

C. H. HAMILTON.  
GRINDING MILL.  
APPLICATION FILED MAR. 15, 1909.

944,550.

Patented Dec. 28, 1909.  
2 SHEETS—SHEET 1.

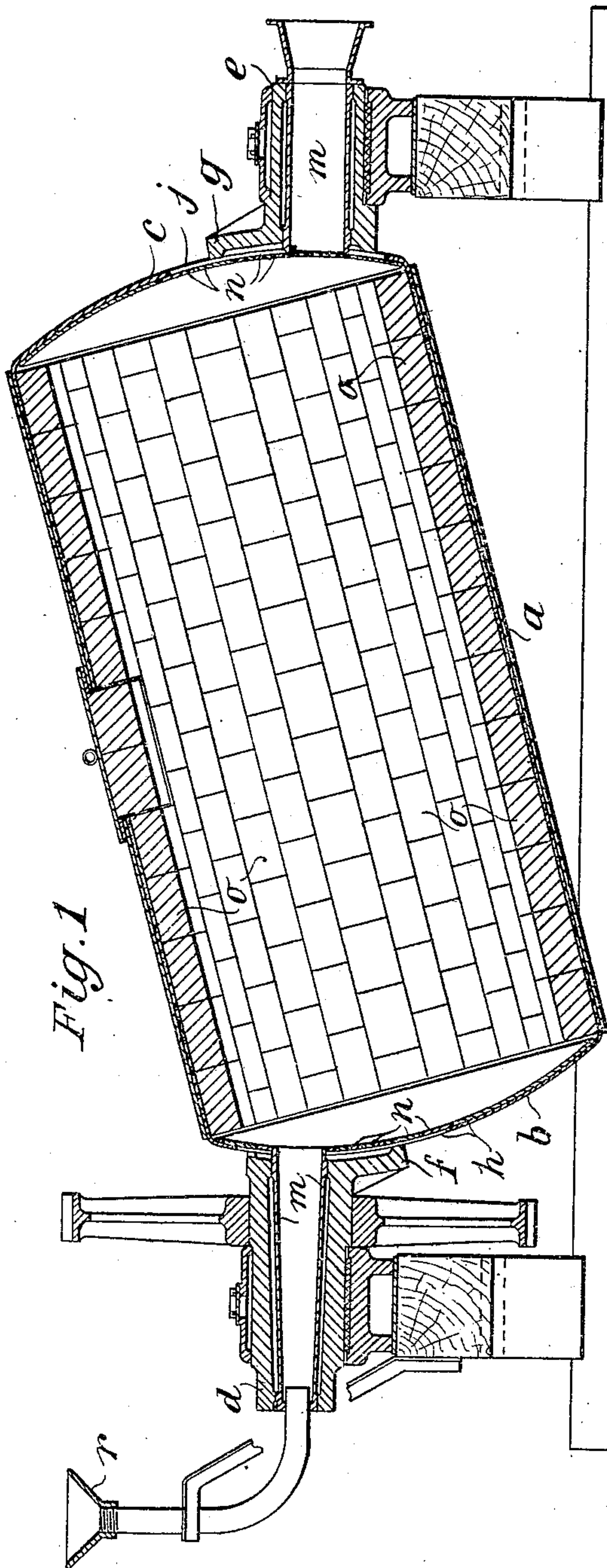


Fig. 1

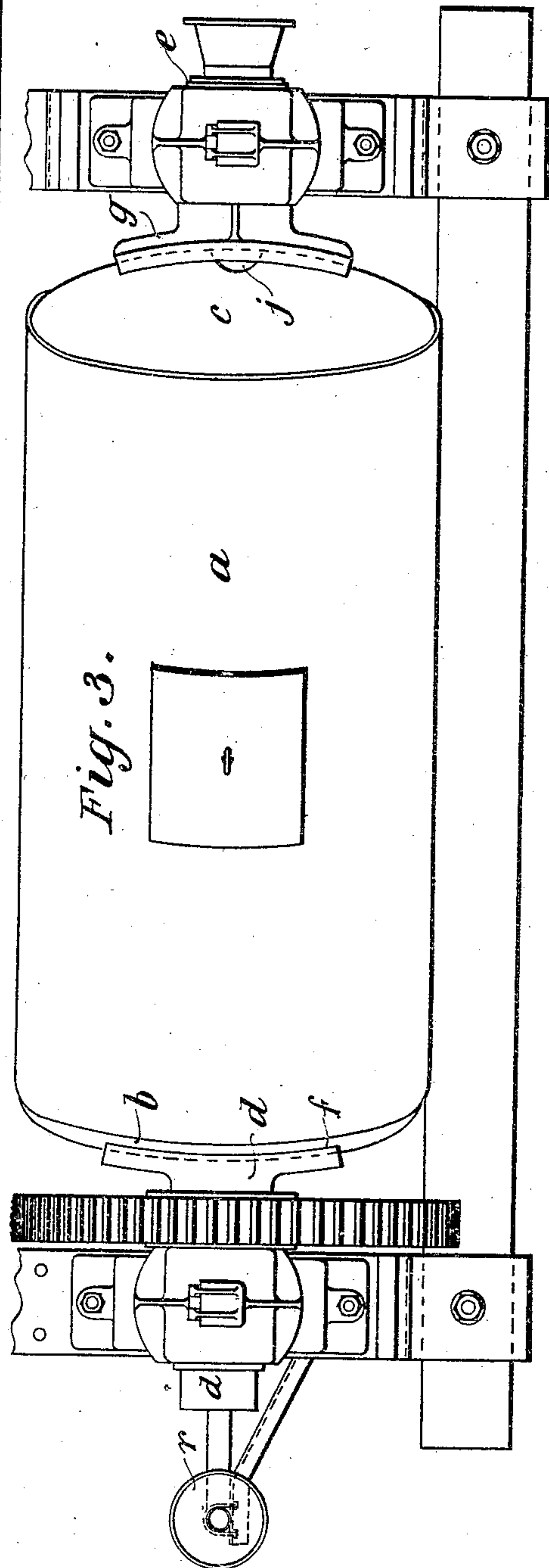


Fig. 3.

Witnesses:

Fred White  
Rene Gruine

Inventor:

