

No. 719,706.

PATENTED FEB. 3, 1903.

E. A. WEIMER.
CINDER OR HOT METAL CAR FOR BLAST FURNACES.

APPLICATION FILED JUNE 25, 1902.

NO MODEL.

4 SHEETS—SHEET 1.

Fig. 1.

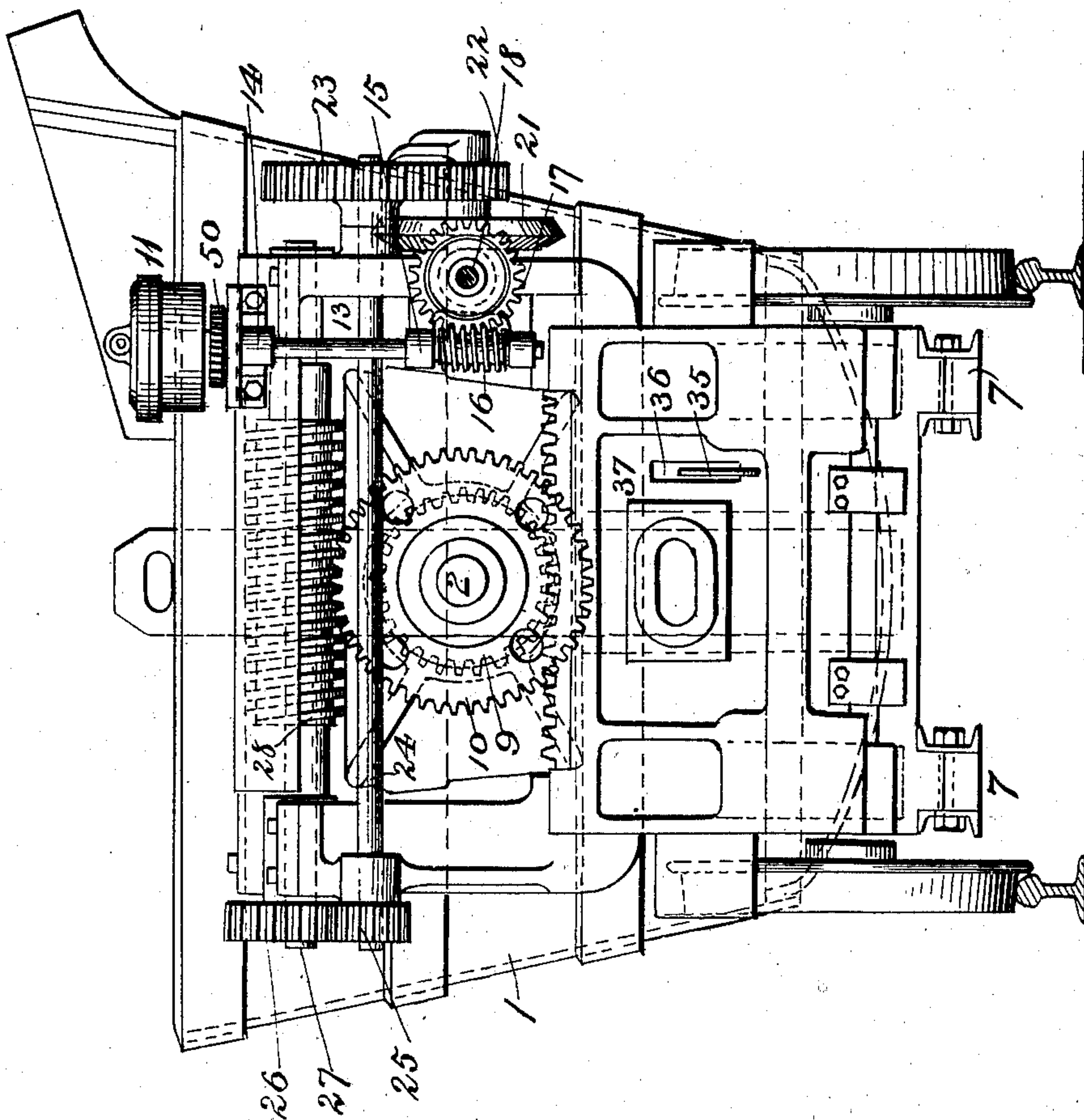
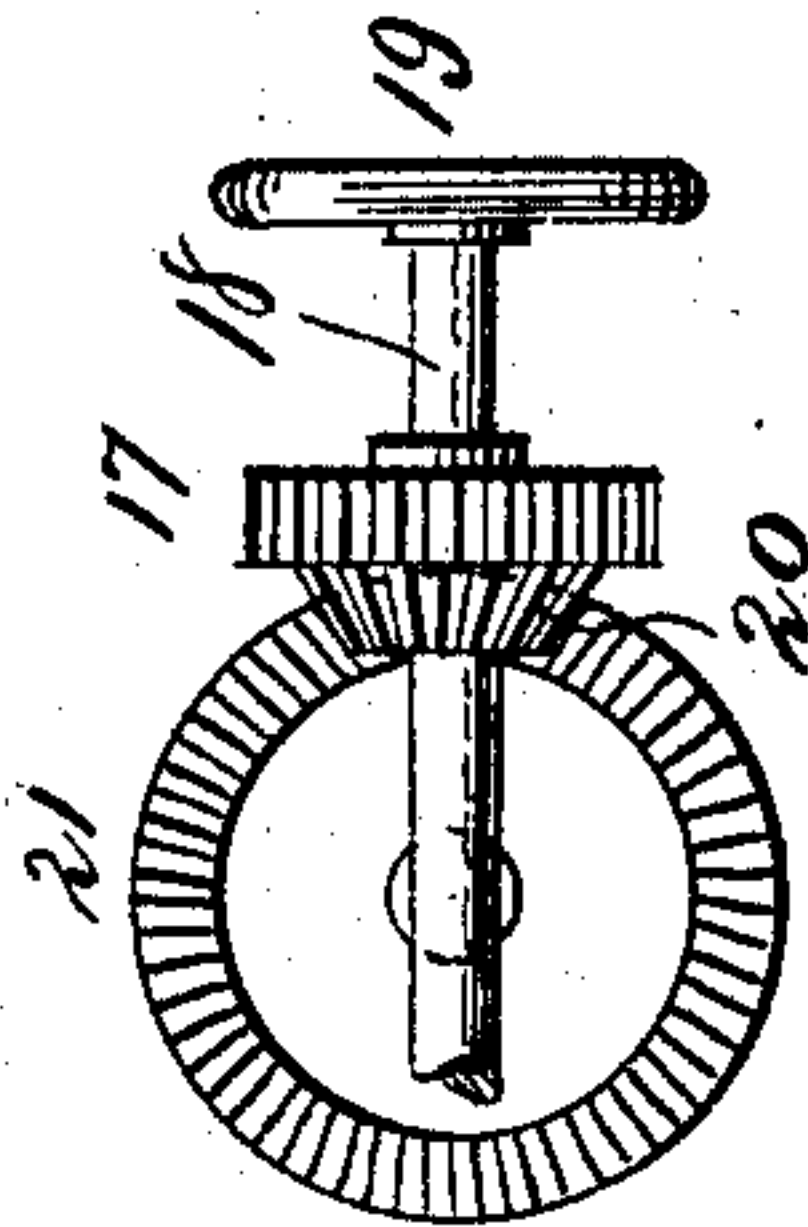


