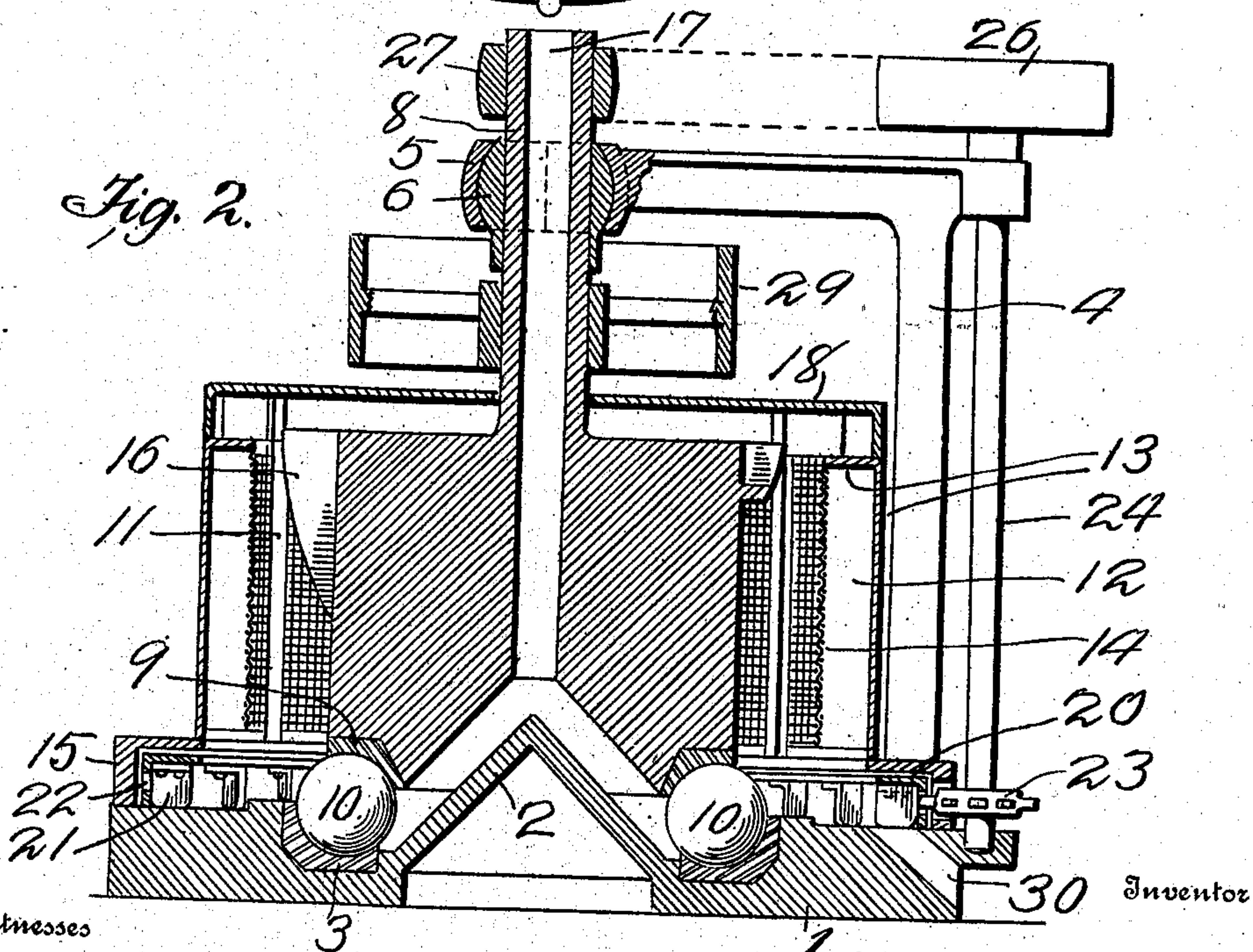
