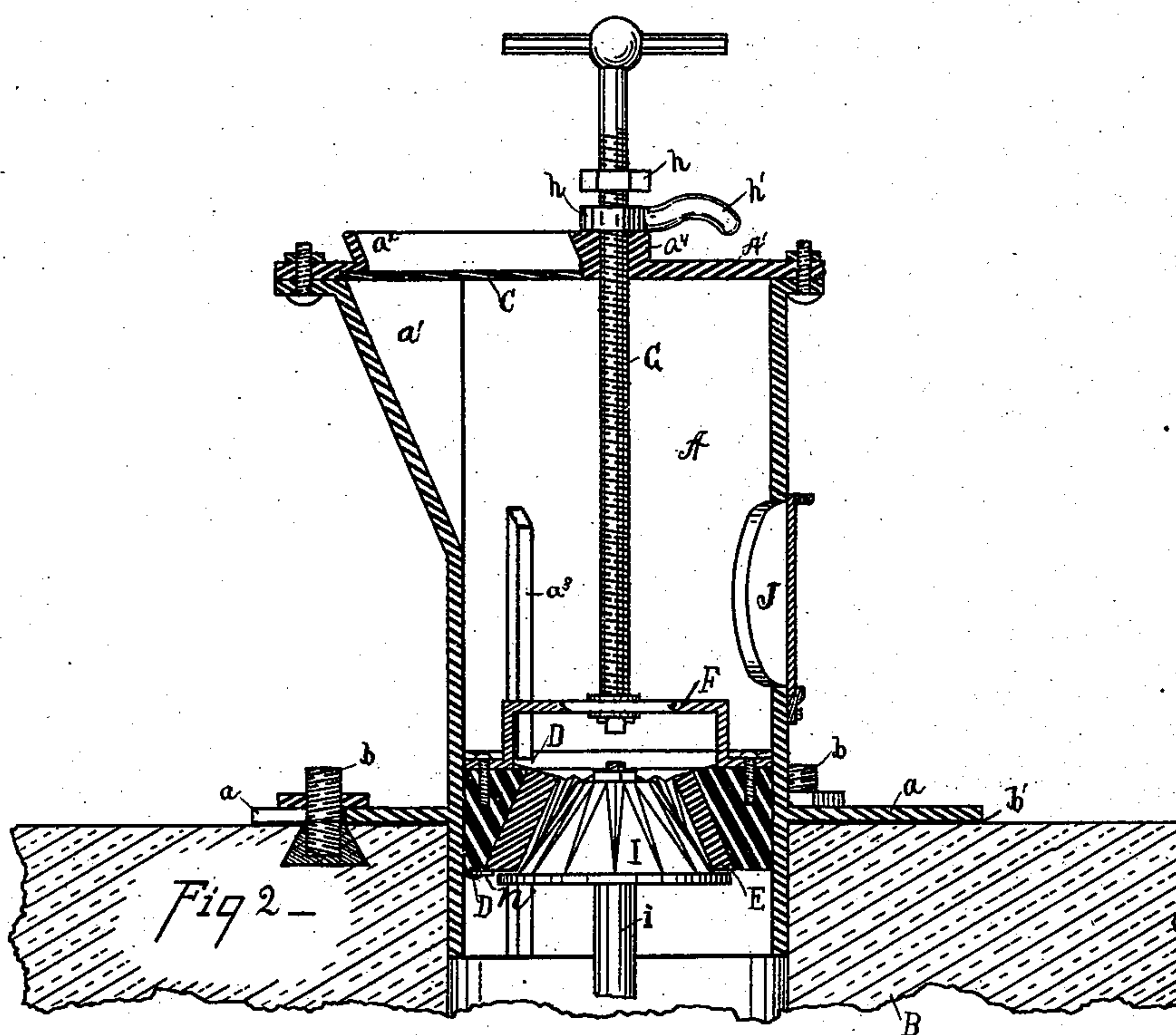
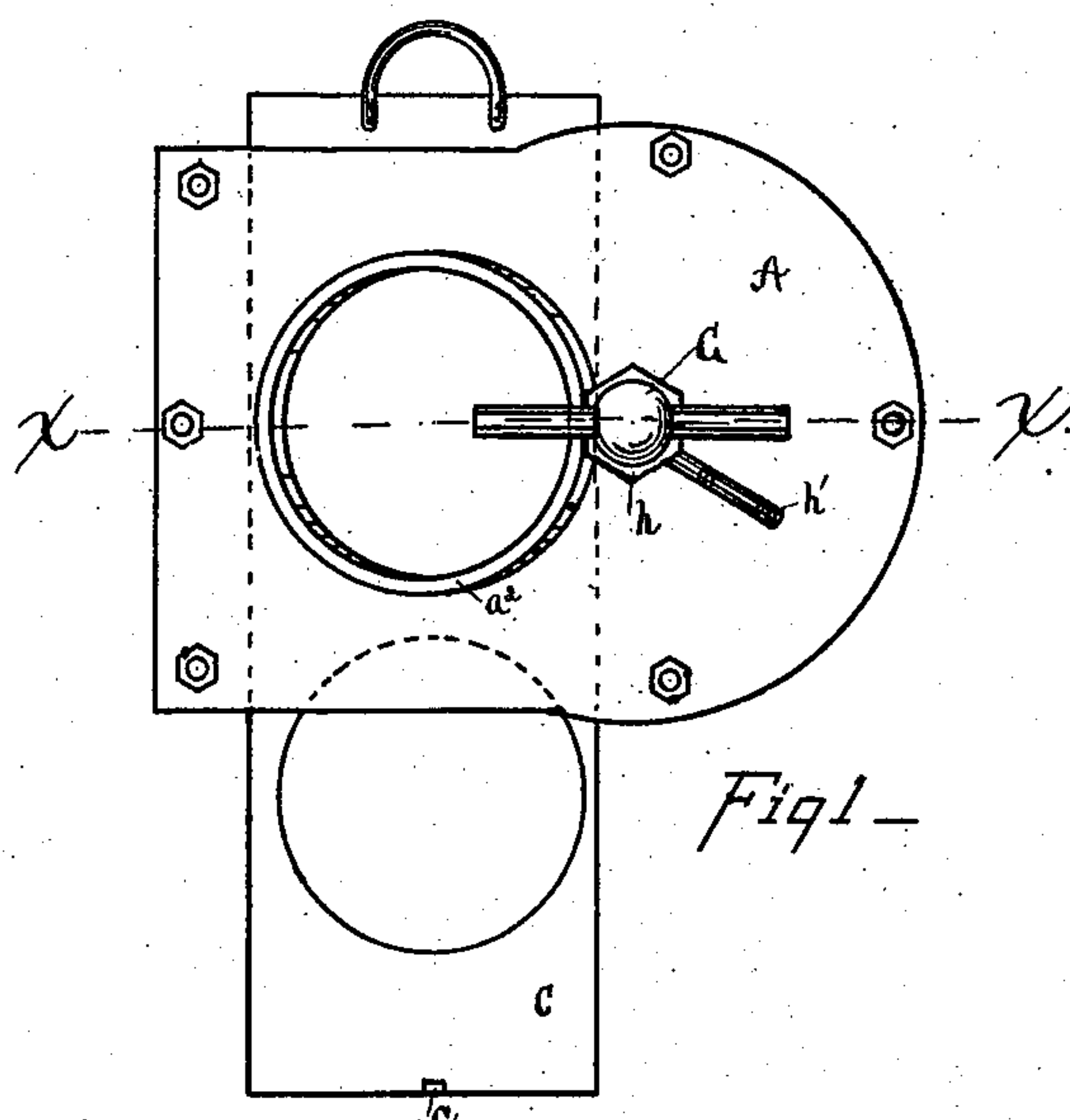


