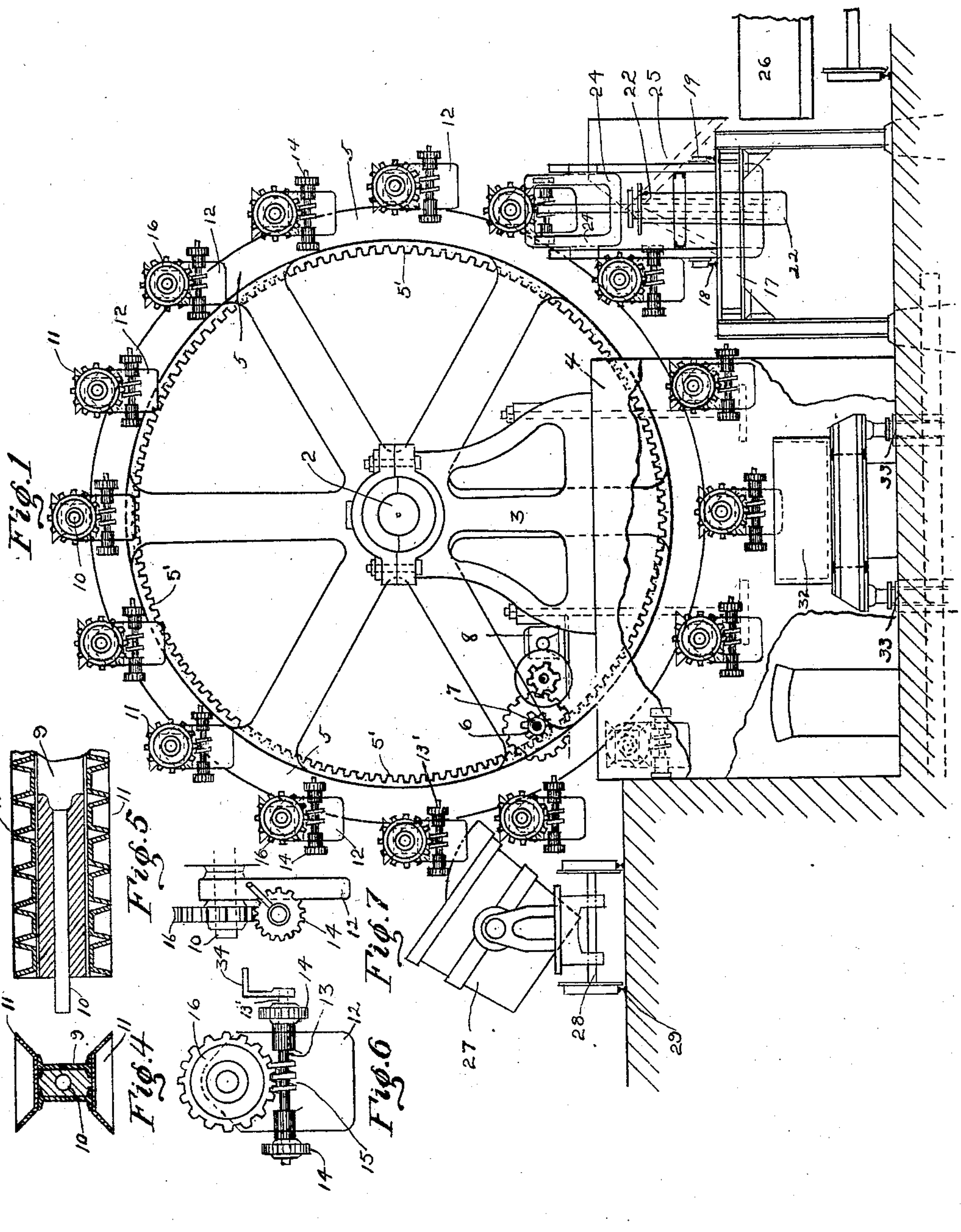
No. 721,878. PATENTED MAR. 3, 1903.

J. S. FIELDING.

PIG CASTING MACHINE.

APPLICATION FILED DEC. 19, 1901.

NO MODEL. 3 SHEETS—SHEET 1.



Witnesses.
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Fred D Sweet.

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NO MODEL. 3 SHEETS—SHEET 2.