Christopher Hesketh Hamilton,

By Attorneys,

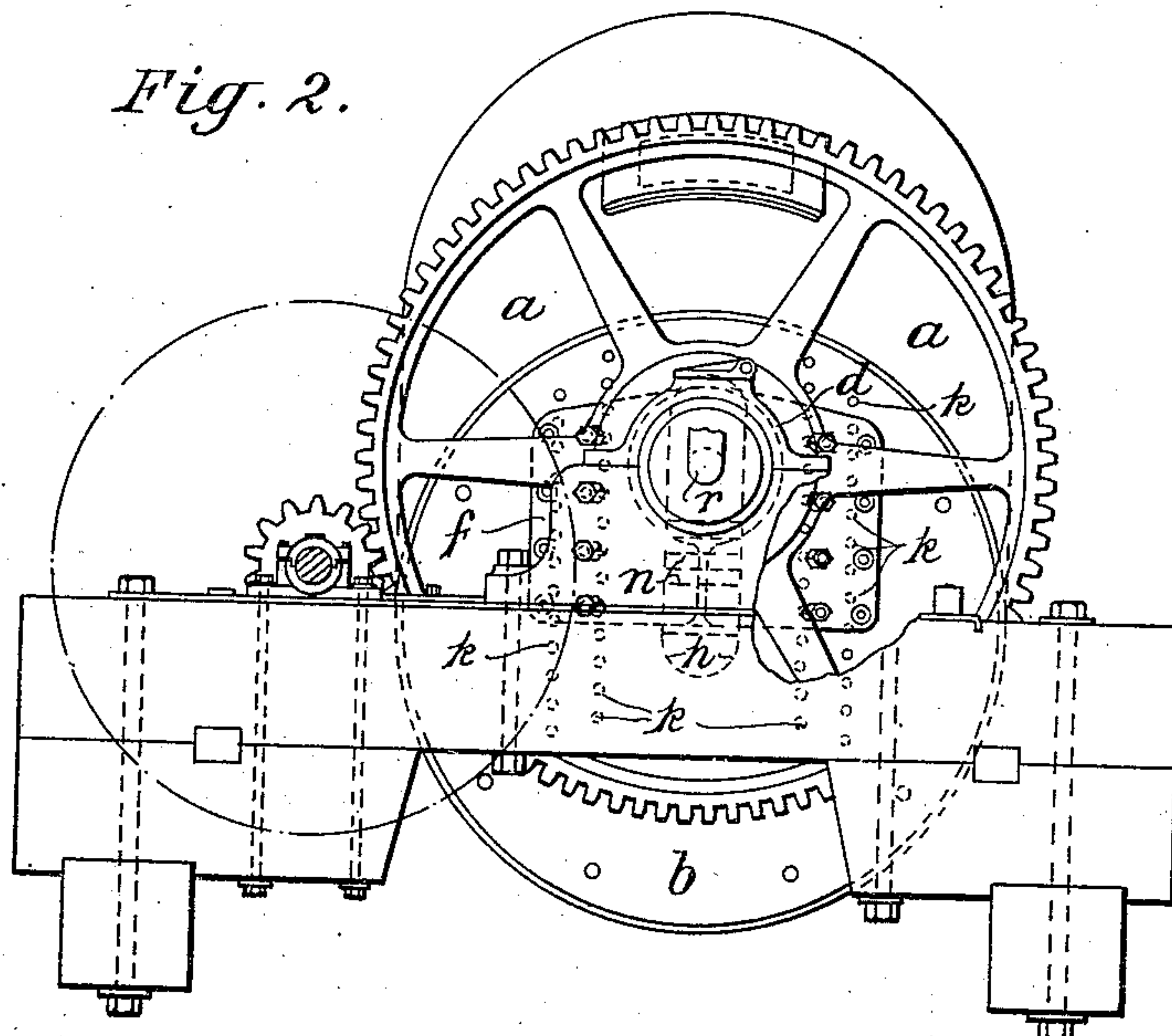
Arthur C. Fraser & Son

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