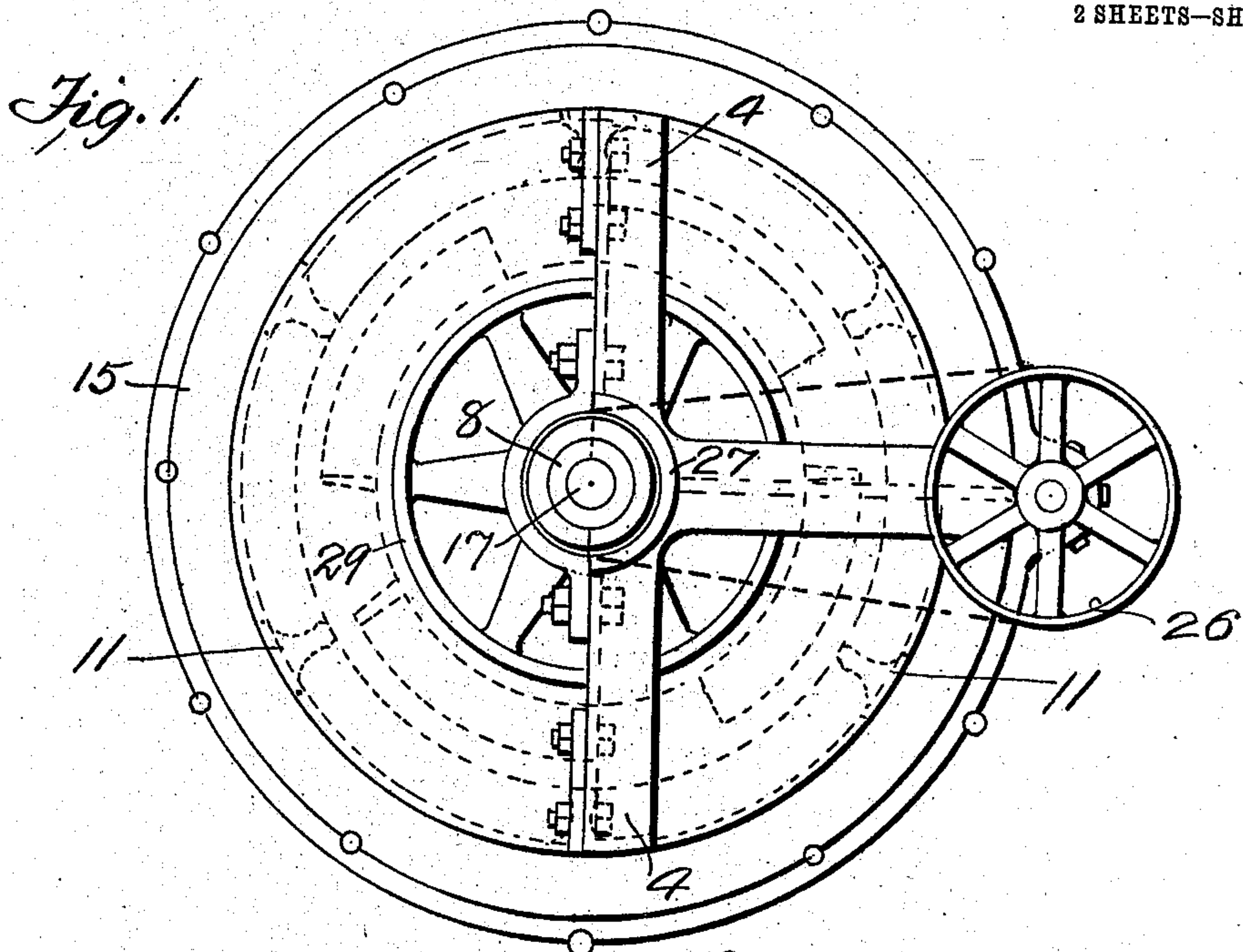