(No Model.)

L. E. KANE.  
MILLSTONE FEEDER.

No. 377,762.

Patented Feb. 14, 1888.



Attest —  
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# UNITED STATES PATENT OFFICE.

LOUIS E. KANE, OF CINCINNATI, OHIO.

## MILLSTONE-FEEDER.

SPECIFICATION forming part of Letters Patent No. 377,762, dated February 14, 1888.

Application filed June 26, 1885. Serial No. 169,895. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS E. KANE, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Millstone-Feeders, of which the following is a specification.

My improvement relates to means for grinding minerals, such as foundry facings, cements, plaster, and similar substances. These substances are prepared for the millstones by first subjecting them to the action of a stamping-mill or "chaser," which breaks them into irregular sizes. When the material so prepared is fed to the eye of the upper stone in the usual manner, the larger pieces do not at once pass between the stones, but play around the eye until broken small enough to enter, and when they first enter are liable to throw the stones farther apart and cause an irregular feed. The materials fed to the mill often contain foreign materials, such as wood or pieces of iron. These when they go between the stones are liable to injure them, and always change the feed by throwing the stones apart. The dust arising from the eye of the stone is also very annoying, and causes considerable loss, especially in grinding coal, plumbago, &c., for foundry facings, and the fine dust settling around the building is very combustible.

