

(No Model.)

D. C. STOVER.

GRINDING MILL.

No. 272,917.

Patented Feb. 27, 1883.

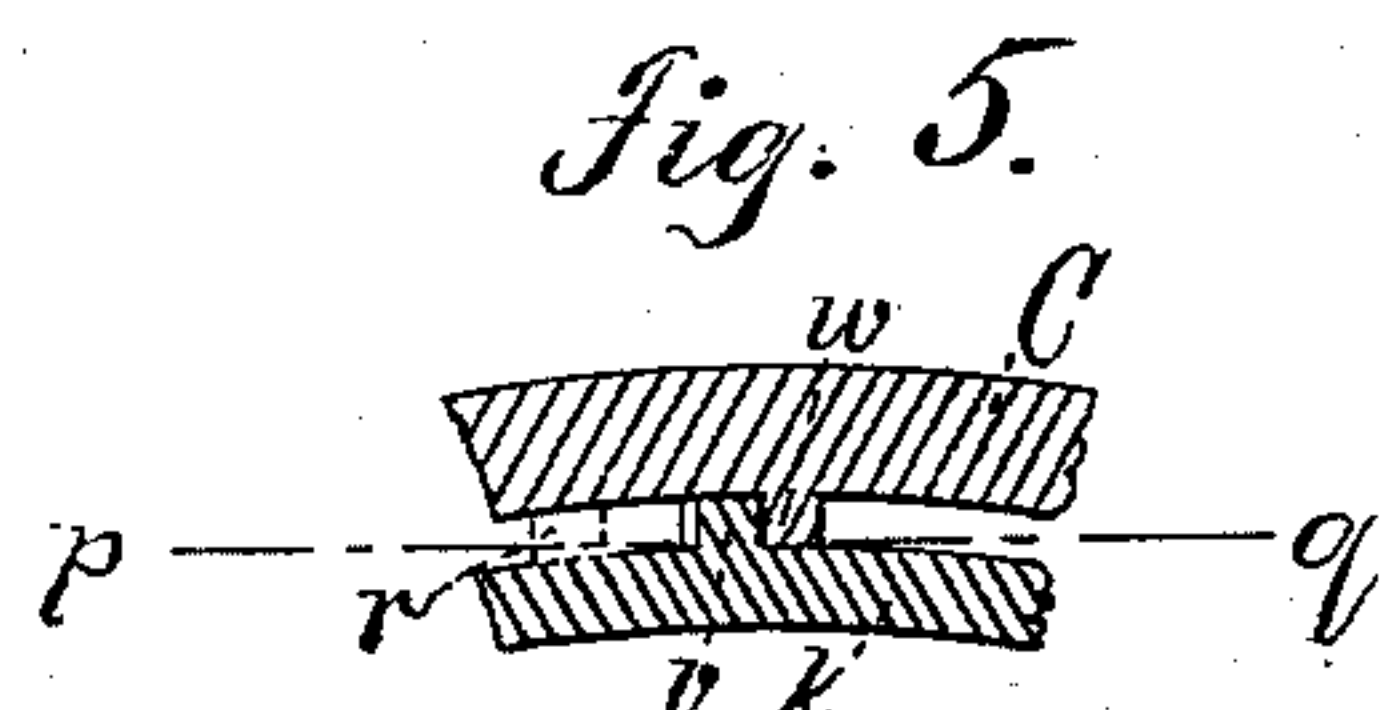
