

(No Model.)

G. B. MAYNADIER.
GRINDING MILL.

No. 286,838.

Patented Oct. 16, 1883.

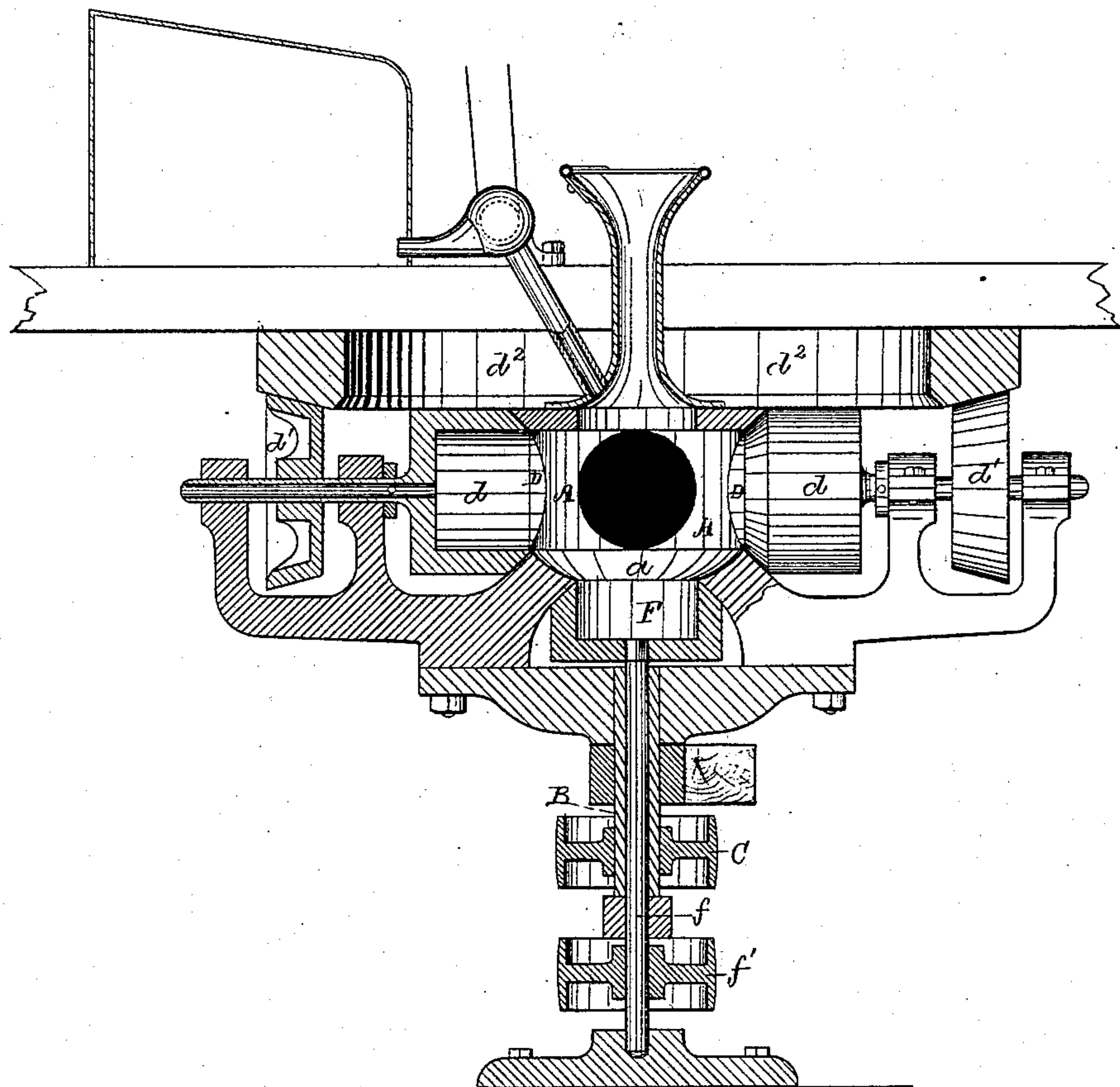


Fig. 1

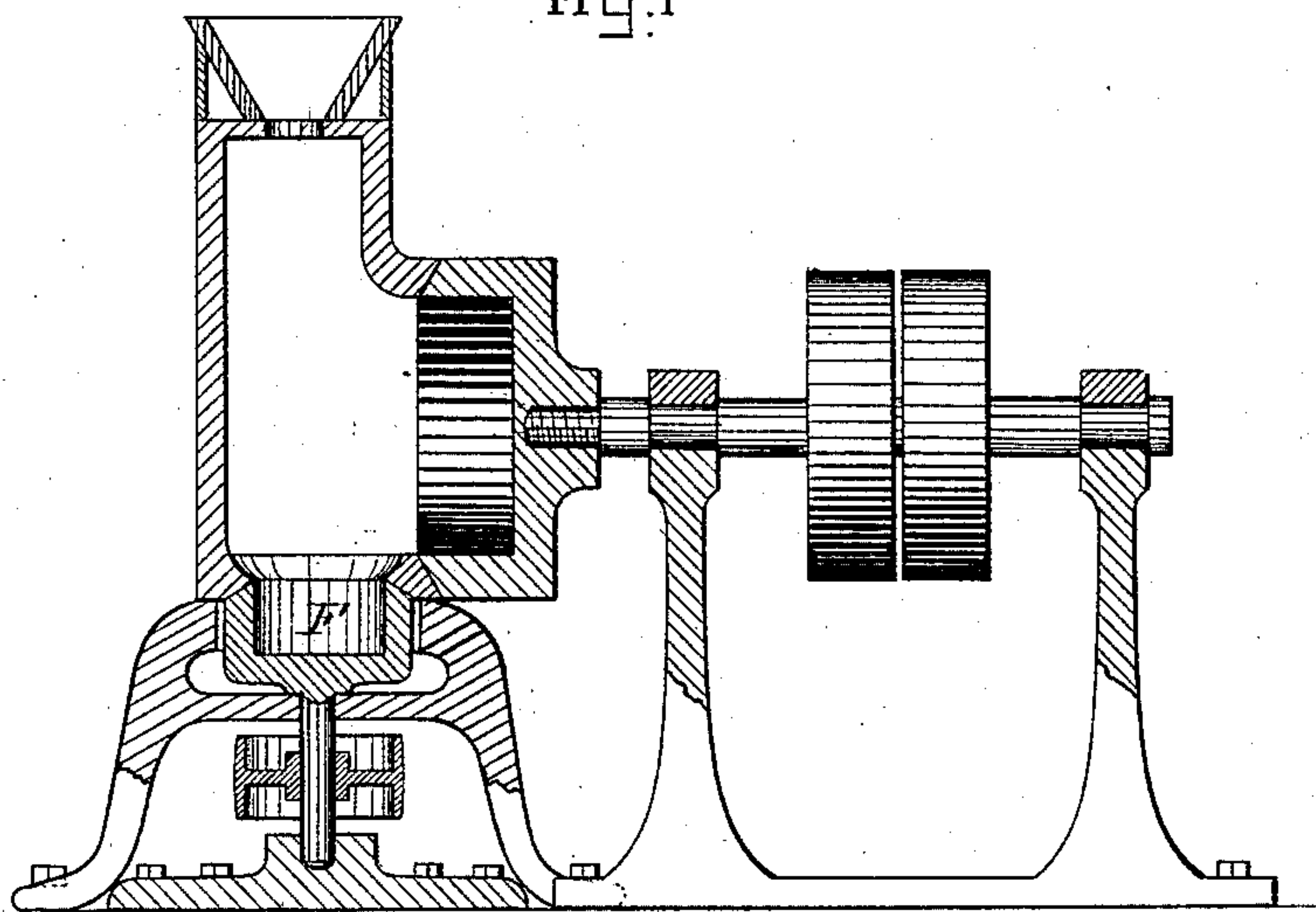


Fig. 2

Witnesses.

L. W. Hölzer.
John R. Snow.

Inventor.

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UNITED STATES PATENT OFFICE.

GUSTAVUS B. MAYNADIER, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF
ONE-HALF TO WILLIAM H. CILLEY, OF SAME PLACE.

GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 286,838, dated October 16, 1883.

Application filed March 14, 1883. (No model.)

To all whom it may concern:

Be it known that I, G. B. MAYNADIER, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Grinding-Mills, of which the following is a specification.

