No. 835,392. PATENTED NOV. 6, 1906.

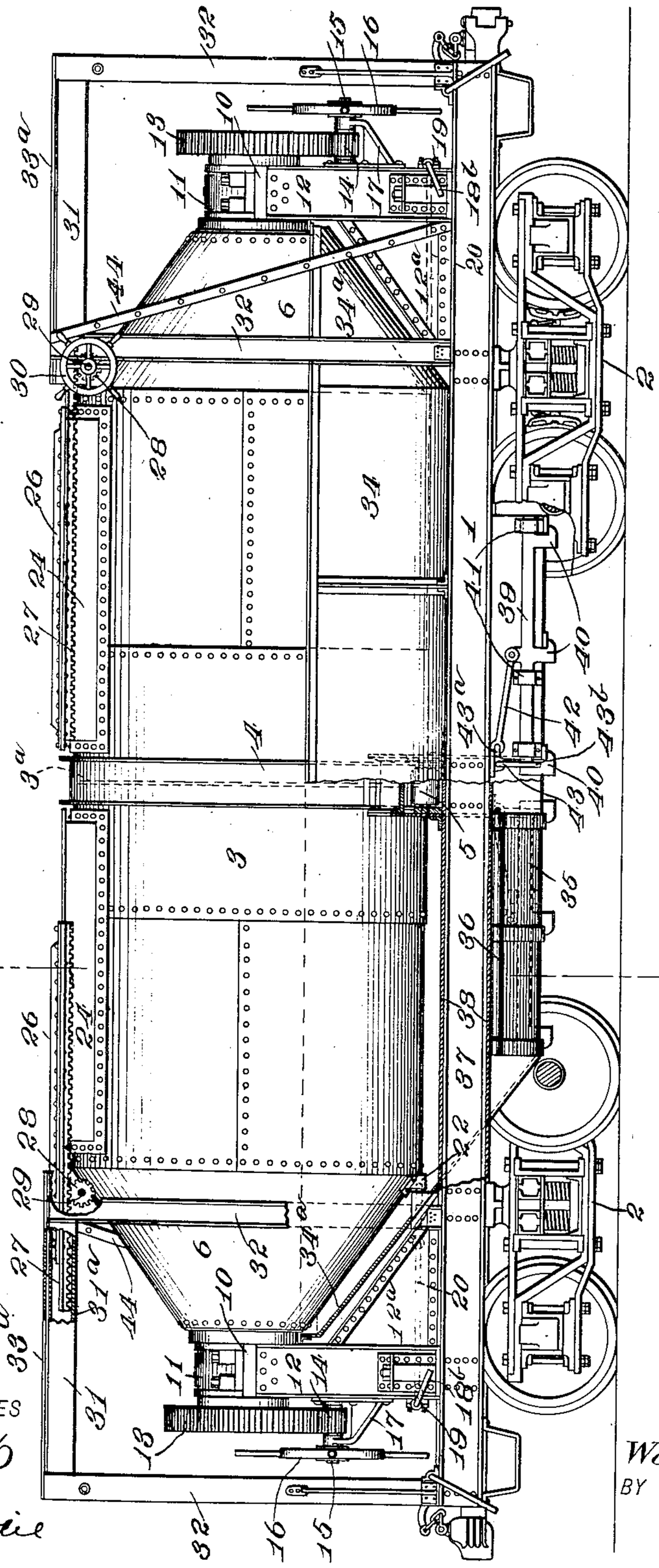
W. I. BROCK.

FREIGHT CAR.

APPLICATION FILED AUG. 17, 1906.

5 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

L. Almquist

P. W. Hardie

INVENTOR

Walter I. Brock

BY Munn & Co.

