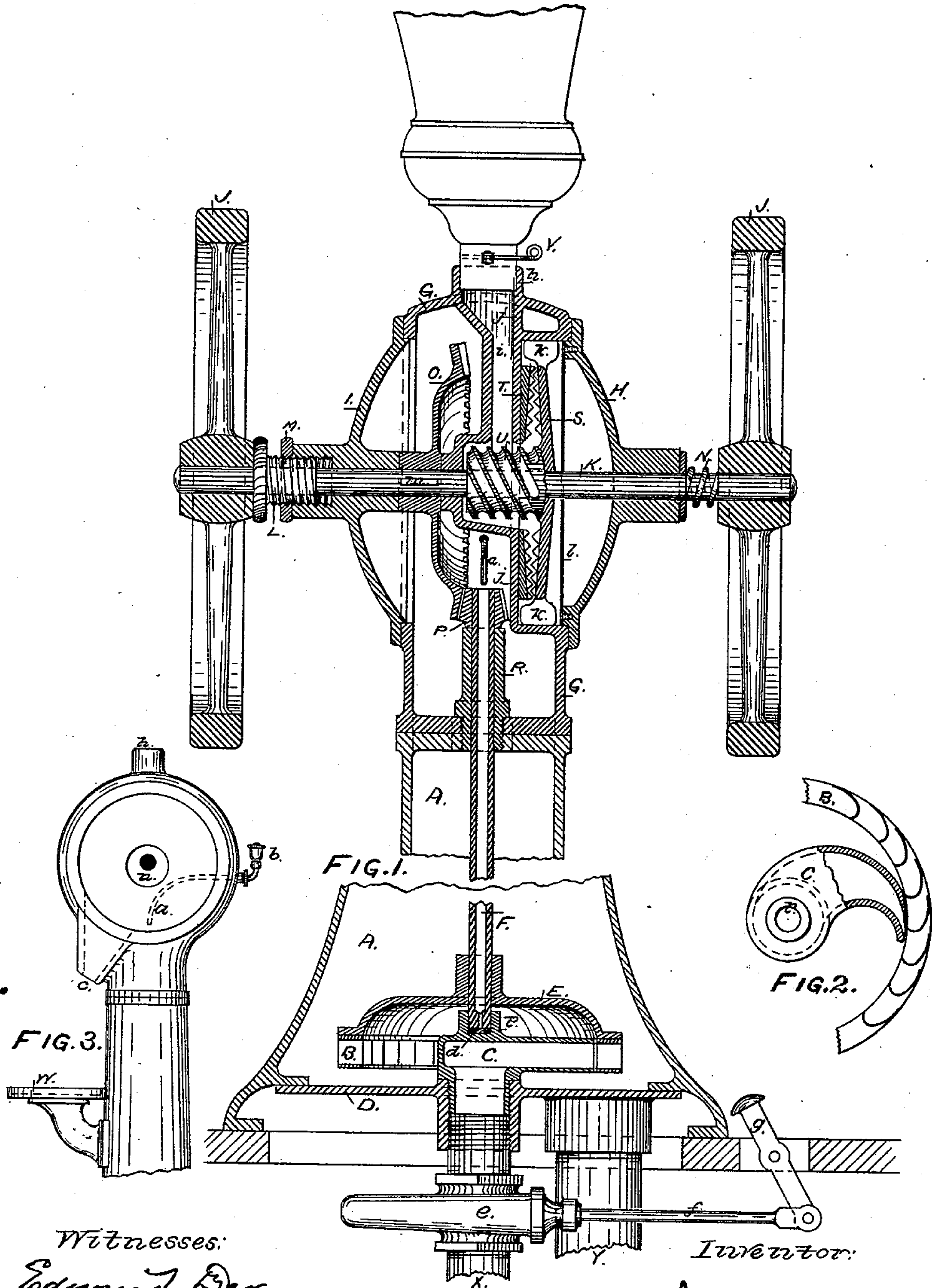


(No Model.)

G. W. BROWN.
GRINDING MACHINE.

No. 437,640.

Patented Sept. 30, 1890.



Witnesses:
Edward J. Ber
Bevil C. Parrie

Inventor:
Geo. W. Brown

UNITED STATES PATENT OFFICE.

GEORGE W. BROWN, OF PORTLAND, MAINE, ASSIGNOR TO THE BELKNAP
MOTOR COMPANY, OF SAME PLACE.

GRINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 437,640, dated September 30, 1890.

Application filed July 8, 1889. Serial No. 316,772. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. BROWN, a citizen of the United States, residing at Portland, in the county of Cumberland and State of Maine, have invented a new and useful Grinding-Machine, of which the following is a specification.

My invention relates to improvements in grinding-machines in which a rotary motor and grinding-mill are combined and inclosed in a single case; and the objects of my invention are to economize space occupied by machinery of mill and motor and to do away with belting which is usually employed to connect mill and motor. I attain these objects by the mechanism illustrated in the following drawings, in which—

Figure 1 is a sectional elevation of machine; Fig. 2, a sectional plan or part of motor and partial section of water-chute, and Fig. 3 a side elevation of upper part of the machine.

A case or frame consisting of a hollow cylindrical base or leg A, supporting a spheroidal head H I G, contains all the working machinery of the motor and mill. In the leg A, near the bottom, which is flared sufficiently to provide a firm foot for the machine, is a rotary motor-wheel B, a chute C, for admitting water or other force, and a bottom plate D, tightly closing the chamber of the leg near the foot. To the motor-wheel B is secured the disk E, which is fastened on the vertical shaft F, having bearings R and p. Water is admitted through pipe X, which contains gate e, operated by foot-lever g and rod f, and is expelled through pipe Y.

In the spheroidal head H I G is contained the shaft K, stationary grinding-disk T, revolving grinder S, feed-worm U, upper end of vertical hollow shaft F, pinion P, and bevel-gear O. The sides H and I are movable and have bearings for horizontal shaft K.

J J are balance-wheels.

The grinders are adjusted by screw L, having milled head and check-nut M, together with spring N.

V is slide or cut-off for material to be ground. a is pipe, and b cup, for oil to lubricate the bearings of hollow shaft F.

The cavity for worm-feed n is eccentric to center of shaft, Fig. 3.

c, Fig. 3, is outlet for substance ground, and W is shelf for receiving-vessel.

The head H I G has vertical partition j, separating gear-chamber from grinding-chamber.

k k are scrapers on grinder S.

m is a key in shaft on which gear O is longitudinally movable.

The operation of the machine is as follows: Water is admitted through chute C to the motor-wheel B, which causes the shaft F, having pinion P, to revolve, turning gear O, which turns shaft K, carrying grinder S. Material to be ground is admitted through passage i and expelled through outlet c.

I am aware that mills with similar grinding parts have been previously used, and that the form of the motor is not entirely novel. I therefore do not claim novelty in either mill or motor themselves, nor in the combination of the two, broadly; but

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

The combination, in a grinding-machine, of a rotary-motor having horizontal bucket-bearing wheel B, operated by a jet or jets of water discharged upon its buckets, and connected with and operating a vertical shaft F, a mill having stationary grinder T, and revolving grinder S, operated on horizontal shaft K, by means of gear O, connected with shaft F, and a case or frame having a hollow spheroidal head H I G, diametrically divided by a vertical partition j, which head incloses and contains the working parts of the mill, and is secured to and supported by a hollow cylindrical leg with flaring base containing and inclosing the working parts of the motor, all substantially as set forth.

GEO. W. BROWN.

Witnesses:

EDWIN L. DYER,
CECIL E. PAINE.