

J. T. Plass.

Ore Crusher.

N<sup>o</sup> 44819

Patented Oct. 25, 1864.

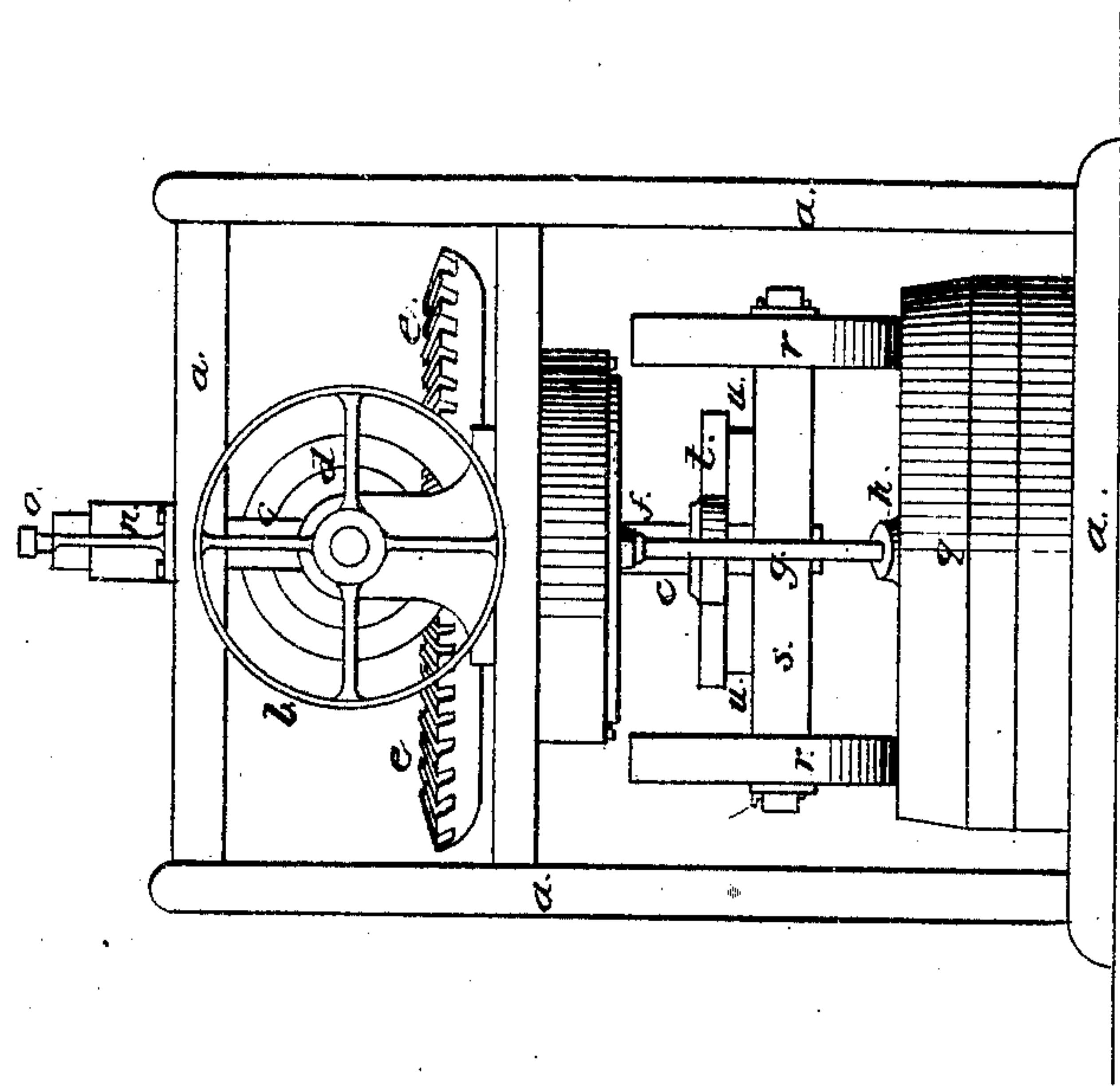


Fig. 2.

