

(No Model.)

H. S. ATKINS.
GRINDING MILL.

No. 520,027.

Patented May 22, 1894.

Fig. 1.

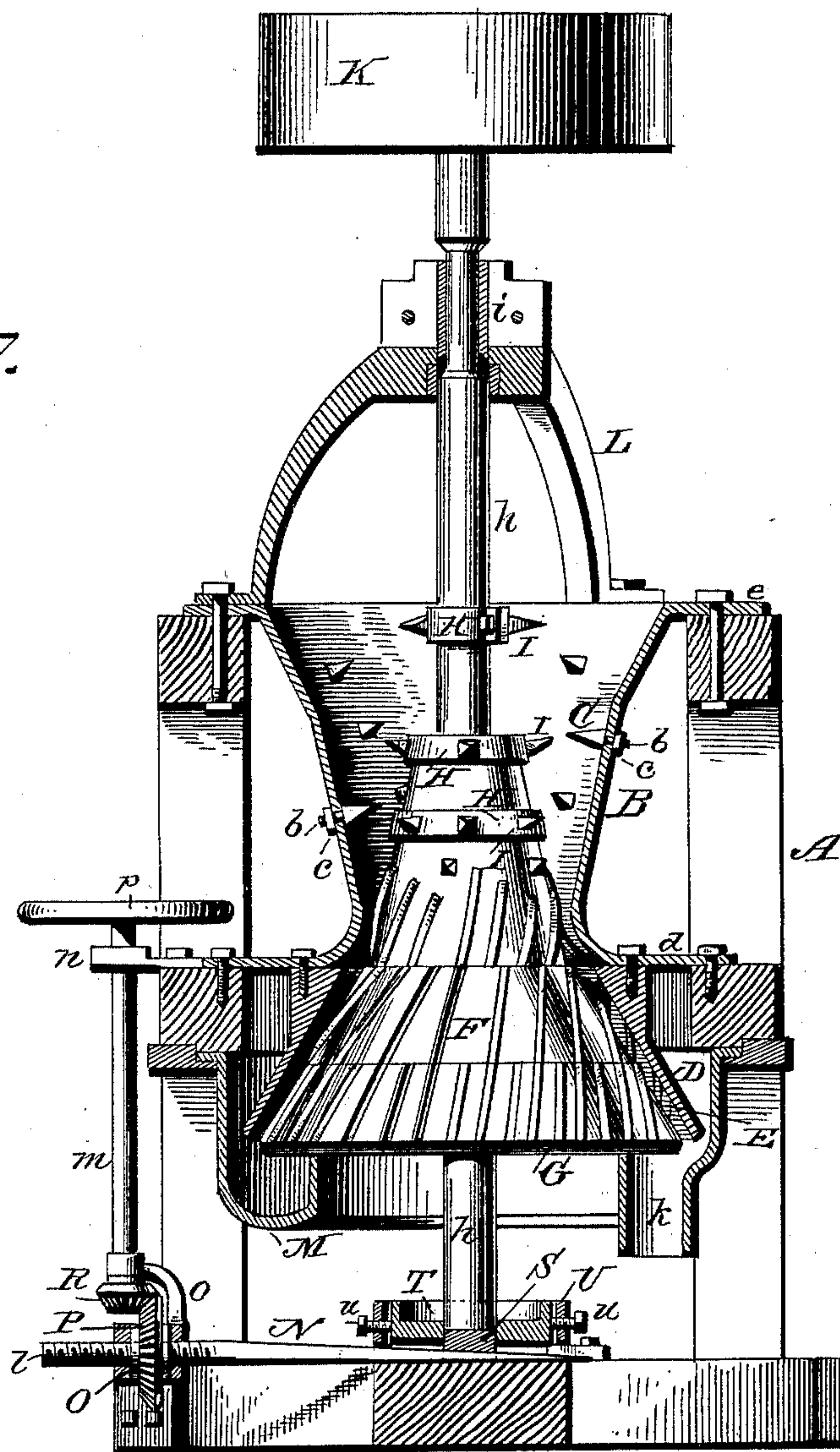


Fig. 2.

