

No. 719,389.

PATENTED JAN. 27, 1903.

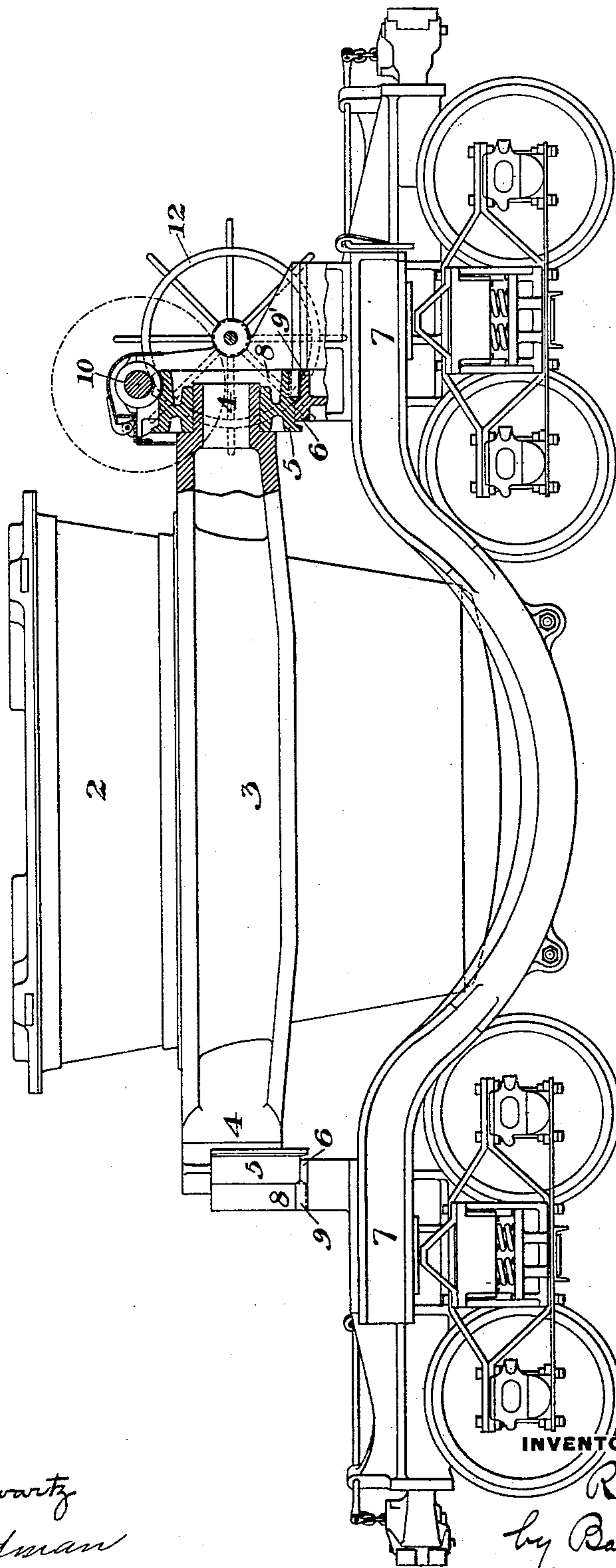
R. H. STEVENS.
LADLE CAR.

APPLICATION FILED AUG. 27, 1902.

NO MODEL.