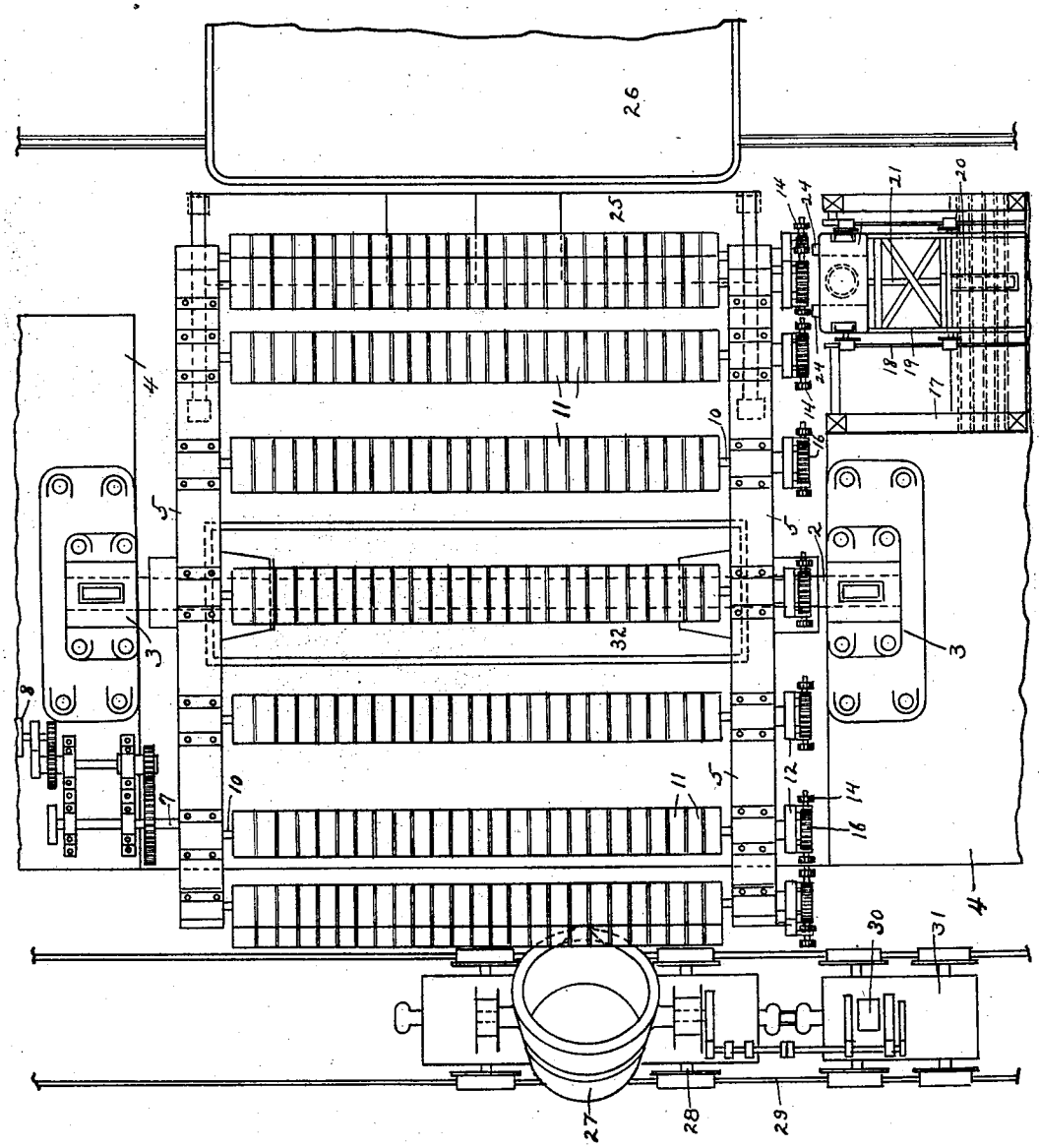

Fig. 2.

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NO MODEL. 3 SHEETS—SHEET 3.

