

No. 666,448.

Patented Jan. 22, 1901.

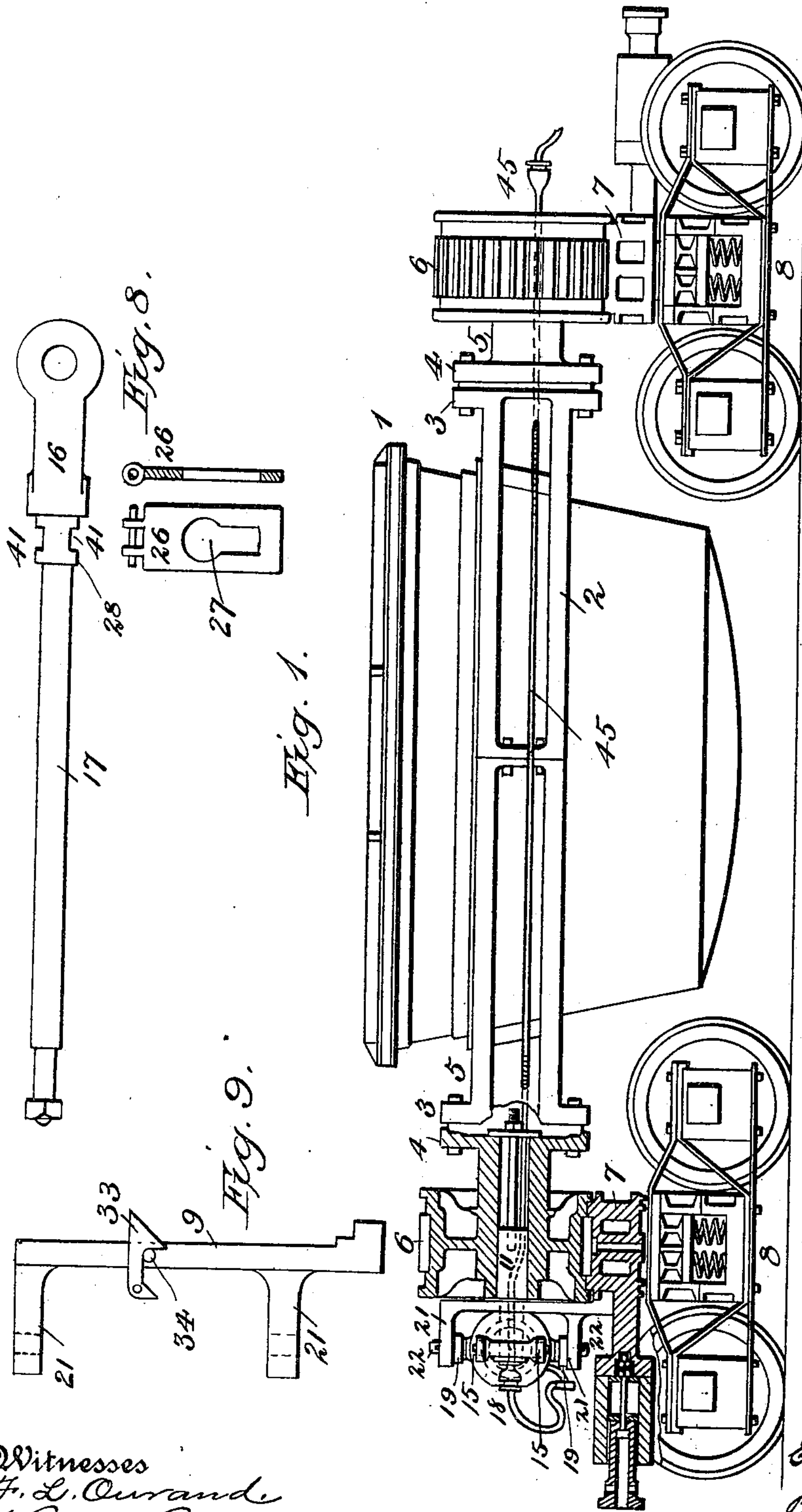
E. A. WEIMER.

CINDER OR HOT METAL CAR FOR BLAST FURNACES.

(Application filed Aug. 13, 1900.)

(No Model.)