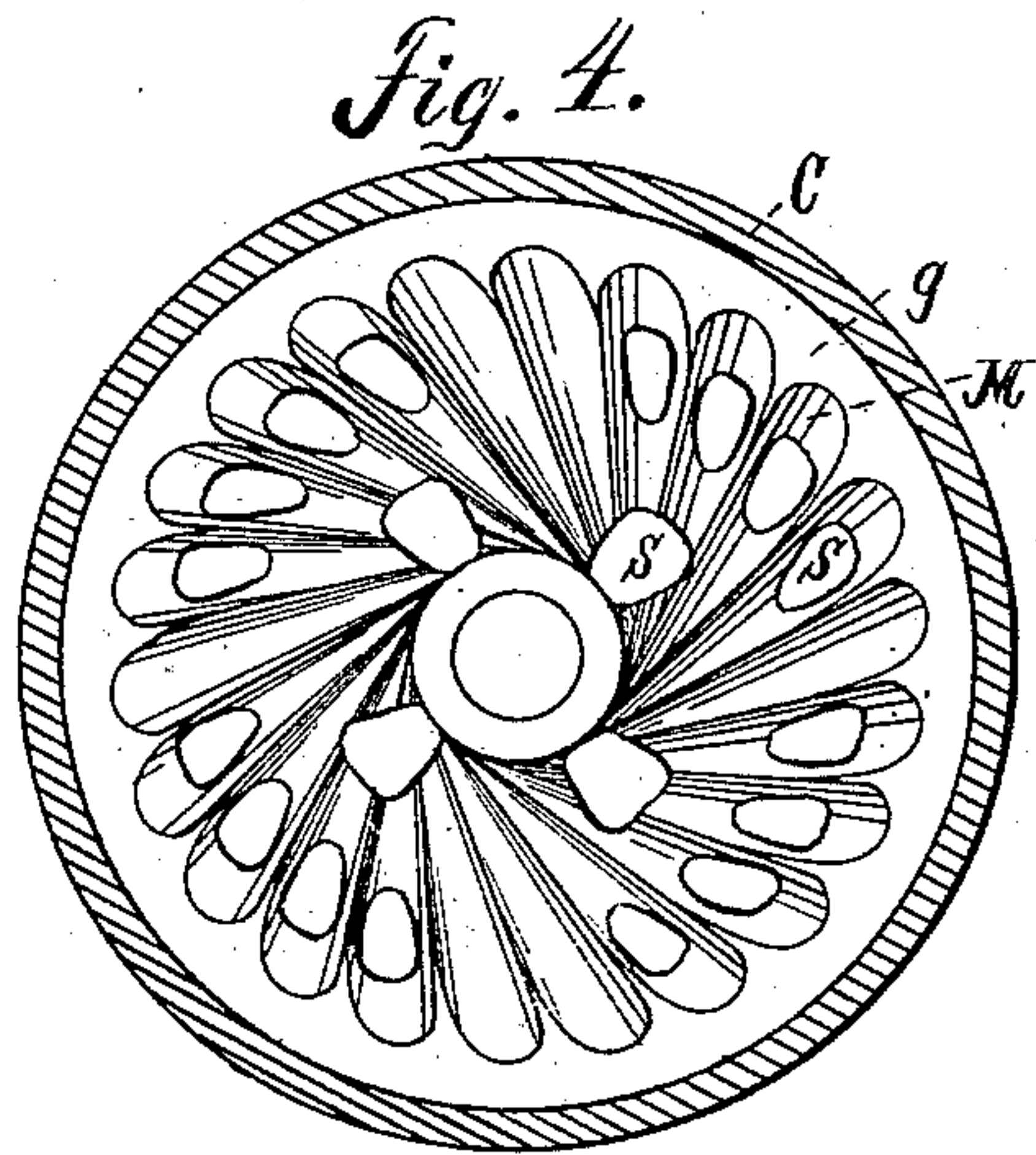
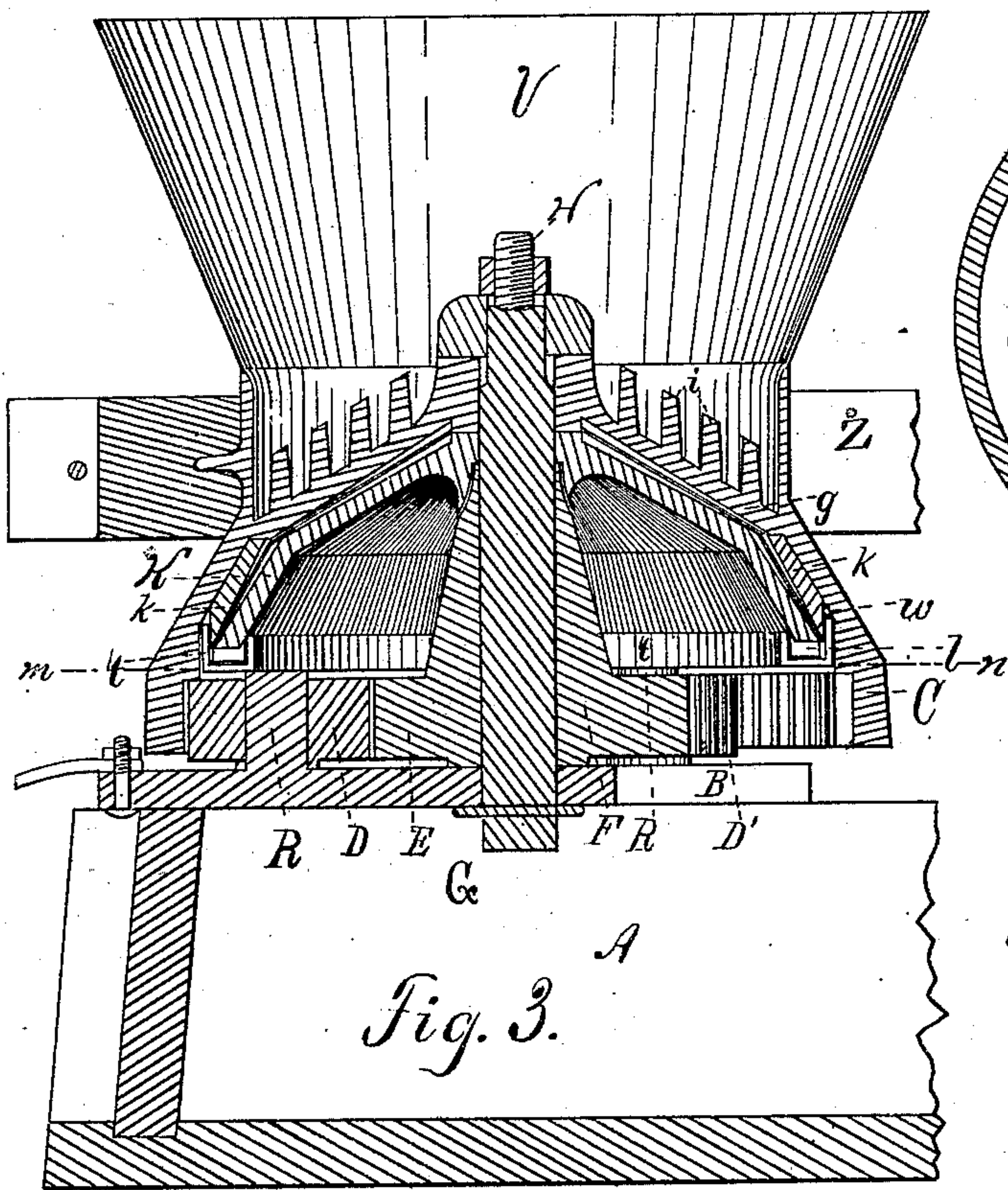
