

J. F. CUSTARD.  
CENTRIFUGAL GRINDING MILL.  
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Patented June 15, 1909.

925,305.

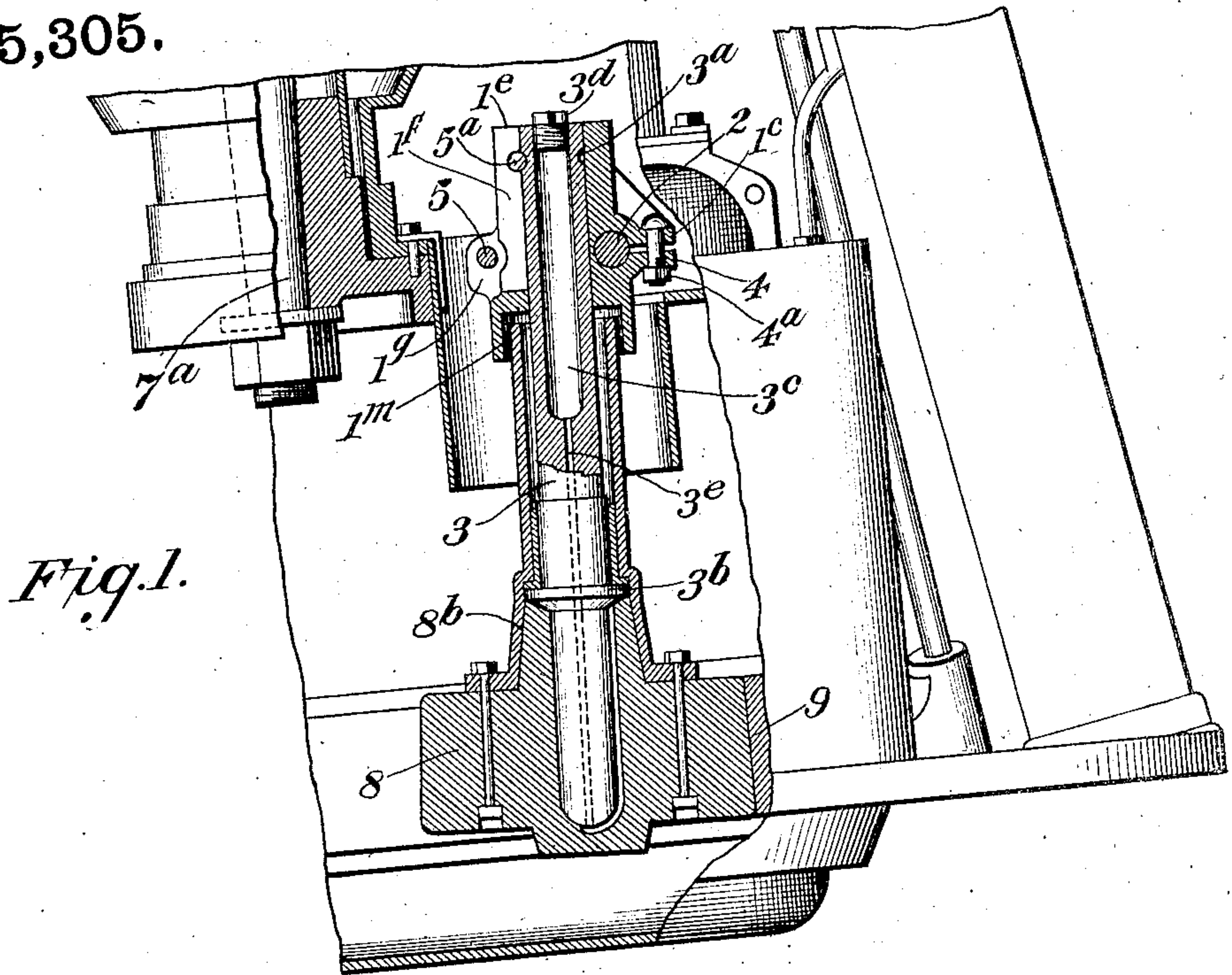


Fig. 1.