ATTORNEYS

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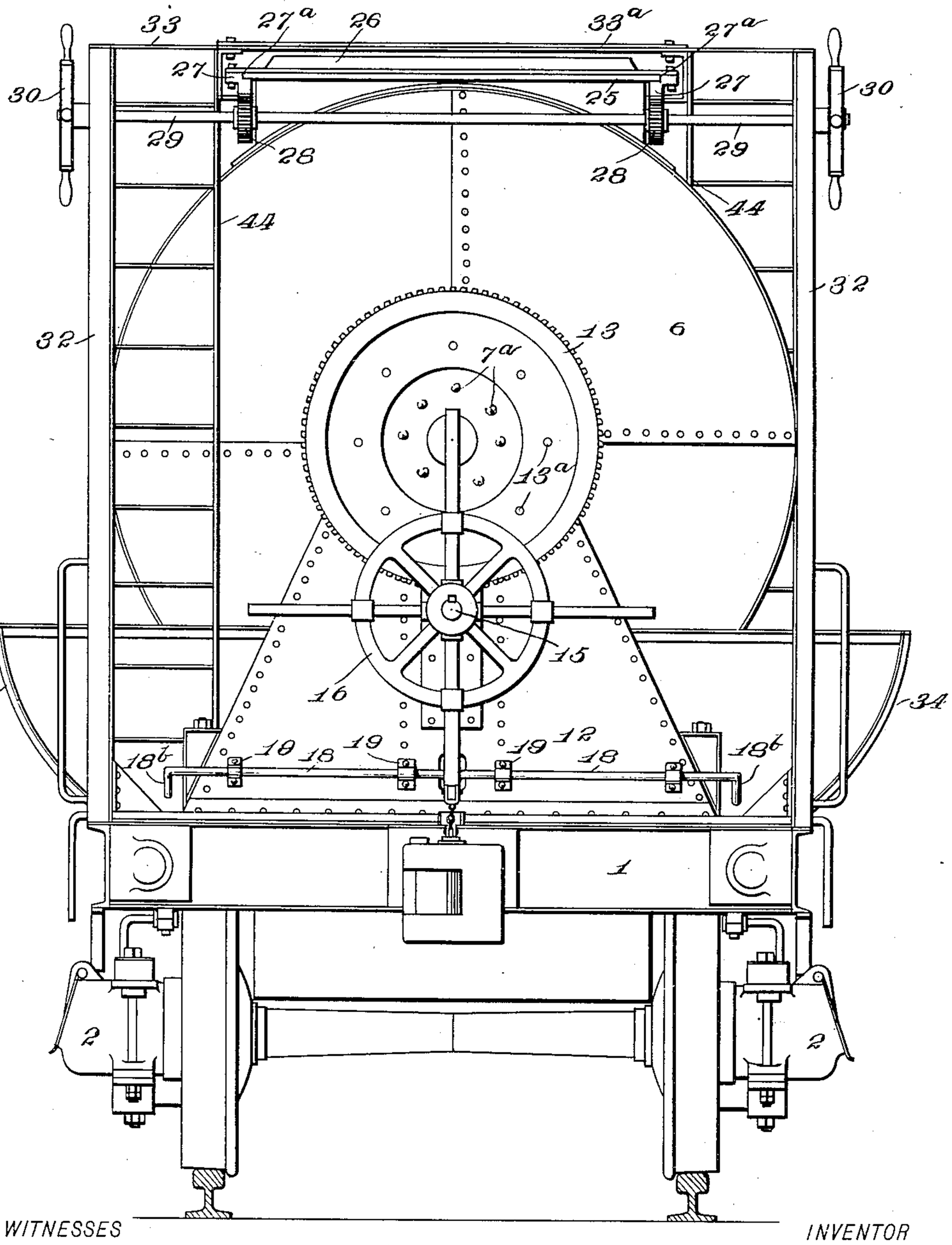
6 SHEETS—SHEET 2.

Fig. 2.