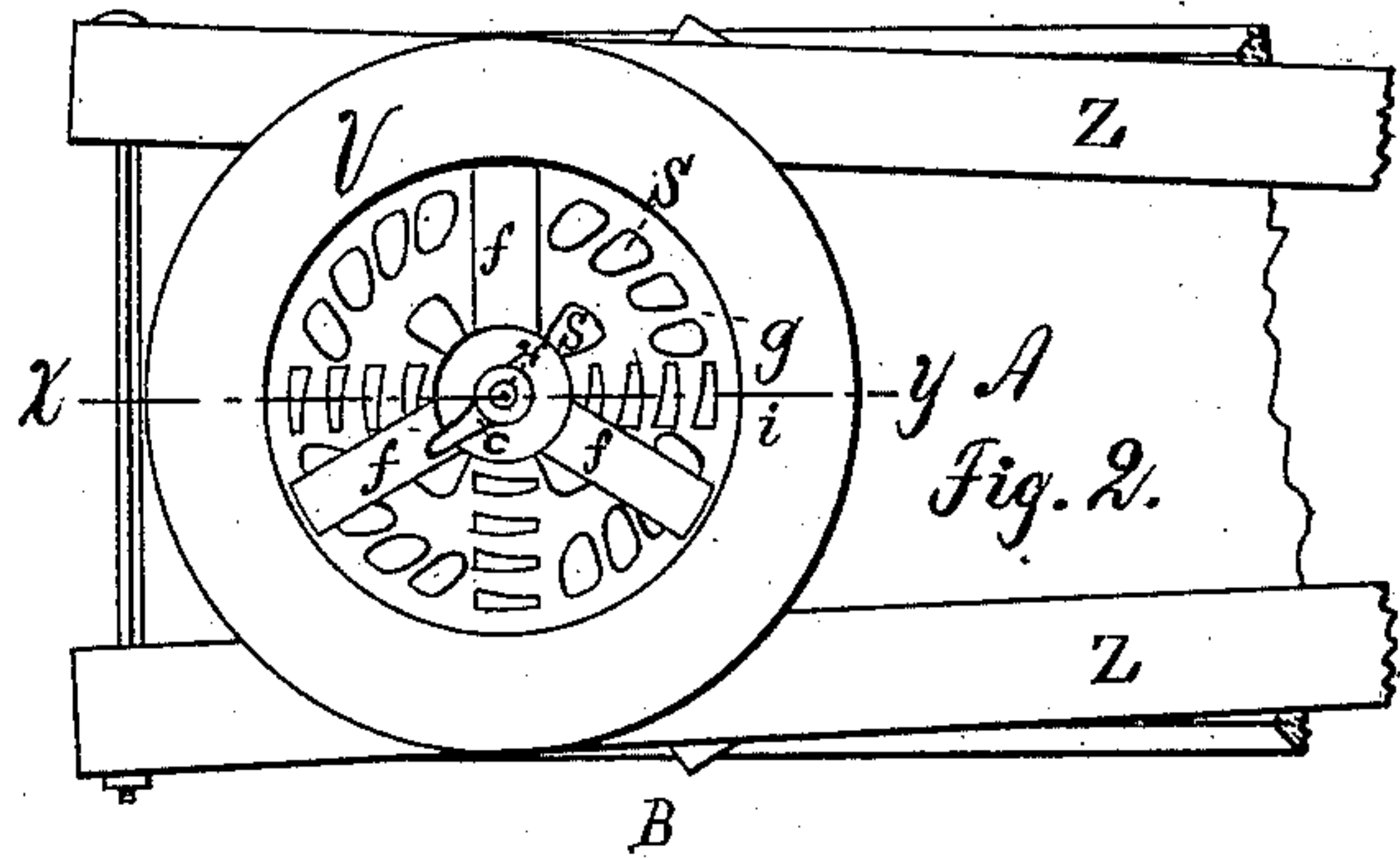
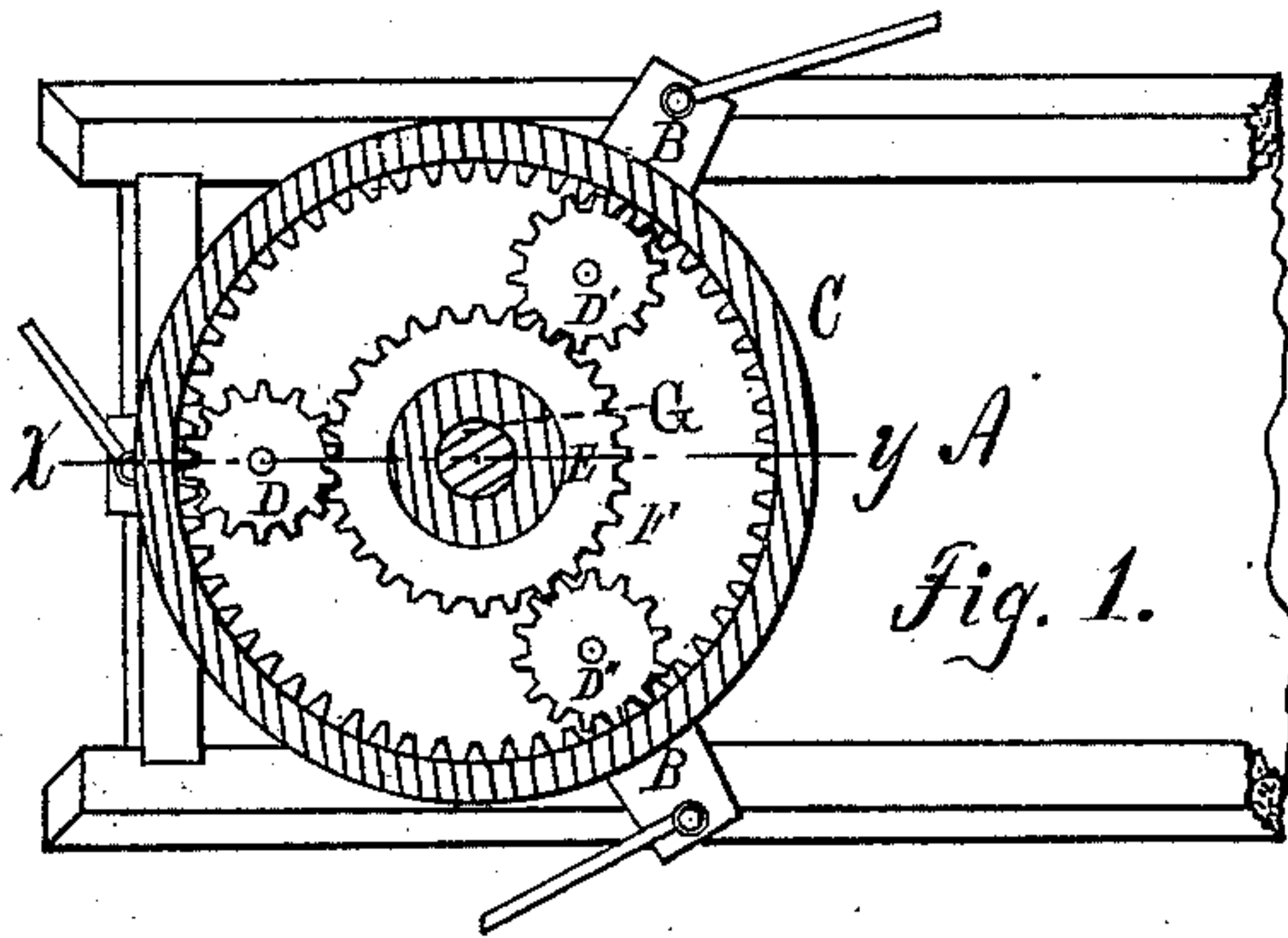