4 Sheets—Sheet 1.



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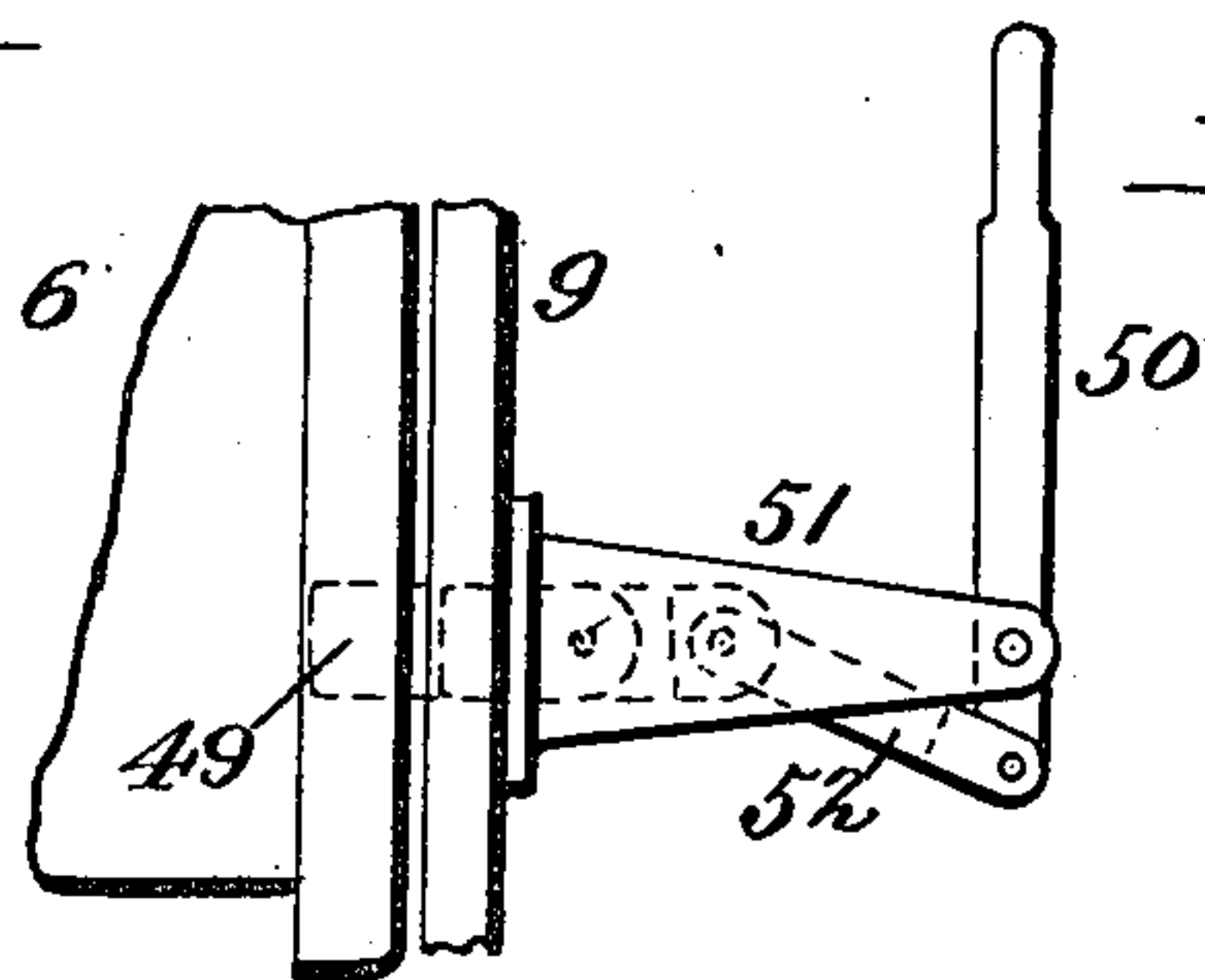