WITNESSES

L. Almquist

Robt Sandoe

INVENTOR

Walter I. Brock

BY Munn & Co

ATTORNEYS

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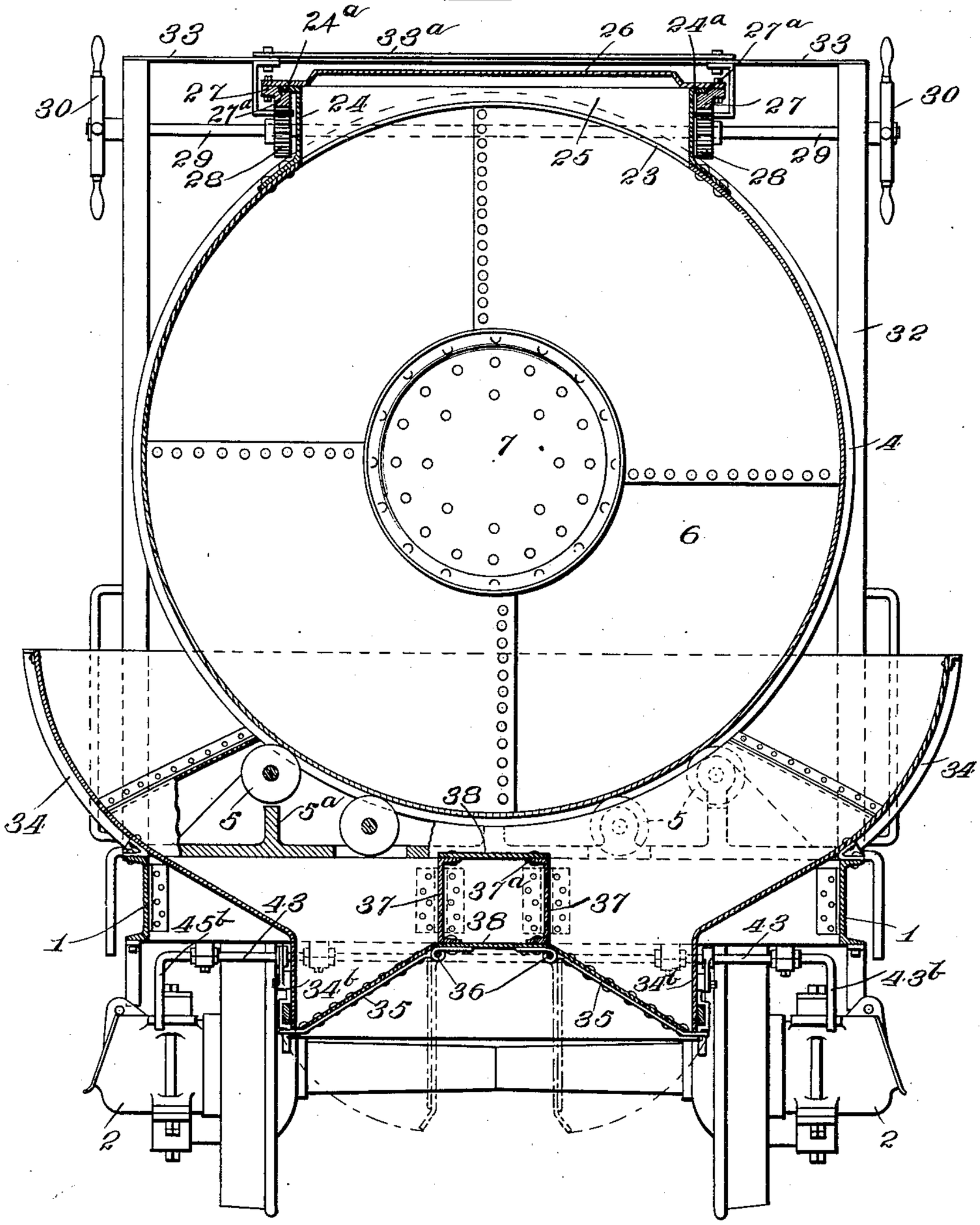
5 SHEETS—SHEET 3.

Fig. 3.



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P. W. Hardie

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Walter I. Brock

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ATTORNEYS

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5 SHEETS—SHEET 4.

Fig. 4.

