T. ROBERTS & T. CADUGAN.

Crushing and Grinding Mill.

No. 197,981. Patented Dec. 11, 1877

Fig. 1.

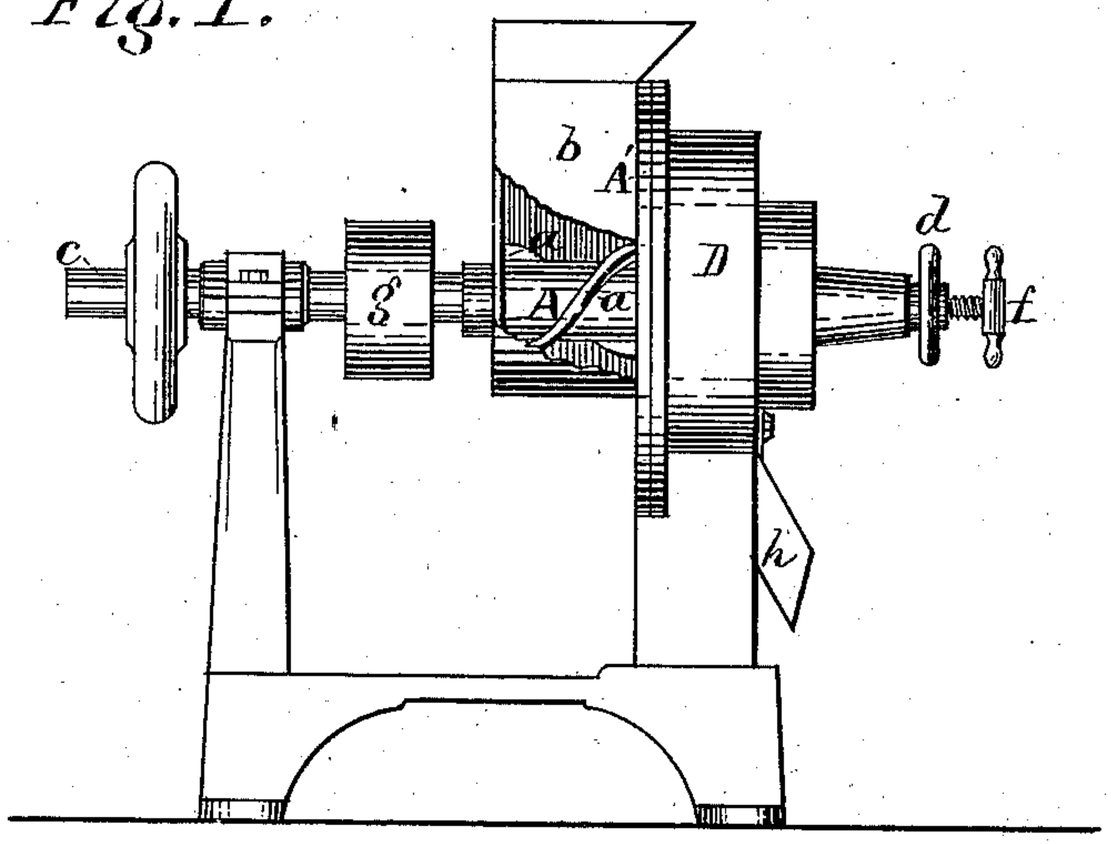


Fig. 3.