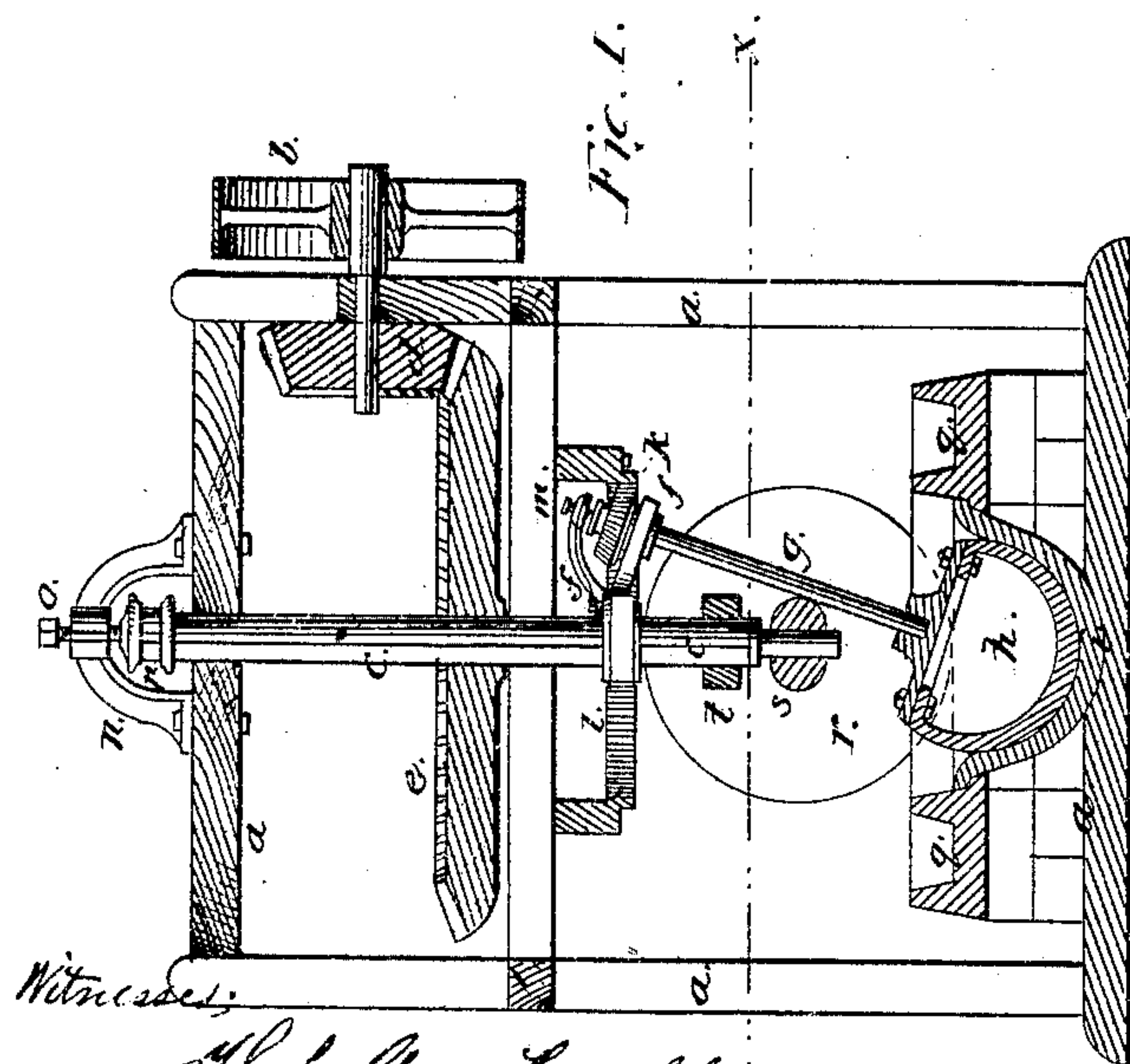


Fig. 1.