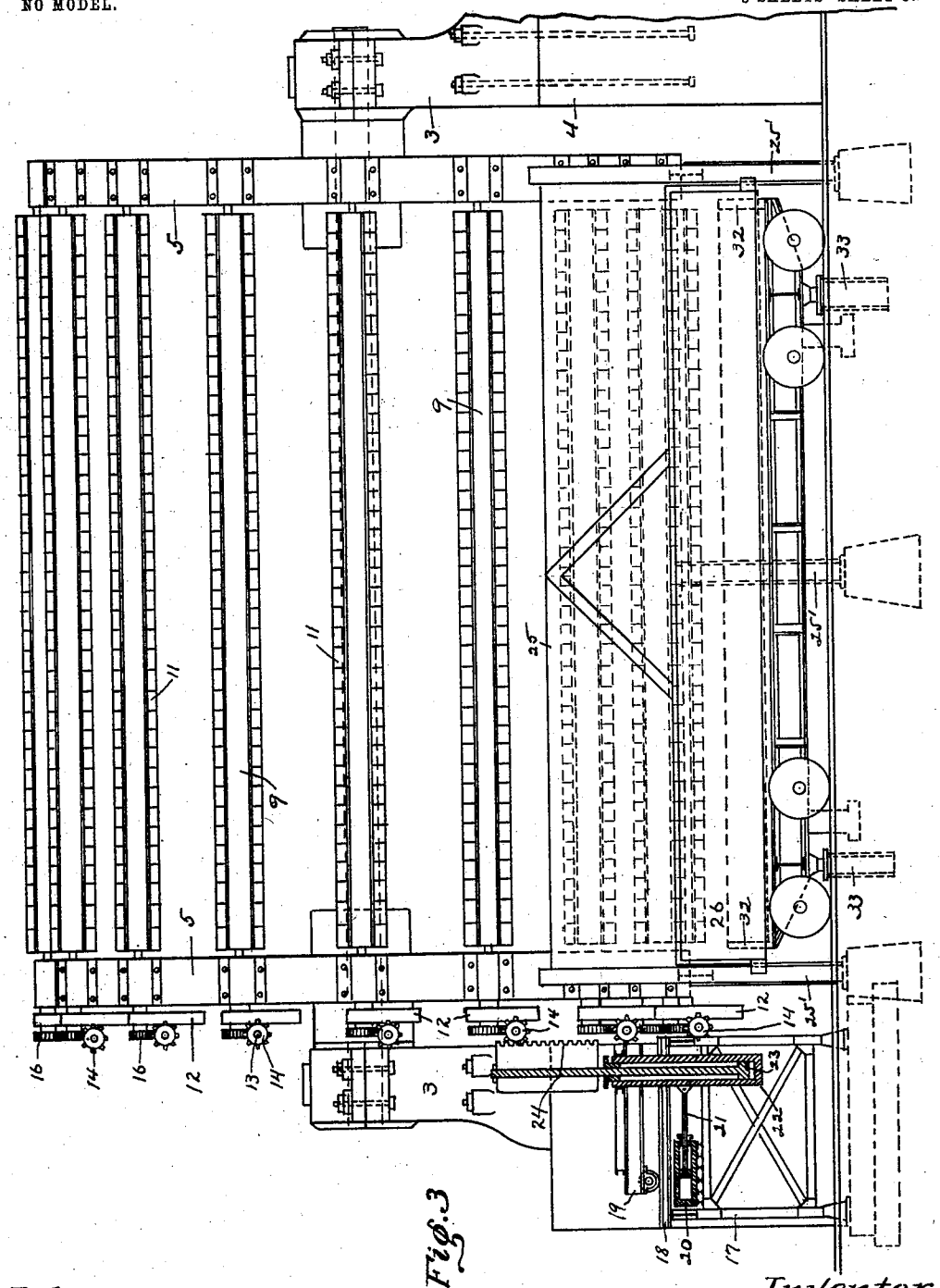

Fig. 3

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UNITED STATES PATENT OFFICE.

JOHN SAMUEL FIELDING, OF SYDNEY, CANADA.

PIG-CASTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 721,878, dated March 3, 1903.

Application filed December 19, 1901. Serial No. 86,610. (No model.)

To all whom it may concern:

Be it known that I, JOHN SAMUEL FIELDING, a subject of the King of Great Britain, residing at Sydney, Cape Breton, Nova Scotia, Canada, have invented certain new and useful Improvements in Pig-Casting Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to pig-casting machines; and it consists, primarily, of an endless carrier of improved construction having secured thereto a series of revoluble mold-supports combined with carrier-actuating means and mechanism for inverting the mold-supports to discharge the pigs. Improved mold-charging and mold-sanding apparatus is also included in the invention.

In the accompanying drawings, Figure 1 is an end elevation of my improved apparatus. Fig. 2 is a plan view. Fig. 3 is an elevation taken at the rear or discharging side of the apparatus. Figs. 4, 5, 6, and 7 are detailed views.