No. 885,211.

PATENTED APR. 21, 1908.

L. D. YORK.  
PULVERIZING MILL.  
APPLICATION FILED MAY 13, 1907.

2 SHEETS—SHEET 1.



Witnesses  
Chas. K. Davis.  
Margaret Smith.

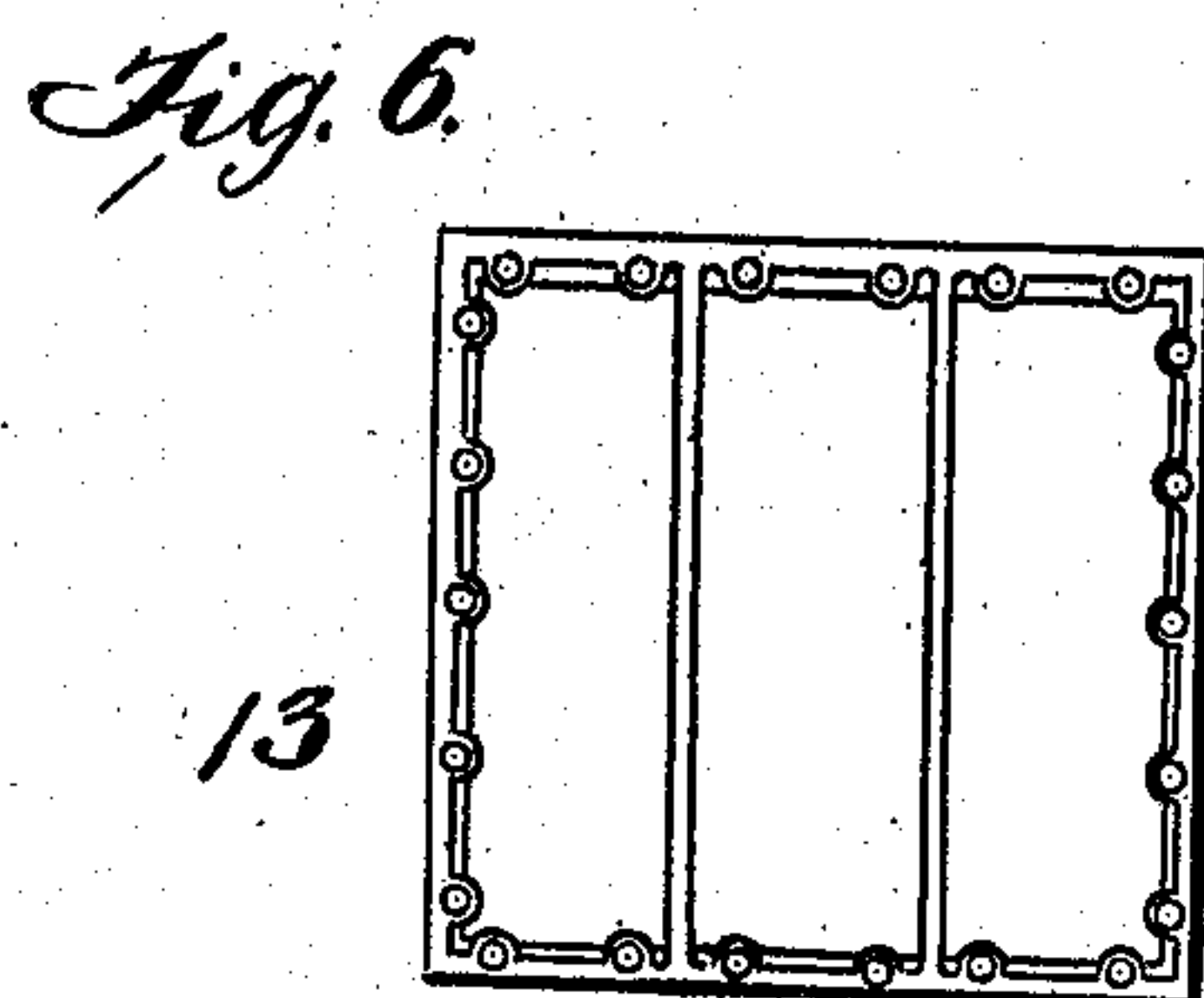
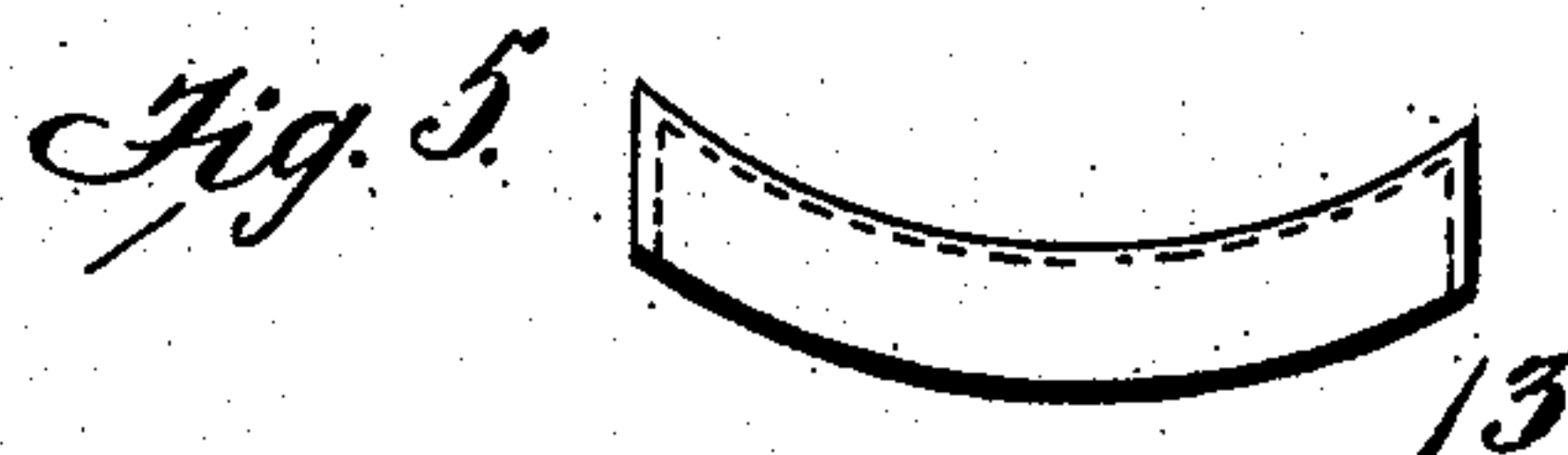