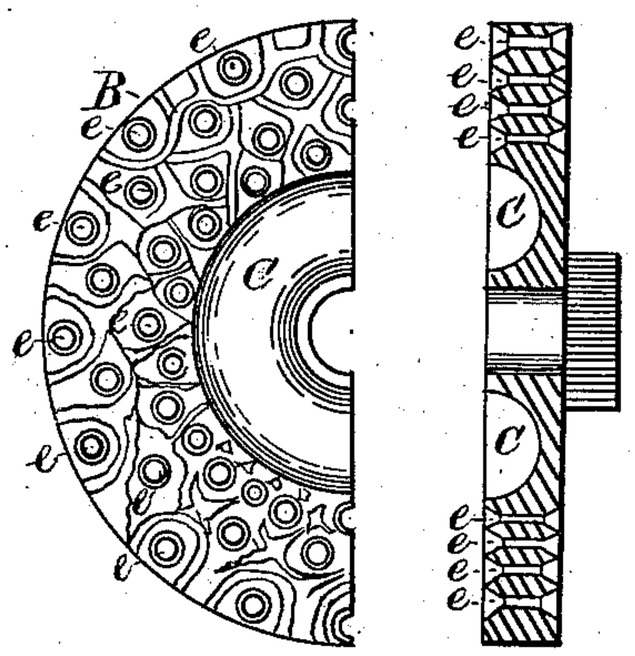
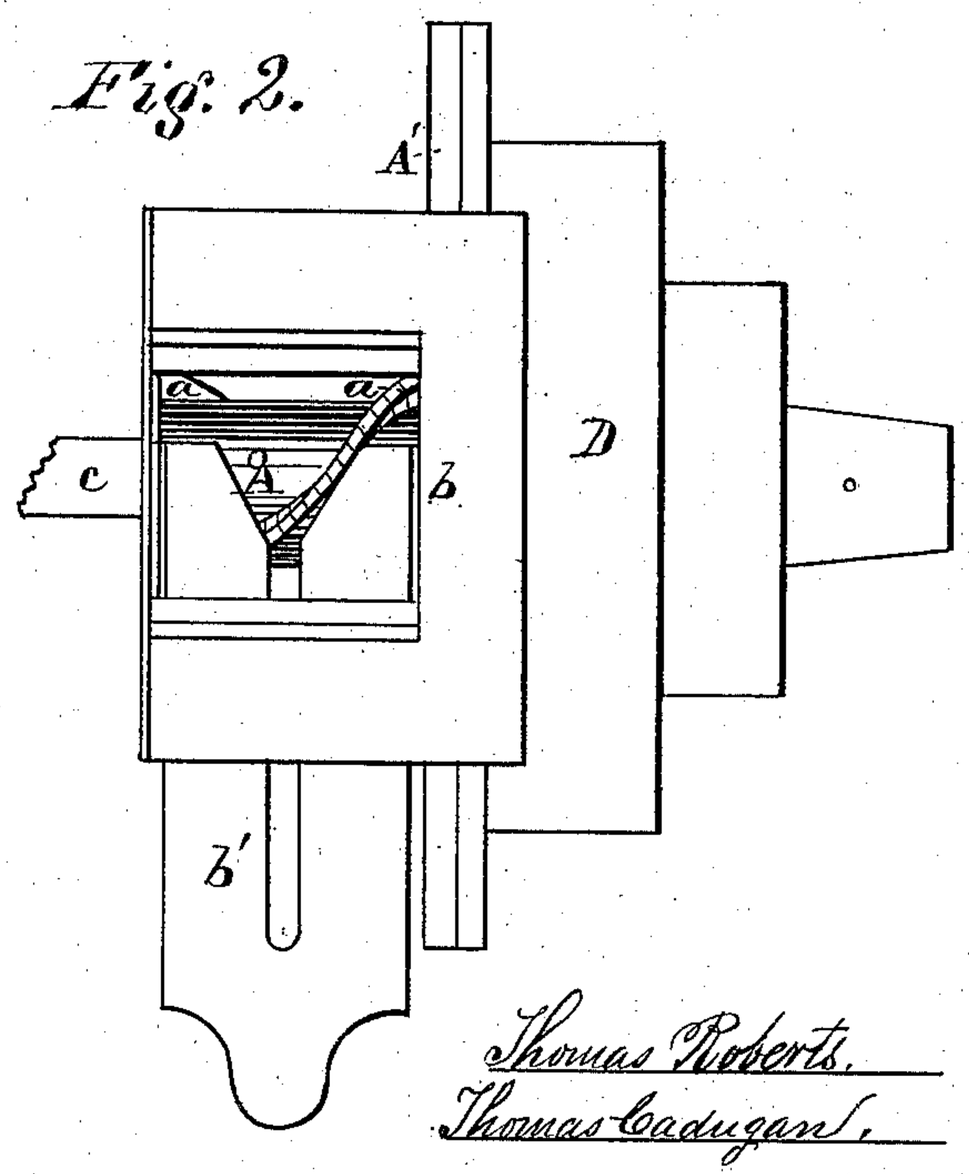


Fig. 2.