Referring to the drawings, the main shaft 2 of the carrier is journaled in bearing-frames 3, supported on foundation-walls 4. Carried by shaft 2 are the separated wheels 5, and the inner periphery of the rim of one of these wheels carries the circular rack 5', and meshing therewith is spur-wheel 6 on shaft 7, the latter being actuated, through suitable interposed gearing, by electric or other motor 8, and by this means motion is imparted to the carrier either forward or backward, as required.

9 represents box-girders supported between the rims of wheels 5 on trunnions 10, and secured in any suitable manner to opposite sides of the girders are the short molds 11, arranged side by side and extending from end to end thereof. Loosely suspended on trunnions 10 at one end of the machine are counterweights 12, and journaled transversely thereon are short shafts 13, provided at their opposite ends with spur-wheels 14 and between their ends with worm-gears 15, the latter meshing with gears 16, fixed on trunnions 10.

At the discharge side of the machine is frame 17, supporting tracks 18 of carriage 19, the latter being moved toward and away from the machine by means of cylinder 20, secured to frame 17, and piston 21, working therein and secured to the carriage. 22 is an upright cylinder sustained by said carriage, and supported by piston 23 thereof are parallel upright racks 24, the distance between the racks being the same as the distance between spur-wheels 14 on each of shafts 13. The molds are charged in manner presently to be explained and carried upward by the carrier and then lowered to the discharging position, all the molds on the upper sides of the girders between the charging and discharging points being charged or filled, and the iron thus given time to chill. When each series of molds is in position for discharging, spur-wheels 14 and racks 24 are in line, the latter being in lowered position. Carriage 19 is then moved forward, placing the racks and spur-wheels in engagement. The racks are then moved upward by piston 24, thereby rotating shaft 13 and through the medium of worm 15 and gear 16 inverting the girder 9, when the pigs drop from the molds into chute 25, supported on posts 25', and from which they discharge into railroad-car 26 or other receptacle. Carriage 19 is retracted before the racks are lowered, thus leaving the emptied molds in inverted position and the previously inactive molds uppermost and ready for the next cast when brought to charging position. Proper position of the girders is maintained by the counterweights, which are made rigid with the trunnions by shafts 13 and gears 15 and 16.

The molds are charged from ladle 27, mounted on car 28, which runs on track 29, paralleling the machine. The ladle starts pouring into the molds at one end of the girder, with the latter at proper elevation. The ladle is advanced slowly as the molds are filled, and at the same time the latter are given very gradual downward movement by reversing the movement of the carrier, so as not to interfere with the tilting of the ladle, also to keep the molds centered beneath the spout. The ladle is tilted as required by means of motor 30, suitably geared thereto and supported on car 31, coupled to ladle-car 28. Thus the molds are charged uniformly and without splashing. As each series of molds is charged the carrier is advanced to

present a fresh series at the charging-point, the charged molds moving upward and over step by step to the discharging position.

Beneath the machine is the mold-sanding mechanism, consisting of box or tank 32, resting on pistons working in cylinders 33. As each series of molds takes position over the box or tank after discharging the latter is elevated by the lifts, thus immersing the molds in a solution of lime or other suitable liquid contained in the tank and effectually sanding them, and as the molds make more than a complete revolution with the carrier after being sanded and before being again charged the sanding solution becomes thoroughly set.

The several cylinders are provided with suitable steam or hydraulic connections. (Not shown.) Each of shafts 13 has a projection or extremity 13', adapted to receive a crank 34, whereby the box-girders 9 may be inverted by hand whenever desired and at any point in their revolution with the carrier.

As each girder carries two series of molds, which are active alternately, the molds have ample time to cool between casts.

Casting apparatus constructed in accordance with my invention economizes space and has comparatively few wearing parts, which are conveniently accessible whenever repairs are required. If a mold breaks, a new one may be quickly substituted.

I do not restrict my invention to the disclosed mechanism for inverting the molds, nor to the sanding mechanism shown, nor to the means for actuating the carrier, and it will be understood that the apparatus may be modified in other particulars without departing from the spirit of the invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An improved pig-casting machine comprising two upright rigidly-connected wheels adapted to rotate on a horizontal axis, counterbalanced mold-supports between and pivotally secured to the wheels parallel with the axis thereof, pig-molds on the supports, and mold charging and discharging means.