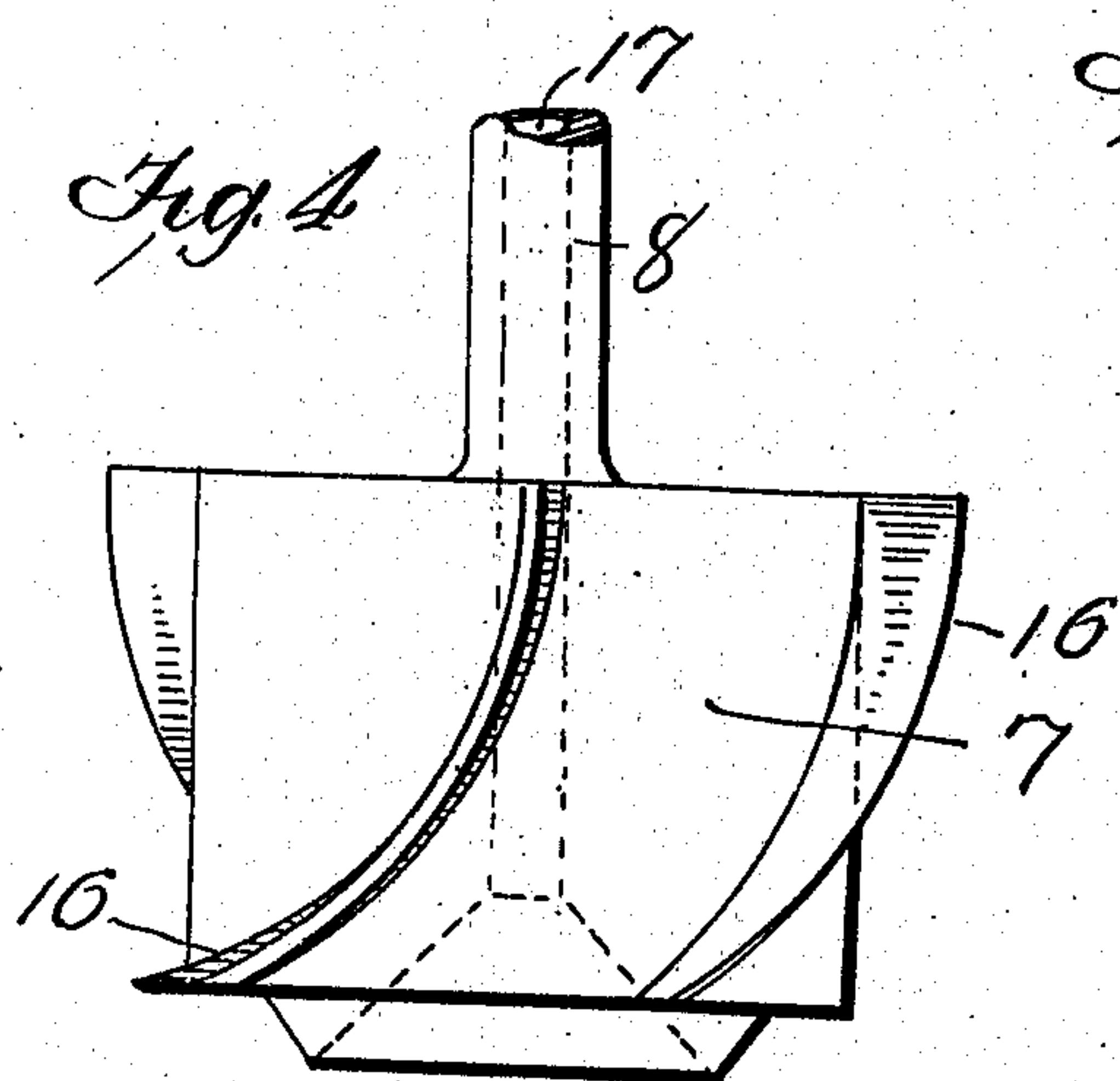
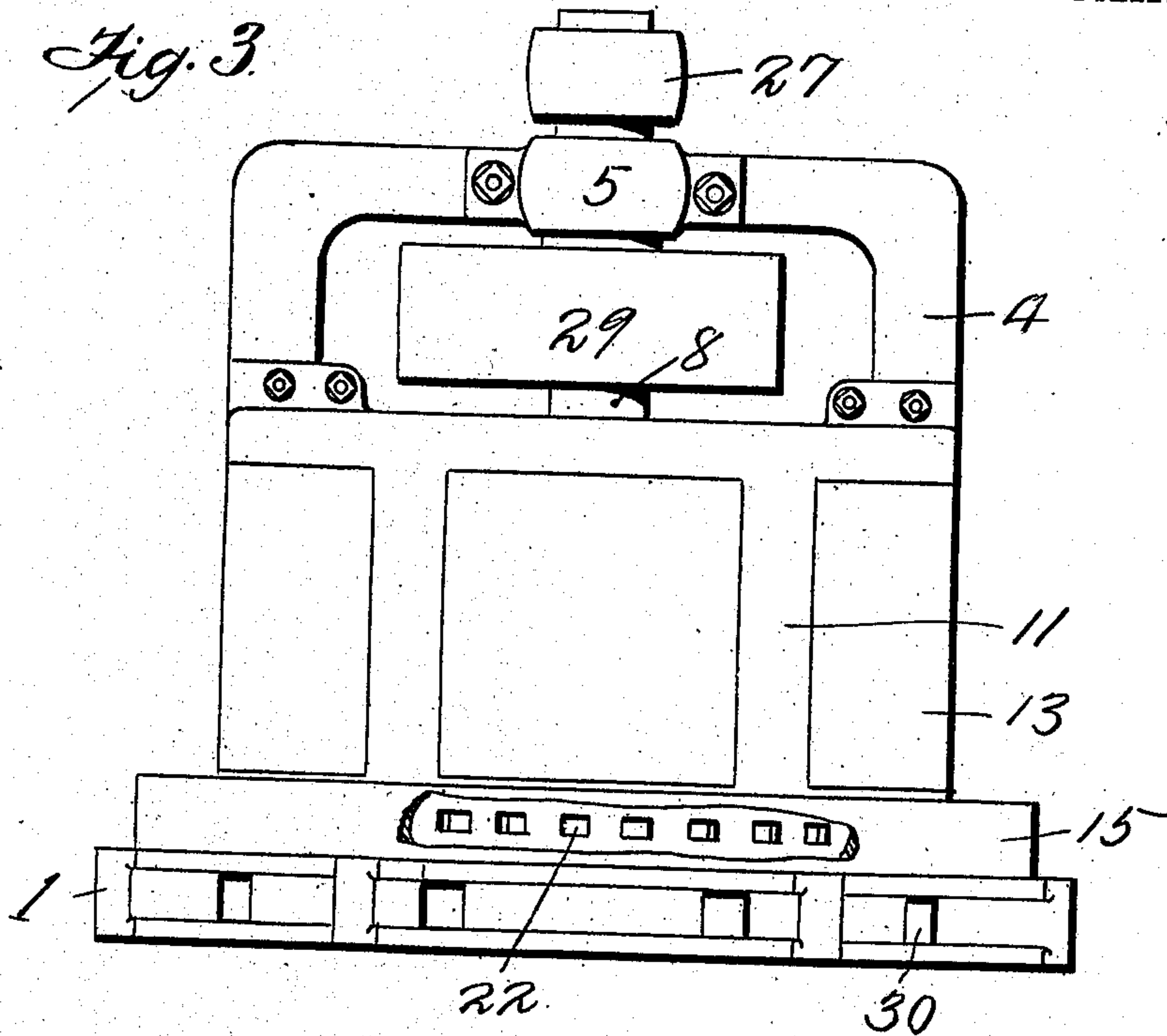
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