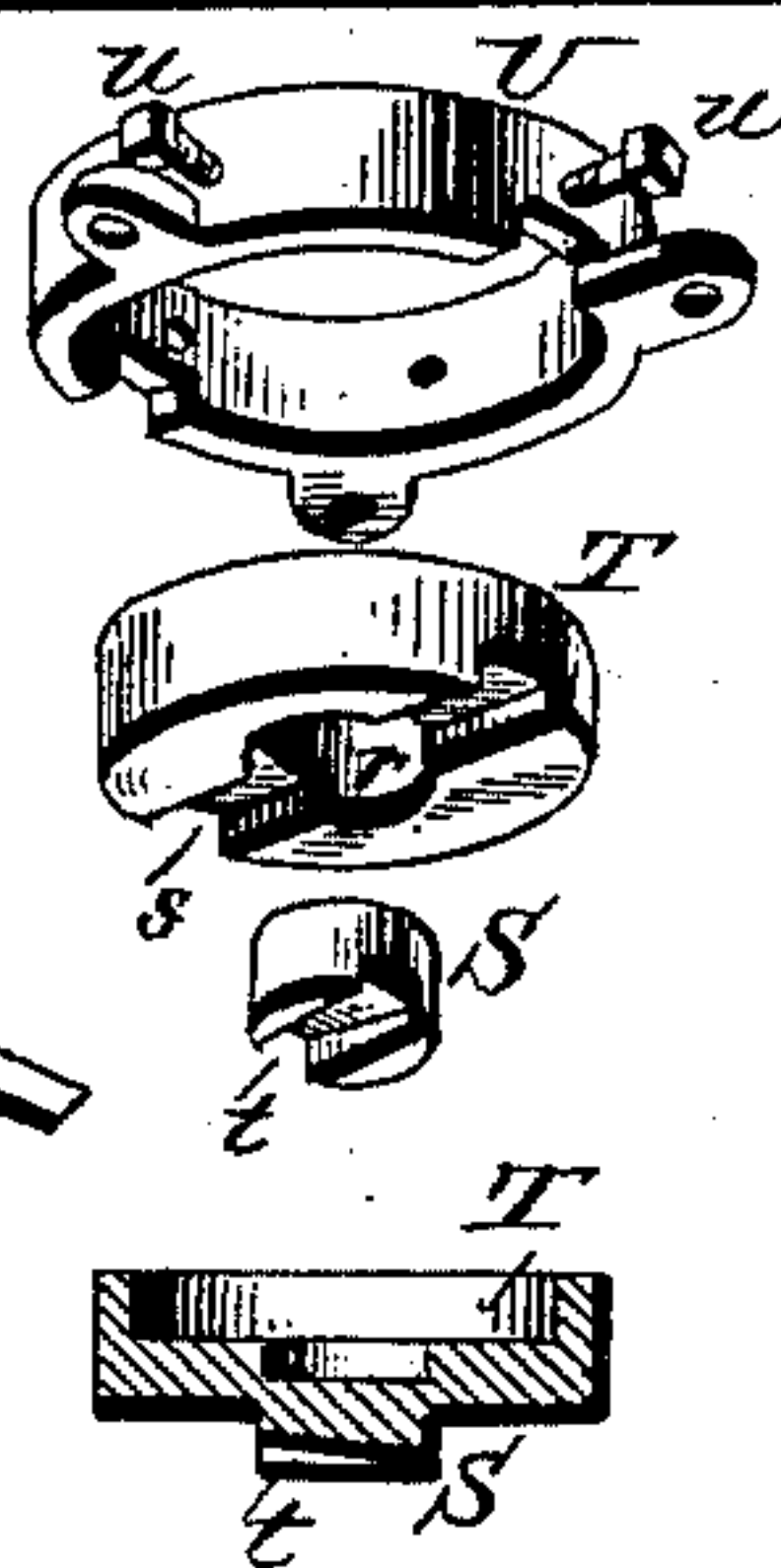
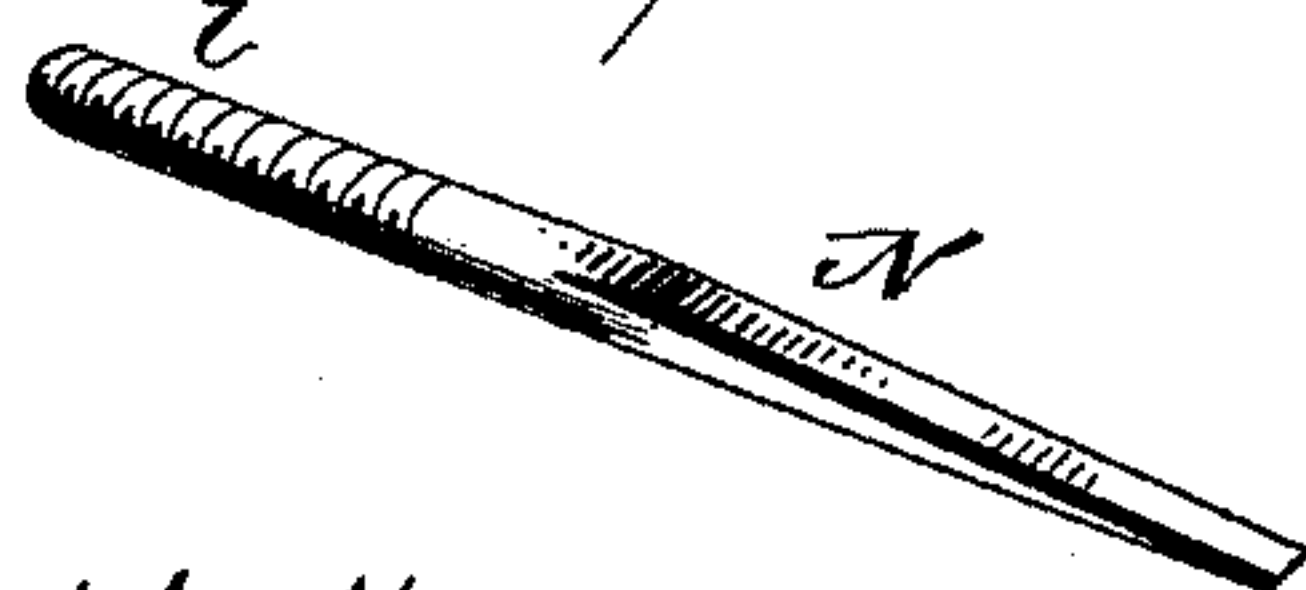
