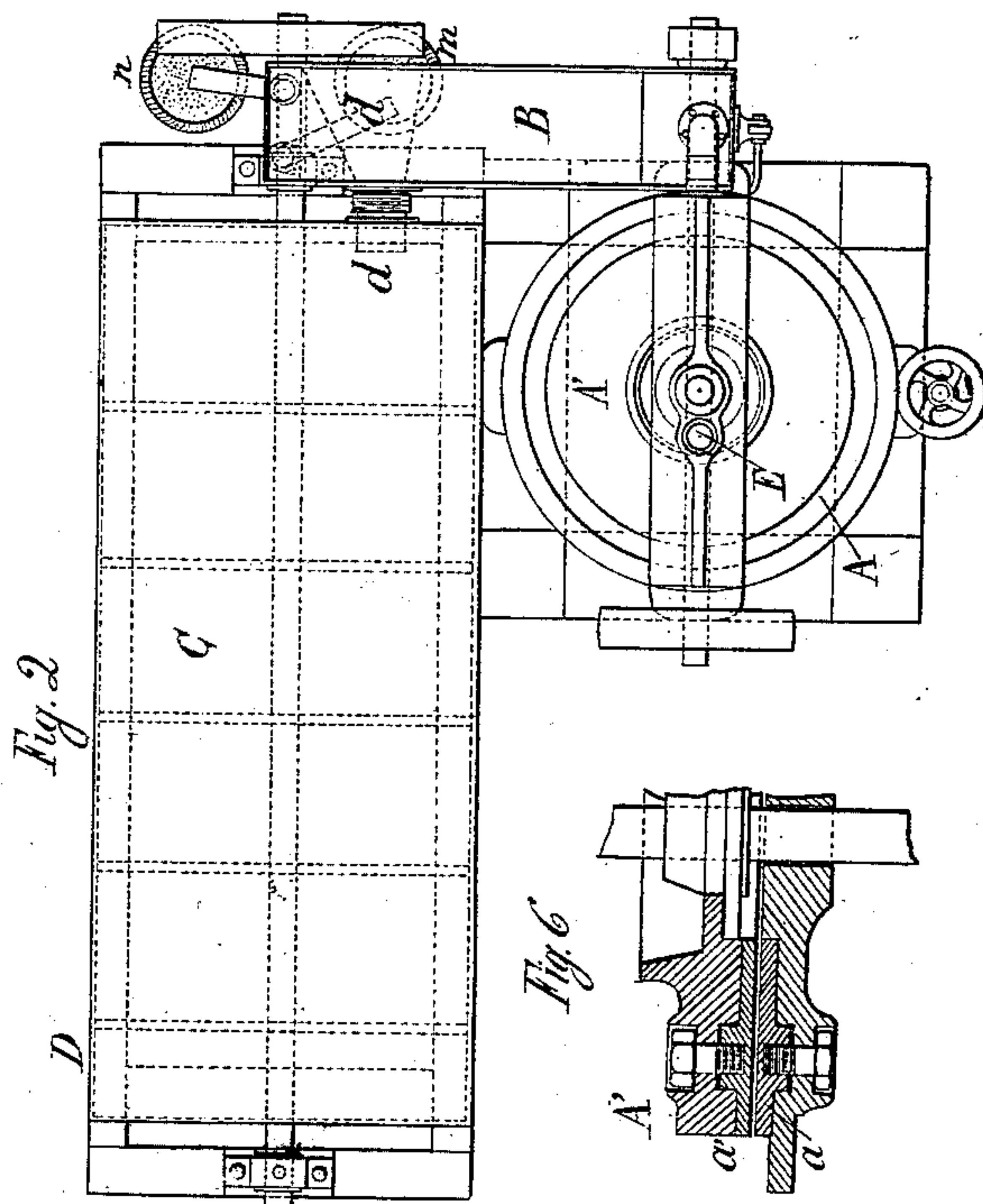
