

No. 666,447.

Patented Jan. 22, 1901.

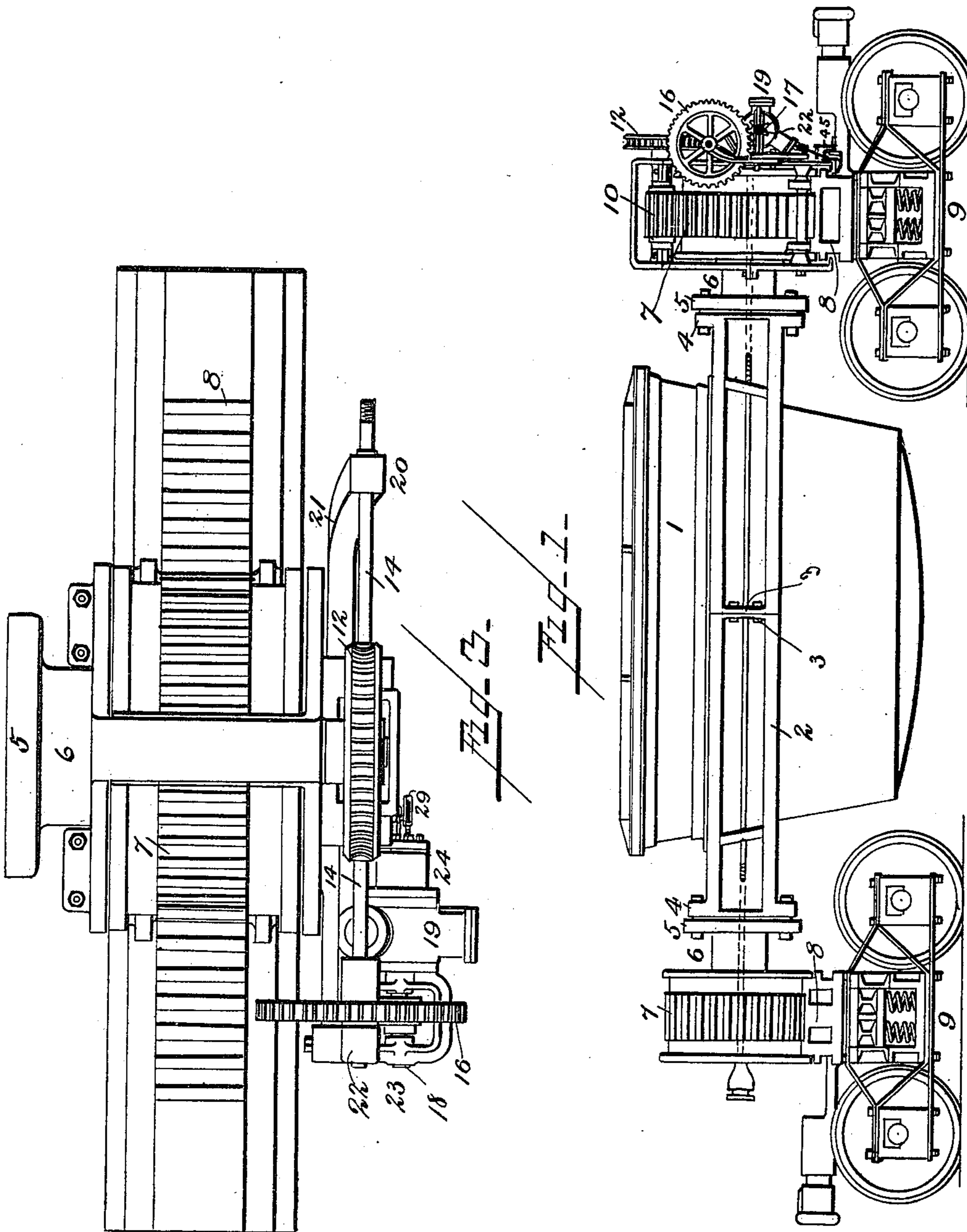
E. A. WEIMER.

CINDER OR HOT METAL CAR FOR BLAST FURNACES.