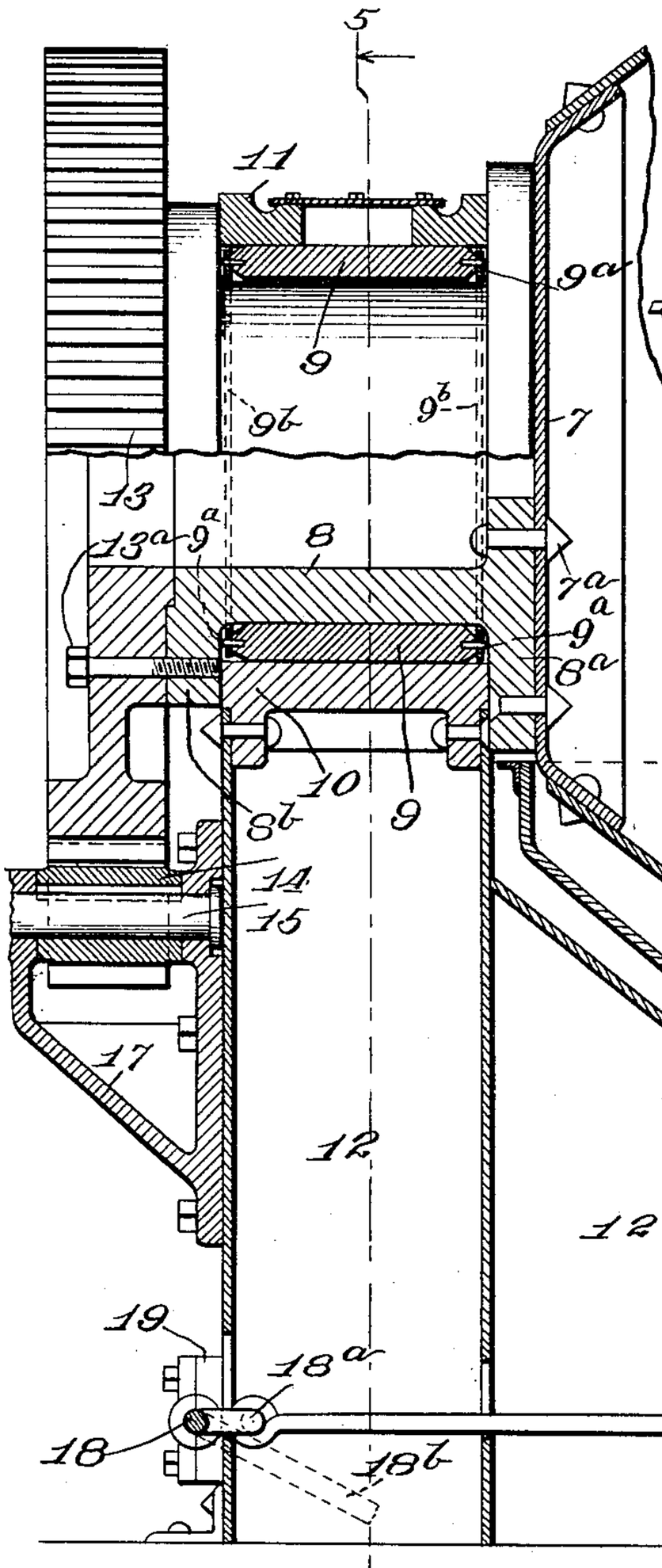
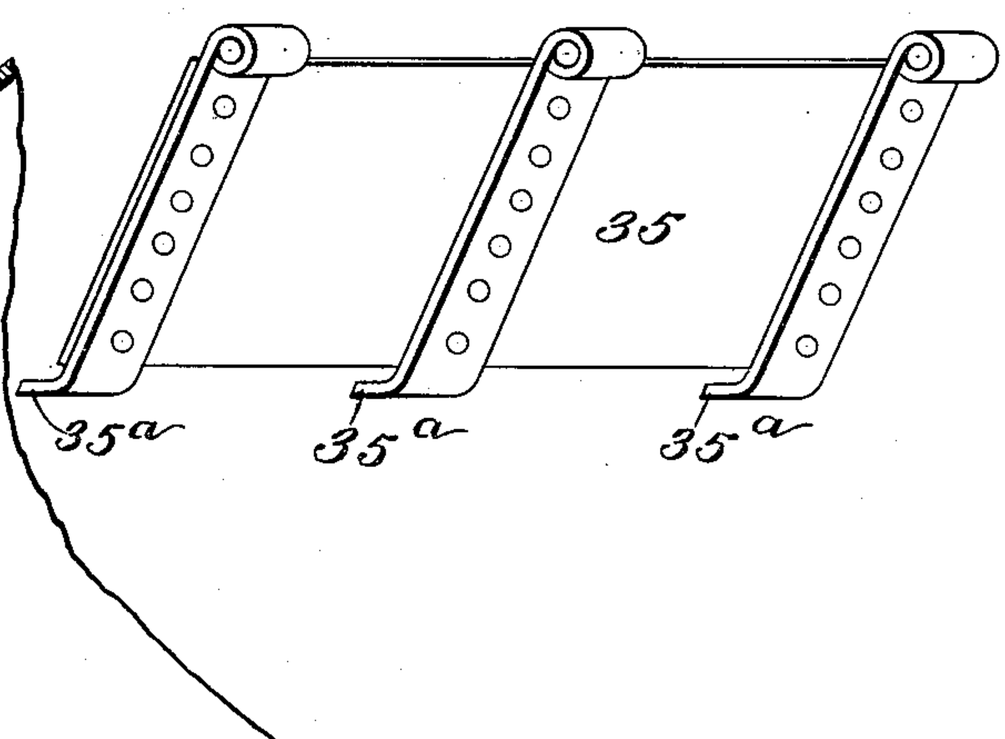


Fig. 7.



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5 SHEETS—SHEET 5.

Fig. 5.