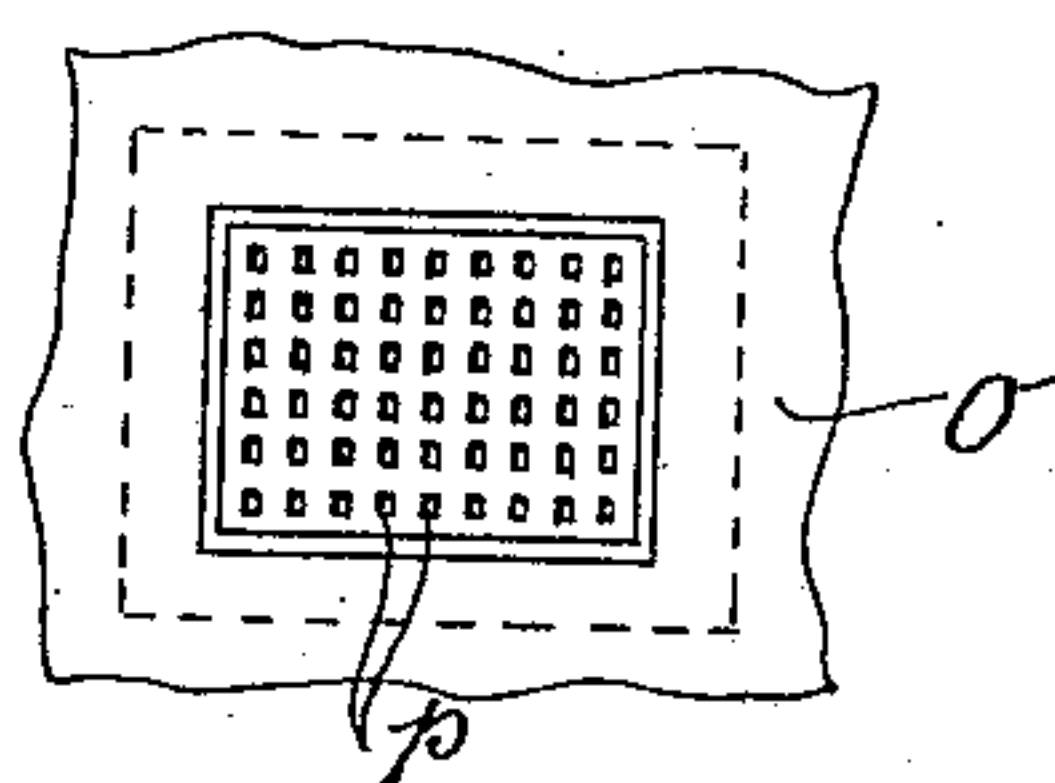
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2 SHEETS—SHEET 2.

