

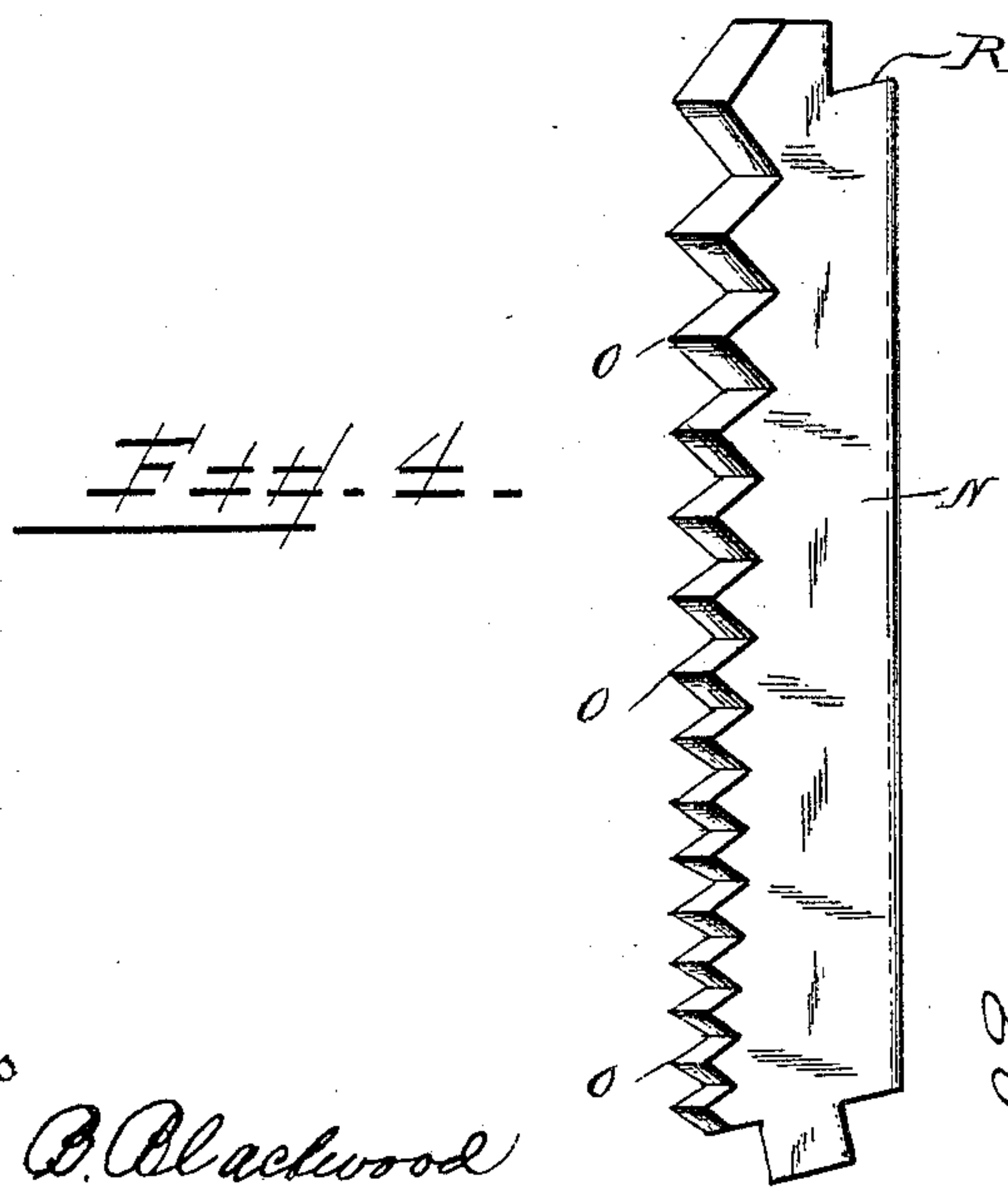