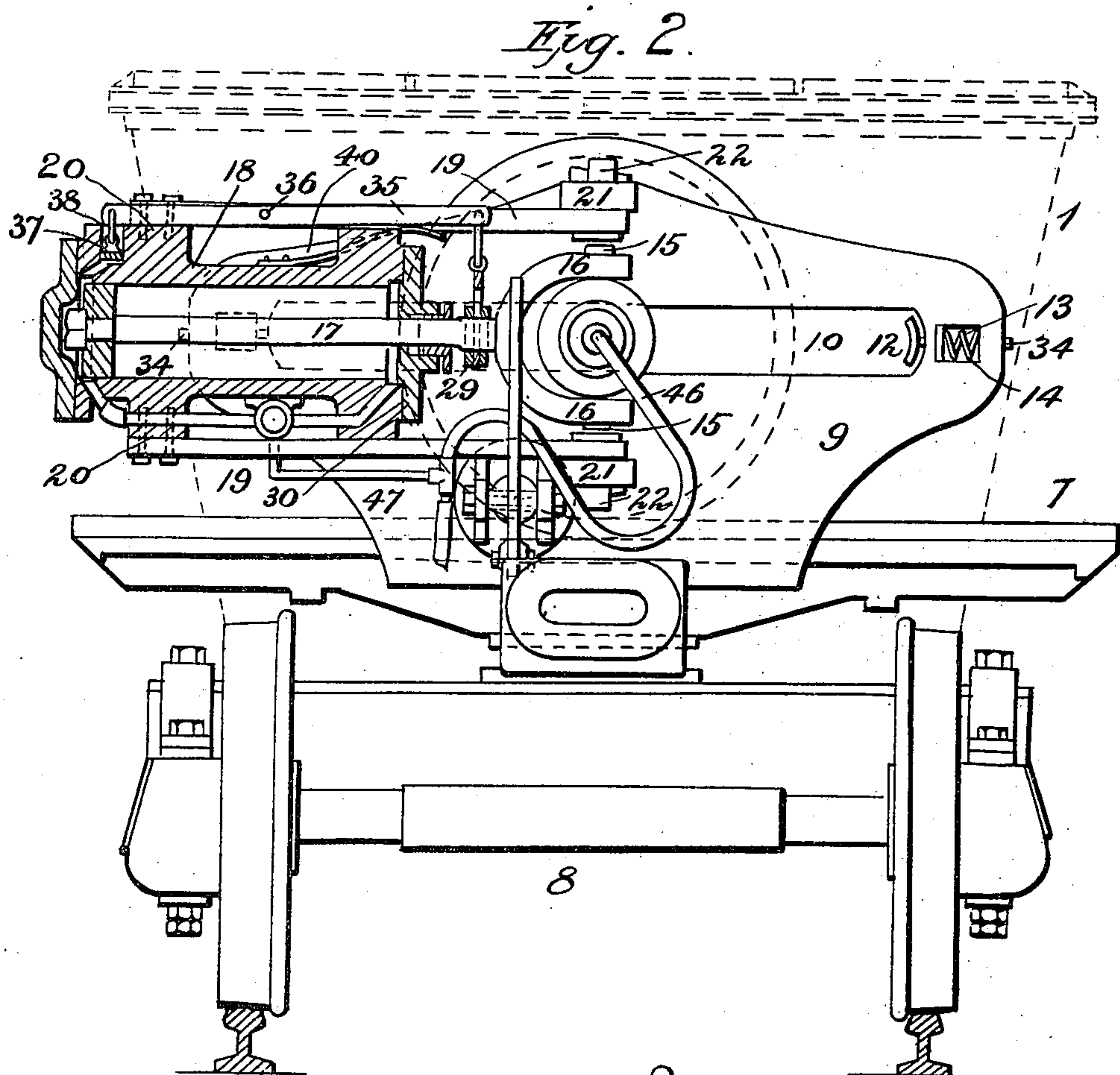
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