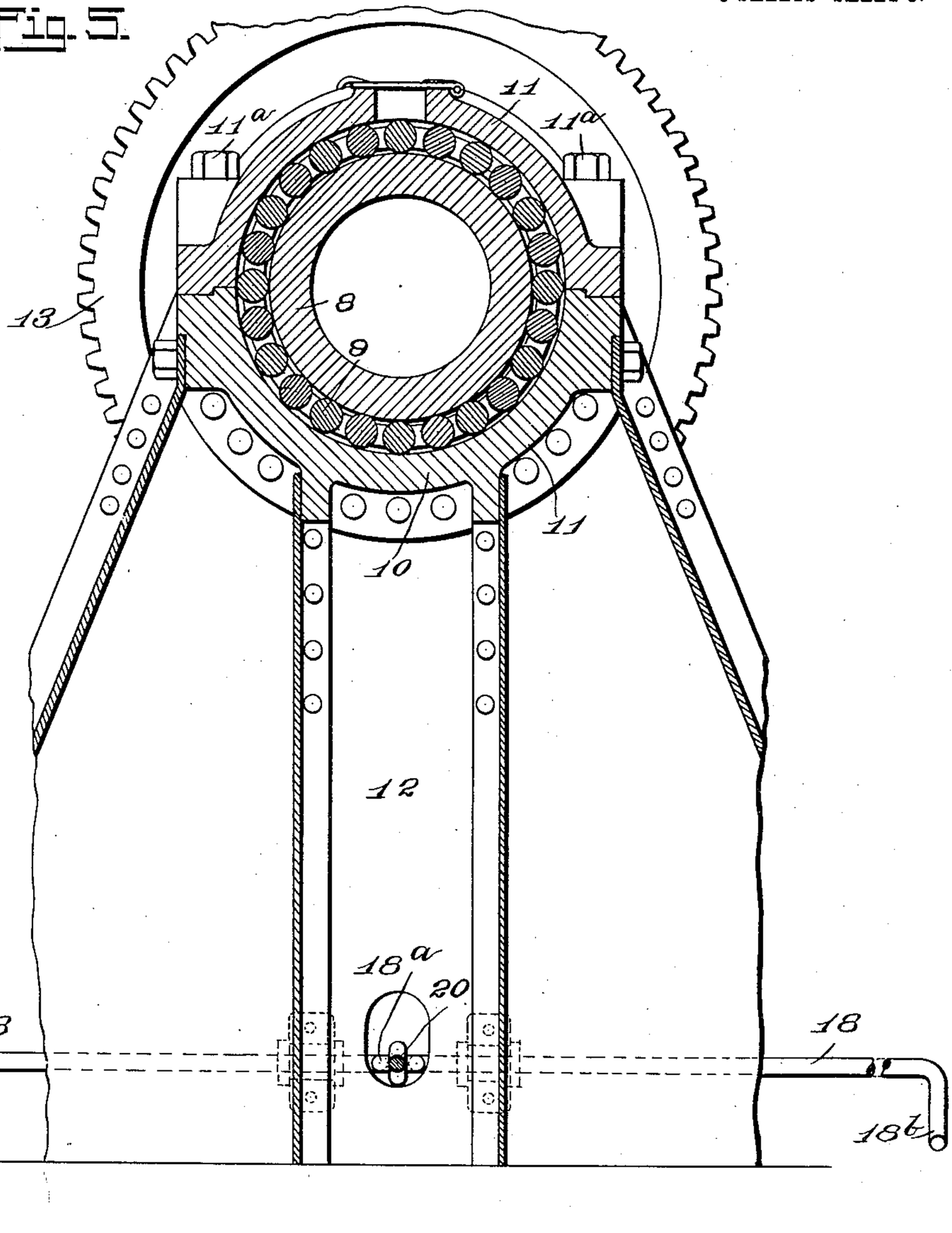
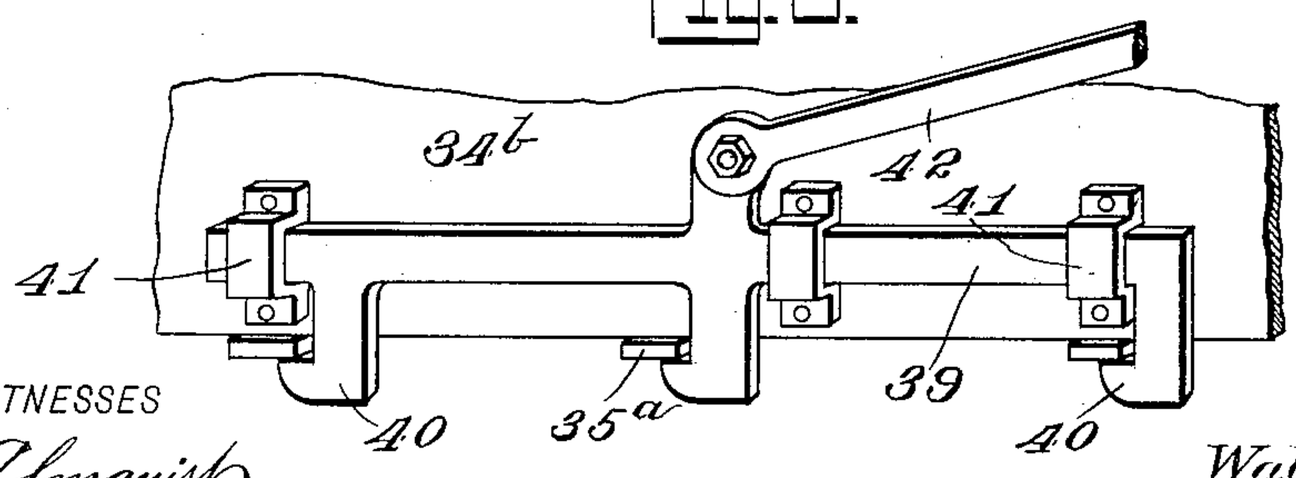