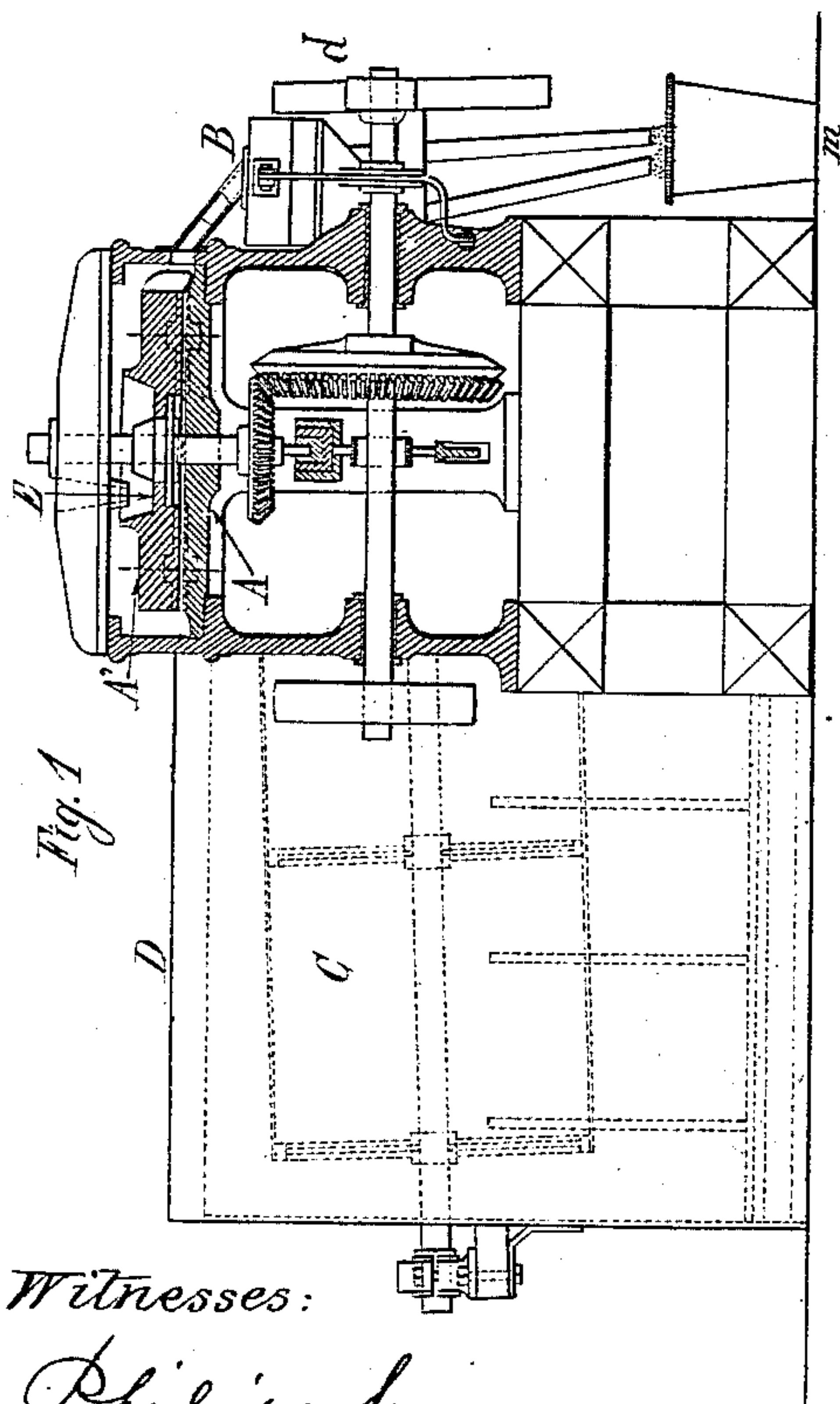
