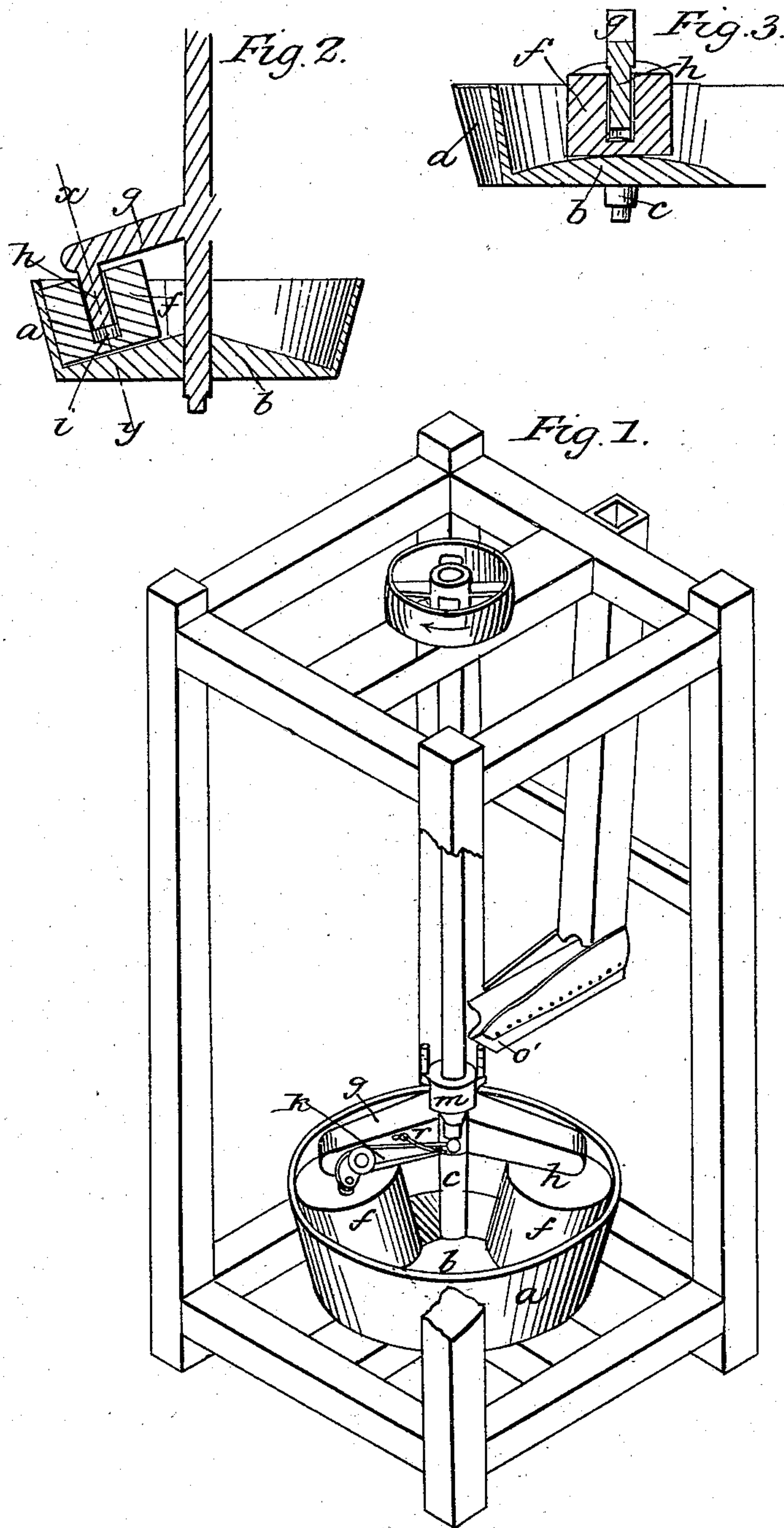


G. D. JONES.

Paint Mill.

No. 8,009.

Patented April 1, 1851.





# UNITED STATES PATENT OFFICE.

GILBERT D. JONES, OF JERSEY CITY, NEW JERSEY.

## IMPROVEMENT IN MILLS FOR GRINDING PAINTS AND DRUGS.

Specification forming part of Letters Patent No. 8,009, dated April 1, 1851.

*To all whom it may concern:*

Be it known that I, GILBERT D. JONES, of Jersey City, in the county of Hudson and State of New Jersey, have invented an Improved Mill for Grinding Drugs and Similar Substances; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure I is a perspective view of my mill. Fig. II is a vertical transverse section. Fig. III is a section on the line  $xy$  in Fig. II.

Similar letters indicate similar parts throughout.

The nature of my invention consists in an improvement in the mills known commonly as "chasers," which are used for grinding gums, gum-resins, and other drugs or articles of similar character, whereby I am not only enabled to disintegrate such articles with great rapidity, but also to produce the required impalpable powder without the necessity of submitting it to the usual additional process known as "dusting."