Fig. 6.



WITNESSES

L. Almquist

P. W. Hanaire

INVENTOR

Walter I. Brock

BY Munn & Co.

ATTORNEYS

UNITED STATES PATENT OFFICE.

WALTER IRVING BROCK, OF ERIE, PENNSYLVANIA.

FREIGHT-CAR.

No. 835,392. Specification of Letters Patent. Patented Nov. 6, 1906.

Application filed August 17, 1906. Serial No. 331,000.

To all whom it may concern:

Be it known that I, WALTER IRVING BROCK, a citizen of the United States, and a resident of Erie, in the county of Erie and State of Pennsylvania, have invented a new and Improved Freight-Car, of which the following is a full, clear, and exact description.

My invention relates to freight-cars; and my object is to provide a car capable of transporting liquid or solid material and which shall be strong in construction, durable in use, and adapted to be freely and quickly loaded and unloaded.

Other objects accomplished by my invention are hereinafter more particularly set forth.

Such objects I accomplish by the means illustrated in the accompanying drawings, in which drawings like characters of reference indicate like parts throughout the views, and in which—

Figure 1 is a side elevation, partly broken away, of a car embodying my invention. Fig. 2 is an end view of the car shown in Fig. 1. Fig. 3 is a vertical transverse section taken on the line 3 3 of Fig. 1. Fig. 4 is a sectional side elevation of the end of a car embodying my invention. Fig. 5 is a transverse section taken on the line 5 5 of Fig. 4. Fig. 6 is a side elevation of a locking-lever adapted to support the trap-doors of a hopper, and Fig. 7 is a perspective view of a trap-door detached from the bottom of the hopper.

As illustrated in the drawings, 1 represents the main frame of a car, mounted upon trucks 2 of ordinary construction.

The body of the car consists of a cylindrical shell 3, having a central bearing-ring 4, which is supported upon rollers 5, journaled upon a frame 5^a, extending transversely of the main frame of the car. The body of the car is provided with conical ends 6, having heads 7 secured thereto, as shown in Fig. 4. Trunnions 8 are provided on their inner ends with flanges 8^a, which are secured to heads 7 of the body of the car by means of rivets 7^a. The trunnions 8 are supported upon rollers 9, having pivot-pins 9^a, which engage corresponding apertures formed in spacing-rings 9^b and adapted thereby to hold the rollers 9 at the desired distance from each other. The rollers 9 are arranged within bearing-boxes 10, which are mounted upon standards 12, secured to each end of the main frame of the car. Caps 11 are secured to the bearing-boxes by means of stud-bolts 11^a. The standards 12 may be of any suitable construction, but consist, preferably, of a vertical outer transverse wall having an inclined inner side wall 12^a connected therewith. The outer ends of the trunnions 8 are provided with flanges 8^b, to which are secured gears 13 by means of bolts 13^a. The gears 13 mesh with pinions 14, which are rigidly fixed upon shafts 15, which shafts are journaled upon brackets 17, secured to the outer ends of the standards 12. Hand-wheels 16 are likewise secured to the shafts 15, by means of which said shafts may be rotated in their bearings, so as to rotate the gears 13 by means of the pinions 14, and thereby rotate the cylindrical body 3 on its trunnions 8. The body of the car, however, is held in its normal position by means of locking-bolts 21, which engage corresponding apertures formed in blocks or heads 22, secured to the conical ends 6 of the body of the car. Connecting-rods 20 are secured at their inner ends to the locking-bolts 21 and at their outer ends to crank-arms 18^a, formed on the crank-shafts 18, which shafts are journaled in bearing-boxes 19, secured to the ends of the standards 12. The locking-bolts 21 are brought into engagement with the blocks 22 or released therefrom by rotating the crank-shafts 18 by means of handles 18^b formed thereon.

