

No. 684,681.

Patented Oct. 15, 1901.

J. W. DAVIS.
RECARBURIZING MACHINE.

(Application filed Jan. 7, 1901.)

(No Model.)

2 Sheets—Sheet 1.

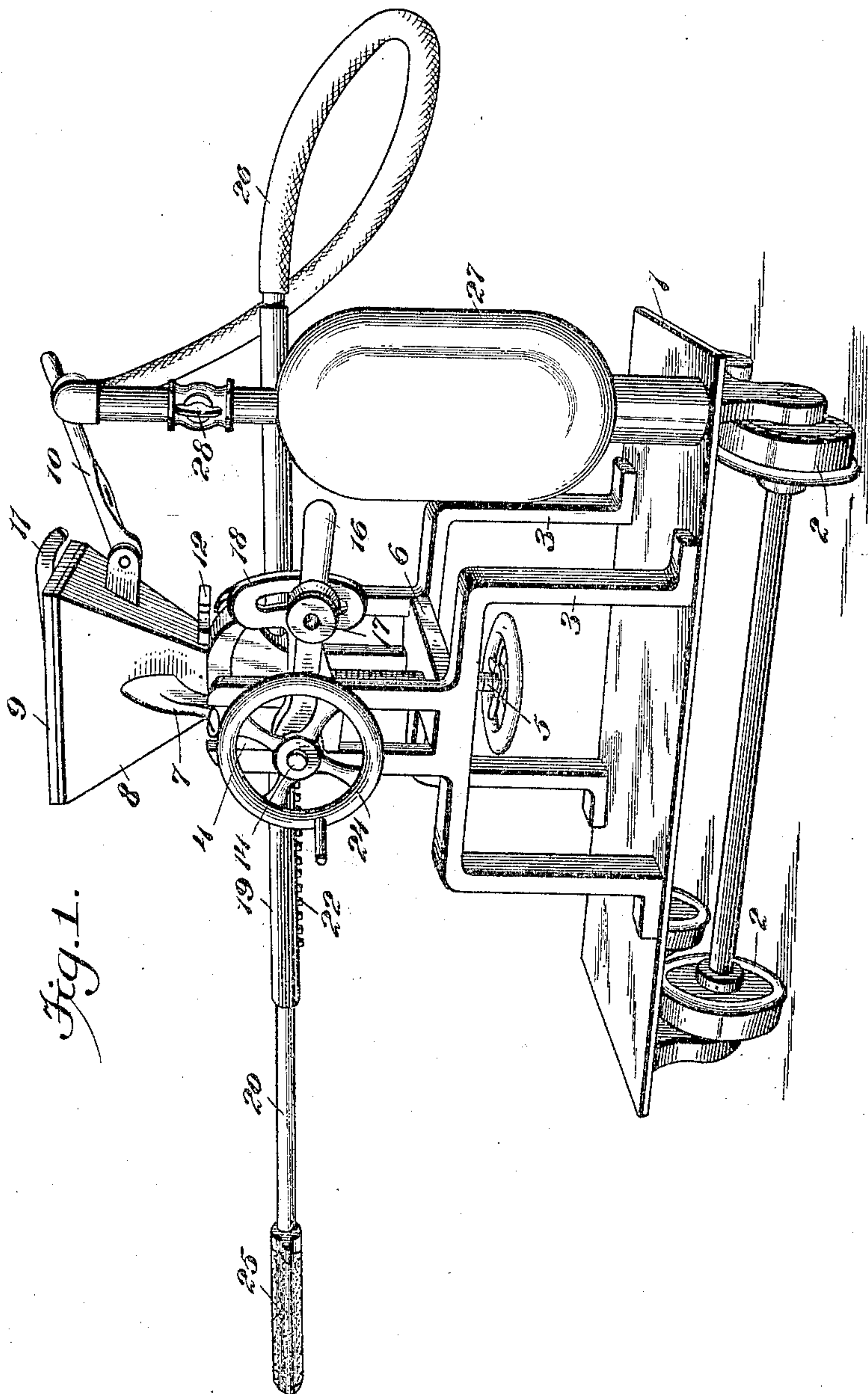


Fig. 1.