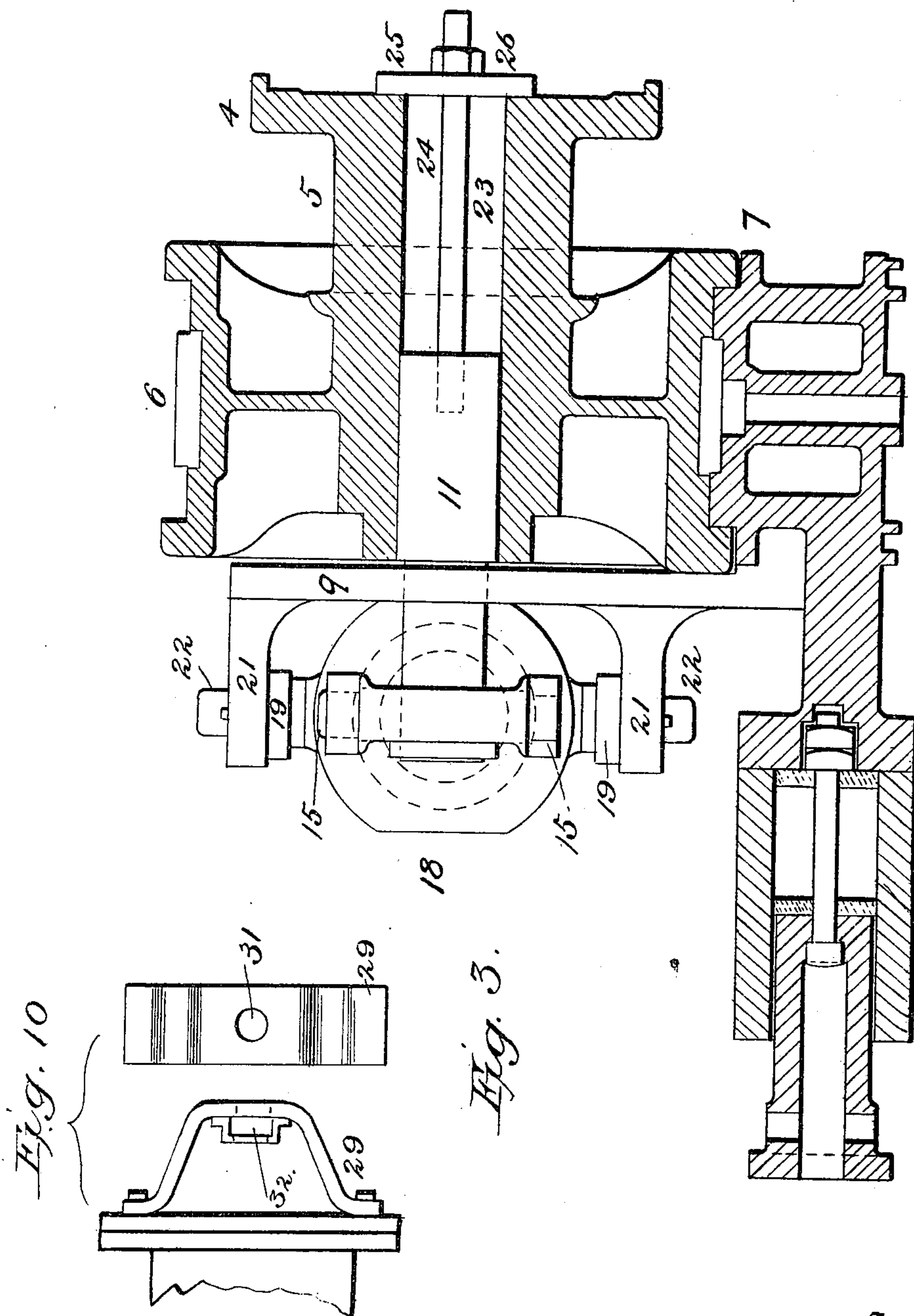
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