(Application filed July 30, 1900.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:

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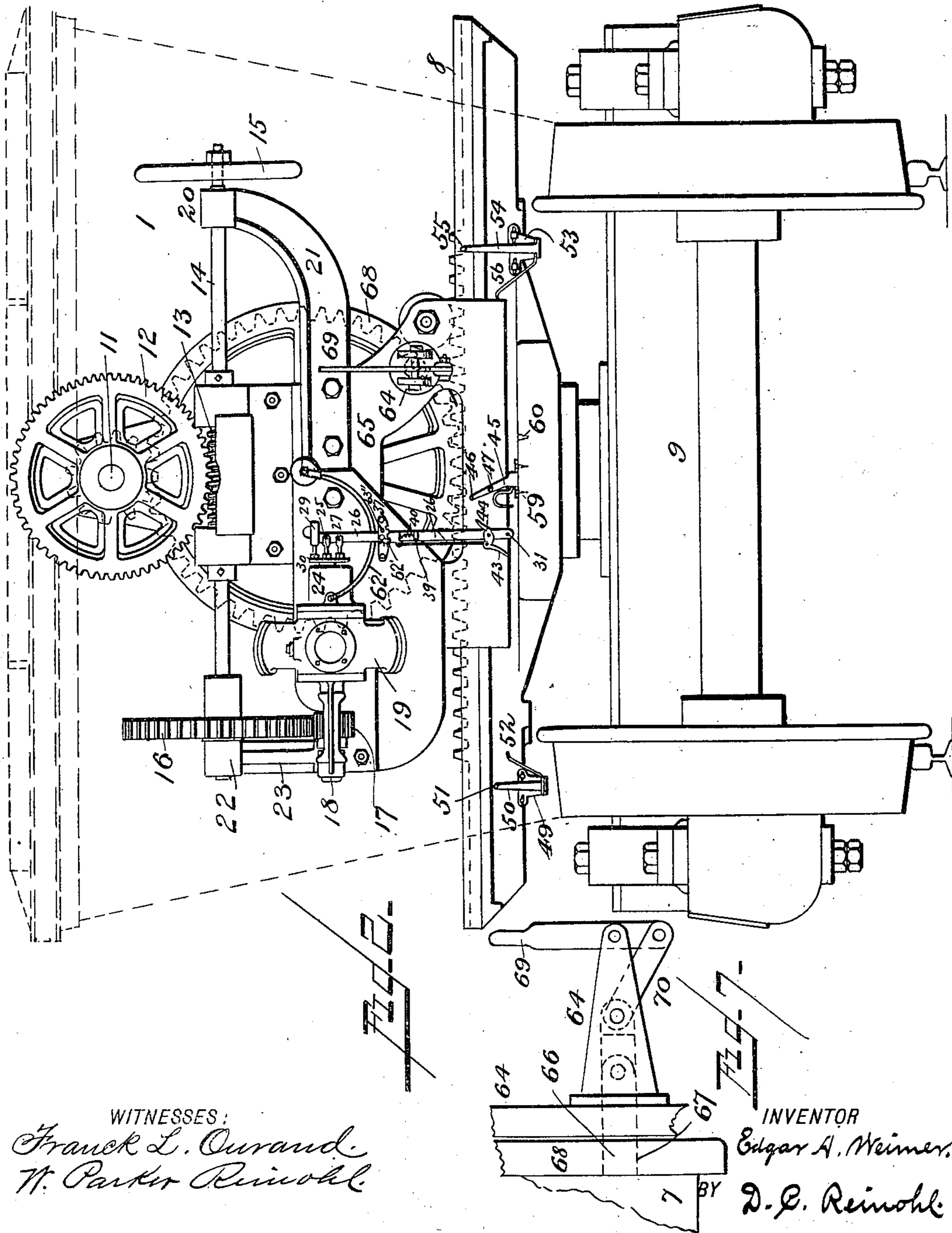
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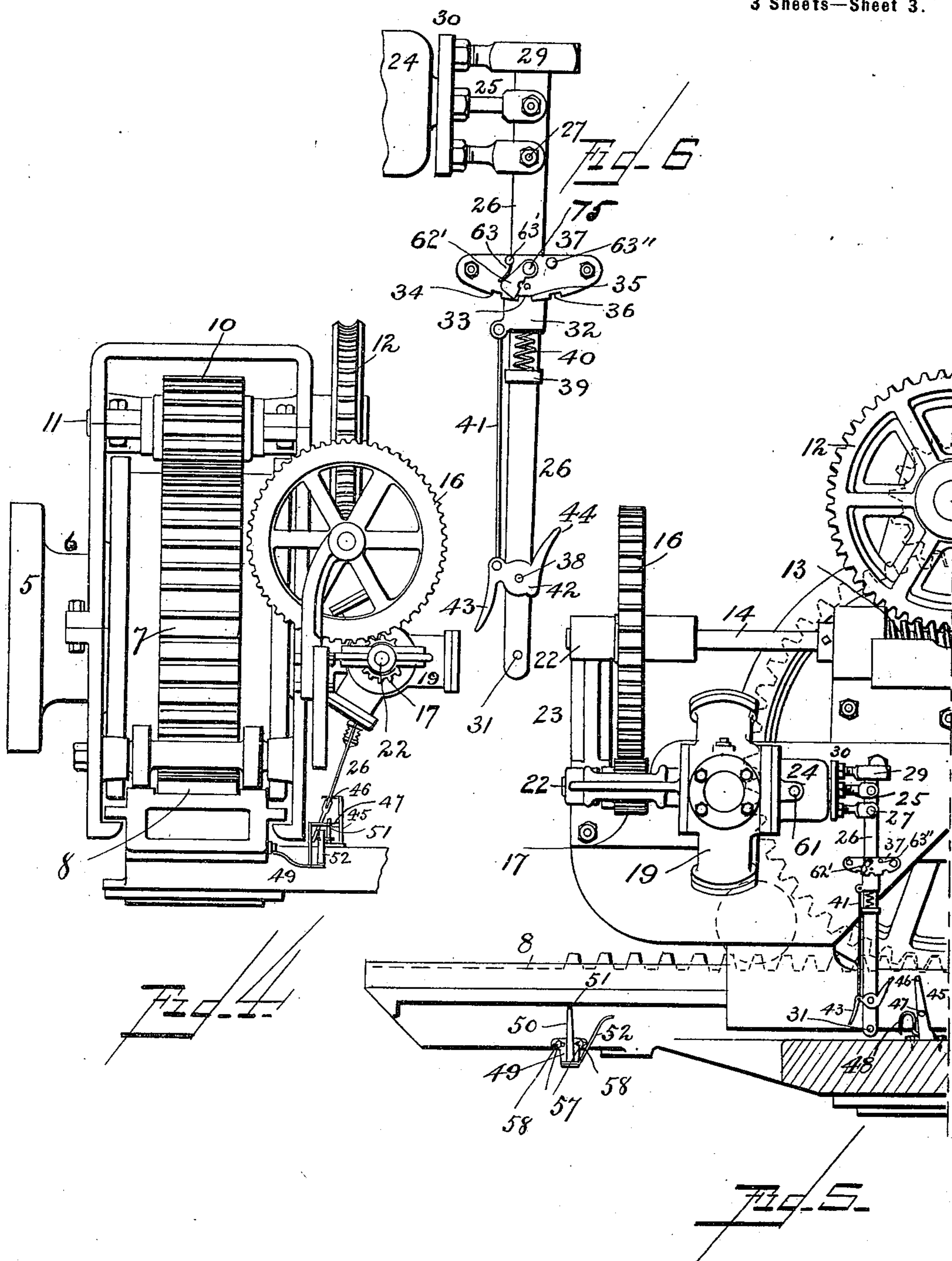
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UNITED STATES PATENT OFFICE.