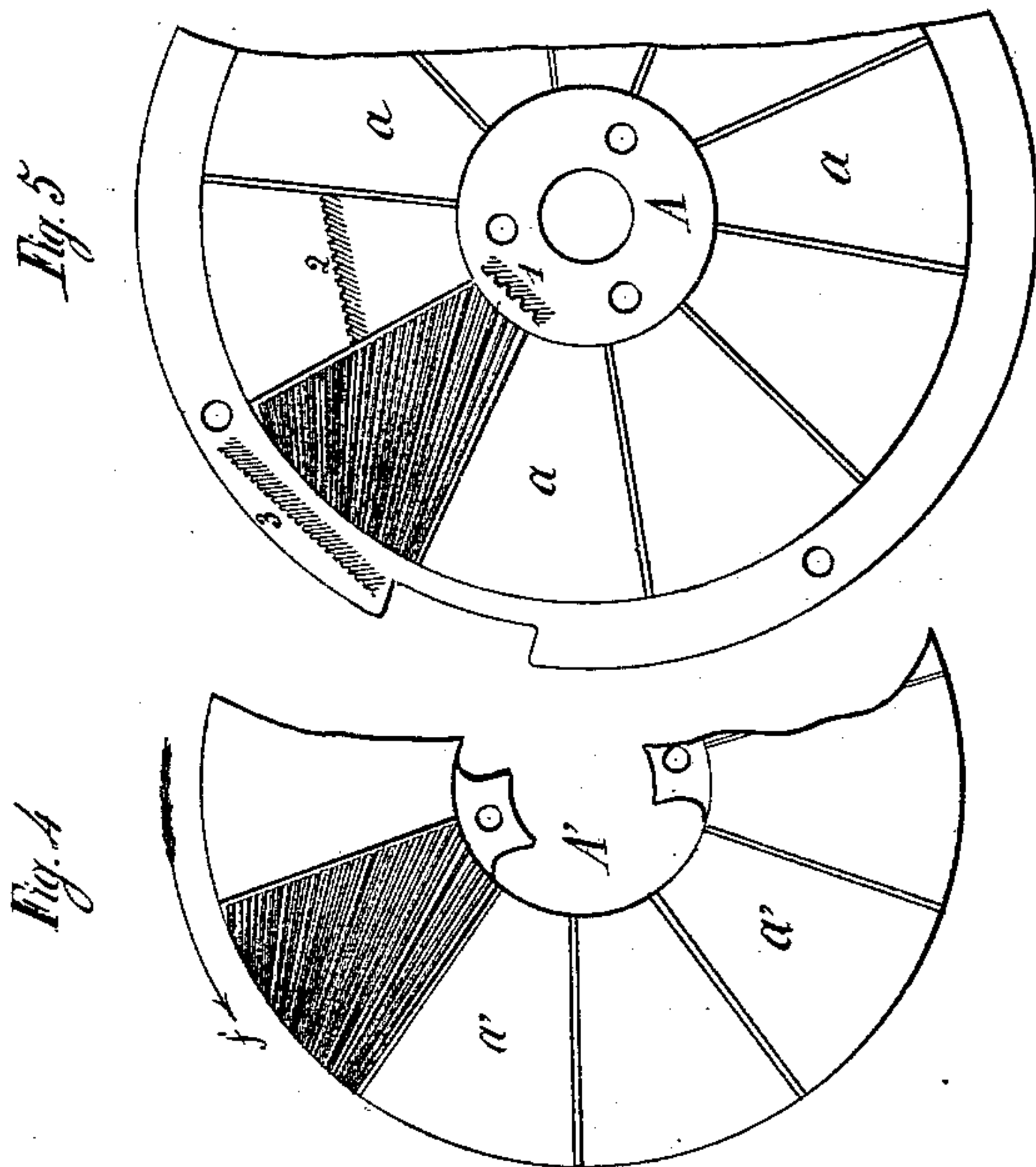