Hatches 23 are formed in the cylindrical body of the car, as shown in Fig. 3. These hatches are provided with end flanges or combings 25 and side flanges 24, having their upper ends 24^a lying in a horizontal plane and offset from the body of the flanges. Hatch-covers 26 are arranged over the hatches 23 and have attached to their outer edges racks 27, which mesh with the teeth of pinions 28, mounted upon transverse shafts 29, having hand-wheels 30, secured to the ends of said shafts. The transverse shafts 29 are journaled in suitable bearings secured to standards 32, which are attached at their lower ends to the main frame of the car and connected at their upper ends by means of transverse bars 33. Longitudinal recesses 27^a are formed on the racks 27 and are adapted to engage the offset edges 24^a of the side flanges 24 of the hatches. The hatch-covers 26 are drawn over the hatches 23 or removed thereform by rotating the shafts 29 so that the pinions 28, mounted on said shafts, will

move the racks 27 and the hatch-covers 26, secured thereto, in the direction desired and in accordance with the direction in which the hand-wheels 30, mounted upon said transverse shafts 29, are turned. The shafts 29 are arranged in advance of the ends of the cylindrical portion 3 of the car-body, and the ends of the racks 27, secured to the hatch-covers 26, are extended beyond the ends of the hatch-covers, so as to be in constant engagement with the pinions 28, mounted upon the transverse shafts 29. When the hatch-covers 26 are drawn outward, so as to uncover the hatches 23, the racks 27 move along the flanges 31ª, formed on the longitudinal beams 31, which are connected to the upper ends of the standards 32, and thereby support the hatch-covers 26 when they are removed from the cylindrical portion of the body of the car. I prefer to make the edges 24ª of the hatch-flanges 24, and also the portion of the racks 27 in contact therewith, slightly tapering, so that the hatch-covers 26 may thereby be drawn sufficiently tight onto the edges of the flanges of the hatch, and in most instances I prefer to place a stop of any suitable construction on the beams 31 to prevent the hatch-covers from moving too far outwardly from the body of the car. Ladders 44 extend from the main frame of the car to the outer ends of the standards 32, so as to enable the hand-wheels 30 to be readily operated. A foot-plate 33ª is secured to the transverse bars 33 and is made, preferably, of the same width as the hatch-covers 26 and of the same length as the side beams 31, which are secured to the upper ends of the standards 32. When the hatch-covers are removed in the manner described and the locking-bolts 21 are released from the blocks 22, the body of the car may be rotated on its trunnions by means of the wheels 16, so as to quickly unload the contents of the cylindrical body of the car into a hopper 34, which is secured to the main frame of the car. The ends 34ª of the hopper are inclined, so as to correspond to the conical ends thus formed on the cylindrical body 3 of the car, and the side walls of the hopper 34 extend in circular lines concentric to the cylindrical body of the car. The lower portions 34ᵇ of the side walls of the hopper 34 extend vertically and support longitudinally-movable bars 39, having bearings in yokes 41, secured to the vertical walls 34ᵇ of the hopper. A central longitudinal beam extends lengthwise of the main frame of the car and consists, preferably, of side beams 37, provided with upper and lower flanges 37ª, to which are secured top and bottom plates 38. Trap-doors 35 are hinged at their inner edges to said central longitudinal beam by means of hinge-pins 36, and the outer edges of said doors are provided with latches 35ª, rigidly secured thereto and adapted to engage offset lugs 40, formed on the locking-bars 39. Links 42 are pivoted at one end to the bars 39 and at their opposite ends to cranks 43ª, formed on rock-shafts 43, which are mounted in suitable bearings on the main frame 1 of the car and provided with handles 43ᵇ. By rotating said handles the locking-bars 39 move longitudinally to a limited extent in their bearings 41, and the lugs 40 of said bars are released from engagement with the latches 35ª of the trap-doors 35 of the hopper and permit said doors to drop downward into a vertical position, as indicated by dotted lines in Fig. 3. A bulkhead 3ª may be extended across the central portion of the body 3 of the car, so as to form two separate and independent compartments adapted to hold cargoes of different kinds at the same time. When this device is in use, the enlarged hatches, extending nearly the entire length of the cylindrical body of the car, enable the body to be quickly loaded and unloaded. If desired, the cylindrical body of the car and the hopper may be loaded with cargoes of different kinds. In such cases the cargo of the hopper is first unloaded, and the contents of the cylindrical body of the car may then be unloaded into the hopper and from thence into receptacles of any suitable character placed beneath the bottom of the hopper connected therewith.