EDGAR A. WEIMER, OF LEBANON, PENNSYLVANIA.

CINDER OR HOT-METAL CAR FOR BLAST-FURNACES.

SPECIFICATION forming part of Letters Patent No. 666,447, dated January 22, 1901.

Application filed July 30, 1900. Serial No. 25,319. (No model.)

To all whom it may concern:

Be it known that I, EDGAR A. WEIMER, a citizen of the United States, residing at Lebanon, in the county of Lebanon and State of Pennsylvania, have invented certain new and useful Improvements in Cinder or Hot-Metal Cars for Blast-Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates especially to cars adapted to convey molten or liquid cinder or metal from a blast-furnace, and has especial reference to the car shown and described in the United States Patent granted to Peter L. Weimer, dated November 23, 1886, and numbered 353,009; and it consists in certain improvements, which will be fully disclosed in the following specification and claims.

In the accompanying drawings, which form part of this specification, Figure 1 represents a side elevation of my invention; Fig. 2, an end elevation on an enlarged scale; Fig. 3, a top plan view; Fig. 4, a side view of the motor and its connections for dumping the ladle; Fig. 5, an end view of the same on an enlarged scale; Fig. 6, a side view of the valve-operating lever detached and on an enlarged scale, and Fig. 7 a side view of the locking mechanism on an enlarged scale.