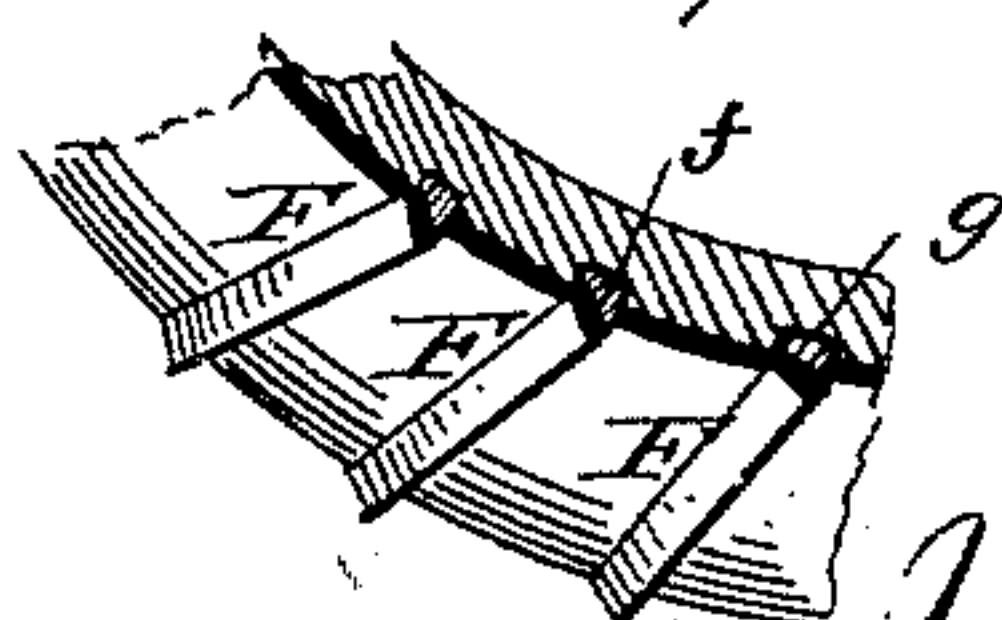