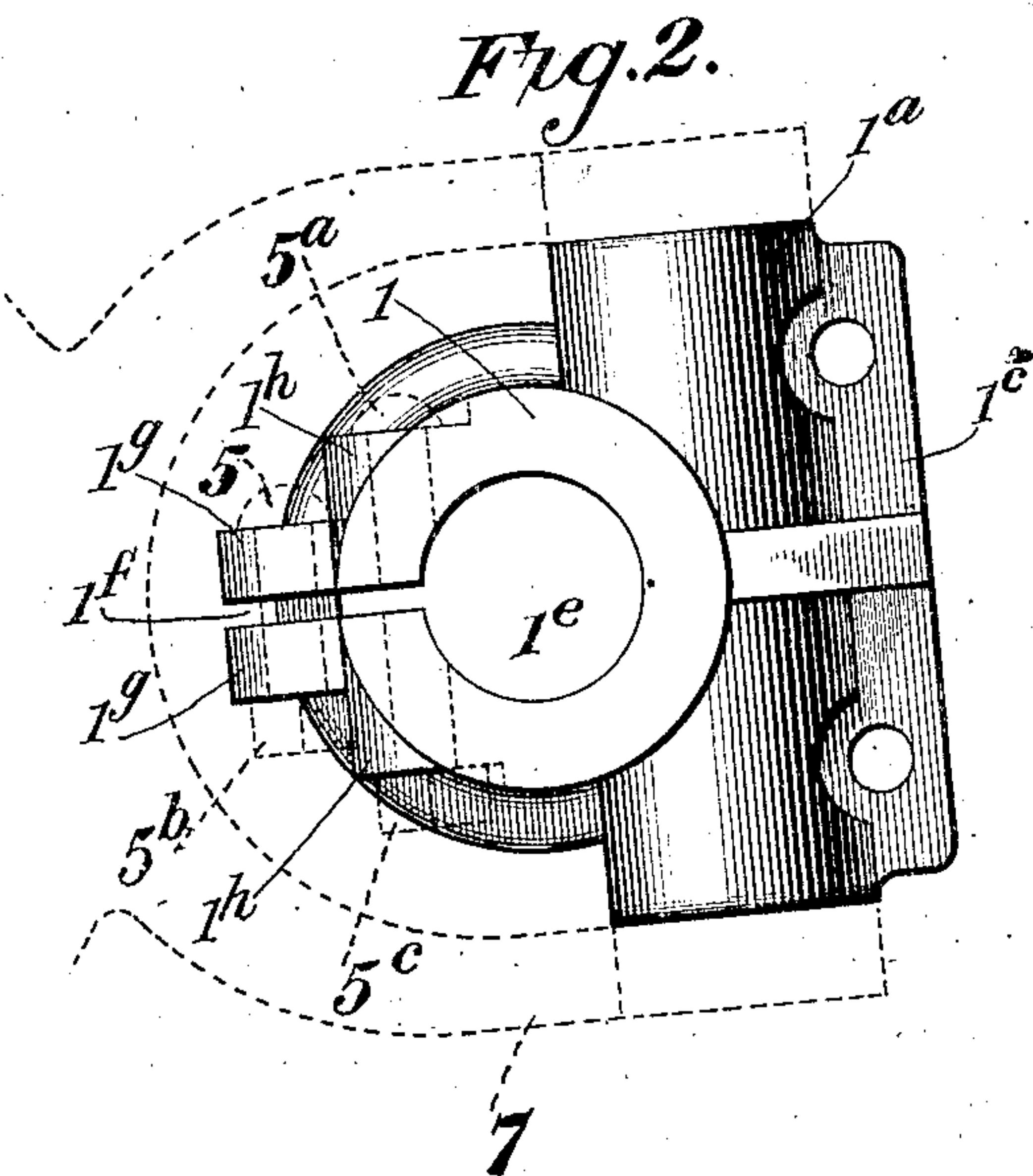


Fig. 2.