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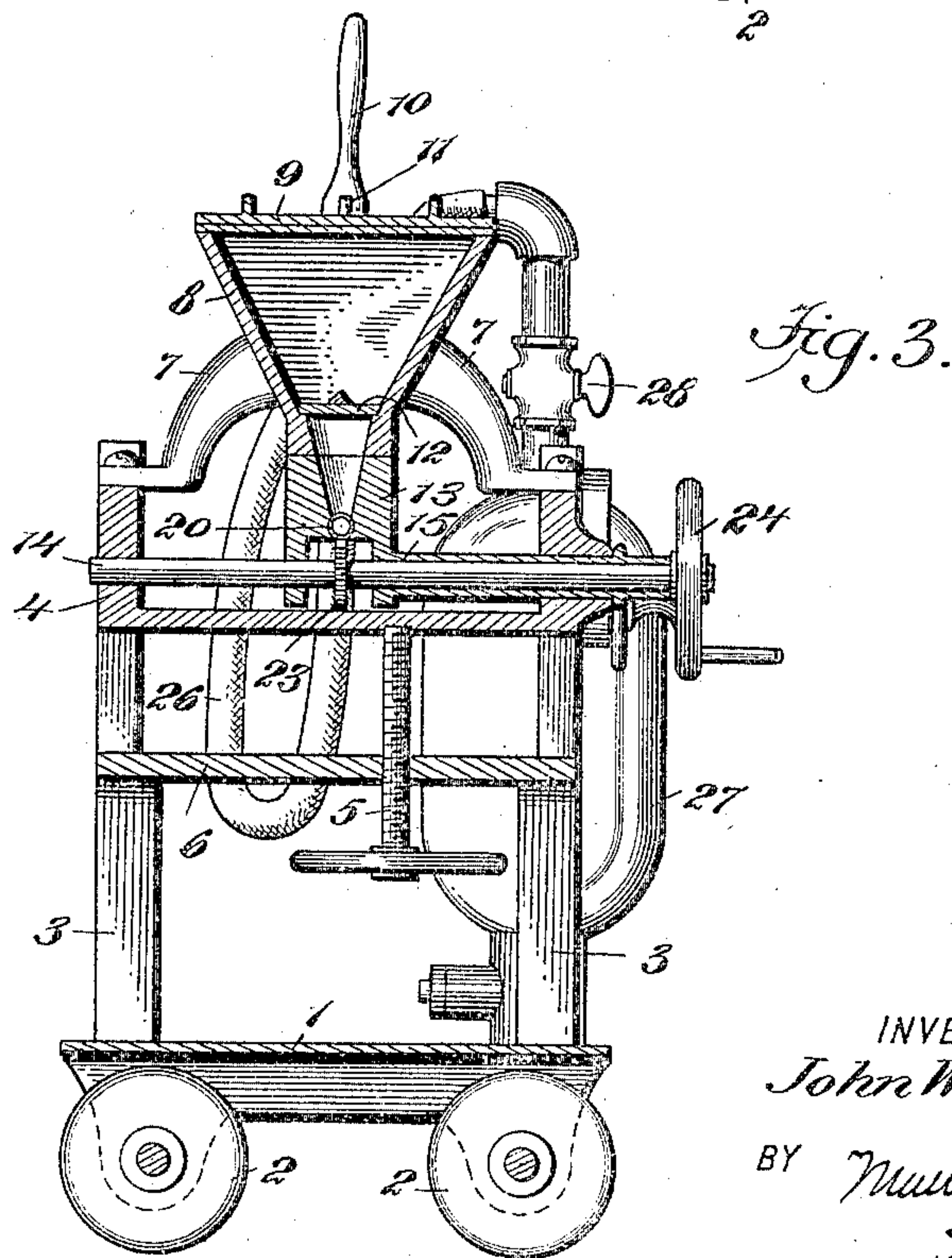
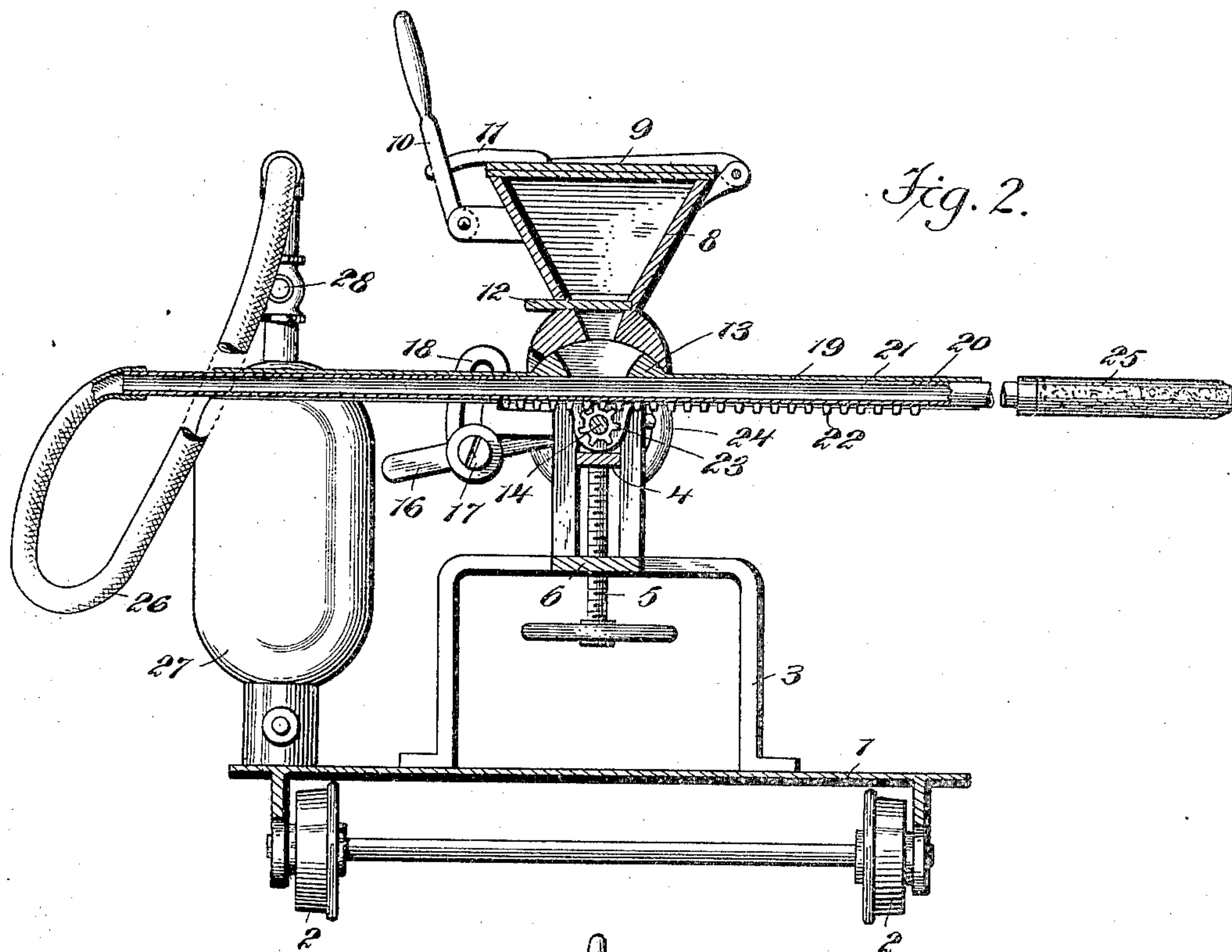
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UNITED STATES PATENT OFFICE.

