

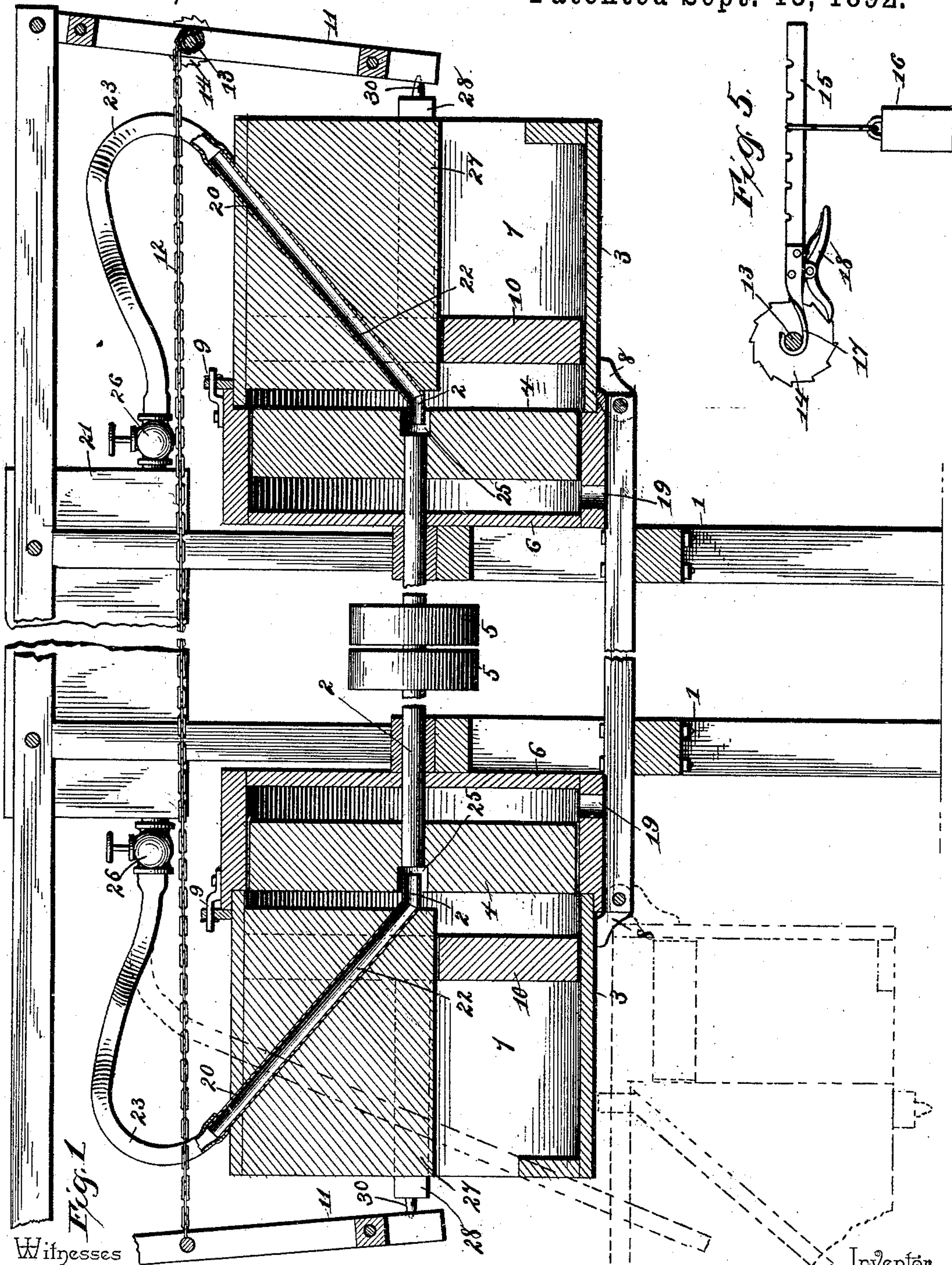
(No Model.)