Witnessed:

Thos. Geo. Hearold

Chas. H. Smith

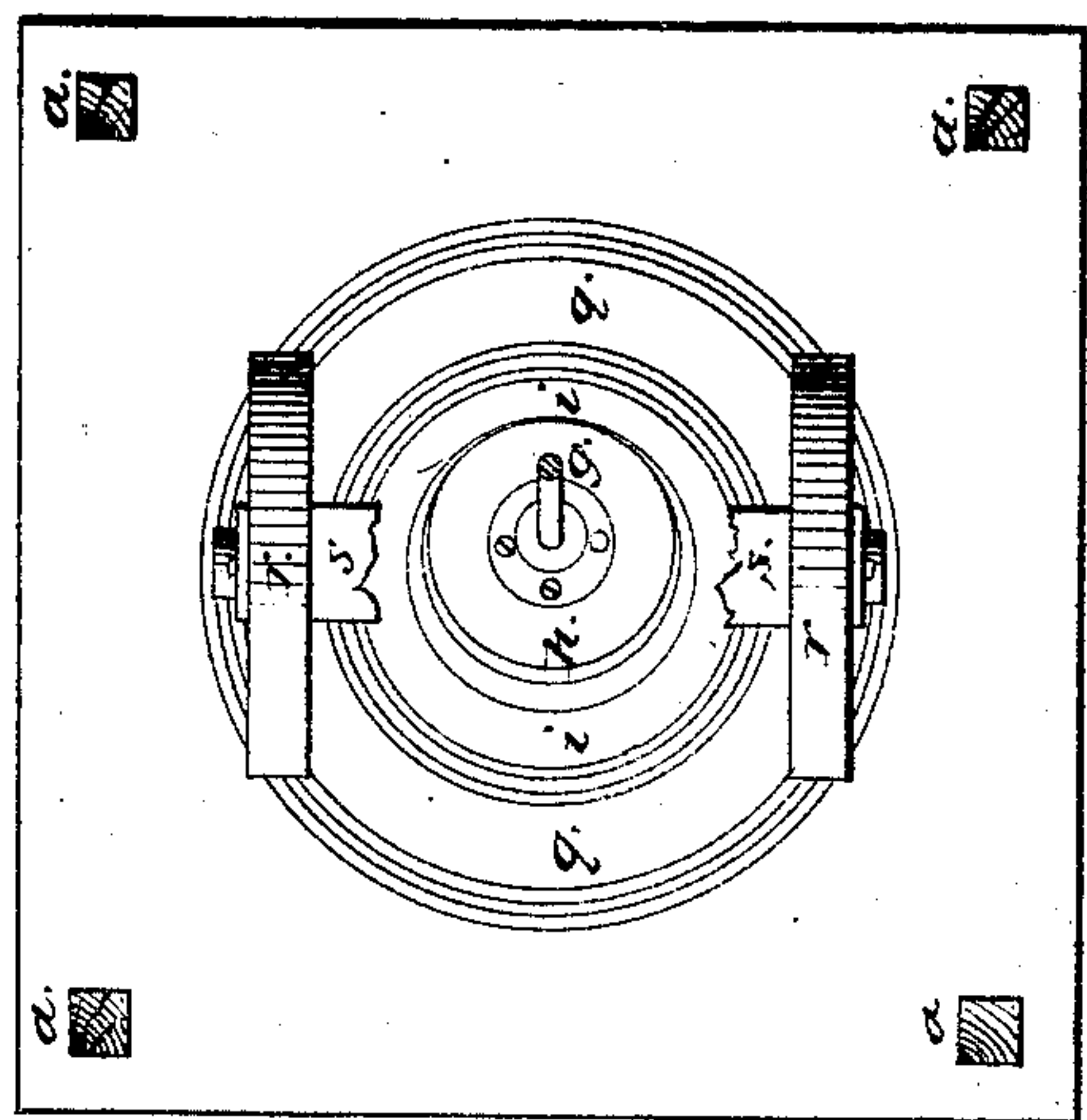


Fig. 3.