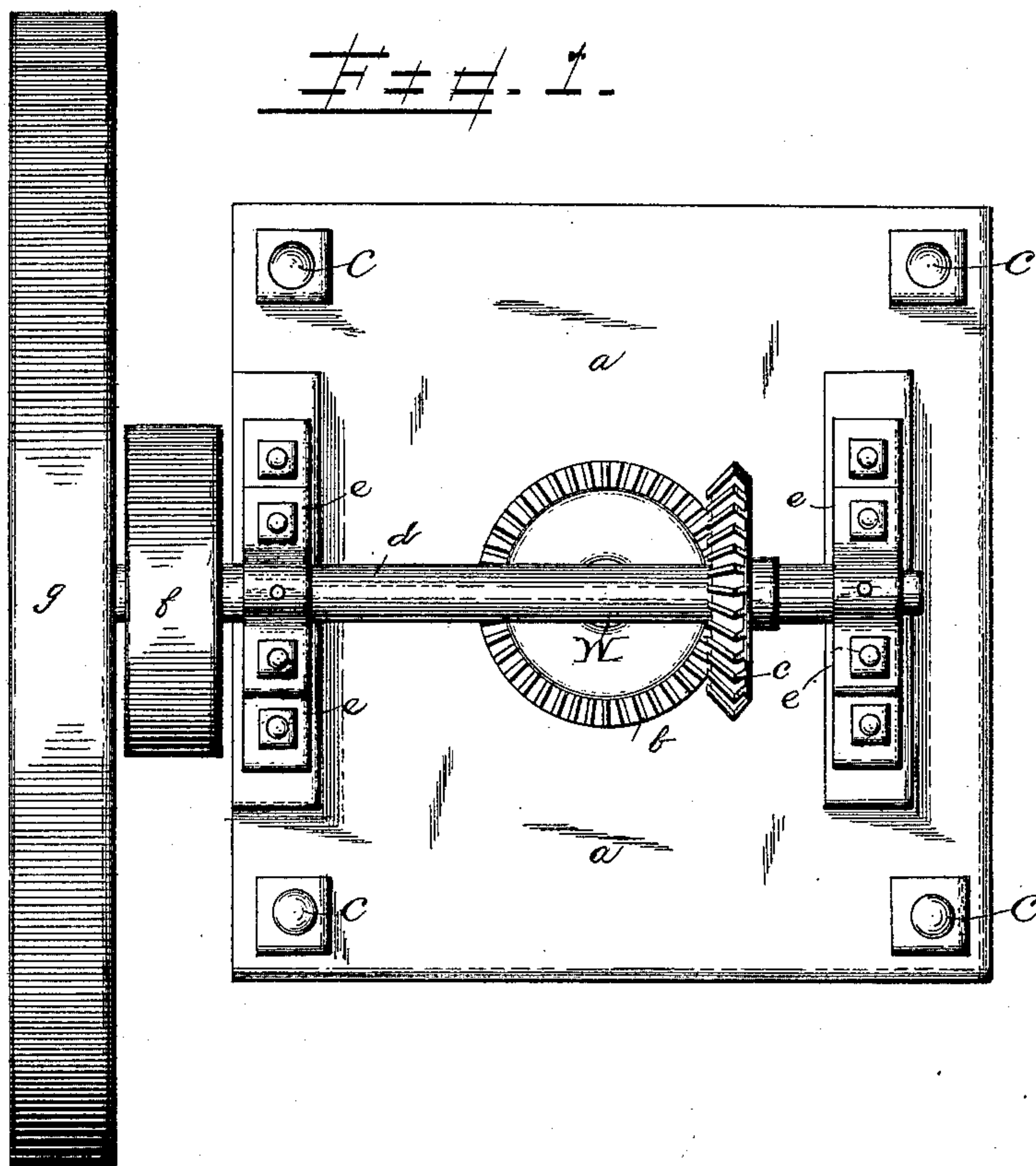
(No Model.)