JOHN W. DAVIS, OF CONVERSE, INDIANA.

RECARBURIZING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 684,681, dated October 15, 1901.

Application filed January 7, 1901. Serial No. 42,329. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. DAVIS, a citizen of the United States, and a resident of Converse, in the county of Miami and State of Indiana, have invented a new and Improved Recarburizing-Machine, of which the following is a full, clear, and exact description.

This invention relates to improvements in machines for recarburizing metal; and the object is to provide a simple machine by means of which powdered carbon, carborundum, or any other finely-ground material may be infused into a bath of molten steel or iron while in a furnace or bath.

I will describe a recarburizing-machine embodying my invention and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of a recarburizing-machine embodying my invention. Fig. 2 is a longitudinal vertical section of the same, and Fig. 3 is a transverse vertical section of the same.

The machine comprises a platform 1, mounted on truck-wheels 2, so that it may be readily moved from place to place. Arranged on the platform are standards 3, and movable vertically in these standards is a frame 4, which carries the feeding-hopper and other parts, as will be hereinafter described. This frame 4 may be raised or lowered, as occasion may require, by means of a screw-rod 5 engaging in a tapped hole in a cross-bar 6, connecting the standards. Supported on the frame 4 by means of arms 7 is a hopper 8 for receiving and feeding finely-pulverized carbon or other material. This hopper is provided with a cover 9, which may be held tightly closed by means of a locking-lever 10, pivoted to lugs extended outward from the hopper and having an opening to receive a finger 11, extended from the cover. This finger 11 is cam-shaped or curved, so that by moving the lever toward the hopper the cover will be drawn tightly down.

In the lower portion of the hopper is a slide-valve 12, that may be more or less opened to regulate the discharge or feeding of material. The lower end of the hopper 8 is curved

in a segment of a circle, as clearly indicated in Fig. 2, and adapted to move against this curved surface is a block 13, having an opening somewhat wider than the opening at the bottom of the hopper. A shaft 14 has bearings in the frame 4, and a downward extension of the block 13 engages around this shaft 14, while another downward extension of said block is rigidly connected or formed integral with a sleeve 15, which surrounds the shaft 14 and extends outward through one end of the frame 4, where it is provided with a hand-lever 16, by means of which the sleeve may be rotated relatively to the shaft 14, and consequently adjust the block 13 to move the discharging-tube carried thereby to discharge material into furnaces or vats of different heights. When adjusted, the lever 16 is held by means of a screw-bolt 17, passing through a curved slot in a plate 18, extending from the frame 4.