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

1. The combination with a main frame mounted on trucks, of a cylindrical shell rotatably mounted on the main frame and provided with hatches and with conical ends; a hopper secured to the main frame beneath said shell, provided with trap-doors; and means for rotating said shell, substantially as shown and described.

2. A freight-car having a hopper provided with a bottom doorway, a trap-door connected therewith, and side walls inclined upward and outward from said doorway, and a rotatable cylindrical body having its lower side portion arranged within said hopper, substantially as shown and described.

3. A freight-car having a hopper extending longitudinally thereof, and a rotatable cylindrical body having its lower side portion arranged within said hopper and spaced therefrom, substantially as shown and described.

4. The combination with a main frame mounted upon trucks, of standards secured to said main frame, a cylindrical shell having conical ends, trunnions mounted upon the ends of said shell, bearing-boxes adapted to support said trunnions, a hopper secured to the main frame and provided with curved sides extending in lines concentric with said shell, and means for rotating said shell, substantially as shown and described.

5. The combination with a main frame

mounted upon trucks, of standards secured to said main frame, a cylindrical shell having conical ends, trunnions secured to the ends of said shell, gears secured to said trunnions, pinions engaging said gears, means for rotating said pinions, a hopper secured to the main frame and provided with side walls curved transversely at their upper portion and extending vertically at their lower portion, and trap-doors hinged at the bottom of said hopper, substantially as shown and described.

6. The combination with a main frame mounted upon trucks and provided with a central longitudinal beam, of standards secured to the main frame, a cylindrical shell having hatches and conical ends, trunnions secured to the ends of said shell, gears mounted on said trunnions, pinions meshing with said gears, means for rotating said pinions, a hopper secured to said main frame, extending outwardly and upwardly therefrom, and provided with conical ends corresponding with the ends of said shell, and extending at its lower central portion below said main frame, and trap-doors hinged to said central longitudinal beam of the main frame, substantially as shown and described.

7. The combination with a main frame mounted upon trucks, of standards secured to the main frame, a cylindrical shell journaled upon the main frame and provided with hatches, a hopper secured to the main frame having sides extending in transverse circular lines, trap-doors hinged to the lower portion of said hopper and provided with latches, and a longitudinally-movable bar provided with lugs adapted to engage and support the latches of the trap-doors, substantially as shown and described.

8. The combination with a main frame mounted upon trucks, of standards secured to said main frame, a cylindrical shell having conical ends, hollow trunnions secured to the ends of the shell and provided with inner and outer annular flanges, gears secured to the outer flanges of said trunnions, a series of rollers mounted upon said trunnions, spacing-rings adapted to hold said rollers in position, and bearing-boxes adapted to support said rollers and trunnions, substantially as shown and described.

9. The combination with a main frame mounted upon trucks, of standards secured to the main frame, a cylindrical shell having conical ends journaled on said standards, a hopper secured to the main frame extending around the lower portion of said shell, and means for rotating said shell on its bearings and for locking said shell in position, substantially as shown and described.

10. The combination with a main frame mounted upon trucks, of standards secured to the main frame, a cylindrical shell provided with hatches and conical ends journaled on said standards, hatch-covers adapted to cover said hatches and to be withdrawn therefrom, racks secured to said hatches, and a transverse supporting-bar provided with pinions engaging said racks, substantially as shown and described.

11. The combination with a main frame mounted upon trucks, of standards secured to the main frame, a cylindrical shell journaled upon the main frame and provided with hatches having flanges provided with offset edges, toothed racks provided with longitudinal recesses engaging the edges of said flanges, a rotating shaft extending transversely of said body, and pinions mounted upon said shaft engaging said racks, substantially as shown and described.

12. The combination with a main frame mounted upon trucks, of standards secured to said main frame, a cylindrical shell journaled upon said standards and provided with a central bulkhead and hatches arranged on each side thereof, a flanged bearing-ring secured to the central portion of said shell, and a series of rollers adapted to support said ring, substantially as shown and described.

13. The combination with a main frame mounted upon trucks, of standards secured to said main frame, a cylindrical shell having conical ends journaled upon said standards, a hopper secured to said main frame having curved sides and vertical lower walls, and trap-doors hinged to said main frame and adapted to be supported on said vertical walls, substantially as shown and described.

14. The combination with a main frame mounted upon trucks, of standards secured to said main frame, a cylindrical shell having conical ends and provided with hatches on its cylindrical portion, means for rotating said shell on its axis, and a hopper secured to said main frame and provided with hatch-doors adapted to open opposite to the hatches of the shell when rotated on its bearings, substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALTER IRVING BROCK.

Witnesses:
W. J. YOUNG,
BERTHA R. KOCH.