2. An improved pig-casting machine comprising two upright rigidly-connected wheels adapted to rotate on a horizontal axis, mold-supports between and pivotally secured at their ends to the wheels parallel with the axis thereof, counterweights movable with the supports and to which the latter are adjustably connected, pig-molds on different faces of the supports, and mold charging and discharging means.

3. An improved pig-casting machine comprising a carrier, mold-supports mounted therein on horizontal pivots, counterweights movable with the supports and to which the latter are adjustably connected, and pig-molds on different faces of the supports.

4. An improved pig-casting machine comprising an upright endless carrier adapted to rotate on a horizontal axis, a circular series of horizontal mold-supports pivotally secured to the carrier, pig-molds arranged side by side on each of said supports, a track adjacent the carrier and paralleling the axis thereof, and a laterally-tipping ladle movable on the track, whereby the carrier may be moved to bring the mold series, successively, to position for filling, and whereby as the ladle is moved along the track and tipped for filling each series of molds the latter may be raised or lowered and thereby moved laterally toward or away from the ladle to effect a proper pouring without regard to the inclination of the ladle.

5. An improved pig-casting machine comprising a carrier, mold-supports revoluble thereon, molds on the supports, counterweights loosely mounted on the axes of the supports, gear-wheels 16 secured to said support-axes, worm-gears 15 mounted on the counterweights and meshing with said gears, and means for rotating the worm-gears.

6. An improved pig-casting machine comprising a carrier, mold-supports revoluble thereon, molds on the supports, counterweights loosely mounted on the support-axes, gear-wheels 16 on said axes, worm-gears 15 mounted on the counterweights and meshing with said gears, and vertically-reciprocating mechanism movable laterally toward and away from the worm-gears and adapted to operatively engage the same for rotating them and turning the mold-supports.

7. An improved pig-casting machine comprising an upright endless carrier adapted to rotate on a horizontal axis, a circular series of individually-revoluble mold-supports in the carrier, molds on the supports, mold-charging means, a carriage movable toward and away from one end of the carrier, vertically-reciprocating mechanism on the carriage, and gearing for each revoluble mold-carrier adapted to be operatively engaged by the said reciprocating mechanism when brought to position adjacent the latter, whereby the mold-supports are inverted and the pigs discharged from the molds.

8. An improved pig-casting machine comprising a carrier, horizontal mold-supports therein revoluble on horizontal axes, molds on different faces of the supports, a sanding-liquid-containing tank over which the molds are adapted to move, and means for elevating the tank around the undermost molds on the supports and submerging the said molds in the sanding liquid.

9. Improved pig-casting apparatus comprising a ladle adapted to tip laterally for pouring, pig-molds, and mold-carrying means movable vertically and laterally with relation to the ladle, whereby the molds may be maintained in position for charging without regard to the degree of inclination of the ladle.

10. Improved pig-casting apparatus comprising a ladle adapted to tip laterally for pouring, a mold-carrier movable vertically and laterally with relation to the ladle, pig-

molds mounted on the carrier on horizontal pivots, and means for maintaining the pivoted molds in upright position on the carrier without regard to the movement of the latter.

11. Improved pig-casting apparatus comprising a vertically and laterally movable mold-carrier, series of molds mounted thereon in horizontal planes, a track at one side of the carrier and paralleling the mold series, a car movable on the track, and a laterally-tipping ladle mounted on the car.

12. Improved pig-casting apparatus comprising pig-molds, vertically and laterally movable mold-carrying means, and a ladle adapted to tip laterally for pouring and movable bodily in a plane at right angles to the direction of movement of the molds, whereby the molds may be maintained in position for charging without regard to the degree of inclination of the ladle.

13. An improved pig-casting machine comprising a carrier, revoluble mold-supports on the carrier, molds on the supports, reciprocating mechanism, and gearing for each mold-carrier adapted to be operatively engaged by the reciprocating mechanism, whereby the mold-supports are inverted and the pigs discharged from the molds.

14. An improved pig-casting machine comprising a carrier, revoluble mold-supports on the carrier, molds on the supports, and support-rotating mechanism movable toward and away from the mold-supports and adapted to operatively engage and invert the same for discharging the pigs from the molds.

15. An improved pig-casting machine comprising a carrier, molds thereon adapted to be inverted, a sanding-liquid-containing tank over which the inverted molds are adapted to move, and means for elevating the tank around the inverted molds, thereby submerging the same in the sanding liquid.

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

JOHN SAMUEL FIELDING.

Witnesses:

JAMES MACDONALD,

JOHN NORMAN.