Fig. 6.

$$r = \frac{v}{w}$$

WITNESSES:

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DANIEL C. STOVER, OF FREEPORT, ILLINOIS.

GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 272,917, dated February 27, 1883.

Application filed November 8, 1882. (No model.)

To all whom it may concern:

Be it known that I, DANIEL C. STOVER, a resident of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Grinding-Mills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention consists in certain improvements in the mill described in Letters Patent No. 265,289, issued to me October 3, 1882.

The improvements claimed are fully described in the following specification, and shown in the accompanying drawings, in which—

Figure 1 is a plan of the gearing of the mill; Fig. 2, a plan of the mill; Fig. 3, an enlarged vertical section of the mill through line *x y*, Figs. 1 and 2; Fig. 4, a plan of the perforated feed-plate, as seen from below; Fig. 5, a horizontal section of a portion of the shell and grinding-ring thereto attached, the plane of section passing through the lug *w*, Fig. 3; and Fig. 6, a vertical section through the line *p q*, Fig. 5.

The foundation of the mill is the horizontal base-plate B, consisting of three arms radiating from a common center. At their central point is rigidly attached the vertical center post, G, which is the axis of rotation of the mill. About the lower portion of this post fits loosely a sleeve, F, formed integrally with a cog-wheel, E, which forms its base, and three pinions, D D' D'', of equal size, are pivoted to the respective arms of the base-plate at such distances from the center as to engage with the cog-wheel E. On the upper end of the sleeve F is hung the cone K of the mill, the connection of the cone and sleeve being such that rotary motion of the sleeve is imparted to the cone, while the cone is free to rock sufficiently to adjust itself to the shell C. The cone K has grinding-teeth on its outer and upper surface, while the shell C is provided with corresponding teeth on its inner surface, as hereinafter set forth. The shell C is pivoted at its vertex on the center post, G, and provided with an internal geared rim at its lower margin, which engages with the pinions D D' D'', so