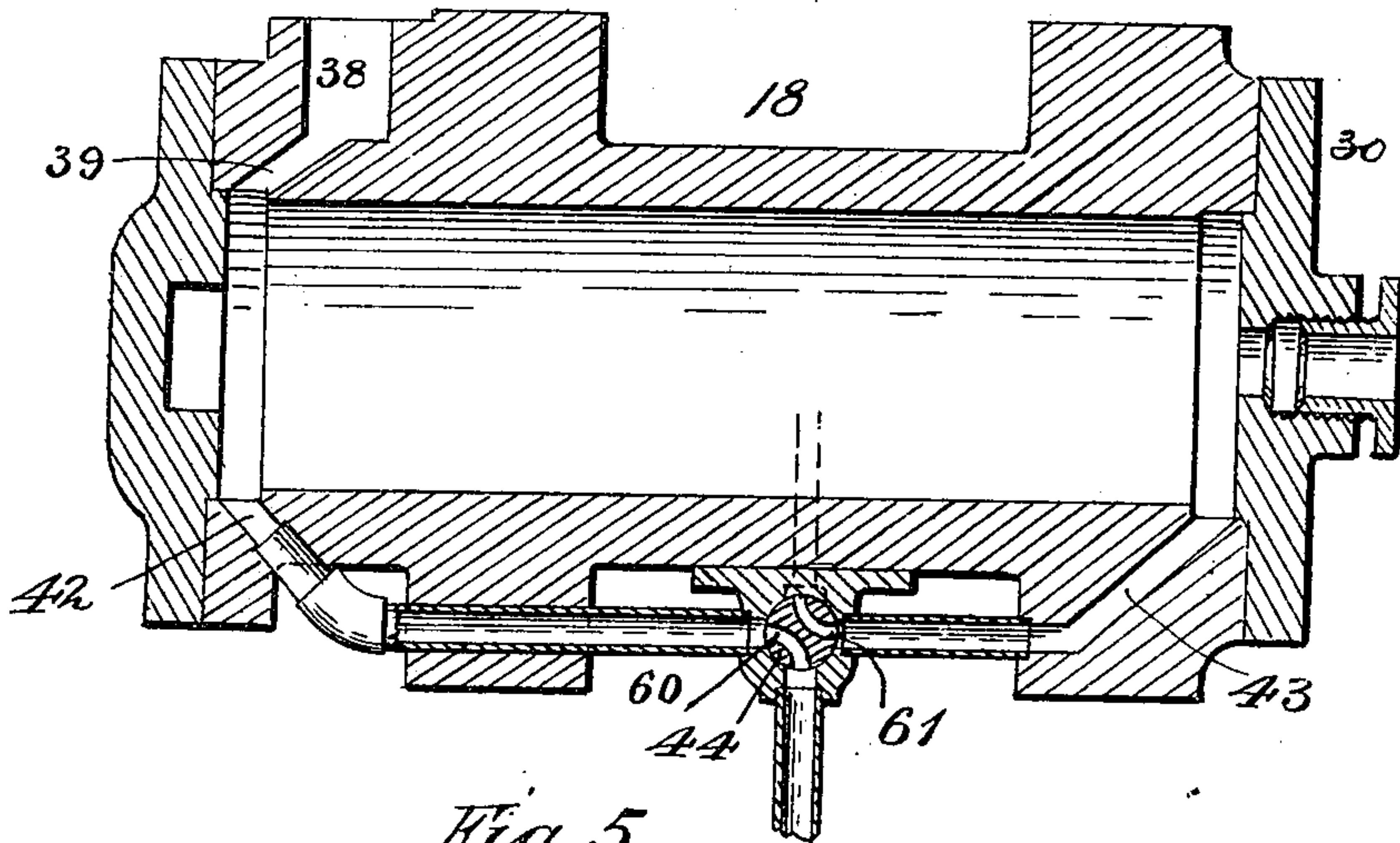
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