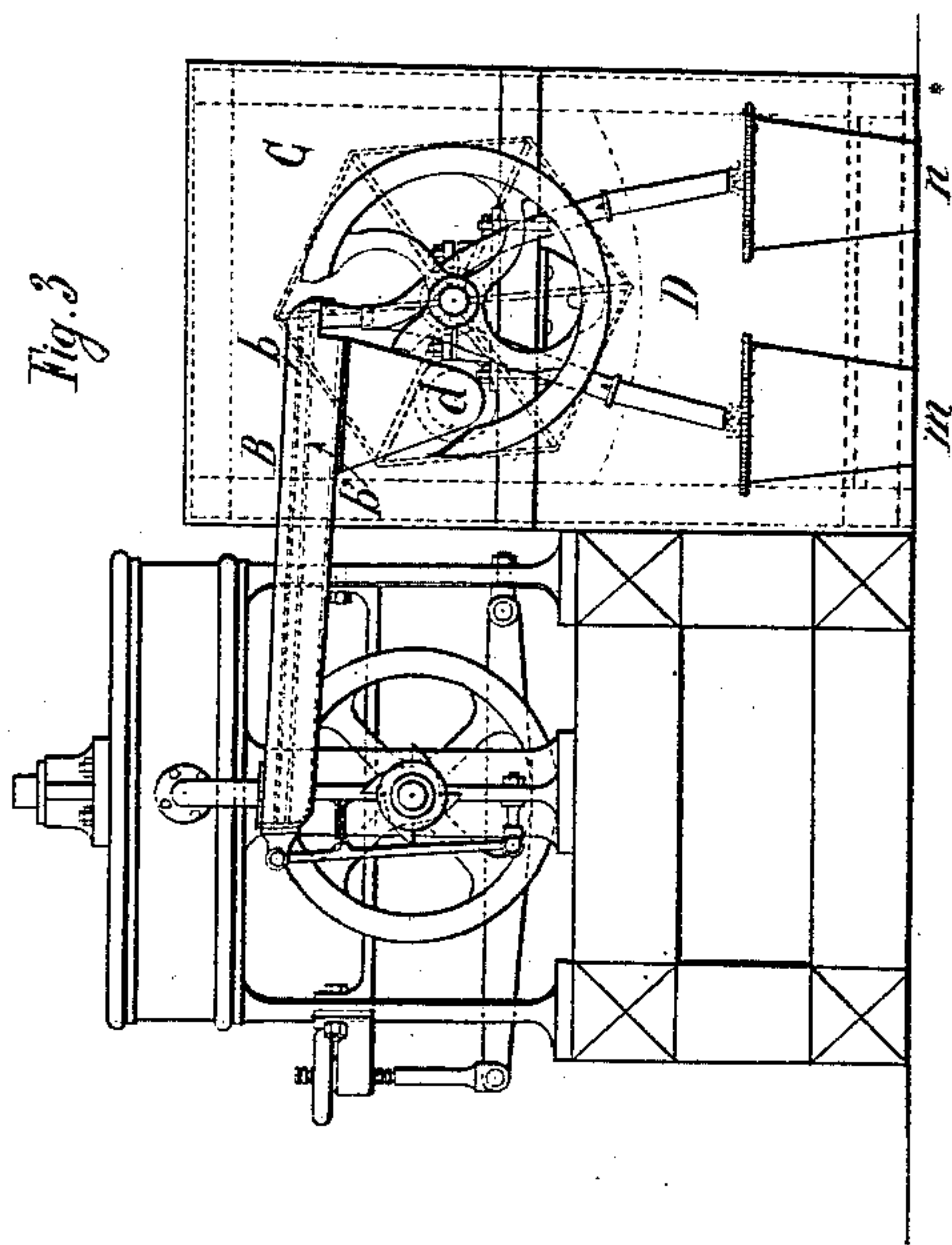