Fig. 5.



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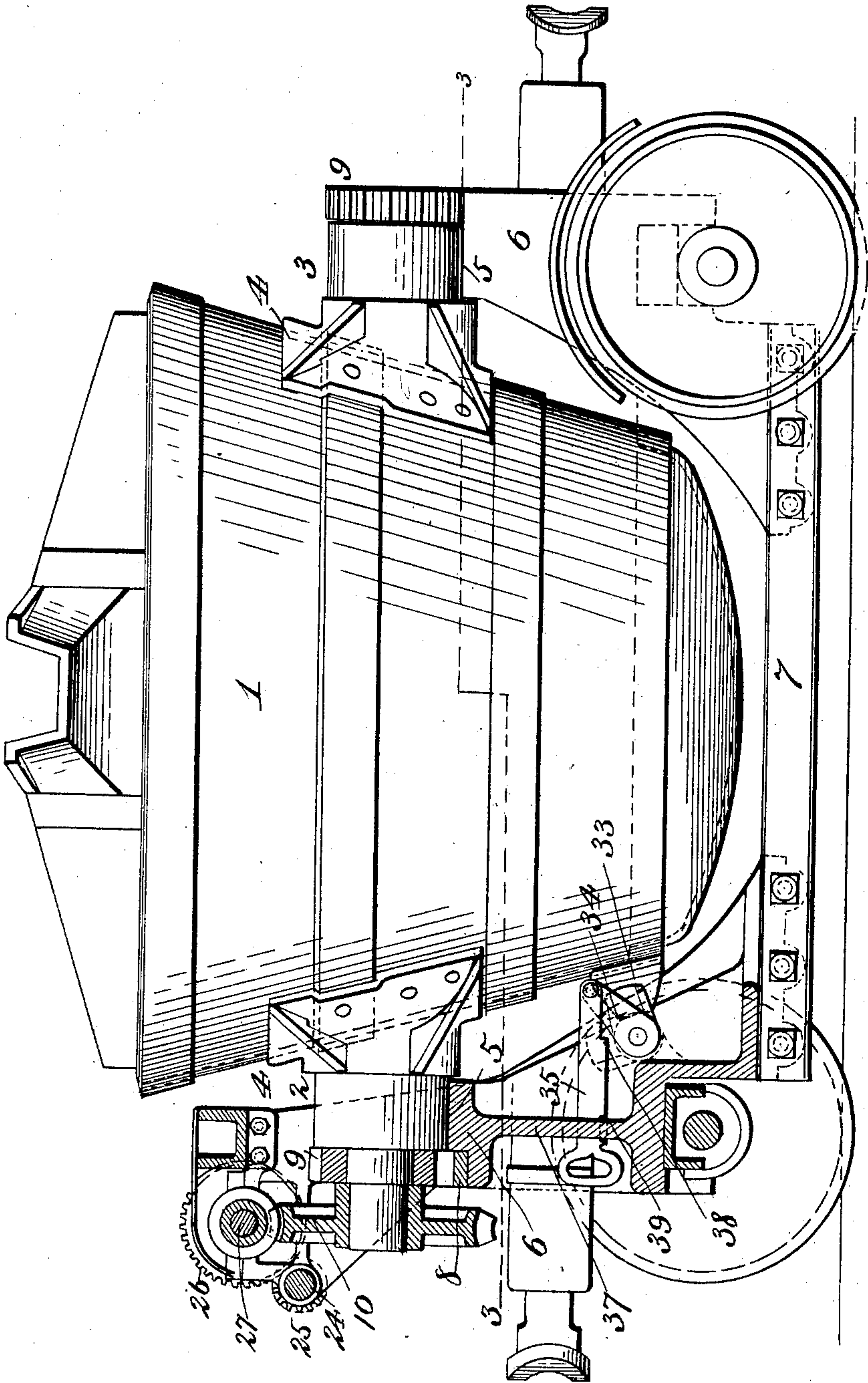
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4 SHEETS—SHEET 2.

Fig. 2.