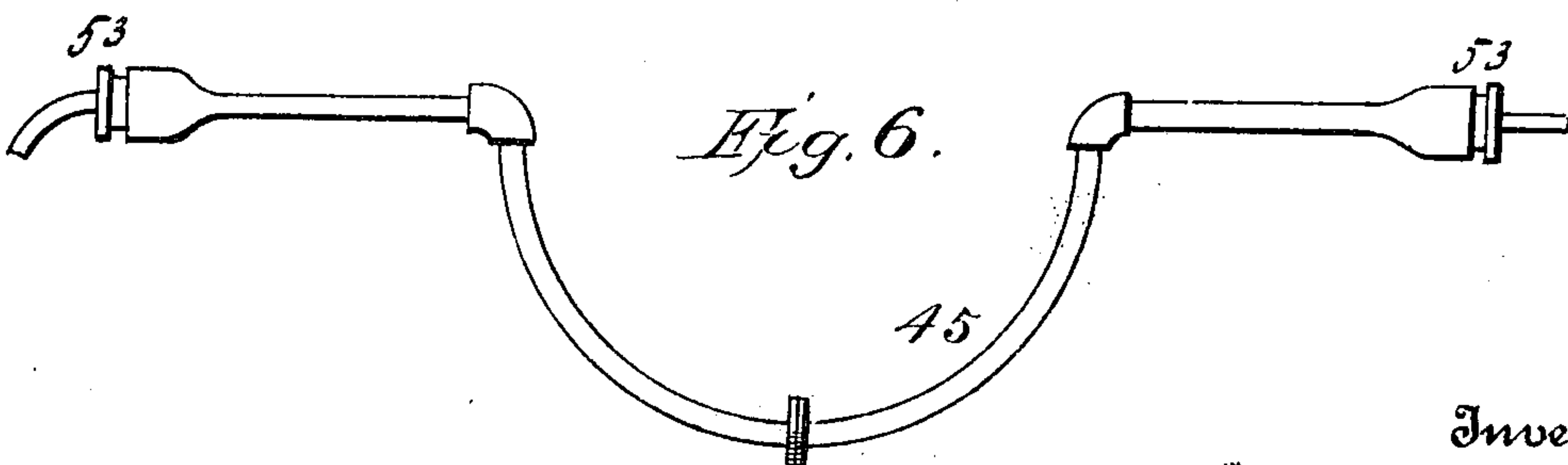
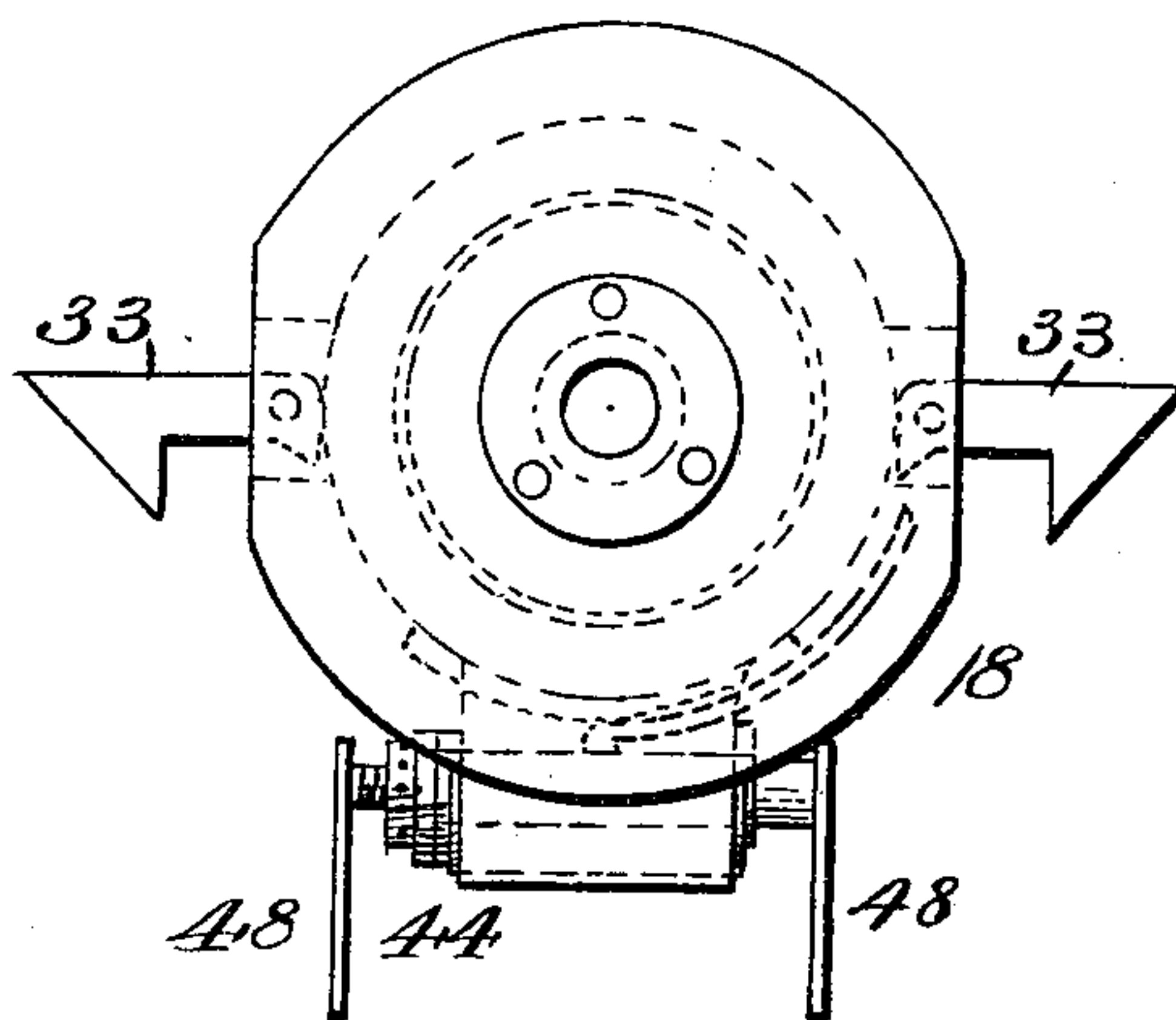
(No Model.)