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UNITED STATES PATENT OFFICE.

THOMAS ROBERTS AND THOMAS CADUGAN, OF SPRINGFIELD, OHIO; SAID CADUGAN ASSIGNOR TO SAID ROBERTS.

IMPROVEMENT IN CRUSHING AND GRINDING MILLS.

Specification forming part of Letters Patent No. **197,981**, dated December 11, 1877; application filed February 26, 1877.

To all whom it may concern:

Be it known that we, THOMAS ROBERTS and THOMAS CADUGAN, of the city of Springfield, county of Clarke, and State of Ohio, have jointly invented certain new and useful Improvements in Crushing and Grinding Mills, for crushing and grinding fruit, feed, &c., of which the following is a full and complete specification.

Figure 1 in the drawings is a side elevation of a grinding-mill with our improvement. Fig. 2 is a plan view of the same divided through shaft *c*, showing the right section. Fig. 3 shows two views of the grinding-disk, a half-section, in plan, and a vertical cross-section.

Our improvement consists in a perforated grinding-disk in a reducing-mill, in combination with a spiral-ribbed crusher, for crushing and grinding apples and other fruits, as well as corn in the ear.

The mill is made of cast-iron, (chilled,) the grinding-disks being placed vertically upon a horizontal shaft, while the crusher is a cylinder, having spiral flanges, which project from it to a sufficient height to crush the apples or corn in the ear when ground in the mill.

The object of our invention is to so combine a crushing and grinding mill as to adapt it for all the different substances used or required by a farmer for food or stock purposes.

We do not claim the use of chilled-iron disks or of a movable disk and a bed-plate in the construction of a crushing and grinding mill, as the same are not new.

The mill shown in the drawings, to which our improvements are applied, consists of a fixed bed-plate, A′, of chilled cast-iron, mounted vertically upon a stand or frame, and having a movable disk, B, (see Fig. 3,) hung upon the shaft *c*, which passes through it, the whole incased in the case D, with the usual adjusting-screw *f* and jam-nut wheel *d* at the end of the shaft and casing.

The hopper *b* in Fig. 1 is shown with a section broken out to exhibit the crushing-cylinder A inside, with its projecting spiral flange *a* on the periphery of the same. This is placed upon shaft *c*, with its end extending through an opening in the bed-plate A′, so as to discharge the crushed mass into the cavity C of the runner B, the motion of which carries it out upon the grinding-surfaces, whence it is discharged in its ground state through the spout *h*. *b′* is a slide for regulating the quantity fed to the crushing-cylinder A. (See Fig. 2.)

Two projecting spiral flanges, *a*, are used upon the cylinder A, although the number may be increased.

The lower part of the hopper *b*, in which the crusher operates, is made of heavy cast-iron, so as to be sufficiently strong to resist the pressure of any of the substances crushed in it, the space between the cylinder and its inside wall being just large enough to break or crush corn-cobs and other substances to the required size desired for levigation in the mill.

It will be seen, by reference to Fig. 3, which exhibits a feature of our improvement, that the holes *e* pass entirely through the burr B, for the purpose of allowing the ground pulp to pass through them during the grinding process. These holes are larger and less in number toward the periphery of the burr. Irregular fissures are made between them to facilitate the grinding process. To allow the pulp of the ground fruit or other substance to pass more readily through them they are chamfered or countersunk on the face of the burr. These holes are made only in the running burr B.

The bed-plate burr, which is provided with deep indentations in its surface, being the subject of an old patent in which the running burr was made of like construction, we do not claim that as any part of our invention.

We do not claim the general construction of the mill in its bed-plate, casing, stand, or mode of adjustment.

What we claim as our improvement is—

1. The grinding-disk B, provided with a series of circular holes, *e*, extending through the same, countersunk, and the intermediate spaces between them formed with fissures, as and for the purpose hereinbefore specified.

2. In a grinding-mill having a spiral crushing-cylinder, as shown and described, the disk B, with its holes *e*, mounted upon the same shaft, and operated in combination therewith, substantially as set forth.

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Attest:
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