My invention relates to an improvement in grinding-mills of the class in which the material is ground by the impact and attrition of pieces or parts of the material against each other, and to the particular types of such mills in which the grinding is effected by revolving portions of a mass of material in contact with the central portion of the mass while the entire mass is revolved, as described in my application for Letters Patent filed January 15, 1883, or by compelling one portion of the mass of material to be ground to remain in a passive state while another portion revolves upon it, as described in Patent No. 255,550, dated March 28, 1882, to Thomas L. Sturtevant.

The object of my invention is to provide means for loosening and agitating the body of material against which the other portions revolve, so as to allow the centrifugal action of the revolving portions to throw out the pieces or parts composing such portions, whereby more intimate mingling and more rapid impact among the pieces or parts of the whole mass are secured, and additional grinding-surface is provided, and free circulation is afforded for the air-blast required to carry off the dust or flour.

My invention consists in the combination, with the receptacle that communicates with a rotary recessed head on its side, of a recessed head mounted opposite an opening in the bottom of the receptacle and adapted to be revolved.

This improvement is more especially adapted to the Sturtevant mill above mentioned, because in this mill the open end of the recessed head is entirely covered by a compact body of material, which prevents the centrifugal force of the revolving recessed head from properly throwing out the material, and impedes the extraction of the dust. By mounting an additional recessed head opposite an opening in the bottom of the receptacle for this compact body, and causing it to revolve rapidly, the material above it will be so loosened and agi-

tated that an air-blast will effectually carry off the dust. The receptacle should be made circular, and a number of communicating rotary heads might be arranged around it. In my mill above referred to, the central body of the material, being rapidly rotated, rises at the sides and sinks at its center, owing to the centrifugal force with which the pieces or parts are driven from the center, and therefore presents only a thin layer of material to the upper parts of the outer revolving heads. The lower parts of these heads, however, are covered by a more or less compact mass which interferes with the motion of the material in these parts. By applying the additional revolving head below this more or less compact mass, it is thrown up thoroughly loosened, and allows more freedom for the pieces in the lower parts of the outer revolving heads to be thrown out.

In the accompanying drawings, which illustrate grinding-mills of the types above mentioned with my improvements embodied, Figure 1 is a central longitudinal section of my mill; and Fig. 2 is a similar section of a Sturtevant mill.

In my mill, Fig. 1, the central hollow hub, A, is attached to a hollow shaft, B, which is provided with a pulley, C, for connecting it to the driving mechanism. Hollow arms D are attached to and communicate with the hollow hub A, and are provided with outer loosely-mounted parts, *d*, which are rapidly revolved by wheels *d'* bearing on a wheel, *d''*, as fully described in my application above mentioned.

To attain the object of my present invention, I have provided an additional hollow head, F, mounted opposite an opening, *a*, in the bottom of the hollow hub A. The head F is provided with a shaft, *f*, passing through the hollow shaft B, and having a pulley, *f'*, secured to it, by means of which it, and consequently the head F attached to it, may be rapidly revolved. In Fig. 2 the additional head F is located so that it will act on the passive body, against which the other head revolves, and may be driven by belting or gear from the main shaft.

It is obvious that on rapidly revolving the head F the material above it will be kept in

constant agitation, and thereby greatly decrease the resistance offered by this body to the motion of the material in the other rapidly-revolving heads. Besides the above important result, additional grinding-surface is provided and free circulation afforded for the air-blast that is required to carry off the dust or flour as fast as it is produced.

When the central receptacle is made large to receive a number of hollow arms and their outer revolving portions, several heads may be arranged opposite openings formed in the bottom of the central receptacle and be independently revolved in the same or different directions.

The air-blast may be effected by exhaust or pressure, or by both combined. Suitable openings through the shafts or heads for the admission of air may be provided in addition to those offered by the joints between the revolving heads and the other parts of the machine. The head F in Fig. 1, if revolved in

a direction opposite to that in which the hollow hub A revolves, would not require as much speed as when revolved in the same direction as that in which the hub revolves; but when the receptacle is stationary, as in Fig. 2, the head F, opposite the opening in the bottom of the receptacle, may be revolved in either direction.

I claim as my invention—

In grinding-mills in which a rotary recessed head communicates with a receptacle for the material, the combination, with the receptacle and a rotary recessed head communicating with the side thereof, of a rotary recessed head communicating with the bottom of the receptacle, substantially as and for the purposes set forth.

G. B. MAYNADIER.

Witnesses:

W. A. COPELAND,
JOHN R. SNOW.