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*Fig. 4.*



*Fig. 5.*



*Fig. 6.*

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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. 666,448, dated January 22, 1901.

Application filed August 13, 1900. Serial No. 26,719. (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 November 23, 1886, and numbered 353,009; and it consists in certain improvements in construction, 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, partly in section, of a car embodying my invention; Fig. 2, an end elevation, partly in section; Fig. 3, a vertical longitudinal section through the spur-gear, the rack or bolster, and the coupling and showing an end view of the motor, all on an enlarged scale; Fig. 4, a vertical longitudinal section of the motor-cylinder; Fig. 5, an end view of the same; Fig. 6, a plan view of the motor-fluid-conducting pipe; Fig. 7, a side view of the locking mechanism; Fig. 8, a detail view showing the piston-rod detached and the locking-plate in side and edge views; Fig. 9, an end view of the cheek-plate, and Fig. 10 a side and end view of the support for the locking-plate on a reduced scale.

Reference being had to the drawings and the numerals thereon, 1 indicates the body or ladle, 2 the hoop or bail, in which the ladle is supported and is provided at each end with a flanged head 3, by which it is connected to head 4 on the end of neck 5 of the spur gear-wheels 6 6 and by which the ladle is revolved in either direction by a motor to discharge its contents. The wheels 6 6 rest upon and engage the teeth of a rack or bolster 7 at each end of the car, supported upon trucks 8 8, of any preferred construction.

Secured to the bolster 7 and crossing the

car transversely is a cheek-plate 9, which is provided with a longitudinal slot 10, through which projects pin 11 in the hub of one of the spur gear-wheels 6, and at each end of the slot is a buffer 12, having a spring 13 in a pocket 14 to cushion the pin 11 as it is forced to the end of the slot 10 in dumping the ladle. The pin 11 is provided with laterally-projecting pins or studs 15, which are engaged by the bifurcated ends 16 16 of the piston-rod 17 and from a toggle-joint.

The cylinder 18 is hinged to the cheek-plate 9 by bars 19 19, connected to the cylinder, at the rear end thereof, at 20 20, as shown in Fig. 2, and the opposite ends of the bars 19 are pivotally connected to brackets 21 21 on the cheek-plate by pins 22 22, so that the engine may be reversed from one side of the car to the other to dump the ladle either to the right or left, as may be desired.

The pin 11 is secured in the bore 23 of the hub of the spur gear-wheel by a bolt 24, plate 25, and nut 26, and the ladle is locked in its horizontal position by a locking-plate 26, having an opening 27, which engages a collar 28 on the piston-rod 17, as shown in Figs. 2 and 8, and the locking-plate is supported in a bracket 29, (see Figs. 2 and 10,) connected to the cylinder-head 30 of the engine. The bracket is provided with an opening 31, through which the piston-rod passes, and a rectangular slot 32 at a right angle to the opening 31, through which the locking-plate 26 passes, and the cylinder 18 is locked to the cheek-plate 9 in either position by a latch 33 on each side of the cylinder engaging a stud or pin 34 on each end of the cheek-plate, only one of which is shown in Fig. 9. The locking-plate is connected to one end of a lever 35, having a fulcrum-pin 36, and connected at its opposite end to a piston 37 in a chamber 38, connected to the fluid-chamber of the cylinder by a port 39, and the lever rests normally upon a leaf-spring 40, whose function it is to raise the outer end of the lever and the locking-plate 26 to engage the slots 41 41 in the collar 28 and lock the ladle in its horizontal position.

The cylinder 18 is provided with ports 42 43, and the supply of motor fluid is controlled by the valve 44, having ports 60 and 61, (shown in Fig. 4,) and is supplied, preferably,



from the compressed-air reservoir on the locomotive-engine from which the brakes are operated or from the boiler of the locomotive.