2 Sheets—Sheet 1.

J. E. TRAWICK.
GRINDER.

No. 482,400.

Patented Sept. 13, 1892.



Witnesses

C. Hurdman
A. R. Ray

By *his* Attorneys,

Calhoun & Co.

Joseph E. Trawick

Inventor

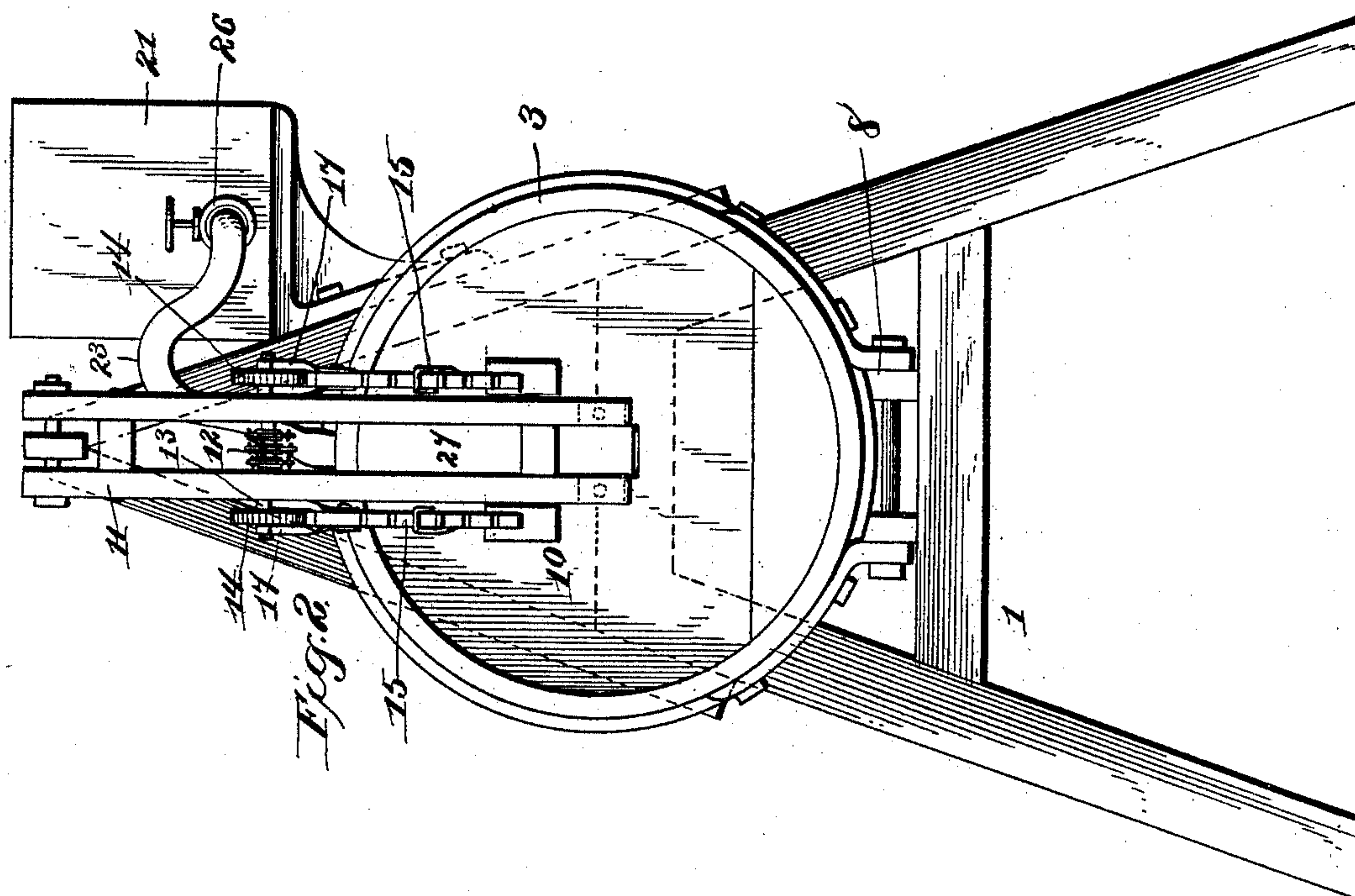
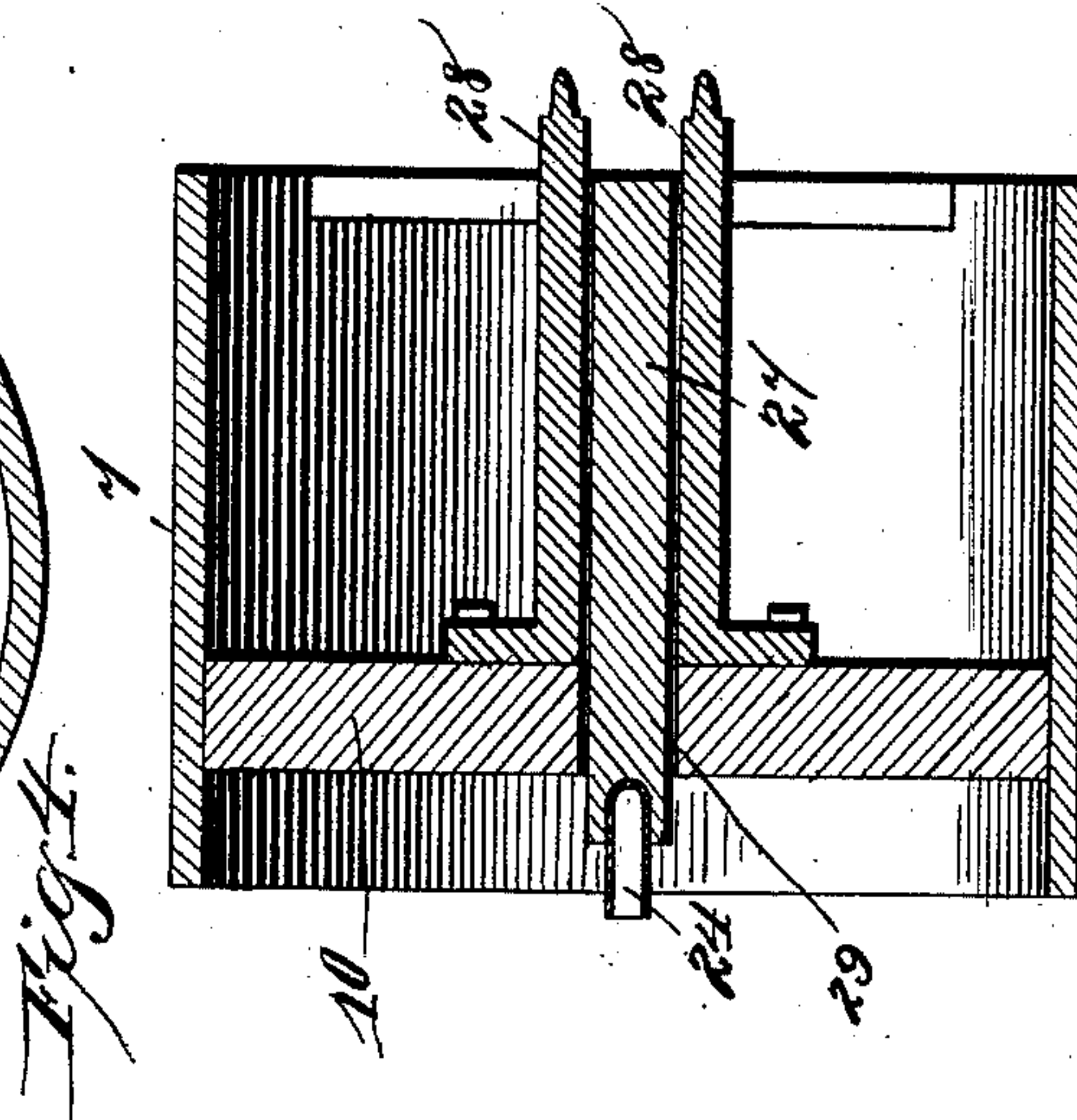