(No Model.)

A. MARIOTTE.
GRIST OR FLOURING MILL.

No. 278,718.

Patented June 5, 1883.



Witnesses:

Philip Kaur
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UNITED STATES PATENT OFFICE.

ABEL MARIOTTE, OF VEREUX, FRANCE.

GRIST OR FLOURING MILL.

SPECIFICATION forming part of Letters Patent No. 278,718, dated June 5, 1883.

Application filed January 10, 1883. (No model.) Patented in France July 10, 1882, No. 150,038.

To all whom it may concern:

Be it known that I, ABEL MARIOTTE, of Vereux, in the Republic of France, have invented a new and useful Improvement in Grist or Flouring Mills, which improvement is fully set forth in the following specification.

This invention has reference, first, to the dress or system of channeling for milling-plates or metal millstones; and, second, to a portable mill or milling apparatus, with mill-plates, separator, and bolt complete.

The first part of my invention consists in combining with supporting and adjusting means horizontal mill-plates, having each a metal grinding-surface divided into sections by nearly radial grooves or channels, said sections being provided with teeth or serrations which gradually converge and diminish in depth and width toward the circumference of the plates, and are of a form and size adapted to crack or reduce by splitting the grain or grits delivered between them, the upper plate having an eye at the center.

The object is to enable the same pair of plates to grind all the way from very coarse to very fine, to crack grain into grits, or to reduce the grits to flour. The pair of plates are to be separated from each other more or less, according to the fineness of the grist. It is designed to pass the grain repeatedly between the plates in the reduction of the same to flour, the said plates being at each operation brought nearer and nearer together.

The second part of the invention consists in the combination, with the mill proper, comprising a pair of milling-plates and the operating devices, of a shaking sifter or separator and a bolt or bolting-reel.

The invention further comprises particular constructions and combinations of parts, as hereinafter specified.

The accompanying drawings, which form a part of this specification, represent milling apparatus constructed in accordance with the invention.

Figure 1 is a view in vertical section, partly in elevation. Fig. 2 is a plan, and Fig. 3 an end view, of the complete mill. Figs. 4 and 5 are partial plan views of the runner and bed-plate, respectively; and Fig. 6, a partial vertical section, on an enlarged scale, through the mill-plates.

A is the bed-plate, bolted at the circumference to the supporting-frame, and A' the runner keyed to an upright shaft, which is revolved by bevel-gears or other suitable mechanism, and is adjustable in its bearings by any ordinary or suitable means. As shown, the lower end of the shaft turns in a step that rests upon a horizontal lever of the second order, the outer end of which can be raised and lowered by a screw and hand-wheel.

B is the shaking shifter or separator; C, the bolt or bolting-reel, and D the covering or case inclosing the said bolt or reel. The grain or material to be ground is introduced through the hopper E into the eye of the upper mill-plate, and after passing between the plates it is delivered by a spout into the upper end of the sifter or separator B. The finer portions are thence delivered through the spout or conveyer *d* into the interior of the bolt C, while the coarser portions pass into the baskets or receptacles *m n*.

The adjacent faces of the runner and bed-plate are dressed or channeled, as shown in Figs. 4 and 5—that is to say, the surfaces are divided into sections *a a'*, respectively, by nearly radial grooves, and each section is provided with a series of grooves or channels, diminishing as well in depth as in width as they approach the circumference toward which they converge. Preferably the groove on one side is nearly parallel with the adjacent edge of the sections, and the others make therewith a progressively greater angle. This, being considered the best arrangement, is shown. The relative depth of the grooves at the center, middle, and circumference is shown by the small sections 1 2 3, Fig. 5.

The grooves or channels may be made in the body of the plates, or in the sectional face-plates *a a'*, which, as shown, are let into the body of the plates and screwed or bolted thereto.

The face-pieces would ordinarily be made of steel, the body of the plates of cast-iron, chilled or hardened, as may be required. The centers of the plates may be slightly depressed to facilitate the entrance of the grist between the plates.