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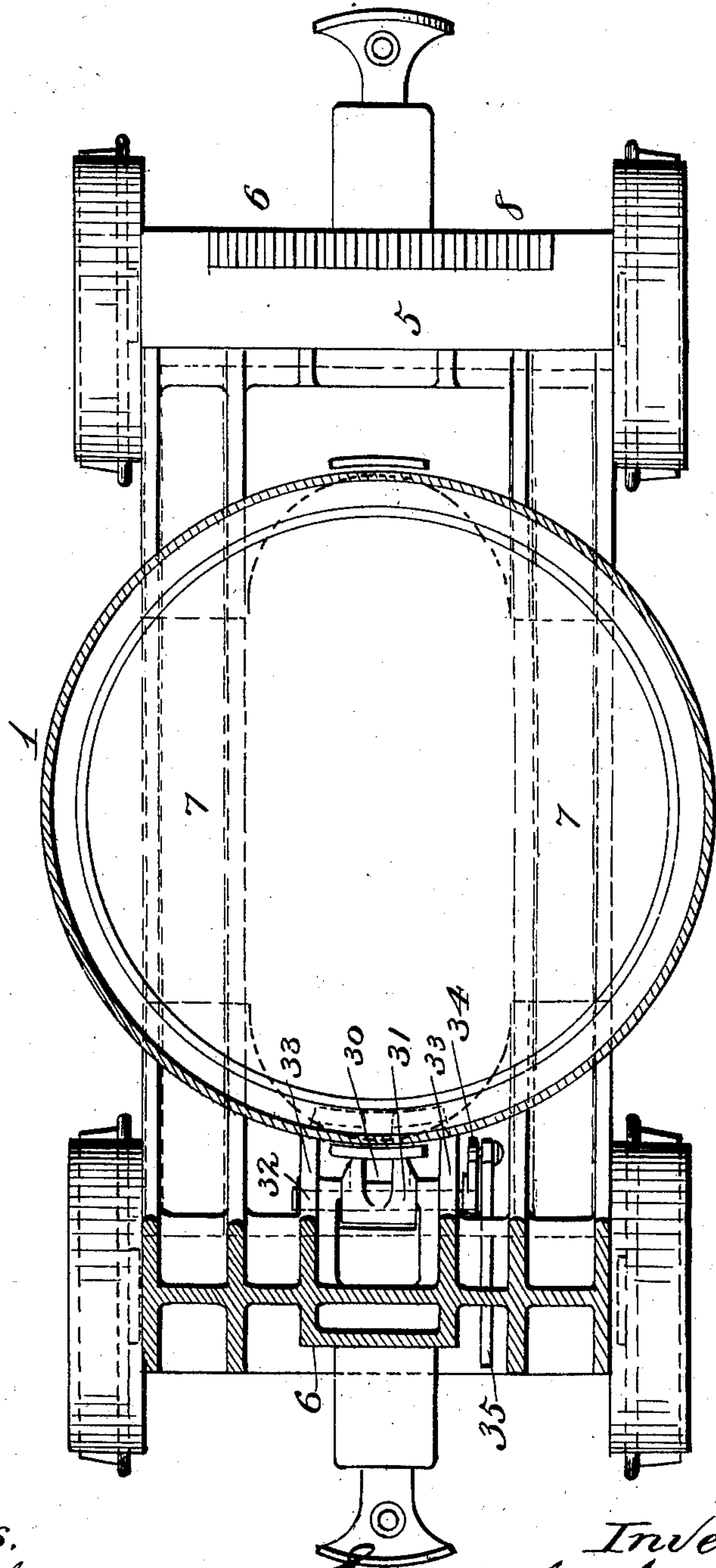
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4 SHEETS—SHEET 3.

