boards and over the respective standards 13 near the rear end of the bed. The binder 15 is attached to the side-boards by means of bolts 17 which pass through the ends of the binders, the underlying standards 13 and the side-boards respectively. Two perpendicular standards 16 are bolted to the end-gate C and the angle-iron 3 of the frame A, and the lower ends thereof are angled to lap under the angle-iron 3 to the lower portion 3′ of which said ends are bolted.

The clips 14 mounted upon the sides of the frame A are open upon one side in order that the standard 13 held by either of them may, when loosened from the bed, be slipped free from said clip without removing any other portion of the bed. The open end of the clips 14 are perforated for the purpose of receiving bolts 14′ which project from the sides 2 of the frame for the purpose of binding the clips firmly upon the standards held thereby.

As the front end of the frame A and the bed formed by the side-boards B is opened, that end of the car is further braced and strengthened by means of strong metallic braces 18 which are disposed upon the inside of the side-boards opposite to the standards 13 at that end of the car, and said braces are perforated for the purpose of receiving the bolts 19 which bind both the braces 18 and the standards 13 to the side-boards B; the braces 18 are angled to extend straight from the lower bolt 19 in the board 11 to the bolt 19 in the inclined board 12 instead of following the angle formed by the union of said boards thereby forming a truss-like brace for said angle, and the brace 18 extends from the lower edge of

the board 12 perpendicularly downward the floor of to the car, where it is angled to form a step 21, whereby it is bolted to the floor *f*.

The front end of the car is opened and closed by an automatically operated end-gate D which consists of the metallic gate *d* hinged by means of strap hinges *d'* to the angle-iron 4 of the frame A, the gate *e* adapted to close the end of the bed formed by the side-boards B and the system of operating levers *i* and *i'* as hereinafter more fully described. The gate *d* completely closes the end of the frame A when abutted against the end of the channel-iron sides 2 and is provided at each end with portions *d''* bent to lap over the sides of the frame A, when the gate is closed, and to receive bolts 22 whereby the lever *i'* is attached to the gate *d*.

The gate *e* consists of a metallic plate conforming in shape to the end of the bed formed by the side-boards B and adapted when closed to abut against the ends of the side-boards and to rest upon the upper edge of the closed gate *d*, thereby entirely closing the end of the front end of the car. Strong metallic levers *i* are fulcrumed upon bolts 23, projecting from either side of the car and consist of the portion 24 which is bolted upon the outer side of the gate *e*, the portion 25 which lies along the side of the car and acts as a lever to raise the gate *e* and the arm 26 which projects, angling downwards, from the fulcrum of the lever and connects at its lower end with the lever *i'*, with which it has pivoted connection by means of the bolt 27. The lever *i* is braced by means of a metallic brace *j* which is bolted firmly to the lever *i* and to the lower portion of the gate *e*, as shown. An angle-brace *m* is bolted firmly to the side of the car immediately back of the fulcrum of the lever *i* and projects over the fulcrum and receives the outer end of the bolts 23 thereby bracing the lever at its fulcrum. The lever *i'* is bent to conform as nearly as possible to the sides of the car along which it rests, thereby presenting but little projection from the car. A strong hook 30 is attached at the middle of the gate *e* and adapted to engage a trip or other object whereby the gate is to be operated. It is apparent from the foregoing description and drawings that when the gate *e* is raised by any object engaging the hook 30, the coöperation of the levers *i* and *i'* will cause the gate *d* to lower upon its hinges to a horizontal position, thereby entirely opening the front end of the car as shown in Fig. 2. When the hook 30 is released, the gate *e* will resume its normal position by reason of its greater weight, thereby closing also the gate *d* by gravitation.

Strong draw-bars 32, of the peculiar design shown in the drawings, are attached at either end of the car for traction purposes.

By way of explanation it may be stated that such cars are usually raised from a mine shaft upon the cage which is automatically tilted as it emerges from the shaft and it is apparent that when the cage is tilted with my car upon it, a conveniently located trip will engage the hook 30 as the car tilts and the gates of the car will thereby be opened and release the car load automatically and the gates will automatically close as the cage resumes its normal position.

The advantages claimed for my car over cars used heretofore for like purposes consist; first, in the greater degree of strength and durability attained from the all-metallic frame of my car, of the construction described; second, the peculiar construction of my car enables one to remove different component parts thereof without interfering with the rest of the car for the purpose of repair and enables one to "knock-down" the car for the purposes of shipment; third, the automatic operation of the gates of the car saves much time, labor and expense in unloading the cars; and fourth, my car will be more economical than former types of cars by reason of its superior strength, durability and convenience of operation.

Having described my car, its structure, operation and advantages, what I claim as new and useful and desire to protect by Letters Patent, is:

1. In a mine-car the combination of a metallic frame constructed of channel and angle iron parts and provided with open clips adapted to engage the standards of the side-boards, draw-bars at each end, axle sleeves, axles and traction wheels, with a bed consisting of hopper-like side-boards, provided with standards adapted to brace the sides and to engage clips provided upon the sides of the metallic frame, a rear end-gate attached to the side-boards, an automatic front end-gate attached to the front ends of the frame and bed, by means of a system of operating levers, a system of levers attached, respectively, to the sides of the car and the front end-gate and adapted to operate the front end-gate, all substantially as described and shown and for the purpose set forth.

2. In a mine-car the combination of a metallic car-frame, a set of four car-wheels mounted upon axles attached to said frame, strap-hangers adapted to attach said axles to the car-frame, draw-bars attached to either end of the car-frame, with a bed composed of side-boards of the design shown, and provided with standards removably attached thereto and adapted to engage open clips provided therefor upon the sides of the car-frame, a rear end-gate removably attached to the rear ends of said side-boards and provided with a metallic binder and two standards adapted, together, to hold said end-gate in proper position, and strong upright metallic braces disposed at the inner and forward end of said bed and frame and adapted to strengthen the same, and an automatically operating front end-gate attached to the car by means of a system of operating levers, all substantially as described and shown and for the purpose set forth.

3. In a mine-car the combination of a metallic frame of the structure described and the hopper-like bed mounted upon said frame in the manner described, and consisting of side-boards, standards and rear end-gate assembled together as shown, with an automatic end-gate consisting of a downward swinging gate, an upwardly swinging gate attached to the sides of the car-bed by means of levers fulcrumed thereon and in pivotal connection with coöperating levers attached to the downward opening gate, a trip-hook attached to the upper gate and hinges adapted to attach the lower gate to the end of the car frame, draw-bars attached at either end of the car-frame and suitable car-wheels, axles and hangers, adapted to support said car, all substantially as described and shown in the drawings and for the purposes set forth.

In testimony that we claim the foregoing as our own we have affixed our signatures hereto in the presence of two witnesses.

EUGENE C. CALLAHAN.
FRANK L. CALLAHAN.

Witnesses:
FRANK S. RAWLEY,
SYDNEY B. DAVIS.