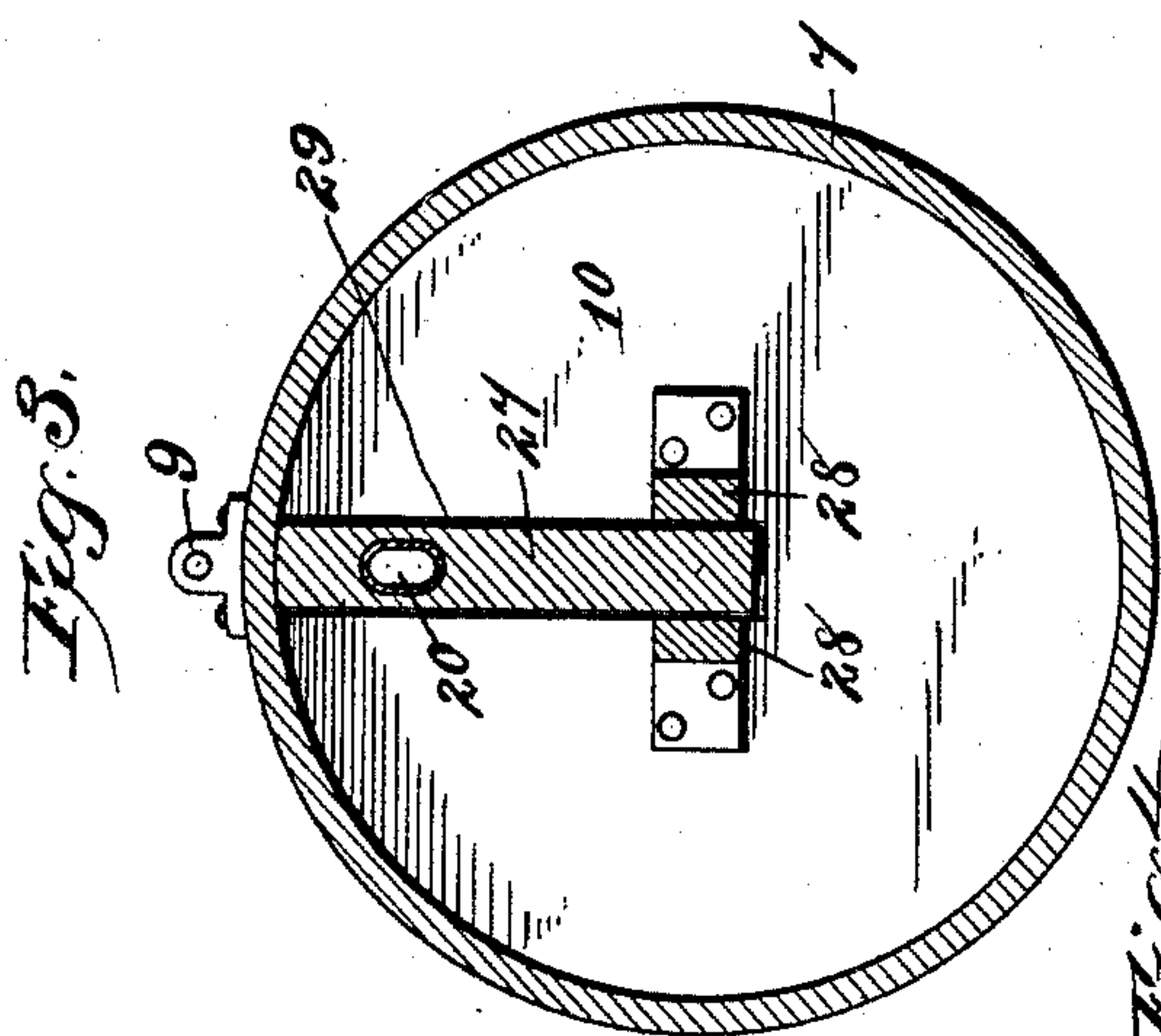
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2 Sheets—Sheet 2.