4 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

Warren W. Swartz
L. M. Redman

INVENTOR

R. H. Stevens
by R. H. Stevens & Byrnes
Attorneys

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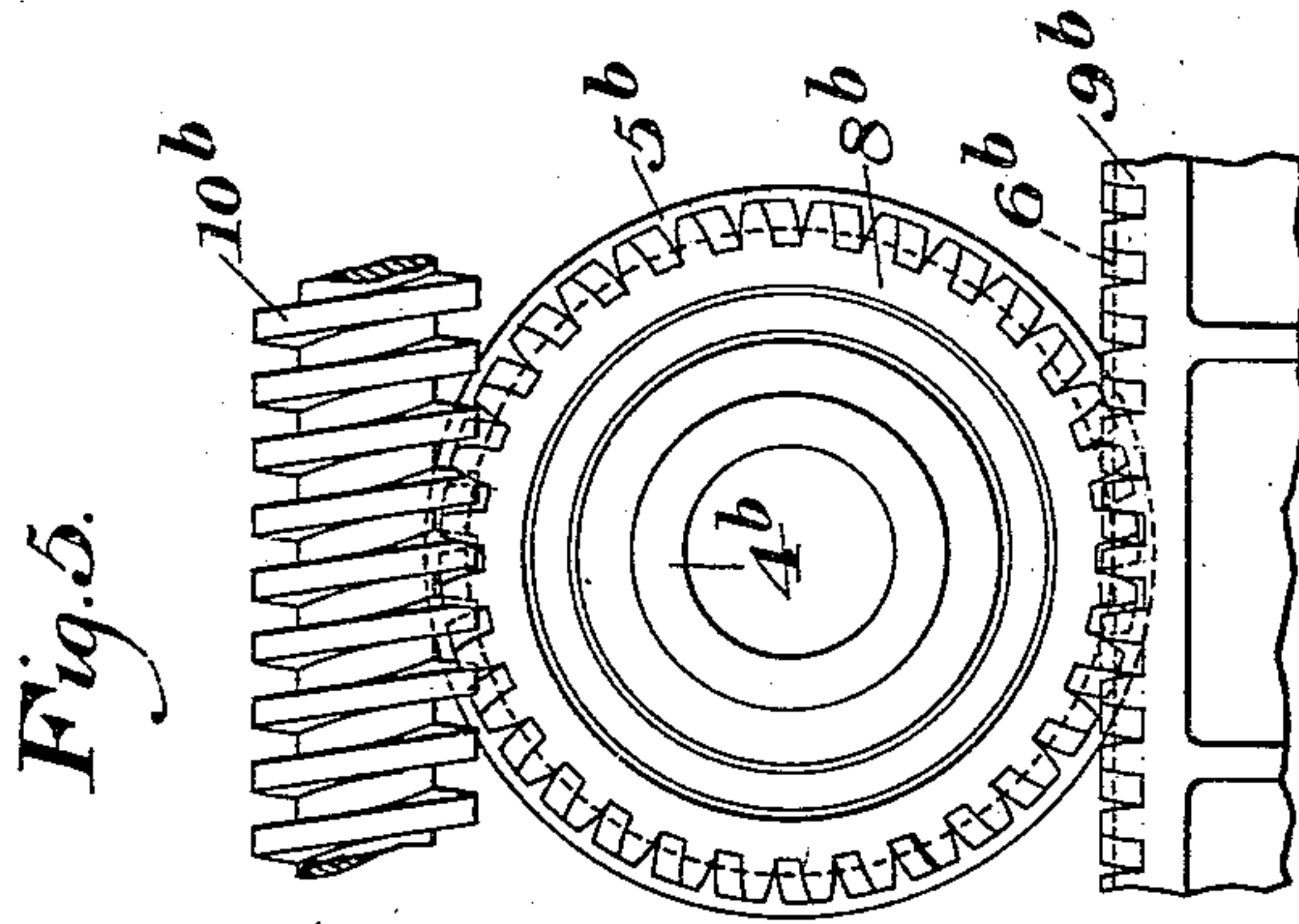
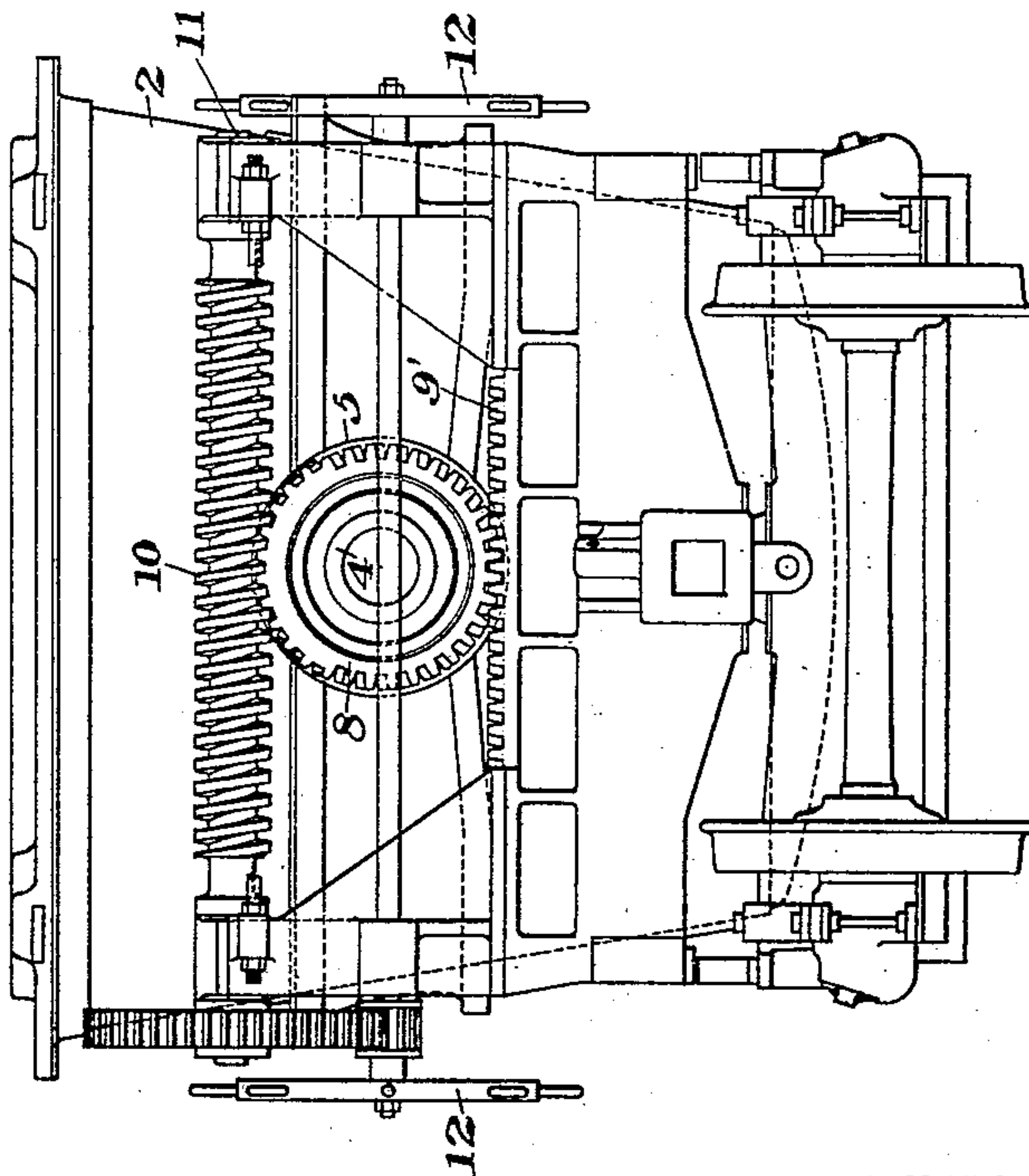


