B. T. BABBITT.

Apparatus for Breaking or Grinding various Substances.

No. 220,109. Patented Sept. 30, 1879.

Fig. 1.

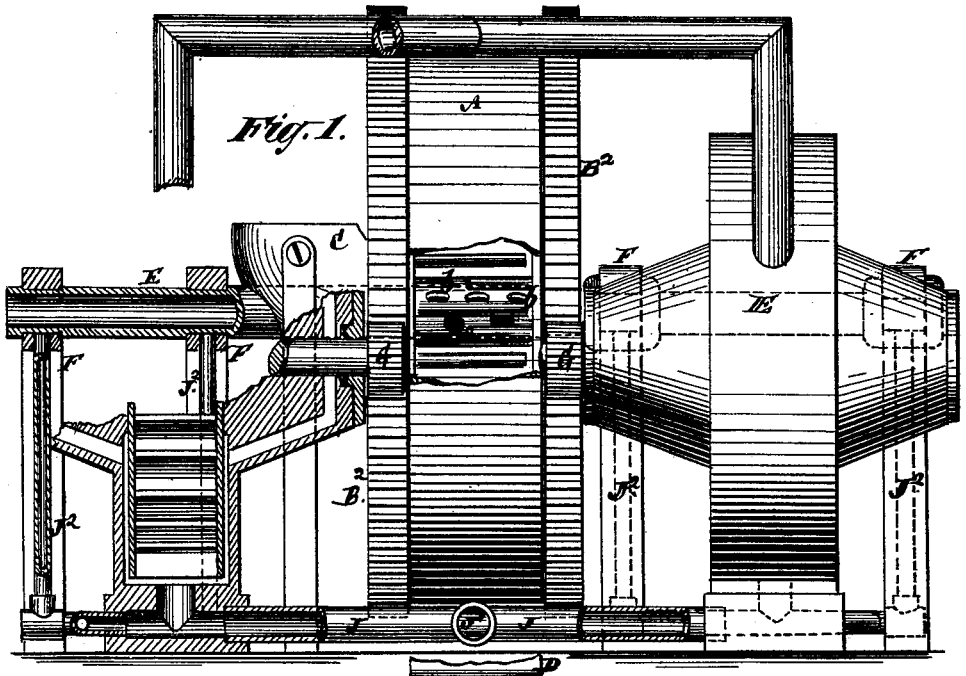
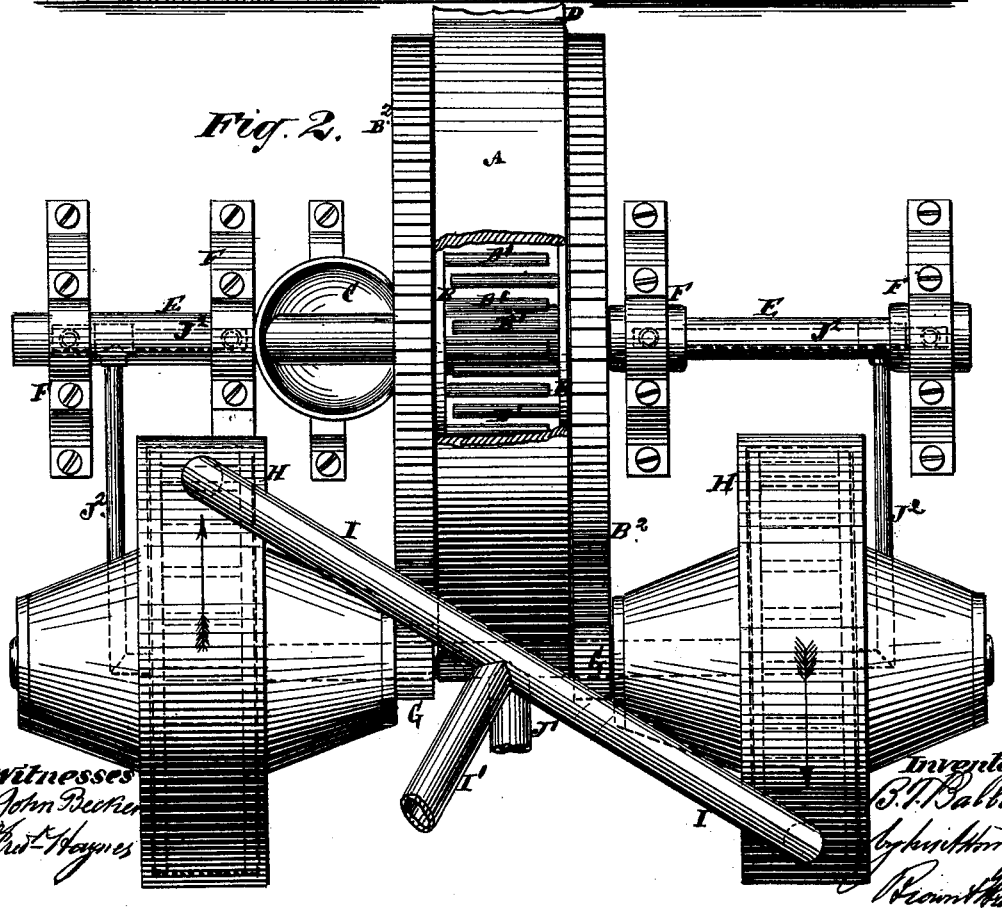