Reference being had to the drawings and designating characters thereon, 1 indicates the body or ladle, and 2 the hoop or bail in which the ladle is supported, made in two parts secured together by flanges 3 3 in the transverse center of the bail, and each part is provided with a flanged head 4, by which it is connected to a head 5 on the end of a neck 6 of the spur gear-wheels 7 7 and by which the ladle is revolved in either direction by a suitable motor to discharge its contents. The wheels 7 7 rest upon and engage the teeth of a rack or bolster 8 8 at each end of the car, supported upon trucks 9 9 of any preferred construction, and to the spur gear-wheel 7 at one end of the car a pinion 10 is connected, said pinion being supported upon a shaft 11, provided with a worm gear-wheel 12, which is engaged by a worm 13 on shaft 14. Thus far the construction of the parts described does not differ materially from that shown in the patent

referred to and on which this invention is an improvement.

On one end of the shaft 14 is a hand-wheel 15 for revolving the shaft and the ladle by hand, and on the opposite end is secured a master gear-wheel 16, which is engaged by a pinion 17 on the shaft 18 of a tricylinder-engine 19, which imparts rotary motion to said shaft 18 and revolves the pinion 17 and the master gear-wheel 16, which in turn revolves shaft 14 and gear-wheels 13 and 12, which communicate motion to shaft 11, pinion 10, and spur gear-wheels 7 and cause the ladle to travel laterally in either direction desired, and at the same time the ladle is revolved axially and the contents thereof discharged.

The shaft 14 is supported at one end in a bearing 20 on a bracket 21, and at its opposite end it is supported in a bearing 22 on a bracket 23, and to the latter bracket the motor 19 is secured.

From the motor-fluid chest 24 of the motor projects a valve-rod 25, to which a lever 26 is connected and is fulcrumed at 27, with its short end 28 engaging a stirrup 29 on a plate 30, and the long end of the lever 26 extends downward to be engaged by the hand of a trainman to control the engine or to be operated automatically. This lever operating upon the valve of the engine starts, stops, and reverses the engine, and to accomplish these threefold functions the lever is provided with a pin 31, projecting out from the front of the lever, a latch 32, longitudinally movable on the lever and having a tooth 33, which engages the notches 34, 35, and 36, respectively, on the rack-bar 37, which is permanently secured on the bracket 23, a collar 39, a spring 40 between the latch 32 and collar 39, and a rod 41, connected at one end to said latch and at its opposite end to a trip 42, pivotally secured to the lever at 38 and provided with oppositely-extending fingers 43 and 44.

On the rack 8 is secured a central and reversible stop 45, provided with laterally-projecting pins 46 and 47 and which are engaged by the fingers 43 and 44 and with a spring 48, engaged by the pin 31 at the end of lever 26, a bracket 49, supporting a stop 50, provided with a laterally-projecting pin 51 and a spring 52 on one side of the stop and at the end of

the lateral travel of the ladle on the rack 8, and a like bracket 53, supporting a stop 54, provided with a laterally-projecting pin 55 and a spring 56, both of said brackets being
 5 adjustably secured to the rack by bolts 57, engaging slots 58 in the brackets, the central stop 45 being set to revolve the ladle toward the right or left, as desired, by securing it in the bolt-hole 59 or 60.

10 The motor 19 is supplied with fluid, such as compressed air or steam, through a nipple 61 and hose or pipe 62, connecting with the compressed-air tank on the locomotive-engine which draws the car or cars, and supplies air to operate the brake on the engine,
 15 or by steam from the engine-boiler, and the motor-fluid is exhausted from the motor 19 through an opening on the chest 24 opposite the nipple 61. (Not shown.)

20 Upon the rack-bar 37 is pivotally secured a pawl 62' by a removable pin 75, operated in one direction by the tooth 33 on the latch 32 and automatically moved in the opposite direction by spring 63, attached to the pawl at one end
 25 and bearing against pin 63' or 63'' at its opposite end to mask or cover the notch 35 and prevent the tooth 33 engaging therewith when the lever 26 is thrown from one side to the other to reverse the motor 19. The pawl is
 30 reversed by withdrawing the pin 75 and turning the pawl to place the spring 63 in position to bear against pin 63'' for dumping the car in the opposite direction.