Fig. 2.



WITNESSES

Warren U. Swartz
L. M. Redman.

INVENTOR

R. H. Stevens
by Baxendell & Synnes
his Attorneys

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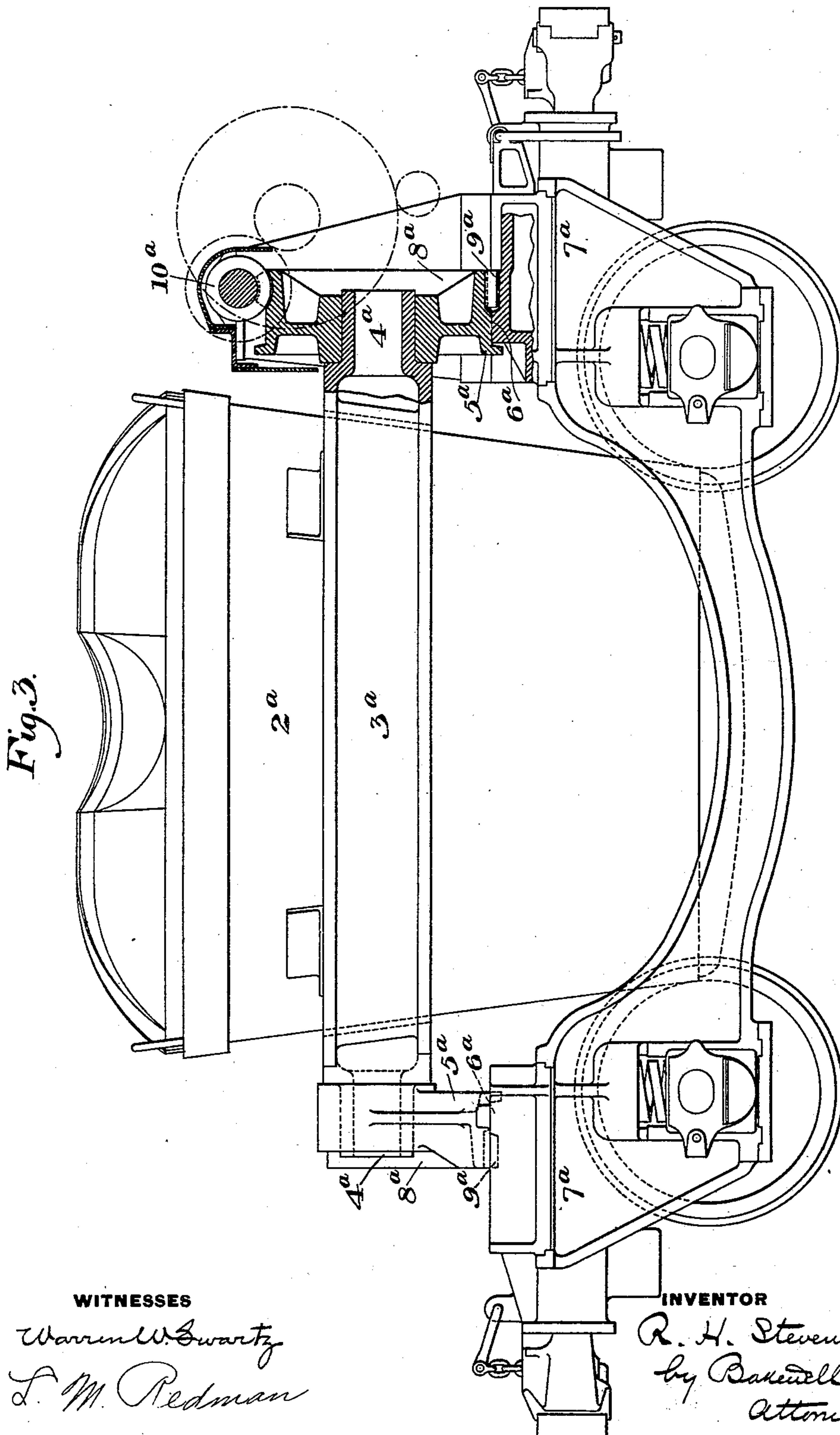
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4 SHEETS—SHEET 3.



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Warren W. Swartz
L. M. Redman