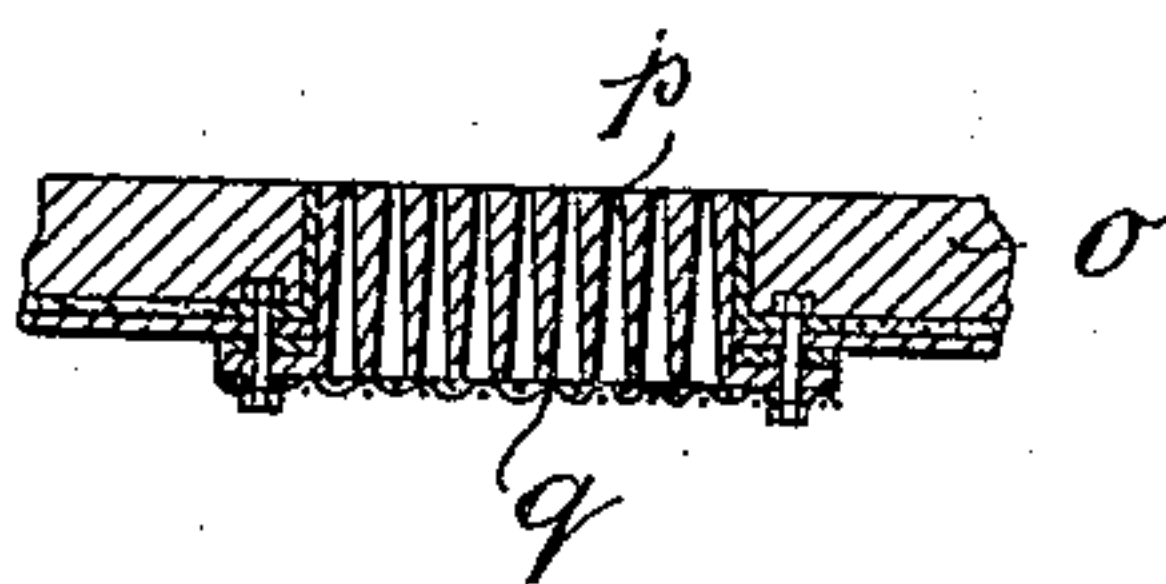
*Fig. 2.*



*Fig. 4.*



*Fig. 5.*



Witnesses:

Irvin White  
Rene' Ruine

Inventor:

Christopher Hesketh Hamilton,

By Attorneys,

Arthur C. Fraser & Son



# UNITED STATES PATENT OFFICE.

CHRISTOPHER HESKETH HAMILTON, OF WEST KENSINGTON, LONDON, ENGLAND.

GRINDING-MILL.

944,550.

Specification of Letters Patent.

Patented Dec. 28, 1909.