Fig. 3



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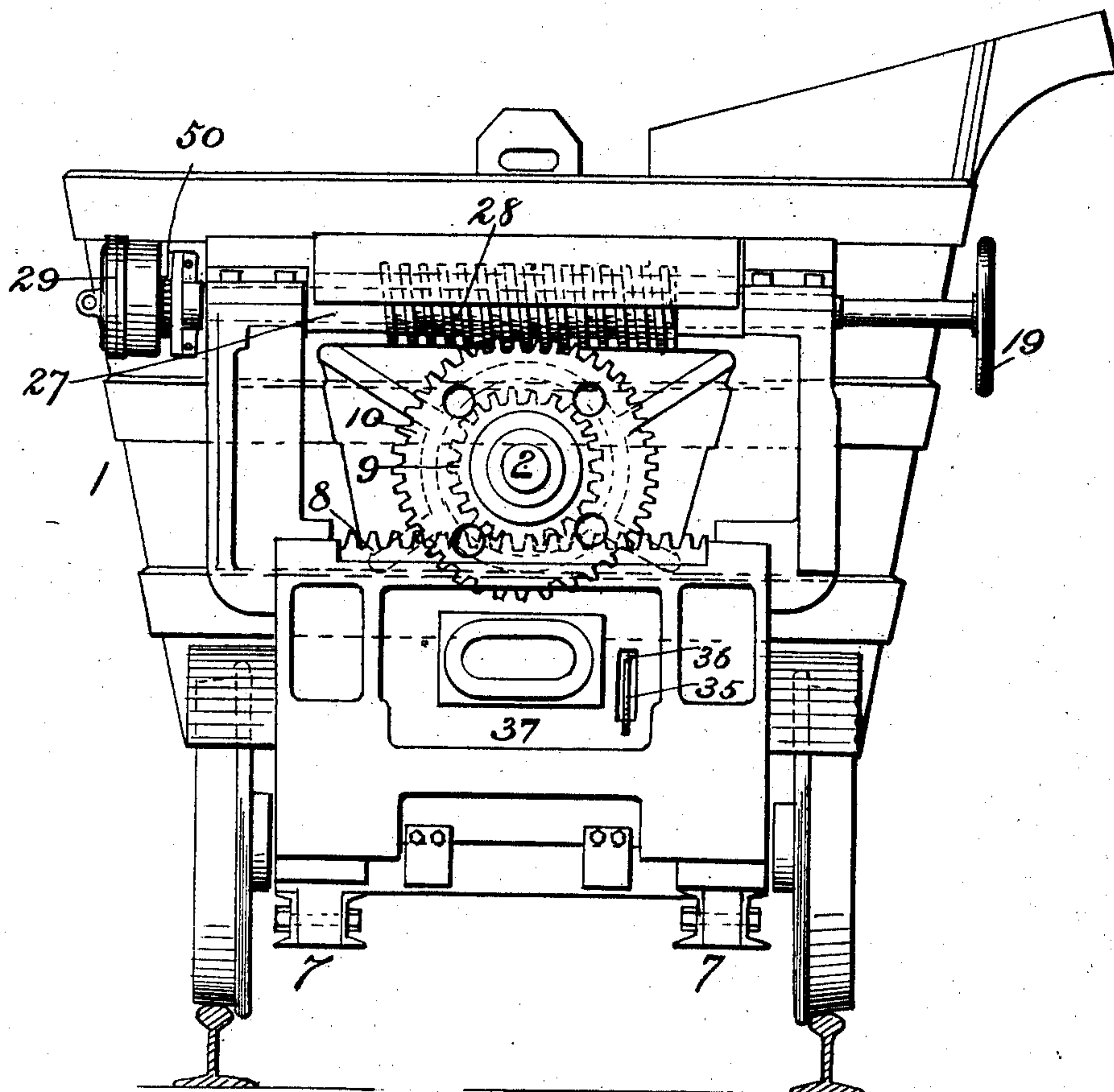
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4 SHEETS—SHEET 4.

Fig. 4.



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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. 719,706, dated February 3, 1903.

Application filed June 25, 1902. Serial No. 113,059. (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 to cars adapted to convey molten or liquid cinder or metal from blast-furnaces and smelters, has especial reference to the cars shown and described in the United States Patent granted to Peter L. Weimer, dated November 23, 1886, and numbered 353,009, and in patents granted to me January 22, 1901, and numbered, respectively, 666,447 and 666,448, and 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 an end elevation of a car embodying my invention; Fig. 2, a side elevation, partly in section; Fig. 3, a top plan view taken on the line 3-3, Fig. 2; Fig. 4, an end view showing a modification of the application of the motor to dump the ladle, and Fig. 5 a detail of the worm-wheel and the miter-gears.

Reference being had to the drawings and the designating characters thereon, 1 indicates the body or ladle, which is provided with trunnions 2 3, having flanges 4, by which they are secured to the ladle, and the trunnions rest and revolve upon elongated seats or bearings 5 5 on the two sections 6 6 of the frame, as shown in Fig. 2, and the two sections of the frame are secured together by bars 7 7, one on each side of the car. The ladle may, however, be supported in a bail of the type shown in patent granted to P. L. Weimer November 23, 1886, and numbered 353,009. The sections 6 6 are castings, and in each one, adjacent to the seats 5 5, are toothed racks 8 8, engaged by gear-wheels 9 9, secured to the trunnions to revolve therewith, and to the outer ends of one of the trunnions, beyond the wheel 9, is a worm gear-wheel 10, also secured thereto to revolve with the trunnion.