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GRINDER.

No. 482,400.

Patented Sept. 13, 1892.



Witnesses

E. C. Mendenhall
N. F. Riley

Inventor

Joseph E. Trawick
By his Attorneys,
C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

JOSEPH E. TRAWICK, OF SPEAR, NORTH CAROLINA, ASSIGNOR OF THREE-FOURTHS TO HENRY R. JONES AND THOMAS B. VANCE, OF SAME PLACE, AND GEORGE H. ZIMMERMAN, OF CRANBERRY, NORTH CAROLINA.

GRINDER.

SPECIFICATION forming part of Letters Patent No. 482,400, dated September 13, 1892.

Application filed February 29, 1892. Serial No. 423,222. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH E. TRAWICK, a citizen of the United States, residing at Spear, in the county of Mitchell and State of North Carolina, have invented a new and useful Grinder, of which the following is a specification.

The invention relates to improvements in mills for grinding mica.

The object of the present invention is to provide a simple, comparatively inexpensive, and efficient mica-grinding mill which may be readily filled from time to time and which when once filled will not require attention until its hoppers have been exhausted and it is necessary to refill them.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a vertical sectional view of a mill for grinding mica constructed in accordance with this invention. Fig. 2 is an end elevation. Fig. 3 is a transverse sectional view of one of the hoppers. Fig. 4 is a longitudinal sectional view of the same. Fig. 5 is a detail view of one of the operating-levers, illustrating its engagement with one of the ratchet-wheels.

Like numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a frame having journaled in suitable bearings of it a longitudinally-disposed shaft 2, which has its ends extending into oppositely-disposed hoppers 3 and carrying grinding-disks 4, and which has mounted upon it intermediate its ends pulleys 5, designed to be connected by belts with a suitable motive power. Each hopper 3 is cylindrical and consists of a stationary section 6, in which is arranged one of the grinding-disks, and a hinged section 7, which is hinged at its bottom at 8 and is provided at its top with a catch 9, and is adapted to be lowered to bring its inner end in a horizontal position for filling, as illustrated in dotted lines in Fig. 1. The mica to be ground is placed in the hop-

per 3 when the hinged section is lowered, and when in operative position the mica is arranged between the grinding-disk and a plunger 10, and is forced against the former by the plunger, which is under a suitable pressure. The mica is to be ground very fine, and the ordinary construction of grinding cone or disk is employed without any dress. The pressure on the plungers of both hoppers is produced by levers 11, which are fulcrumed at their tops on the frame and which have their lower ends engaging the plungers and a chain 12, connected with the levers at intermediate points of the latter. The levers 11 are drawn together to advance the plungers by means of a windlass consisting of a shaft 13, ratchet-wheels 14, rigidly secured to the ends of the shaft, and detachable operating-levers 15, which engage the ratchet-wheels and are adapted to rotate the shaft 13 to wind the chain and which are rendered automatic in their action by means of adjustable weights 16. The operating-lever 15 has its engaging end 17 forked and curved inward and adapted to straddle a ratchet-wheel and to receive the shaft in its curved portions, and it is provided with a spring-actuated pawl 18, arranged to engage the adjacent ratchet-wheel and adapted to be withdrawn from such engagement to permit the operating-lever to be readily detached. The two operating-levers, by means of the adjustable weights, produce a constant pressure on the plungers, and when one of them falls toward a perpendicular it may be raised without releasing the shaft, as the other operating-lever will still be in engagement with the other ratchet-wheel.