Inventor John T. Plass.

# UNITED STATES PATENT OFFICE.

JOHN T. PLASS, OF NEW YORK, N. Y.

## IMPROVEMENT IN MACHINES FOR CRUSHING ORES.

Specification forming part of Letters Patent No. 44,819, dated October 25, 1864.

*To all whom it may concern:*

Be it known that I, JOHN T. PLASS, of the city and State of New York, have invented and made a certain new and useful Improvement in Machines for Crushing Ores and other Substances; and I do hereby declare the following to be a full, clear, and exact description of the said invention, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1 is a vertical section of my machine. Fig. 2 is a side view at right angles to Fig. 1. Fig. 3 is a sectional plan at line *x x* of Fig. 1.

Similar marks of reference denote the same parts.

The nature of my said invention consists in a globular pestle in a similarly-shaped mortar, to which pestle a rubbing action is given by rotating the handle or upper end of the shaft of such pestle in a circle or by a circular movement, combined with a spring applied to keep the said pestle down to its work, whereby the parts can be made much lighter than heretofore usual and still equally effective; and I communicate to such pestle also a revolving motion upon its own shaft or axis, so as to rub, grind, and thoroughly pulverize the ore passing in between the pestle and mortar. I also combine with the parts before named a pair of wheels running in a circular basin and acting to pulverize or sufficiently reduce the ore for introduction into the mortar to be operated upon by the pestle.

In the drawings, *a* represents a frame of any suitable character. *b* is the driving-pulley, communicating rotation to the vertical shaft *c* by means of the bevel-gears *d* and *e*. This shaft *c* carries at its lower end an arm, *f*, that receives the upper end of the axis or shaft *g* of the pestle *h*, that sets within the mortar *i*, so that said pestle will, by the action given in the revolution of the shaft *c*, rub, grind, and finely comminute the particles of ore supplied between the pestle *h* and mortar *i*, and the finely-ground ore may be passed away dry from a hole in the bottom or side of the mortar, or water may be supplied to carry away such particles as are sufficiently reduced.

The pestle and mortar are both constructed

in such a manner that the parts exposed to wear can be removed and replaced.

The upper end of the shaft *g*, if free in a hole in the arm *f*, will only sway the pestle around in the mortar without any rotation of the pestle itself. I, however, prefer that the shaft *g* be fitted with a pinion, *k*, on its upper end, taking a fixed internal gear, *l*, so that the act of carrying the end of the shaft *g* around by the arm *f* shall also communicate a rotary movement to the shaft *g* and pestle *h* to increase the rubbing and grinding action.

To keep the pestle down with the necessary pressure, and thereby require less weight, I employ the secondary arm *f'* and set-screw *m*, acting at the end of the shaft *g*, and the shaft *c* is kept down by the yoke *n* and screw *o*. A spring, of rubber or other material, may be employed at *p* to allow the parts to yield to any obstruction.

Around the mortar *i* is a circular basin, *q*, receiving rollers *r* on an axis, *s*, that is drawn around by a cross-head, *t*, and chains or links *u*. From the shaft *c*, and into this trough or circular basin *q*, the ore to be crushed is deposited, and when sufficiently small to pass into the mortar is delivered out of such trough into the upper part of the mortar by means of a scraper or other convenient device.

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

1. The globular, or nearly globular, pestle *h*, setting into the mortar *i*, and moved by the shaft *g* and arm *f*, in combination with the adjustable spring *p*, whereby said pestle is pressed to its work with the desired force, as set forth.

2. A stationary wheel, *l*, and pinion *k* on the shaft *g*, in combination with the pestle *h* and mortar *i*, to communicate to said pestle the movements specified.

3. The circular basin *q* and rollers *r*, in combination with the pestle *h* and mortar *i*, for the purposes and as specified.

In witness whereof I have hereunto set my signature this 28th day of July, 1864.

Witnesses: JOHN T. PLASS.

LEMUEL W. SERRELL,  
CHAS. H. SMITH.