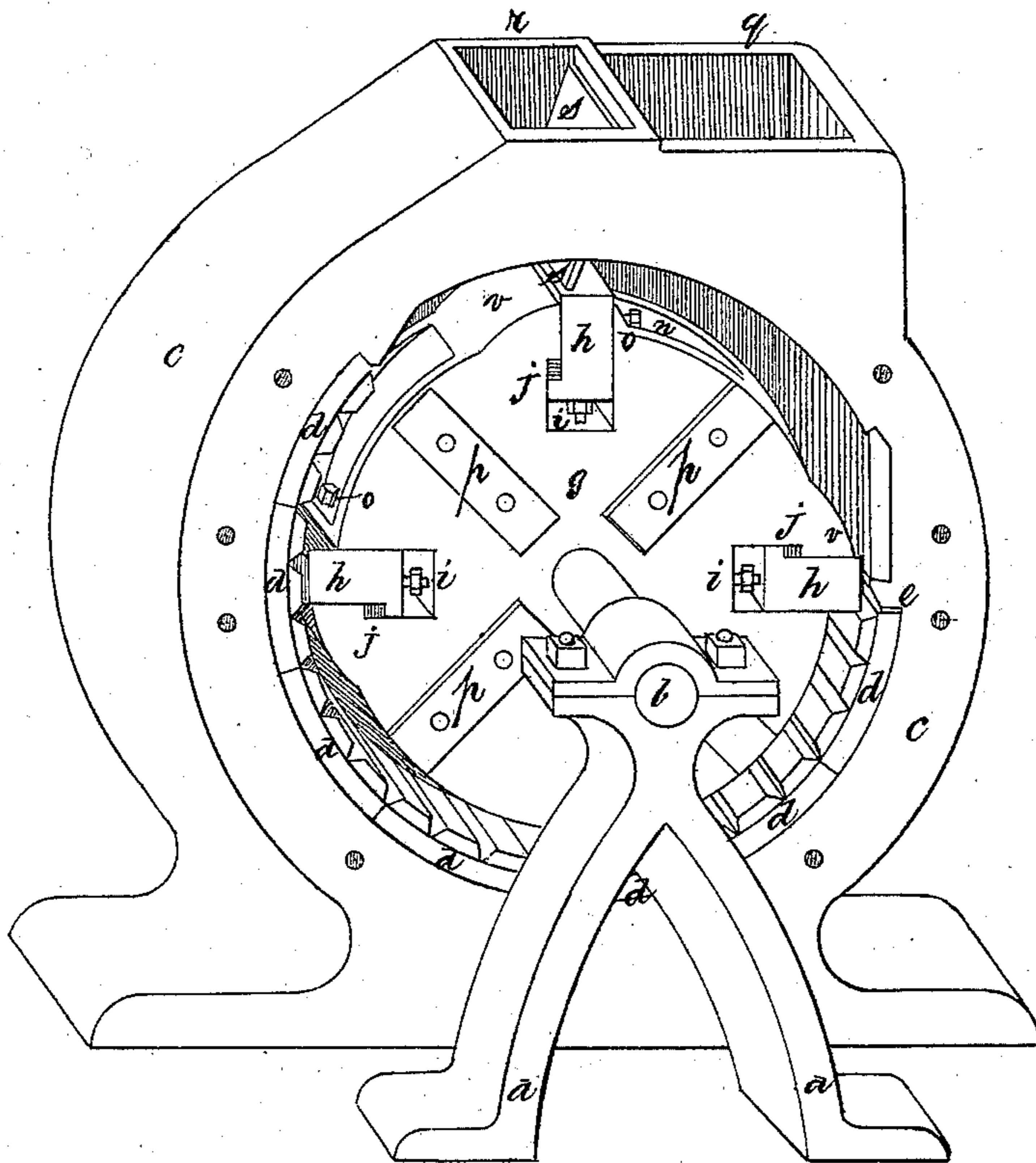


GOVE MITCHELL.  
Improvement in Ore Crushers.