3 Sheets—Sheet 1.

A. SIMPSON & J. B. ALVORD.
COAL BREAKING MACHINE.

No. 432,446.

Patented July 15, 1890.



Witnesses

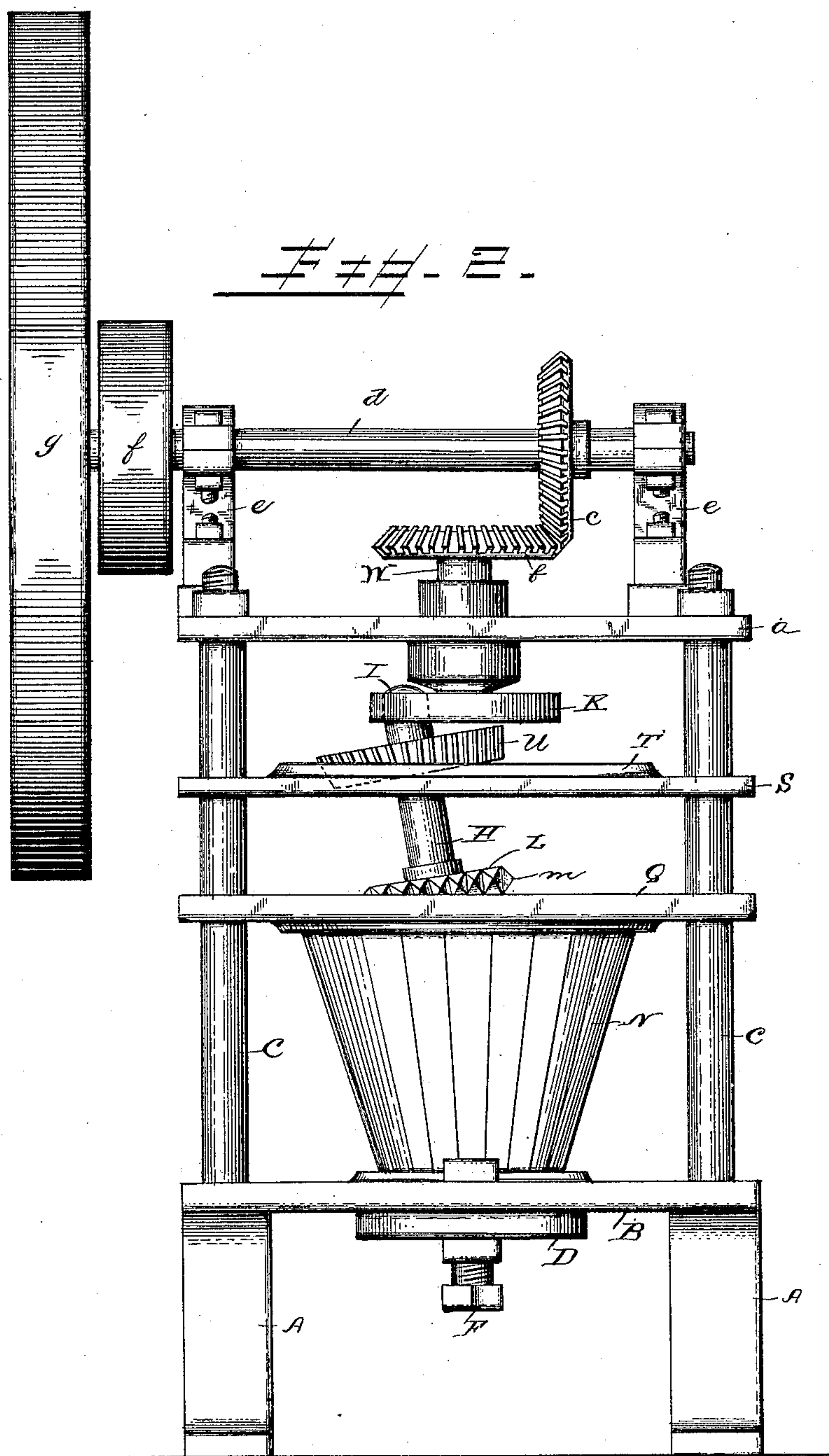
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3 Sheets—Sheet 2.