The construction is as follows: I make of granite or other suitable material a circular tub or bed-stone  $a$ , of which the bottom  $b$  rises in the center in the form of a cone, and the side is inclined, so that in any vertical section passing through the center of the tub the side would be at a right angle with the surface of the bottom, as shown in Fig. II. This conical form is employed for the purpose of enabling the advancing edge of the muller (which has a plane surface) to pass over or mount upon the material submitted, instead of pushing that away, as would be the case were both surfaces plane. The conical form also serves to throw the mullers against the side of the tub, by which means they have rotary motion. The bed-stone thus formed is firmly fixed on a suitable frame, as shown. A shaft  $c$  passes through a hole in the center of the bed-stone and has a step  $d$ , by which it is secured in place in the frame-work. At the upper end it is also secured to the frame-work by a proper box and has a pulley, by which rotary motion is imparted to it, as shown.

Within the bed-stone and in contact with the side I place one or more "mullers"  $f$ , which are of granite or other suitable material, made

cylindrical and of a diameter somewhat less than the radius of the bottom of the bed-stone. The length of the cylinder is nearly equal to the height of the side of the tub, as shown.

In the center of the upper end of the muller  $f$  a hole  $i$  is drilled, extending downward nearly to the bottom and at right angles with the face of the muller. Above the muller is an arm  $g$ , which is firmly fixed to the shaft  $c$ , and it has at the outer end a spindle  $h$ , which extends downward into the hole  $i$ , but not quite to the bottom, in order that the muller may rise, if necessary. The spindle is less in diameter than the hole, for the purpose of permitting quite easy play.

On the arm  $g$  is a lever  $k$ , affixed as shown, having one end bent down into contact with the upper end of the muller  $f$  and the other end extended onto the side of the shaft, as shown, Fig. I, and this lever is for the purpose of regulating the feed.

On the shaft  $c$  is a damsel or beater  $m$ , of common construction, revolving with the shaft, but having a sliding vertical motion upon it. It rests on the long end of the lever  $k$ , is lifted by that, and falls by gravity. The pins  $n$  on this strike against the shoe  $o$  of the hopper, and thus throw or shake out a portion of the contents in the usual manner. The toe  $o'$  of the shoe is inclined in the form shown for the purpose of regulating the degree of vibration which will be imparted by the pins. The lever  $k$  is kept constantly pressing against the top of the muller by the action of the spring  $r$ . The mill thus constructed is inclosed in the usual tight case, from which the reduced substances are taken when they have passed over the curb.

The operation will be thus: Rotary motion being given to the shaft in the direction indicated, the mullers  $f$  are driven round by the spindles  $h$ . The mullers bear upon the bed  $b$  only on the line of a radius, the bed receding from the face of the muller on both sides in a curve, as seen in the section, Fig. III. If now the material to be acted upon be introduced, the simple forward movement of the muller over the stone would have the effect of rubbing the substances between; but as the centrifugal force, assisted by the conical form of the bed-stone, throws the side of the muller into contact with the inclined side of the tub,



the muller will thus roll upon that, and hence a point on the periphery of the face of the muller will describe a hypocycloid upon the material on the bed-stone. In the chasers in common use the substances are crushed by a cylindrical or spherical stone, which merely rolls over them on the bed, and although the particles of many articles—such as rhubarb, &c.—are thus obtained light enough to rise over the curb, they are still flat and are susceptible of further disintegration by the simple operation of the “dusters.” In mine the muller is constantly assuming a new line of bearing on the conical surface of the bed-stone, between which and the face of the muller the substances are reduced by a rotating and grinding motion on the line of contact. If the material is supplied too rapidly and accumulates beneath the muller, that will rise upon its spindle and pass over the matter, thus causing the long arm of the lever *k* to be depressed and permitting the beater to fall, when the feed will be diminished in the manner well known. The bottom of the bed-stone may be made more or less conical, to suit the nature of the work to be performed, as it is evident that if entirely flat the whole face of the

muller would be in contact with it, while if very much raised in the center the line of contact will be more distinctly defined.

I do not intend to confine myself to the precise forms of construction herein described, as those may be varied in many ways to produce the same results—as, for instance, the rotation of the mullers may be effected by the use of gearing, or the spindles of the mullers may be firmly fixed and the bed-stone be made to revolve, all of which methods involve the principles of my invention.

What I claim as of my own invention, and desire to secure by Letters Patent of the United States, is—

1. The construction of a mill in which the grinding-surfaces shall consist of a plane or planes operating upon a cone, as herein described.

2. The lever *k*, in combination with the muller, for the purpose of regulating the feed, the whole being constructed substantially in the manner as set forth herein.

G. D. JONES.

Witnesses:

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