Fig. 2.



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BENJAMIN T. BABBITT, OF NEW YORK, N. Y.

IMPROVEMENT IN APPARATUS FOR BREAKING OR GRINDING VARIOUS SUBSTANCES.

Specification forming part of Letters Patent No. **220,109**, dated September 30, 1879; application filed April 10, 1879.

To all whom it may concern:

Be it known that I, BENJAMIN T. BABBITT, of the city and State of New York, have invented certain new and useful Improvements in Apparatus for Breaking or Grinding Various Substances, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

The invention consists in a certain combination of two reversely-rotating breaking or grinding devices with two independent reversely-moving rotary engines and gears connecting said engines with said grinding devices; also, in a further combination, with said grinding devices, rotary engines, and gears, of a pipe common to both engines for supplying the motive agent thereto, substantially as hereinafter described, the whole forming a simple, efficient, and readily controllable bruising, breaking, or grinding apparatus.

In the accompanying drawings, Figure 1 represents a partly-sectional elevation of an apparatus constructed in accordance with my invention, and Fig. 2 a plan view of the same.

A is a vertical grinding-cylinder or circular case, within which two reversely-rotating breaking or grinding disks or heads, B B, provided with grinding pins or projections B^1 B^1, arranged to pass one within or outside of the other, are free to rotate; but the breaking or grinding devices may be variously constructed, it only being necessary that they should rotate in reverse directions with each other.

C is the inlet for reception of the substances to be reduced, and D the outlet for the ground or reduced substances.

The reversely-rotating grinding-disks B B are hung on separate shafts E E, supported in independent bearings F F, and one of which shafts may be hollow and be constructed with distributing-apertures *b* for circulating a cooling current of air within or between the substances being ground or otherwise undergoing reduction. Said reversely-rotating grinding devices are provided with spur-wheels B^2 B^2, which mesh or gear with pinions G G on the independent shafts of two independent rotary engines, H H, operated to rotate simultaneously in reverse directions for the purpose of giving the necessary reverse rotation to the grinding devices.

These engines H H may be simple bucket-wheels arranged to rotate within cylinders or cases, and may be driven by steam, gas, compressed air, water, or other suitable motive agent.

To secure the necessary joint operation of these engines H H simultaneously in reverse directions, the steam or other motive fluid is supplied to them on reverse sides of the axes of their shafts relatively with each other by means of a supply-pipe, I, arranged to connect tangentially with the cylinders or cases of the engines on reverse sides of their respective axes, and having a common inlet, I′, to which the starting and regulating valve may be applied to control the motions of both engines.

J is a general exhaust-pipe from said engines, having a common outlet, J^1, and branches J^2, by which a certain amount of the exhaust-steam or other spent propelling fluid, when of a lubricating description, may be used to lubricate the shafts of the grinding devices.

I claim—

1. The combination of two reversely-rotating breaking or grinding devices with two independent reversely-moving rotary engines and gears connecting said engines with said grinding devices, substantially as specified.

2. The combination, with two reversely-rotating breaking or grinding devices, two independent reversely-moving rotary engines, and gears connecting said engines with said grinding devices, of a pipe for supplying the propelling fluid to said engines on reverse sides of the axes of their shafts relatively with each other, essentially as shown and described.

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