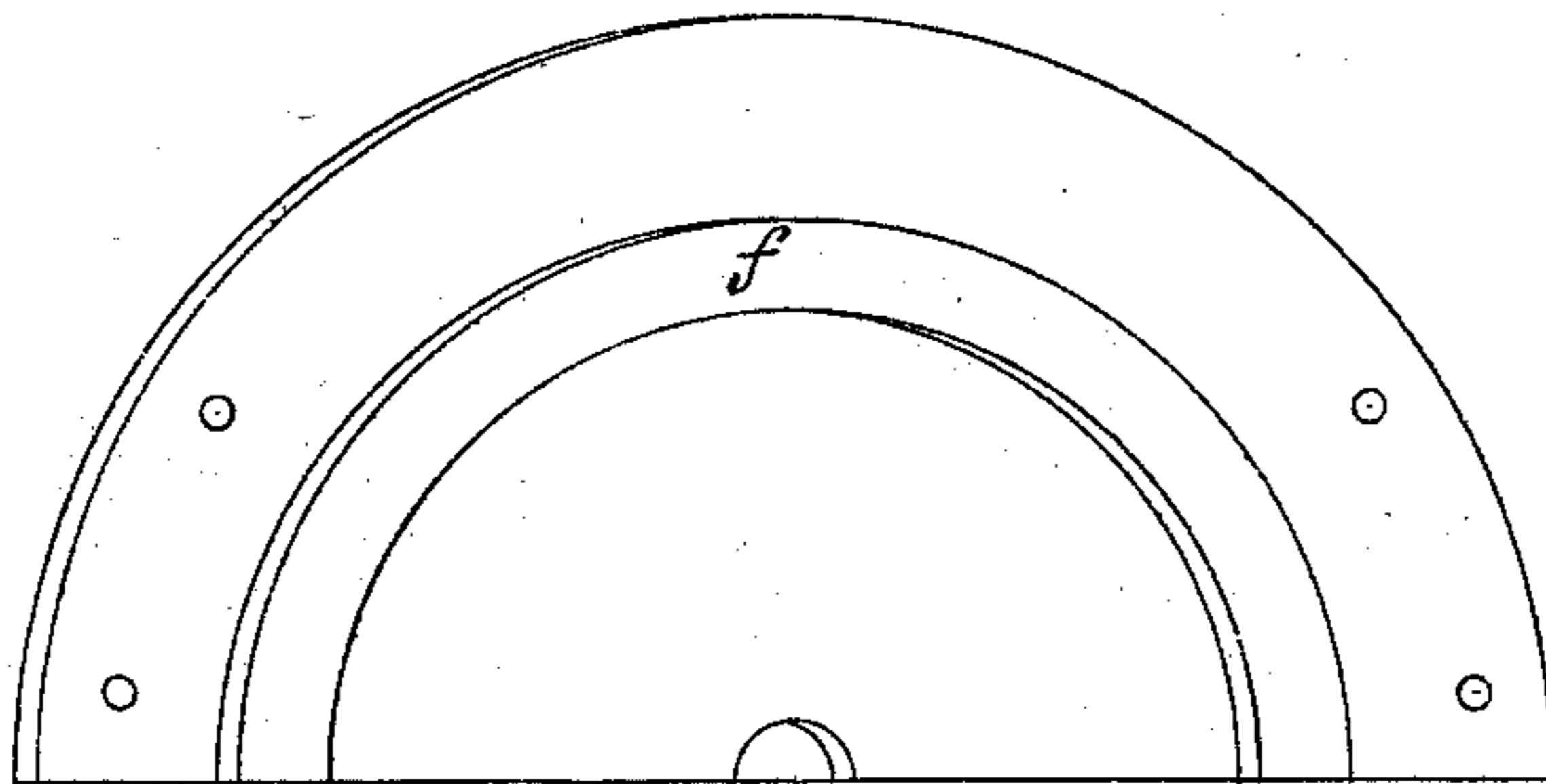
No. 127,260.

Patented May 28, 1872.