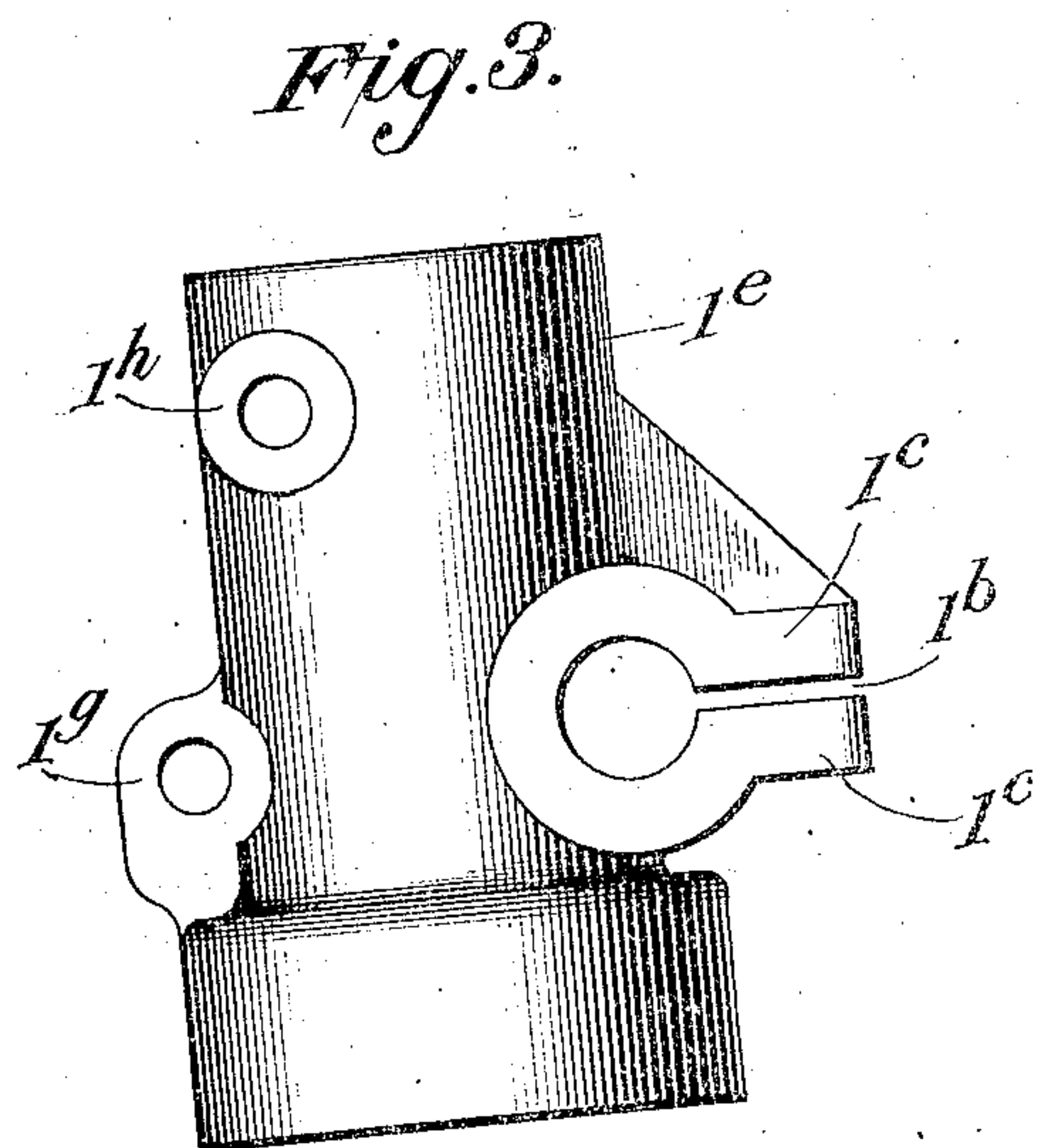


Fig. 3.

Witnesses

*M. E. Fowler*  
*James H. Mansfield*

Invent

*Joseph F. Custard*

By

*Alexander S. Fowler*  
Attorney



# UNITED STATES PATENT OFFICE.

JOSEPH F. CUSTARD, OF COPLAY, PENNSYLVANIA.

## CENTRIFUGAL GRINDING-MILL.

No. 925,305.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed December 23, 1908. Serial No. 468,940.

*To all whom it may concern:*

Be it known that I, JOSEPH F. CUSTARD, of Coplay, in the county of Lehigh and State of Pennsylvania, have invented certain new and useful Improvements in Centrifugal Grinding-Mills; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improvement in crushing or pulverizing mills of the centrifugal roller type, and it relates particularly to the means for suspending the crushing roll shaft and for lubricating the crushing roll so that there will be less wear on the parts, the roll will be more securely suspended; cost of repairs and maintenance will be lessened; the parts can be assembled with greater facility, and the roll bearing will be more perfectly lubricated.

The invention therefore consists in the novel construction of the rocker-head by which the roll shaft is suspended; and also in the novel construction of the roll-shaft to insure proper lubrication of the roll-bearings.

I will now describe the invention with reference to the accompanying drawings, which illustrate the same as applied to a centrifugal roller mill of a well known type.

In the drawings—Figure 1 is a sectional view of part of such mill showing the rocker-head, and roll-shaft in section. Fig. 2 is an enlarged top plan view of the rocker-head and shaft. Fig. 3 is a side view of Fig. 2.