Application filed March 15, 1909. Serial No. 483,387.

*To all whom it may concern:*

Be it known that I, CHRISTOPHER HESKETH HAMILTON, of 16 Newton Mansions, Queen's Club Gardens, West Kensington, London, England, mining engineer, have invented certain new and useful Improvements in and Relating to Grinding-Mills, of which the following is a specification.

The object of my invention is certain improvements in the construction of tube or grinding mills, whereby they can be made to work equally as well as the ordinary mill but whereby increased capacity and greater efficiency are obtained.

The invention relates especially to the grinding of metal-bearing rocks and cement slag in which the material to be ground is churned within a cylinder with pebbles or metal balls or other suitable material.

A grinding mill constructed in accordance with this invention comprises a cylindrical or elliptical metal shell lined with silex, steel or other suitable material, mounted on bearings placed diagonally at the ends of the cylinder thus causing the cylinder to be out of the horizontal and to work eccentrically so that while retaining the rotary movement the material contained therein is caused to travel obliquely from end to end. The angle of eccentricity can be varied to meet the requirements of the material to be ground.

The metal shell is mounted on hollow trunnions which are adapted to form the inlet and outlet for the material to be ground. The cylinder may be provided with peripheral discharges which may take the form of gratings or grooves covered with gauze. Means are provided for rotating the cylinder.

Figure 1 is a sectional elevation of one form of grinding mill made in accordance with this invention; Fig. 2 is an end view of same part broken away; Fig. 3 is a plan; Figs. 4 and 5 are details of a modification.

*a* is a cylindrical shell having spherical ends *b* and *c*.

*d* and *e* are hollow trunnions provided with flanges *f* and *g* adapted to be bolted to the ends of the shell, the shell being provided with slots *h* and *j*, and bolts *k* *k* so

that the angular position of the shell can be adapted as required.

*m m* are liners in the trunnions the ends of which project into the slots *h* and *j*.

*n n* are filling pieces to close the ends of the slots *h* and *j*.

*o* is a lining of silex or other suitable material. In some cases gratings *p* and gauze *q* forming peripheral discharges can be employed as shown in Figs. 4 and 5.

In use the obliquity of the cylinder is adjusted according to the nature of the material to be ground. Pebbles or metal balls are placed within the cylinder and the material is fed into the apparatus by the inlet *r*. As the cylinder is rotated the balls and material are thrown obliquely from one end of the cylinder to the other, to and fro. In this manner the material is quickly and efficiently ground to a slime, the ground material passing out of the hollow trunnions *e* and also through the gratings *p* when they are fitted.

In the improved machine the material is more efficiently and rapidly ground than by apparatus mounted centrally.

What I claim and desire to secure by Letters Patent is:—

1. A grinding mill comprising in combination a metal shell lined with hard material, horizontal hollow trunnions whereon said shell is mounted, means for rotating the shell, and means for adjusting the shell eccentrically and obliquely relatively to said horizontal trunnions, whereby the shell can be adjusted obliquely without interference with the alinement of the horizontal trunnions, substantially as described.

2. A grinding mill comprising in combination a cylindrical metal shell lined with hard material, fixed horizontal hollow trunnions whereon said shell is mounted longitudinally, means for rotating the shell and means for adjusting the shell eccentrically and obliquely relatively to said hollow trunnions, substantially as described.

3. A grinding mill comprising in combination a cylindrical metal shell lined with hard material, spherical ends on said shell, horizontal hollow trunnions whereon the shell is mounted longitudinally, flanges on

said trunnions and corresponding in contour to the ends of the shell, means for adjustably securing said flanges to the shell ends, slots in said shell ends and detachable filling  
5 pieces for closing said slots, substantially as described.

In witness whereof I have hereunto signed

my name in the presence of two subscribing witnesses.

CHRISTOPHER HESKETH HAMILTON.

Witnesses:

REGINALD EATON ELLIS,  
ROBERT MILTON SPEARPOINT.