*Fig 1*



*Fig 2*



Witnesses:

B Rowland Croasdale  
Comptroller

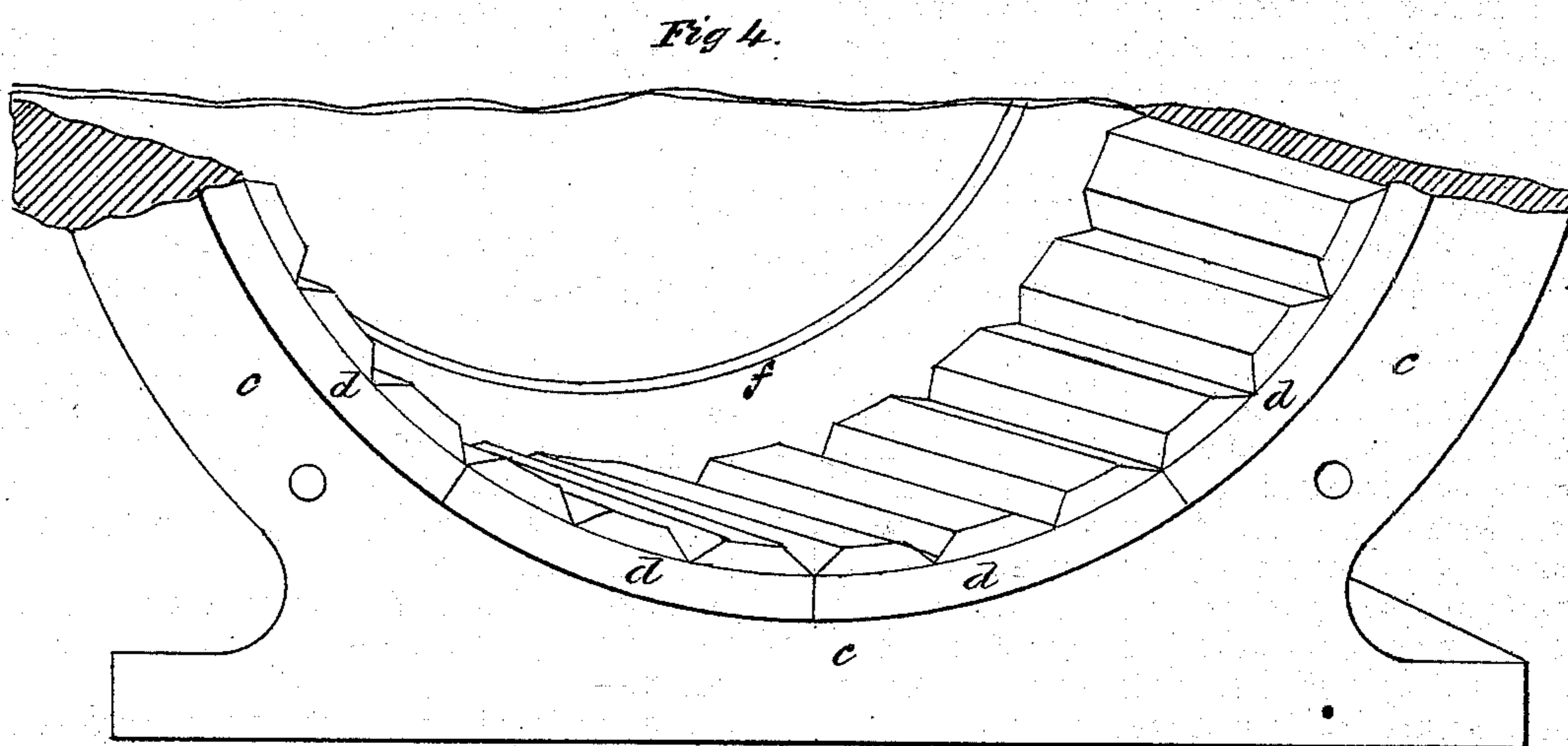
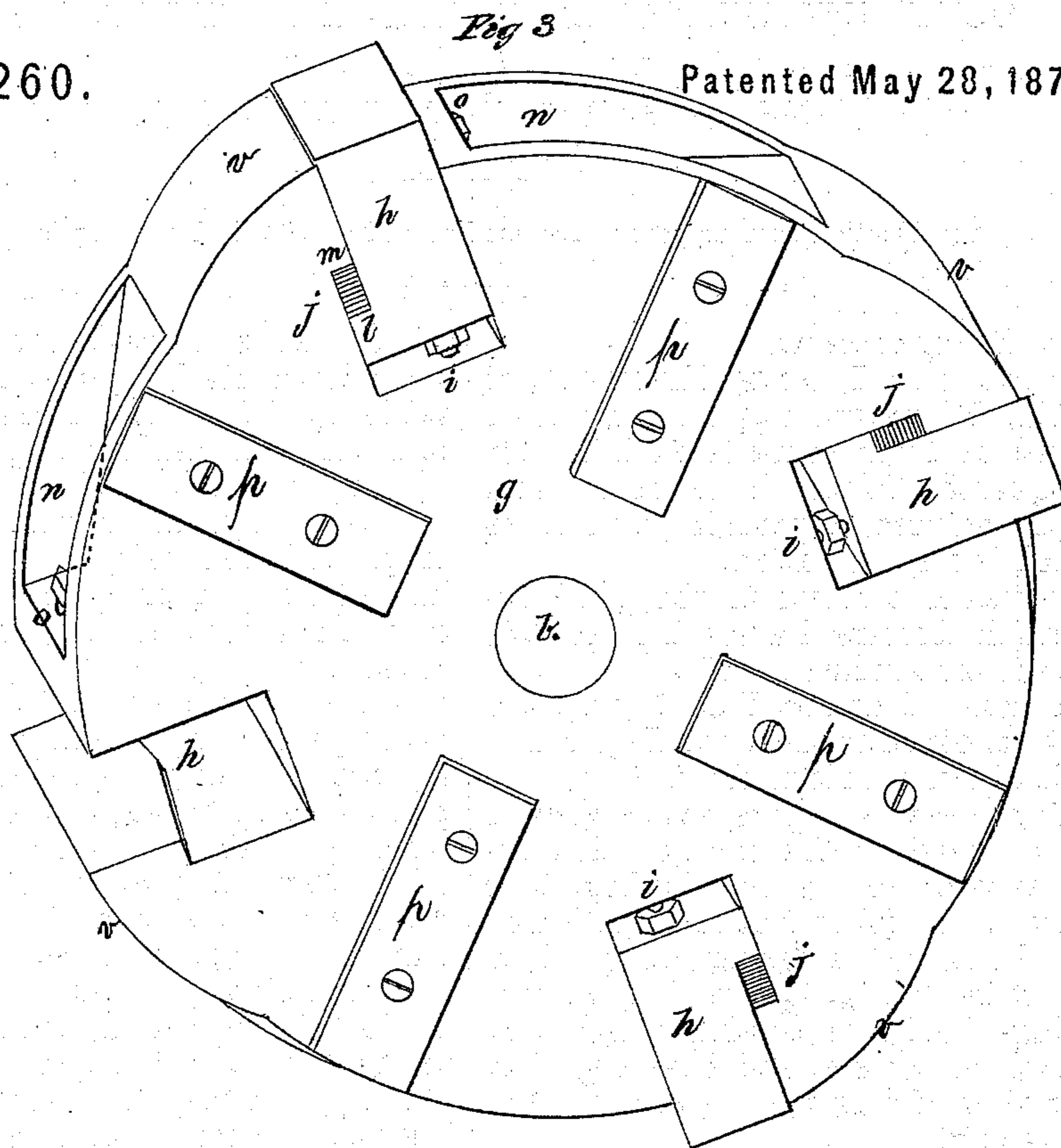
Inventor:

Gove Mitchell

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Witnesses:  
B Rowland Crossdale  
Tom R Wright.

Inventor:  
Gove Mitchell

# UNITED STATES PATENT OFFICE

GOVE MITCHELL, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN ORE-CRUSHERS.

Specification forming part of Letters Patent No. 127,260, dated May 28, 1872.

*To all whom it may concern:*

Be it known that I, GOVE MITCHELL, of Philadelphia, Pennsylvania, have invented new and useful Improvements in Mills for Grinding Quartz, Guano, Phosphates, and other hard substances, of which improvements the following is a specification:

My improvements relate to the grinding-mill for which Letters Patent No. 106,271 were issued to me August 9, 1870.

In the annexed drawing, Figs. 1 and 2 are on a scale of one inch to the foot. Figs. 3 and 4 on a scale of two inches to the foot.

Figure 1 represents a perspective view of the mill, one head of the casing being removed to expose parts enclosed; Fig. 2, a similar view of the inner face of a section or half of the head of the casing, designed to show the flange *f*; Fig. 3, a similar view of the pounding-wheel *g*, adjustable hammers *h*, and flanges *p*, recesses *n*, and bosses *v*; Fig. 4, a similar view of a part of the serrated lining of the casing.

In Fig. 1, *a* represents one of two similar standards employed to support the shaft *b*. The standards *a* are intended to be attached to any substantial base. *c* is the casing, which I prefer to cast in one piece. The casing *c* is partly lined with the serrated plates *d*, set in sections, keyed at *e*, and further secured by means of raised strips or flanges, *f*, Figs. 2 and 4, formed on the inner sides of the heads respectively. *g*, Figs. 1 and 3, is the pounding-wheel, mounted on the horizontal shaft *b*, to which power is applied. The hammers are marked *h*. They are inserted into recesses formed for them in the body of the wheel *g*, as shown. They are adjustable, having the capacity of being set out by means of the screw-bolts *i*, as their projected ends are worn down by use. A number of separate metallic strips, *j*, laid together between a shoulder, *l*, of the hammer, and a shoulder, *m*, of the wheel, Fig. 3, are employed as packing, one or more of said strips being removed, as required, when the hammers are set out. Shallow recesses, *n*, Fig. 3, one in front of each hammer, are formed in the edge of the

wheel. These recesses cause the hammers to wear down nearly square, thus obviating the tendency which the hammers otherwise have to bevel from their striking faces. The backs or striking surfaces of the recesses *n* act as fans, and very much assist in clearing the mill of ground materials, and in preventing the hammers from getting heated. For their protection against wear these backs may each be covered with a removable plate, (not shown,) which may be secured by the screw-bolts *o* passing through the said backs and abutting against the hammers, respectively. Flanges *p* are secured to each side of the pounding-wheel *g*. These flanges act as fans, and, by the blast which they create, keep the ground materials from settling down about the shaft *b* and clogging the wheel.

The heads of the casing are preferably made flat, and have ordinary stuffing-boxes applied to them around the shaft of the pounding-wheel *g*, and they fit close up to the flanges *p*, but not so close as to interfere with the motion of the pounding-wheel.

*q*, Fig. 1, is an aperture in the rim of the casing, through which the materials to be ground are introduced. *r* is another aperture in the rim through which the ground materials are discharged in a powdered state. The aperture *q* is intended to be surmounted with a hopper, and to the aperture *r* there is attached an ordinary spout or tube, varying in length from three feet upward, according to the degree of fineness to which the materials are to be reduced. *s*, Fig. 1, is a removable and adjustable plate, employed to direct the blast and ground materials out of the mill through the aperture *r*.

The several parts of the mill may be made of iron or steel, cast or wrought.

I claim—

1. The combination of the pounding-wheel *g*, adjustable hammers *h*, recesses *n*, fanning flanges *p*, inclosing casing *c*, segmental serrated linings *d*, and adjustable blast-director *s*, in the manner and for the purpose substantially as set forth.

2. In combination the pounding-wheel *g*,

recesses *n*, and adjustable hammers *h*, in the manner and for the purpose substantially as set forth.

3. The pounding-wheel *g*, constructed with the recesses *n* and fanning flanges *p*, substantially as set forth, for the purposes specified.

4. In combination, the pounding-wheel *g*, removable segmental serrated linings *d* of the

casing, and the securing flanges *f*, in the manner and for the purpose substantially as set forth.

GOVE MITCHELL.

Witnesses:

B. ROWLAND CROASDALE,  
WM. R. WRIGHT.