The rocker-head 1 is provided with a transverse sleeve 1<sup>a</sup>, for a horizontal shaft 2; and with a vertical sleeve 1<sup>e</sup> for the upright roll-shaft 3; the said sleeves therefore lie at right angles, and are formed in one common or integral casting. The sleeve 1<sup>a</sup> is split longitudinally as at 1<sup>b</sup>, and is provided with a pair of perforated ears 1<sup>c</sup> at opposite sides of the slit for the passage of clamp bolts 4, which are provided with nuts 4<sup>a</sup> and by which the sleeve can be securely clamped to the shaft 2. The sleeve 1<sup>e</sup> is also longitudinally split, as at 1<sup>f</sup>, and is provided on opposite sides of the slit with perforated lugs 1<sup>g</sup> and 1<sup>h</sup>, for the passage of bolts 5 and 5<sup>a</sup>, which are provided with nuts 5<sup>b</sup>, 5<sup>c</sup> to tighten the bolts and cause the sleeve to firmly clamp shaft 3.

The shaft 2 is short and is journaled in

bearings in a bifurcated carrier or support 7 attached to the main shaft 7<sup>a</sup> of usual construction, so that when shaft 7<sup>a</sup> is rotated, the rocker-head is carried around in an orbital path. The shaft 3 is suspended from the rocker-head, and its upper end fastened in sleeve 1<sup>e</sup> by the clamp bolts 5, 5<sup>a</sup>. The shaft 3 is provided with a notch or groove 3<sup>a</sup> near its upper end, which notch is engaged by the bolt 5<sup>a</sup>, said bolt serving as a key to prevent the shaft 3 turning in the sleeve 1<sup>e</sup> and also to prevent shaft 3 moving endwise in the sleeve, and also as a means for clamping sleeve 1<sup>e</sup> tightly around shaft 3. Shaft 3 is provided with a flange 3<sup>b</sup> near its lower end, and below the flange is a crushing-roll 8, which is journaled on the lower end of the shaft, and is upheld by a sleeve 8<sup>b</sup>, secured to the roll and supported upon the flange 3<sup>b</sup> in the usual manner. The upper end of sleeve 8<sup>b</sup> enters a recess 1<sup>m</sup> in the lower end of sleeve 1<sup>e</sup>, as shown. As the shaft 7<sup>a</sup> is rotated the support 7 carries shaft 3 around in an orbital path, and roll 8 moves outward by centrifugal force, and crushes material against the side walls of crushing ring 9, as usual. In order to lubricate the roll 8, the shaft 3 is provided with a large bore 3<sup>c</sup> in its upper end, forming an oil chamber. The upper end of this bore is internally threaded, and is closable by a screw-cap 3<sup>d</sup>, as shown. A small bore 3<sup>e</sup> leads from the lower end of chamber 3<sup>c</sup> to the bottom of the shaft, and supplies lubricant to the bearing of roll 8 in a direct and most advantageous manner. The shafts 2 and 3 are secured to the rocker-head by first slightly spreading the sleeves by inserting wedges in the slits, then after the shafts are positioned, the wedges are removed and the bolts tightened, clamping the sleeves firmly to the shafts. This construction does away with the threads and top nuts heretofore employed to connect the roll-shaft to the rocker-head. And the interior oil chamber in shaft 3 does away with the usual oil cups and exterior appliances which are cumbersome and disadvantageous.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a centrifugal grinding mill, the combination of a rotatable support, a rocker-head pivotally mounted thereon having a vertical split sleeve and clamping bolts transfixing said sleeve; with a shaft having its upper end confined in said sleeve, and notched



for engagement with one of the clamping bolts whereby longitudinal movement of the shaft is prevented, and a crushing roll on said shaft.

- 5 2. In a centrifugal grinding mill, the combination of a rotatable support, a horizontal shaft thereon, a rocker-head having a horizontal split sleeve clamped on said shaft and also having a vertical split sleeve, and clamping bolts transfixing said vertical sleeve, one  
10 of said bolts being set nearer the axis of the sleeve than the other; with a shaft having its

upper end confined in said sleeve and notched for engagement with said inner clamping bolt whereby longitudinal movement of the shaft is prevented, and a crushing roll on the lower end of said shaft. 15

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

JOSEPH F. CUSTARD.

Witnesses:

DAVID J. NAGLE,  
F. A. READING.