Fig. 4.

Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

HIRAM S. ATKINS, OF STOWE, VERMONT.

GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 520,027, dated May 22, 1894.

Application filed December 22, 1893. Serial No. 494,494. (No model.)

To all whom it may concern:

Be it known that I, HIRAM S. ATKINS, a citizen of the United States, residing at Stowe, in the county of Lamoille and State of Vermont, have invented certain new and useful Improvements in Grinding-Mills; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters of reference marked thereon.

The present invention has for its object to provide a mill for grinding corn and other grain that will possess the requisite wear and durability and perfectly operate upon the grain to reduce it to the required fineness in a comparatively short space of time, also in providing a very simple and effective device for regulating the mill to govern the degree of fineness to which the grain is to be ground. These several objects I attain by the construction substantially as shown in the drawings and hereinafter described and claimed.

Figure 1 of the drawings represents an elevation of my improved mill partly in section; Fig. 2 detail views in perspective of the means employed for adjusting the height of the grinding cone in regulating the mill; Fig. 3 a detail view in perspective showing the means employed for attaching the breaking-knives to the cone. Fig. 4 is a detail sectional view showing a modification of the step and block, the same being made in one piece.

In the accompanying drawings A represents a suitable frame of any preferred construction to which is connected by bolts and screws or other well known means a suitable shell B, which shell is flaring and provided upon its inner side with teeth C. These teeth have screw shanks *b* which extend through holes in the shell and securely held thereto by nuts *c* engaging with the screw threads upon the shanks. This manner of connecting the teeth to the shell enables the teeth to be readily removed should they become worn, broken, or otherwise injured and new teeth substituted with comparatively little trouble.

The shell B has a horizontally extending rim or flange *d* at its lower end and at its upper end a similar flange or rim *e* by which the shell is conveniently connected to the frame A by screws and bolts hereinbefore described.

To the lower end of the shell B is connected a supplemental shell D which has upon its interior, breaking-knives E to correspond with the breaking-knives F upon the exterior of the grinding-cone G. The supplemental shell D may be connected to the shell B in any suitable and well known manner although it is shown as fastened to the rim or flange *d* by screws.

The grinding-cone G is preferably made in sections and upon and around the upper end thereof are secured bands H which are provided with teeth I. The bands and also the teeth are removable, said teeth having screw threaded shanks for convenience of removably connecting them to the bands, the teeth being substantially like the teeth upon the interior of the shell B.

In order that the breaking knives upon the supplemental shell and the grinding-cone may be readily removed when they become worn or broken and new ones substituted, the knives at their base are of dove-tail form, as shown at *f* Fig. 3, and fit in correspondingly formed grooves *g* in the shell and cone. The breaking knives therefore can be formed of steel without constructing the entire cone and shell of steel and as the knives are connected independently of each other they can be in like manner removed when necessity requires.

The cone G is suitably connected to an upright shaft *h* which shaft at its upper end is provided with a pulley K to receive a belt, or any other preferred means may be employed for operating the shaft. One or more of the bands H may be connected directly to the shaft *h* and may also have teeth I, said shaft extending up through a boxing *i* in the spider L as shown, which spider is suitably connected to the frame A. A trough M is connected to the frame A to receive the ground material as it passes down from between the supplemental shell and cone and passes out through the spout *k*. If desired some of the teeth I may have screw shanks adapted to engage with screw threaded holes in the cone, thereby, in addition to the bands H the teeth may be connected directly to the cone.

To provide means for raising and lowering the grinding cone F to control the fineness to which the material is to be ground,

a horizontally and longitudinally movable wedge N is employed which is operated by a feeding-nut O engaging with the screw threads upon the shank *l*. This nut is formed
 5 with a bevel gear wheel P with which engages a pinion R upon the lower end of a shaft *m*, which shaft has its bearings in suitable brackets *n o* secured to the frame A, and upon the upper end of the shaft is a hand-
 10 wheel *p* for operating it. As the shaft is turned by the hand-wheel the pinion on the shaft will turn the gear-wheel and with it the feeding-nut, and the nut engaging with the threads on the screw-shank, will move
 15 the wedge forward or backward as the case may be.

The shaft *h* at its lower end is supported by the grooved step S, said step being located within a central opening or hole *r* in a centering-block T. The block and also the step
 20 have guide-grooves *s t* respectively, and when together these grooves register with each other so as to form a guide-way for the wedge N whereby said wedge is guided in its longitudinal movement. This movement of the
 25 wedge will raise or lower the step and with it the shaft and grinding cone attached thereto, thus regulating the space between the cone and shell so as to grind any degree of
 30 fineness. The block T is for the purpose of centering the shaft *h* by changing the position of the block through the medium of the set-screws *u*, which screws hold the block in its adjusted position within a stationary ring
 35 U firmly secured to the frame A. If preferred the step and block may be made in one piece as shown in Fig. 4, as sometimes this

construction may be considered the most preferable.

There are many details of construction that 40 are susceptible of change or modification which may be made without departing from the principle of the invention, and therefore I do not wish to be understood as confining myself to exact details of construction herein 45 described and shown.

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

1. The combination with a grinding-mill, of 50 means for raising and lowering the shaft to which the grinding-cone is connected, consisting of a movable wedge, a grooved step for the end of the shaft to rest on, and a grooved centering block, substantially as and 55 for the purpose described.

2. A grinding mill having its cone and shell provided with independently removable breaking-knives, means for raising and lowering the grinding-cone consisting of a movable wedge, a grooved step for the end of the cone-shaft to rest on, and a grooved centering-block, and means for operating the wedge consisting of a feed-nut having a gear-wheel, and a shaft and pinion for operating them, 65 substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

HIRAM S. ATKINS.

Witnesses:

A. R. STRAW,
 HENRY LOTH.