The shaking-sifter B has two sieve-cloths, *b b'*, of different mesh, the same being made of wire-gauze or other suitable fabric. The up-

per one, *b*, is of coarser mesh, and intercepts only the larger particles which pass through the spout into the receptacle *n*, the lower, *b*, intercepts those of medium size, which pass thence into the receptacles *m*, while the finer particles pass through both and are delivered into the bolting-reel C through the spout *d*. The bolting-reel C and its case are of ordinary or suitable construction.

10 The operation is as follows: The runner A' being adjusted the proper distance from the bed-plate A, the said runner, the sifter or separator B, and bolt C are put into motion. The runner A' is preferably revolved in the direction of the arrow, Fig. 4, so that each section of the runner enters upon each section of the bed-plate by the short grooves. Grain, introduced through the hopper E, is passed between the mill-plates and cracked, the result being 15 grits and semolina, with a small portion of flour. The ground material is divided by the sifter or separator B into three parts, the coarsest falling into the receptacle *n*, the next finer grade into the receptacle *m*, and the finest particles into the bolting-reel. This reel separates the flour from the fine grits, and from any fine bran or the like. As this flour is of poor quality it should be kept apart.

The particles or grits which do not pass the separator or sifter B, and which collect in the receptacles *m n*, as well as those which are sifted from the flour by the bolting-cloth, are returned again and again to the hopper E, the mill-plates being set closer and closer together, as the reduction proceeds. The returning is continued until the coarse bran is eliminated by the sifter or separator B, and the cleared grits all pass through the bolting-reel over the silks or cloths, through which the ten to twelve 40 per cent. of flour produced in the course of the process has passed. These grits are taken again in their turn, and, after a preliminary passage to complete the purifications by the removal of any remaining fine bran and germs, are then reduced, by passage between the mill-plates set very close together, into excellent flour of semolina or grits, which almost all pass through the meshes of the bolting-cloth.

The mill-plates, on account of their great efficiency, may be of small diameter, and, as compared with ordinary millstones, they give a larger yield with less expenditure of power. The wheat is treated dry and the flour remains fresh. The material in which the grooves or channels are made being very hard and resistant, redressing is not necessary.

The mill may be operated by horse-powers, by a portable engine, or by other source of power. It may easily be transported, and to facilitate this the mill proper, the sifter or

separator, and the bolt are made readily separable, being connected by hooks or similar devices, which can readily be disconnected. In the operation, the first cracking of the grain permits the ready elimination of the dust 65 lodged in the fissures in the grain, the several passages or returnings of the cracked grains, grits, or semolina effects the successive removal of the exterior layers, and the final crushing of the reduced grits or semolina proper, which 70 has passed through the bolt and which has been subjected to a preliminary purification to separate the remaining bran and germs, produces the finest flour in large quantities. The different sizes of grits or semolina may be 75 passed separately through the mill, or several sizes together. It will be noticed that the same apparatus effects both the production of grits and the final crushing.

Modifications may be made without departing from the spirit of the invention, and parts of the invention may be used separately, if desired.

Having now fully described my said invention, and the manner of carrying the same into effect, what I claim is—

1. In combination with supporting and adjusting means, the horizontal mill-plates having each a metal grinding-surface divided into sections by nearly radial grooves or channels, 90 said sections being provided with teeth or serrations which gradually converge and diminish in depth and width toward the circumference of the plates, and are of a form and size adapted to crack or reduce by splitting the grain or grits delivered between them, the upper plate having an eye at the center, substantially as described.

2. The combination of the mill proper with grooved mill-plates, the shaking sifter or separator, and the bolt, the latter arranged to receive the fine material from the sifter or separator, substantially as described.

3. The mill proper, comprising the mill-plates with grooves or channels diminishing in cross-section toward the circumference, and the means for supporting the same and for adjusting the distance between them, in combination with the sifter or separator receiving the discharge from said plates, and the bolt 105 receiving the finer particles from the sifter or separator, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ABEL MARIOTTE.

Witnesses:

S. DUPONT,
EMILE PITIOT.