The object of my invention is to overcome these difficulties, and to provide a constant, regular feed, that requires but little attention, prevents the dust escaping, and arrests all foreign substances fed in with the material. It also provides a convenient means for regulating the feed accordingly as different materials are to be ground, and provides a ready means of access to the preliminary grinders or breakers for the purpose of removing any foreign substances that may gather about the feed-throat without stopping the stone. These objects are attained by the means illustrated in the accompanying drawings, in which—

Figure 1 is a top view of my improved device, and Fig. 2 is a central vertical section taken through line *xx* of Fig. 1. In this view the device is shown secured in place upon the upper stone. The grinding-cone, spindle, and the regulating screw-shaft are shown in elevation.

Referring to the parts, which are represented by similar reference-letters wherever they occur throughout the various views, A represents the case of my device, which is preferably a cylindrical shell of a size to fit into the eye of the upper stone, B. It has a flange, *a*, projecting from its periphery to rest upon the top of the stone, which flange is slotted from the rim in, to pass over the screws *b*, which are embedded in the upper stone. The case is tightened down upon the stone by nuts on these screws.

The case A has a lip or projection, *a'*, from one side, and is covered by a cap, A', which has an inclined circular opening surrounded by a thimble, *a''*, to receive the spout leading from the hopper. On the under side of the cap A' is a depression extending entirely across it to receive a sliding gate, C. Cast upon the inside of the cylinder is a feather or spline, *a'''*, which enters a groove in the ring D. This ring has also a feather on its inside, which enters a groove on the outside of the grinding-shell E, as is clearly shown on the left-hand side of Fig. 2, (the section being taken through the feather on the ring and the groove in the outside of the grinder,) to prevent the ring E from turning with the grinder.

The shell E and ring D are detachably connected together by screws passing through washers *n* into the ring D, a portion of the washers overlapping the ring E. Across the top of the ring D is a yoke, F, which is swivel-jointed to a vertical screw-shaft, G. This screw-shaft is tapped through a boss, *a''''*, in the cap A', and is provided above the cap with two nuts, *h*. One of these nuts has a handle, *h'*, which serves as a set-screw or jam-nut to retain the grinding-shell E and its casing D in place. The upper one serves as a gage to determine the opening between the stationary grinder E and the revolving cone-grinder I. The grinding-cone I is mounted upon a spindle, *i*, which is revolved by the lower stone.

The grinders E and I are made of steel or case-hardened iron. The purpose of making the grinder E in the form of a hollow cone, so as to fit within its casing, is that it may be removed when worn and replaced without much expense. As here shown, when the grinders are worn it is only necessary to take out the screws



that hold the ring E in place through the overlapping washers, remove the grinder E, and replace it with another. The ring D, which is turned off smooth to slide freely within the case, never needs renewing, and it is much cheaper to make the hollow cone E than it would be to make one piece as heavy as D and E. Besides, the light shell can be more easily case-hardened if of cast-iron, or tempered if of steel.

In one side of the shell A is a hand-hole closed by a vertically-sliding door, J, for the purpose of easy access to the grinding-cone to remove any foreign substance that may feed in with the material to be ground. This door is held in place upon the outside of the cylinder A by a rabbeted frame, which, with the shell of the case, forms a groove for the edge of the door. This frame is carried up upon each side of the door to near the top of the case. Between the stone B and the flange *a* of the cylinder is a packing, *b'*, of rubber or other suitable material, to make a close joint to prevent the escape of dust.

The operation of the device is as follows: The tube from the hopper, which is not shown, closely fits within the thimble *a*<sup>2</sup> of the cap, and, the machine being started, the slide C is drawn back until its stop *c* strikes the edge of the cap A', when its opening registers with the opening of the cap. The

material fed to the grinders E I is broken by them to a uniform size and fed between the stones. To regulate the feed, the space between the grinding-cone and its case or shell is increased or diminished by screwing or unscrewing the shaft G and elevating or lowering the stationary grinder. Should any piece be too large to be affected by grinders or foreign substances—such as pieces of iron, nails, or wood—getting into the case A in sufficient quantities to interfere with the feed, which can be detected by the amount of material passing from the stones, the slide is shoved in, as shown in Fig. 1, the door J slipped up, when the foreign substances may be removed through the hand-hole without stopping the machine.

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

The combination, substantially as specified, of the casing A A' *a*, the ring D, fitted to slide vertically within the body of the casing, the non-rotating grinder E, detachably secured to said ring, the screw G, and yoke F, for raising and lowering the same, for the purpose of regulating the feed, the grinding-cone I, and spindle *i*, for the purpose specified.

LOUIS E. KANE.

Witnesses:

WM. GOERLICH,  
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