The motor fluid is conducted through pipe 45, supported by the bail 2, extending through the spur gear-wheels 6, and branches 46 and 47, (see Fig. 2,) connecting with the valve-chest, (see Fig. 4,) the valve 44 being supplied with a lever 48 at each end for the trainman to maintain and dump the ladle.

The ladle is locked against lateral movement on the racks or bolsters 7 while *en route* a considerable distance or over a rough track by a pin 49, engaging the rim of the spur gear-wheel 6 and operated by a lever 50, connected to a bracket 51 on cheek-plate 9, and a link 52, connected to the pin and to the lever, as shown in Figs. 2 and 7. This locking mechanism is claimed in my application filed July 30, 1900, Serial No. 25,319.

The pipe 45 is provided with suitable couplings 53 at each end for engaging a similar coupling on an adjacent car at each end, so that any desired number of cars may be connected in a train.

As shown, the motor is in position to dump the ladle to the right and the ladle locked in its horizontal position. The ladle having been filled and a car or a train of cars having been transported to the place for discharging the ladle or ladles, the operator turns the valve 44 to admit the motive fluid into the front or pin end of the cylinder, which forms a cushion and takes the strain off the lock applied to the piston-rod. The valve is then reversed and the fluid admitted to the rear or head end of the cylinder, which instantly operates upon the piston 37 and pushes the locking-plate 26 down, disengaging it from the slots 41 in the collar 28 of the piston-rod 17, and as the pressure increases in the cylinder 18 the piston moves forward, and to prevent a too-rapid movement of the piston the fluid in the front end of the cylinder is slowly expelled through the small port 61 in the valve 44 until the ladle has been dumped, and its contents discharged. The fluid is then turned on the front or pin end of the cylinder and the fluid in the rear end allowed to exhaust and the ladle returned to its horizontal and normal position. The piston-rod is locked by the spring 40 raising the plate 26 and causing it to engage the slots 41 in the collar 28.

To dump to the left, the cylinder 18 is unlatched from the plate 9 and swung over to the opposite side of the plate and again latched thereto.

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

1. A cinder or other car having a ladle supported upon a rack; in combination with a motor reversibly supported at one end of the

car and connected to the ladle to impart lateral and revoluble motion thereto, and means for supplying motive power to said motor.

2. A cinder or other car having a ladle supported upon a rack; in combination with a spur gear-wheel provided with a pin in the hub thereof, a cheek-plate having a slot engaged by said pin, a motor reversibly connected to said cheek-plate and to the ladle to impart lateral and revoluble motion to the ladle, and means for supplying motive fluid to said motor.

3. A cinder or other car having a ladle supported upon a rack; in combination with a spur gear-wheel provided with a pin in the hub thereof, a cheek-plate having a slot engaged by said pin, means for cushioning the pin at the ends of said slot, a motor reversibly connected to said cheek-plate and to the ladle to impart lateral and revoluble motion to the ladle, and means for supplying motive fluid to the motor.

4. A cinder or other car having a ladle; in combination with a motor, connections between the ladle and the motor, and means engaging the piston-rod of the motor for locking the ladle in its horizontal position.

5. A cinder or other car having a ladle; in combination with a motor, connections between the ladle and the motor, means engaging the piston-rod of the motor for automatically locking the ladle in horizontal position, and means for disengaging the locking mechanism.

6. A cinder or other car having a ladle; in combination with a motor, connections between the ladle and the motor, and means engaging the piston-rod of the motor and operated by the motive fluid for locking the ladle in horizontal position.

7. A cinder or other car having a ladle supported upon a rack; in combination with a motor, a support for the motor, a connection between the motor and the support, whereby the motor may be reversed from one side of the car to the other, means for locking the motor in either position, and connections between the ladle and the motor, whereby lateral and revoluble motion is imparted to the ladle.

8. A cinder or other car having a ladle supported upon a rack; in combination with a motor connected to the ladle, means engaging the piston-rod of the motor for locking the ladle in horizontal position, and means for locking the ladle against lateral movement.

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

EDGAR A. WEIMER.

Witnesses:

JNO. L. ROCKEY,  
S. M. MILLER.