Extended through the block 13 and to opposite sides thereof is a tube 19, having an opening registering with the opening through the block 13, and movable longitudinally in this guide-tube 19 is a discharge-tube 20. This tube 20 is provided at its upper side with a longitudinal slot 21, through which material may pass first received from the hopper, and on the lower side of said tube 20 is a rack 22, which projects through a longitudinal slot formed in the bottom of the tube 19, and this rack engages with a pinion 23 on the shaft 14, and the outer end of the shaft 14 is provided with a crank or hand wheel 24.

On one end of the discharge-tube 20 is a nozzle 25, consisting of fire-clay, plumbago, or other material not destructible by heat, and this end is designed to be inserted into a furnace or bath. The opposite end of the tube 20 has a flexible tube connection 26 with a reservoir 27 for containing compressed air. This reservoir 27 is mounted on the platform 1, and a valve 28 is arranged in its discharge-pipe, so that the blast of air may be regulated as desired.

In operation, assuming that molten metal in a melting-furnace is to be recarburized, the frame 4 and the parts carried thereby may be moved to the proper height by means of the screw 5. Upon reaching the furnace

and adjusting the nozzle 25 in line with the opening the said nozzle may be moved through the opening by turning the shaft 14. The finely-powdered material received in the tube 5 20 will be forced out with the proper amount of air from the reservoir 27. Obviously upon an opposite rotation of the shaft 14 the nozzle will be withdrawn. It will be noted that the slot 21 is substantially of the same length as 10 the rack 22, so that an opening is presented to receive material from the hopper throughout the limit of movement of the tube 20.

Having thus described my invention, I claim as new and desire to secure by Letters 15 Patent—

1. A machine for infusing a powder into a bath, comprising a feeder for the powder, a tube for receiving the material from the feeder, the said tube being mounted to rock 20 relatively to the feeder, a blast connection with said tube, and a truck on which the feeder, tube and blast are mounted, substantially as specified.

2. A recarburizing-machine, comprising a 25 hopper for the recarburizing agent, a discharging-tube for receiving material from the hopper, a blast connection with the said tube, and means for moving said tube longitudinally with relation to the hopper, substan- 30 tially as specified.

3. A recarburizing-machine, comprising a hopper, a block arranged below the hopper and having an opening communicating with the opening of the hopper, means for impart- 35 ing a rocking adjustment of said block, a tube extended in opposite directions from the block, and a discharge-tube movable longitudinally in the first-named tube, a blast connection with the discharge-tube, the said 40 discharge-tube having a longitudinal slot through which material may pass as received from the hopper, substantially as specified.

4. A recarburizing-machine, comprising a 45 truck, standards on said truck, a frame vertically adjustable in the standards, a hopper

carried by said frame, a discharge-tube carried by the frame and having an opening through which material from the hopper may pass, a blast connection with the tube, and means for adjusting said discharge-tube lon- 50 gitudinally, substantially as specified.

5. A recarburizing-machine, comprising a vertically-adjustable frame, a hopper carried by said frame, a block adjustable underneath said hopper and having an opening commu- 55 nicating therewith, a guide-tube extended in opposite directions from said block, a discharge-tube movable in the guide-tube and having a longitudinal slot at the top, a rack on the lower side of said discharge-tube and 60 extended through a slot in the guide-tube, a gearing engaging with said rack, and means for supplying an air-blast to the discharge-tube, substantially as specified.

6. A recarburizing-machine, comprising a 65 truck, standards mounted on said truck, a frame vertically adjustable in the standards, means for causing said adjustments, a hopper carried by the frame, a shaft extended through the frame, a sleeve surrounding a portion of 70 said shaft, an adjusting-lever on said sleeve, a block connected to said sleeve and arranged below the hopper, the said block having an opening registering with the opening of the hopper, a guide-tube connected to the block, 75 a discharge-tube movable longitudinally in the guide-tube and having a longitudinal slot at the top, a rack on the lower side of said discharge-tube and extending through a slot in the lower side of the discharge-tube, a pin- 80 ion on the shaft engaging with said rack, and an air-blast device connected with said tube, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of 85 two subscribing witnesses.

JOHN W. DAVIS.

Witnesses:

SHERMAN H. MARSHALL,
ROSCOE KIMPLE.