It is desirable to grind the mica as fine as possible, and the grinding-disk of each hopper has its periphery arranged close to the stationary section 6, and the ground mica is carried between the periphery of the grinding-disk and the section 6 to a discharge-opening 19 by means of water discharged upon the center of the grinding-disk from a water-pipe 20. The water-pipe communicates with a tank 21, which is located at the top of the frame; and it consists of a rigid

portion or metal pipe 22, which is mounted in the hinged section of the hopper, and a flexible section 23, which extends from the top of the hopper to the tank to permit the hinged section to swing downward for the purpose of filling the hopper. The inner end 24 of the rigid section 22 is arranged horizontally and is located within a recess 25 of the grinding-disk, whereby the water will be equally distributed over the grinding-face of the disk. The supply of water is regulated by a valve 26, arranged adjacent to the tank 21. The rigid section 22 of the water-pipe is inclined and is mounted in a vertical partition or flange 27, which supports and braces it and which depends from the top of a hinged section of a hopper. The plunger is provided in its head with an opening 29 to receive the partition or flange 27, and is guided by the latter and has its rod composed of two bars 28, arranged on opposite sides of the partition of flange and provided at their outer ends with points 30, engaging the lower end of the adjacent lever 11, which is composed or a pair of bars spaced by blocks.

It will be seen that the mill is simple and comparatively inexpensive in construction, that the material will be readily supplied, and that when its hoppers are full it will not require attention until it is necessary to refill them. The water delivered upon the grinding-disks is necessary to the operation of grinding, and it also conveys the ground mica to the discharge-openings.

What I claim is—

1. In a grinding-mill, the combination of a hopper composed of a cylindrical stationary section provided with a discharge-opening and a hinged section, a shaft extending within the stationary section, a grinding-disk carried by the shaft and fitting snugly within the stationary section and having its periphery arranged close to the section, said grinding-disk being arranged between the discharge-opening and the hinged section, a water-supply pipe and a plunger arranged in the hinged section, substantially as described.

2. In a grinding-mill, the combination of a hopper having a stationary section provided with a discharge-opening and having a hinged section, the shaft, a grinding-disk carried by the shaft and provided with a central recess, an inclined water-pipe mounted in the hinged section and having its inner end arranged in the recess of the grinding-disk, and a plunger

arranged in the hinged section, substantially as described.

3. In a grinding-mill, the combination of a hopper composed of a stationary section provided with a discharge-opening, and a hinged section having a depending partition, a shaft, a grinding-disk carried by the shaft and arranged in the stationary section, an inclined water-pipe mounted on the partition and arranged to direct water upon the grinding-disk, and a plunger arranged in the hinged section and provided in its head with an opening to receive the partition and having bars arranged on opposite sides of the partition, substantially as described.

4. In a grinding-mill, the combination of a frame, the oppositely-disposed hoppers, a shaft, grinding-disks arranged on the ends of the shafts, plungers mounted in the hoppers, the levers fulcrumed on the frame and engaging the plungers to advance the same, a chain connecting the levers, and a windlass for winding up the chain and advancing the plungers, substantially as described.

5. In a grinding-mill, the combination of a frame, a tank mounted on the frame, a hopper composed of a stationary section and a hinged section, a grinding-disk mounted in the stationary section, a water-pipe mounted on the hinged section and arranged to discharge water from the grinding-disk and provided with a flexible section extending from the hopper to the tank and permitting the stationary section to be swung downward, substantially as described.

6. In a grinding-mill, the combination of a frame, hoppers mounted on opposite sides of the frame, a shaft, grinding-disks mounted on the ends of the shaft and arranged within the hoppers, plungers mounted in the hoppers, levers fulcrumed on the frame and engaging the plungers, a chain connecting the levers, and a windlass mounted on one of the levers and comprising a shaft, ratchet-wheels, and the detachable operating-levers engaging the ratchet-wheels and having adjustable weights, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOSEPH E. TRAWICK.

Witnesses:

JOHN H. SIGGERS,
HORACE G. PIERSON.