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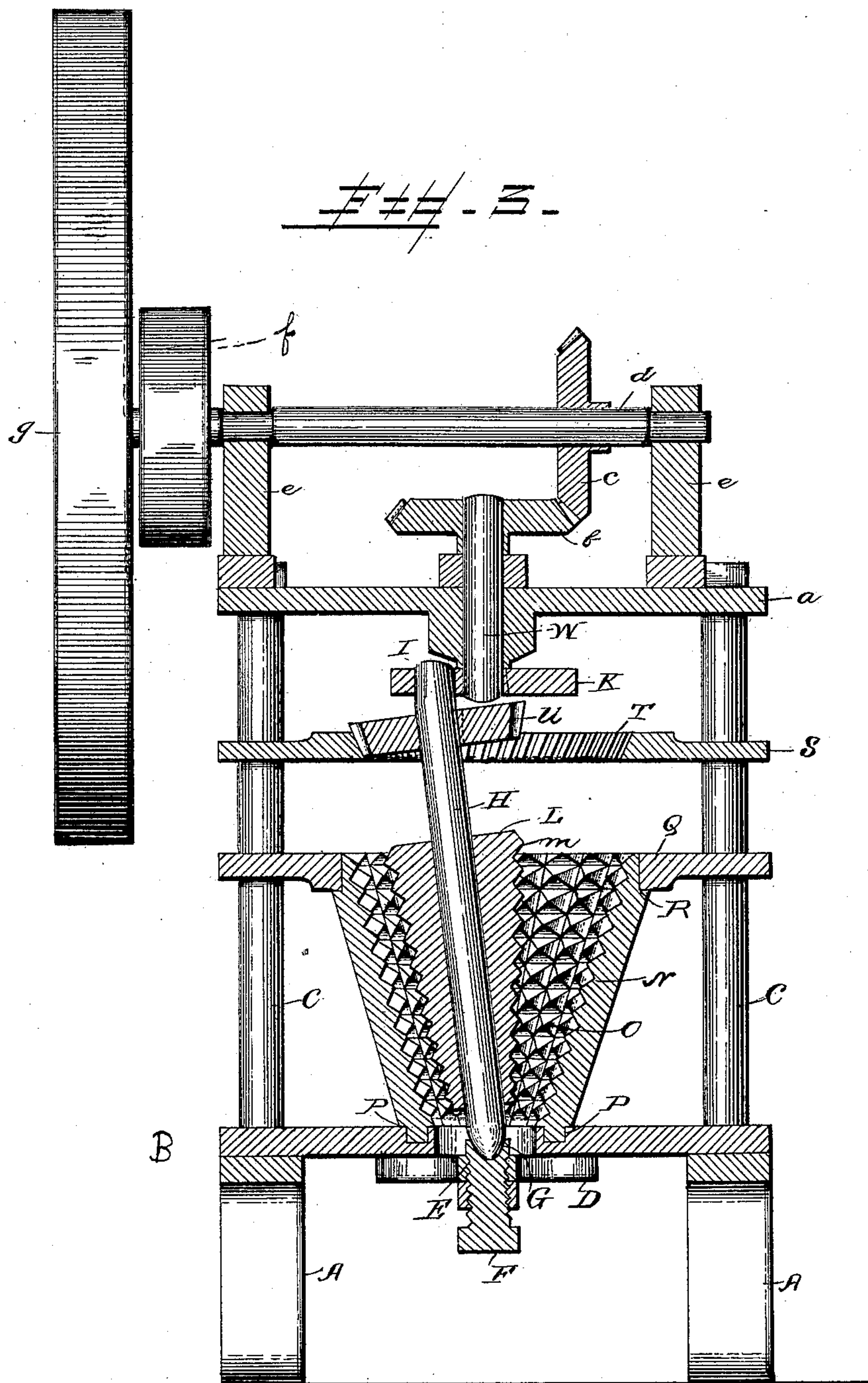
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UNITED STATES PATENT OFFICE.