INVENTOR

R. H. Stevens
by Baxwell & Byrnes
Attorneys

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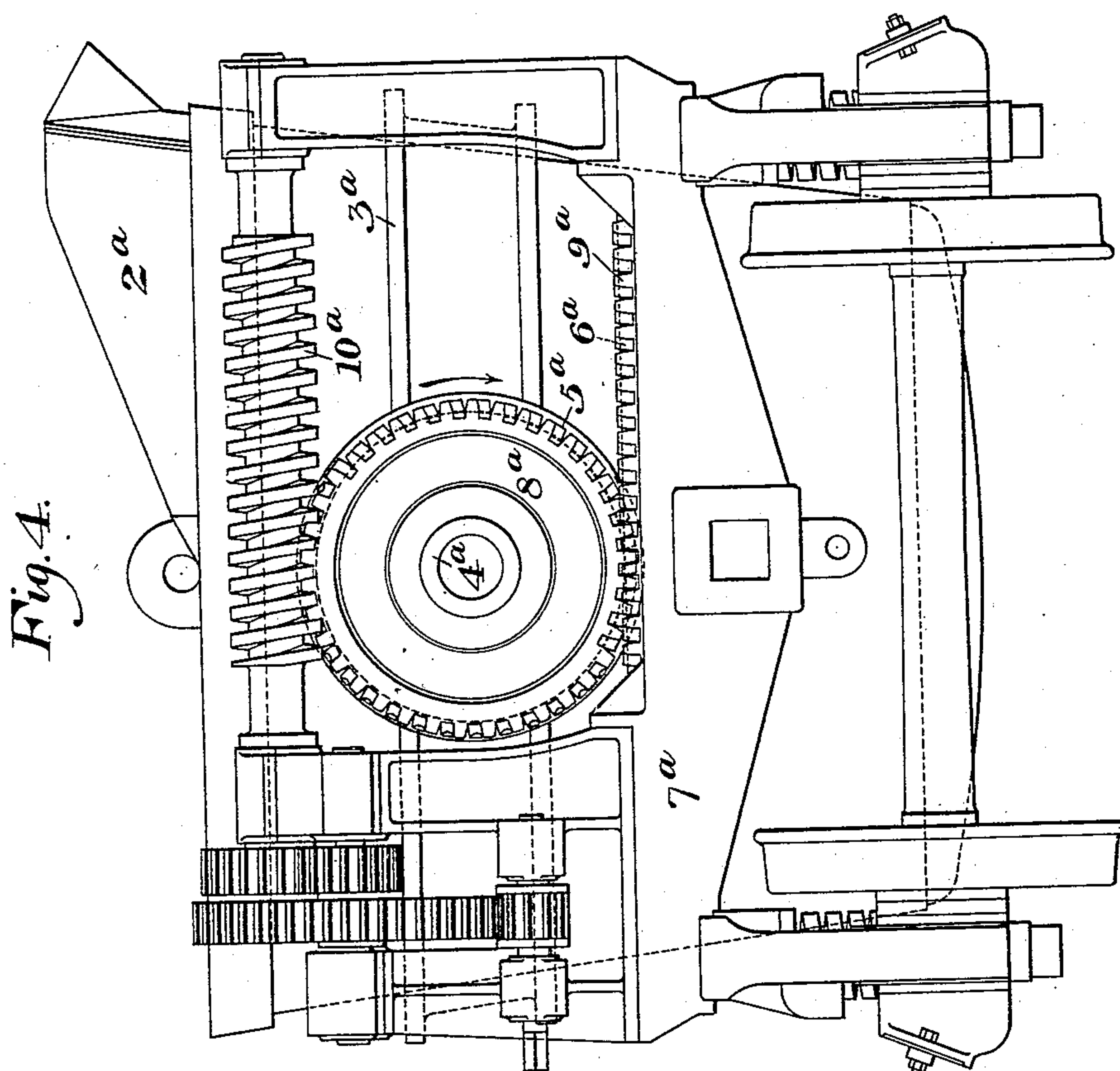
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4 SHEETS—SHEET 4.

NO MODEL.



WITNESSES

Warren W. Swartz
L. M. Redman

INVENTOR

R. H. Stevens
by Baxendell & Byrnes
attorneys

UNITED STATES PATENT OFFICE.

RICHARD H. STEVENS, OF MUNHALL, PENNSYLVANIA.

LADLE-CAR.

SPECIFICATION forming part of Letters Patent No. 719,389, dated January 27, 1903.

Application filed August 27, 1902. Serial No. 121,221. (No model.)

To all whom it may concern:

Be it known that I, RICHARD H. STEVENS, of Munhall, Allegheny county, Pennsylvania, have invented a new and useful Ladle-Car, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation showing a cinder-car arranged in accordance with my invention. Fig. 2 is an end view of same. Fig. 3 is a partial side elevation of an iron ladle-car of a modified form of my invention applied thereto, and Fig. 4 is an end view of the iron ladle-car with another form of my invention applied thereto. Fig. 5 is a detail view of the operating-wheel, showing another modification.