LEVI D. YORK, OF PORTSMOUTH, OHIO.

## PULVERIZING-MILL.

No. 885,211.

Specification of Letters Patent.

Patented April 21, 1908.

Application filed May 13, 1907. Serial No. 373,328.

*To all whom it may concern:*

Be it known that I, LEVI D. YORK, a citizen of the United States, and resident of Portsmouth, in the county of Scioto and State of Ohio, have invented certain new and useful Improvements in Pulverizing-Mills, of which the following is a specification.

The characteristics and advantages of the invention are hereinafter fully set forth in connection with a detailed description of the accompanying drawing which illustrates exemplifying structures in which the invention is embodied, and in which—

Figure 1 is a plan view of a pulverizing mill, Fig. 2, a vertical section of Fig. 1, Fig. 3, an elevation, Fig. 4, a detail of the rotary member, Fig. 5, a plan view of one of the screen boxes, and Fig. 6 an elevation of a screen box.

The mill rests on a base 1, having a central upwardly projecting cone 2. The lower pulverizing ring 3 rests on the base surrounding the cone. Three uprights 4 converge near the top of the mill at 5, where a spherical socket is formed to receive a spherical bearing-member 6. The weighted driver 7 preferably consists of a heavy mass of metal and has an operatively integral shaft 8 extending upward from it, passing through bearing-member 6, with a sliding fit. Seated in the bottom of the driver is the upper pulverizing ring 9, and balls 10 of any suitable number run between rings 3 and 9, supporting the driver and serving as the rolling crushing members.