that the rotation of the shell rotates the cone in an opposite direction. The outer surface of the shell extends upward in a neck for the reception of an ordinary hopper, V, and a perforated feed-plate, *g*, formed integrally with the shell, and provided with breaking-teeth *i* on its upper surface, coarse grinding-ridges M on its lower surface, and a series of perforations, *s*, extends from the vertex of the shell to the inner circumference of the neck. This perforated feed-plate *g* takes the place of a series of radial arms shown and described in my former patent above referred to, and is introduced for a twofold purpose: first, as a force-feed, the grinding-teeth M of its lower face acting in connection with the grinding-teeth of the upper surface of the cone K, to grind the grain and force it downward to the finer grinding-ridges below; and, second, as a means of preventing the passage of broken ears of corn into the grinding-ridges below the plate until they are broken sufficiently fine to render choking impossible. Above the perforated feed plate *g* the center post is flattened, and a stationary cap, provided with three breaking-arms, *f*, and having at its center an opening corresponding to the flattened center post, rests on the upper surface of the vertex of the plate. The arms *f* are provided with breaking-teeth on their lower surface, between which the breaking-teeth *i* of the perforated feed-plate *g* pass when rotated. A wing-nut, *c*, serves to tighten or loosen the mill. Immediately below the perforated feed-plate *g* the shell C is provided with an internal grinding-ring, *k*, provided with a series of exterior lugs, *v* (Figs. 5 and 6.) The inner surface of the shell C is provided with a corresponding series of lugs, *w*, (shown in plan in Fig. 5 and in elevation in Fig. 6,) each of which is formed with a step or recess in its upper surface. The shell C being inverted, the ring *k* is dropped into it, the lugs *v* being in the position shown by dotted lines at *r*, Figs. 5 and 6, when a slight movement of rotation of the ring brings each of the lugs *v* of the ring into the step or recess in the corresponding lug *w* of the shell, and the ring is held firmly in position in the shell. The resistance to the motion of the ring in grinding presses the lug *v* against the upper part of lug *w*, and that portion of the

lug *w* which is immediately under the lug *v* prevents it from falling down. The grinding-ring *k* is shown in my former patent above referred to, but is represented and described as fastened by any suitable means, and the means of securing it hereinabove described is believed to be novel.

Immediately below the opening between the grinding-faces of the cone and shell is situated a meal-trough, *t*, which is secured by bolts to the bosses *R*, which form the pivots of the pinions *D D' D''*, and a series of scrapers, *l*, attached to the lower margin of the cone, scrapes the meal to an opening in the bottom of the meal-trough, through which it falls into the meal-box below. In order to prevent any possible overflow of the meal from the meal-trough, which might clog the gearing of the mill, the grinding-ring *k* is cut away on the outside at its lower edge, leaving a recess between the ring and the shell *C*, and the outer flange of the meal-trough extends upward into the recess so formed. As shown in my former patent, the lower edge of the grinding-ring *k* is full and the outer edge of the meal-trough is immediately below it.

Power is applied to the mill by means of sweeps attached to the shell, and its operation is the same as that of the mill shown in my former patent above referred to.

It is evident that the perforated feed-plate *g* and the method of fastening the grinding-ring *k* into the shell are equally applicable to

any cone-mill as well as to the one shown. The use of the improved arrangement of the meal-trough, however, is limited to a geared mill of the general construction shown.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a cone and shell mill, the combination of a cone provided with coarse grinding-ridges on its upper surface, and a perforated feed-plate formed integrally with the shell, and provided with coarse grinding-ridges on its lower face, whereby it is adapted to assist in grinding and in forcing the ground material into finer grinding-ridges below.

2. The combination, of the cone *K* and the perforated feed plate *g*, formed integrally with the shell *C*, and provided with breaking-teeth on its upper face and grinding-ridges on its lower face, substantially as and for the purpose set forth.

3. The combination of the shell *C*, provided with lugs *w*, and the grinding-ring *k*, provided with lugs *v*, said lugs co-operating to hold the ring in place in the shell, substantially as and for the purpose set forth.

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

DANIEL C. STOVER.

Witnesses:

R. H. WILES,

A. W. GREENE.