ALEXANDER SIMPSON AND JAMES B. ALVORD, OF SCRANTON, PENNSYLVANIA.

COAL-BREAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 432,446, dated July 15, 1890.

Application filed March 22, 1890. Serial No. 344,886. (No model.)

To all whom it may concern:

Be it known that we, ALEXANDER SIMPSON and JAMES B. ALVORD, of Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Coal-Breaking Machines; and we 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 appertains to make and use the same.

Our invention relates to an improvement in coal-breaking machines, the object of the same being to provide a machine of this character, by means of which the waste or pickings of coal may be utilized and rendered of commercial value, thereby greatly enhancing the importance of mine outputs and at the same time supplying the market with a necessary article at greatly-reduced cost.

A further object is to provide a machine of this character, by means of which the waste arising from the loss of coal in dust will be reduced to a minimum.

A further object is to provide a machine of the above character, which will be simple and economical in construction and durable and efficient in use.

With these ends in view our invention consists in the certain features of construction and combinations of parts, as will be hereinafter fully described, and pointed out in the claim.

In the accompanying drawings, Figure 1 is plan view of the machine. Fig. 2 is a side view of the machine. Fig. 3 is a vertical longitudinal section. Fig. 4 is a detail view of one of the toothed plates.

A represents the horizontal supports, to which is secured the platform B by means of the standards C, which pass through the platform and supports and are suitably secured thereto. To the bottom of the platform B is attached the plate D, which is provided with the screw-threaded bolt-hole E to receive the threaded regulating-rod F, which is preferably provided with a recess G, forming a bearing for the lower end of the journal-rod H. If desired, however the rod F may be pointed,

and the rod H provided with a recess to receive said rod F. The opposite end of said journal-rod H is provided with the tapering head I, and is journaled eccentrically in the disk or crank K, whereby an eccentric gyratory movement is imparted to it. To the journal-rod is secured the cone L, carrying the burred plates M, set thereon in section, so that they may be removed and replaced without loss of the entire cone. In the bottom of the platform B is secured the conical shell N, the same being formed of a series of toothed plates O, the teeth of which are sharpened at the points and edges. The plates O are secured in suitable mortises P, formed in the platform B, their upper ends being held in place on the frame Q by means of the oblique shoulder R, formed thereon. The advantage arising from having the plates M removable is, that when they are broken or worn they may be readily replaced and when the edges become dull they may be removed for sharpening. The center frame S is provided with the internal bevel-gearing T, with which meshes the bevel-gearing U on the journal-rod H.

The disk K is keyed to the rod W, which is journaled in the upper frame a. The rod W has secured to the top thereof the bevel gear-wheel b, meshing with a similar wheel c on shaft d, the said shaft being journaled in suitable bearings in the standards e. A drive-pulley f and fly-wheel g are keyed to said shaft.

The operation is as follows: The machine in motion will cause the disk K to revolve, carrying with it the journal-rod H, which will have an eccentric or wobbling movement imparted thereto, which is likewise imparted to the cone L, which will have an oscillating movement, and consequently a greater power will be brought to bear upon the coal with which it comes in contact, and as the cone is continually out of center the lower end thereof will naturally be smaller than the upper, so that when the coal passes through the openings h in the bottom of the platform B it will be uniform in size. The coal may be broken into different sizes by elevating and lowering

the cone L, which is accomplished by means of the rod F, the frames Q, S, and *a* being suitably adjusted to conform therewith.

Having fully described our invention, what
5 we claim, and desire to secure by Letters Patent, is—

The combination of the inverted conical shell made in section and having an abrading-
surface, the adjustable bearing F, the cone
10 L, the crank-disk K, rigidly secured to shaft

W, the bevel-wheel *u*, and the fixed internal beveled rack T, substantially as set forth.

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

ALEX. SIMPSON.

JAMES B. ALVORD.

Witnesses:

G. W. MILLER,

ELLIS R. SIMPSON.