The base carries uprights 11 and between these uprights are removably secured screen boxes 12 of a suitable number, each comprising solid top and outside plates 13 and a screen 14 of a mesh suitable to the work for which the mill is intended, forming the inside surface of the box. The boxes are open at the bottom and communicate with a circular chamber inclosed by housing 15, which rests on the base.

Driver 7 is provided with a plurality of spiral vanes extending from bottom to top of the outside surface. These vanes are curved, as best seen in Fig. 4, so that at the bottom they present a sharp angle to the vertical and at their tops are nearly parallel with the axis of the driver. The angle and shape of the vanes may of course be varied to suit different working conditions.

In operation material to be pulverized is fed into the hollow bore 17 of shaft 8 and

falls upon apex of cone 2, which directs it to the balls, by which it is pulverized. The pulverized or partially pulverized material thrown out from the crushing balls is scooped up by the vanes and elevated toward the top of the rotor and at the same time thrown outwardly, forcibly against the screens, through which the material which is properly pulverized passes, the remainder dropping back to be again subjected to the action of the balls. The pulverized material falls through the bottoms of the boxes into the annular chamber formed by housing 15. A plate 18 rests on top of uprights 11 surrounding shaft 8, with more or less clearance, and serves to prevent dust from rising from the mill.

For advantageously removing the pulverized material from the mill I provide a conveyor, which will now be described: A ring of L-shaped ange-iron 20 rests in the chamber in housing 15 with its open sides facing down and inwardly. At suitable intervals the ring is provided with blades 21 extending inward, and the outer web of the ring is provided with perforations 22 engaged by the teeth of a spur wheel 23 carried on shaft 24, which is revolubly journaled in bearings carried by the base and one of the uprights 4. Shaft 25 carries at its upper end a large pulley 26, which is driven by a small pulley 27 on shaft 8 and a belt. The main shaft is driven by means of pulley 29 from any suitable source of power. While the machine is in operation shaft 24 is driven slowly from the main shaft and ring 20 is rotated, causing blades 21, which come in contact with the pulverized material, to carry the material around within housing 15 to one or more chutes 30, from which it is delivered to suitable receptacles.

As special points of advantage in my invention the following are to be noted—the vanes on driver 7 not only throw the pulverized material outward by centrifugal force, but elevate it so that it is thrown against the whole surface of the screen. The screen surface is very large, which is made possible by the nature of the driver and vanes. The upper bearing of the driver is a universal joint permitting side play of this heavy member and the shaft is a sliding fit in bearing-member 6, so that upward movement of the driver when it strikes an unusual obstruction is permitted without strain to any of the parts. The upper bearing is also amply protected from dirt and grit arising from the



crushing process. The conveyer is an operatively integral part of the mill and provides means for continuously and easily removing the product.

5 Having described my invention, what I claim is:

1. In a pulverizing mill, the combination of a driver, a shaft therefor, an annular chamber into which pulverized material falls, an  
10 annular conveyer in the chamber, a pinion engaging the conveyer, a pinion shaft, pulleys on the driver and pinion shafts, and a belt connecting the pulleys.

2. In a pulverizing mill, a cylindrical  
15 driver, a shaft extending from the top thereof, the driver and shaft having a cylindrical bore, a base, pulverizing rings carried by the base and driver, balls running between the rings and carrying the driver, spiral vanes

running from top to bottom of the cylindrical 20 surface of the driver and screens surrounding the driver.

3. In a pulverizing mill, a cylindrical driver, a shaft extending from the top thereof, the driver and shaft having a cylindrical 25 bore, a base, pulverizing rings carried by the base and driver, balls running between the rings and carrying the driver, spiral vanes running from top to bottom of the cylindrical surface of the driver, screens surrounding the 30 driver, a sleeve on the shaft forming a sliding fit and having a spherical member, and a stationary support having an internal spherical surface engaging the spherical member.

LEVI D. YORK.

Witnesses:

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