My invention relates to the class of rolling and tilting ladle-cars wherein the ladle is carried upon end rollers or wheels and the tilting is accomplished by means of a rack engaging teeth on a wheel secured to the ladle-trunnion.

My invention is designed to provide a single wheel with teeth all arranged in the same plane at an angle to the axis and engaged both by the worm and by the rack. The teeth may be either similar throughout the circumference and arranged at a suitable angle to receive the worm or the teeth through a portion of its circumference may be shaped to receive the worm, while the teeth in the other part of the circumference are shaped to engage the rack.

Referring to the form of Figs. 1 and 2, 2 represents a cinder-ladle supported in a ring-shaped casting 3, having oppositely-projecting supporting-trunnions 4, which are rigidly secured to the supporting-wheels 5. These wheels travel upon suitable tracks 6 6, which are supported upon the frame 7 of the car, and each of the supporting-wheels is provided with an annular wheel or rim portion 8, and one of said wheels is provided with ordinary gear-teeth, which engage rack 9. The wheel 8 at one end is of the ordinary type, while that at the other end is provided with inclined straight-faced gear-teeth through a portion of its circumference, preferably about two hundred and forty degrees, which engage inclined rack-teeth 9', while the remain-

ing portion of its circumference of about one hundred and twenty degrees is provided with concave worm-teeth of the usual type. This worm-tooth portion is so arranged that its central part is at the top of the wheel when the ladle is in vertical position, and a worm 10, mounted upon a shaft 11, engages the worm-teeth in the ordinary manner. The worm-shaft has the ordinary gear connections with a hand-wheel 12, by which the ladle may be tilted in either direction at the will of the operator. Both of the racks 9 9' extend across the car and preferably at right angles to the tracks. The car is used in the ordinary manner, the tipping being accomplished by turning the worm-shaft through the connection to the hand-wheels, and as the worm-teeth engage and turn the wheel the inclined rack-teeth upon this wheel engage similarly-inclined teeth in the rack and cause the ladle to roll and tilt.

In Fig. 3 I show the invention as applied to an iron ladle-car which is only tipped in one direction. In this case the construction is much the same as that of the cinder-car, similar parts being indicated with similar numerals with the letter *a*. In this case, however, the operating-wheel 8^a is provided with regular worm-teeth through about one hundred and eighty degrees of its circumference, while the remainder of the circumference is provided with spur-teeth which engage the rack and are inclined to the axis of the ladle. The teeth are so arranged on this wheel that when the ladle is in vertical position the worm is engaging one end portion of the worm-teeth and the rack is similarly engaging the end portion of the inclined spur-teeth. When the hand-wheel is rotated, the wheel 8^a is turned in the direction of the arrow.

In Fig. 5 I show another form of the invention, wherein the wheel 8^b is provided throughout its circumference with straight-faced spur-teeth, which are, however, set at such an angle as to suit the worm engaging the upper teeth. The rack in this case is provided with straight-faced teeth at an angle to the axis similar to those of the wheel.

The advantages of my invention are that the trunnion is shortened and the car simplified and made lighter.

I claim—

1. A ladle-car having a rolling and tilting ladle, and an operating-wheel therefor having its teeth at an angle to the axis of the ladle, a rack engaging said teeth, and having its teeth at a corresponding angle, and an operating-worm also engaging the teeth of said wheel; substantially as described.

2. A ladle-car having a rolling and tilting ladle, an operating-wheel therefor having two sets of teeth lying in the same general plane, a rack engaging one set of teeth, and a worm engaging the other set, the rack-teeth being at an angle to the axis of the ladle; substantially as described.

3. A ladle-car having a rolling and tilting ladle, an operating-wheel therefor having rack-teeth in its lower portion, and worm-teeth in its upper portion, a rack engaging the lower rack-teeth and having teeth at an angle to the axis of the ladle, and an operating-worm engaging the upper worm-teeth; substantially as described.

In testimony whereof I have hereunto set my hand.

RICHARD H. STEVENS.

Witnesses:

A. W. SODENBERG,

WM. BAILEY MCCREERY.