11 in Fig. 1 is a motor, preferably electric, and engages gear-wheel 50, connected to shaft 13, supported in bearings 14 and 15 and provided with a worm 16, which engages a worm gear-wheel 17 on shaft 18, which shaft is or may be provided with a hand-wheel 19 for dumping the ladle by manual power. On the rear of the wheel 17 is a miter gear-wheel 20, (shown in dotted lines in Fig. 1,) which engages a like miter gear-wheel 21, but of greater diameter, to reduce the speed of the wheel 20 and the travel of the ladle as it is being discharged or returned to its normal position, and secured to the shaft of the miter gear-wheel 21 is a pinion 22, which engages a gear-wheel 23 on one end of shaft 24 and transmits motion through pinion 25 at the opposite end of shaft 24 to gear-wheel 26 on the end of shaft 27, which is provided with a worm 28, which engages the worm-wheel 10 on the trunnion.

The mechanism described for dumping the ladle may be applied to ladles whose trunnions are supported in bearings by extending one of the trunnions through its bearings and securing a worm gear-wheel 10 thereto outside of the bearing without departing from the spirit of my invention. It is also within the scope of my invention to use a plain-toothed gear-wheel instead of the worm gear-wheel 17 and a pinion instead of the worm 16.

It is obvious that the gear 9, adjacent to the worm-wheel 10, may be dispensed with and the worm-wheel made to engage a correspondingly convex toothed rack instead of the plain flat or straight teeth shown on rack 8.

In Fig. 4 is shown a modification of the application of the motor designed for small cars to carry hot metal or slag from copper or other smelters. In this instance the motor 29 is attached directly to the end of the shaft 27, on which the worm 28 is formed, and transmits power direct to worm-wheel 10, and through it to trunnions 2, gear-wheel 9, and rack 8 without the intervention of the several gears and shafts required for larger cars.

30 is a lug secured to the ladle 1, as shown in Figs. 2 and 3, and is engaged by a bifurcated arm or latch 31 on rock-shaft 32, supported in lugs or bearings 33 on the frame-section, and is provided with a crank 34, to

which is attached an operating-bar 35, which extends through a slot 36 in the web 37 of the frame and is provided with two notches 38 near the inner end of the bar and 39 near the outer end thereof and in engagement with the web 37, as shown in Fig. 2, and in which position the ladle is locked, so that it cannot swing while the car is in motion to convey cinder or hot metal to any desired place for delivery. When the ladle is unlocked for dumping its contents, the notch 38 engages the web 37 and the latch assumes the position shown in dotted lines in Fig. 2. To dump the car-ladle, the latch 31 is disengaged from lug 30, the motor, supplied with a suitable motor fluid by suitable connections, is started, when the trunnions are revolved and the ladle moved laterally to one side of the car while it is being revolved on the trunnions until the contents of the ladle have been discharged, when the motor is reversed and the ladle returned to its normal position, and the latch 31 again engaged with lug 30, when the ladle is ready to be refilled.

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

1. A cinder or other car having a ladle provided with a trunnion at each end, elongated seats or bearings on which said trunnions are

supported, a toothed wheel on one of said trunnions and a revoluble member engaging said toothed wheel; in combination with a motor connected to said member to impart lateral and revoluble motion to the ladle.

2. A cinder or other car having a ladle provided with a trunnion at each end, elongated seats or bearings engaged by said trunnions, racks on the car-frame, gear-wheels on the trunnions engaging said racks, a toothed wheel on one of the trunnions, and a member engaging the toothed wheel; in combination with a motor connected to said member.

3. A cinder or other car having a ladle supported on trunnions, a toothed wheel on one of the trunnions, a member engaging said toothed wheel, and a motor connected to said member; in combination with a lug on the ladle, a rock-shaft supporting a latch which engages said lug, and an operating-bar connected to said rock-shaft, and provided with notches, extending through and engaging the web of the frame.

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

EDGAR A. WEIMER.

Witnesses:

H. E. HAUZ,

CHAS. R. DISSINGER.