To prevent lateral rocking motion of the
 35 ladle when the car is traveling being transmitted to the revolving mechanism, a bracket 64 is secured to the cheek-plate 65 and supports a pin 66, which passes through the cheek-plate and engages a hole 67 in the rim 68 of
 40 one of the spur gear-wheels 7 and is operated by a lever 69, fulcrumed on the bracket and connected to the pin by a link 70, as shown in Figs. 2 and 7. The locking of the spur gear-wheel is necessary only when the car is
 45 hauled a considerable distance and over a rough track.

The ladle 1 having been filled with molten cinder or metal, the trainman sets the stop 45 on the rack or bolster 8 and the pawl 62' in
 50 position to turn the ladle to the right or left, as desired, the position shown in Fig. 2 being that required to dump to the left. The hose or pipe from the locomotive or adjacent car, as the case may be, is then attached to a
 55 coupling (not shown) at the end of pipe 62, and the opposite end of pipe 62 is applied to the nipple 61 on the motor-fluid chest 24 of the motor, after which he disengages the latch 32 from the notch 35 (when the pawl 62' falls
 60 and masks or covers the notch 35 to prevent the tooth 33 engaging it) and moves the lever 26 to the left until the latch 32 engages the notch 34. If the cars are in train, this must be done on each car, and when the car or
 65 train of cars have reached the place for discharging the contents of the ladle or ladles the trainman unlocks the ladle by drawing the

pin 66 out of the hole 67 in the rim of the spur gear-wheel 7, when the engineer in the cab on the locomotive turns on the air or steam,
 70 when the motor 19 is set in operation and the ladle moved laterally toward the left and is at the same time revolved on its axis, and when the ladle is almost in dumping position the spring 52 commences to press against the pin
 75 31 on the end of the lever 26. By the time the ladle has been discharged the advancing left-hand finger 43 strikes the stop 50 and disengages the latch 32 from the notch 34. The tension or resiliency of the spring 52 throws
 80 the lever and the latch past the notch 34 into engagement with notch 36, and the spring 40 locks the latch. The motor is now reversed, and the ladle starts to return to its horizontal
 85 position. Before the ladle reaches its horizontal position the pin commences to press against spring 48, and when the ladle has reached its horizontal position the pin 46 on the stop 45 strikes the right-hand finger and
 90 disengages the latch 32, when the spring 48 throws the lever 26 toward the left, and on coming to the central notch 35 in the rack-bar 37 the latch engages said notch, cuts off the supply of motor fluid, and stops the motor.

It is obvious that by setting the stop 45 and
 95 the pawl 62' in the reverse position the ladle will travel toward the right and that the same operation will be repeated in reverse direction, thus enabling cars in a train to be discharged on opposite sides of the track at will,
 100 or any car can be held in its normal position by latching the lever 26 to notch 35 on the car not to be dumped. When it is desired to clean the ladle, the car being separated from the locomotive or source of power, it may be
 105 revolved by means of the hand-wheel 15. It is also obvious that other forms of motors and motive power and means of connecting the motor to the spur-gear may be used without departing from the spirit of my invention.
 110

Having thus fully described my invention, what I claim is—

1. A cinder or other car having a ladle supported at both ends upon racks and spur-wheels engaging the racks, gear-wheels and
 115 pinions connected to one of said spur-wheels; in combination with a motor supported at one end of the car and connected to the ladle by said gearing, to impart lateral and revoluble motion thereto, and means for supplying
 120 motive power to said motor.

2. A cinder or other car having a ladle supported at both ends upon racks and spur-wheels engaging the racks, gear-wheels and
 125 pinions connected to one of said spur-wheels; in combination with a rotary motor supported upon the car and connected to the ladle by said gearing, to impart lateral and revoluble motion thereto, and means for supplying
 130 motor fluid to the motor.

3. A cinder or other car having a ladle supported at both ends upon racks and spur-wheels engaging the racks, gear-wheels and
 pinions connected to one of said spur-wheels;

in combination with a motor supported upon the car and connected to the ladle by said gearing, to impart lateral and revoluble motion thereto, means for supplying motor fluid
5 to the motor, and means for starting, reversing and stopping said motor.

4. A cinder or other car having a ladle supported upon a rack; in combination with a motor, and connections with the ladle for
10 imparting lateral and revoluble motion there-

to, means for supplying motor fluid to the motor, means for starting the motor, and automatically reversing and stopping mechanism for the motor.

In testimony whereof I affix my signature 15
in presence of two witnesses.

EDGAR A. WEIMER.

Witnesses:

F. D. HOUCK,

D. P. WITMEYER.