

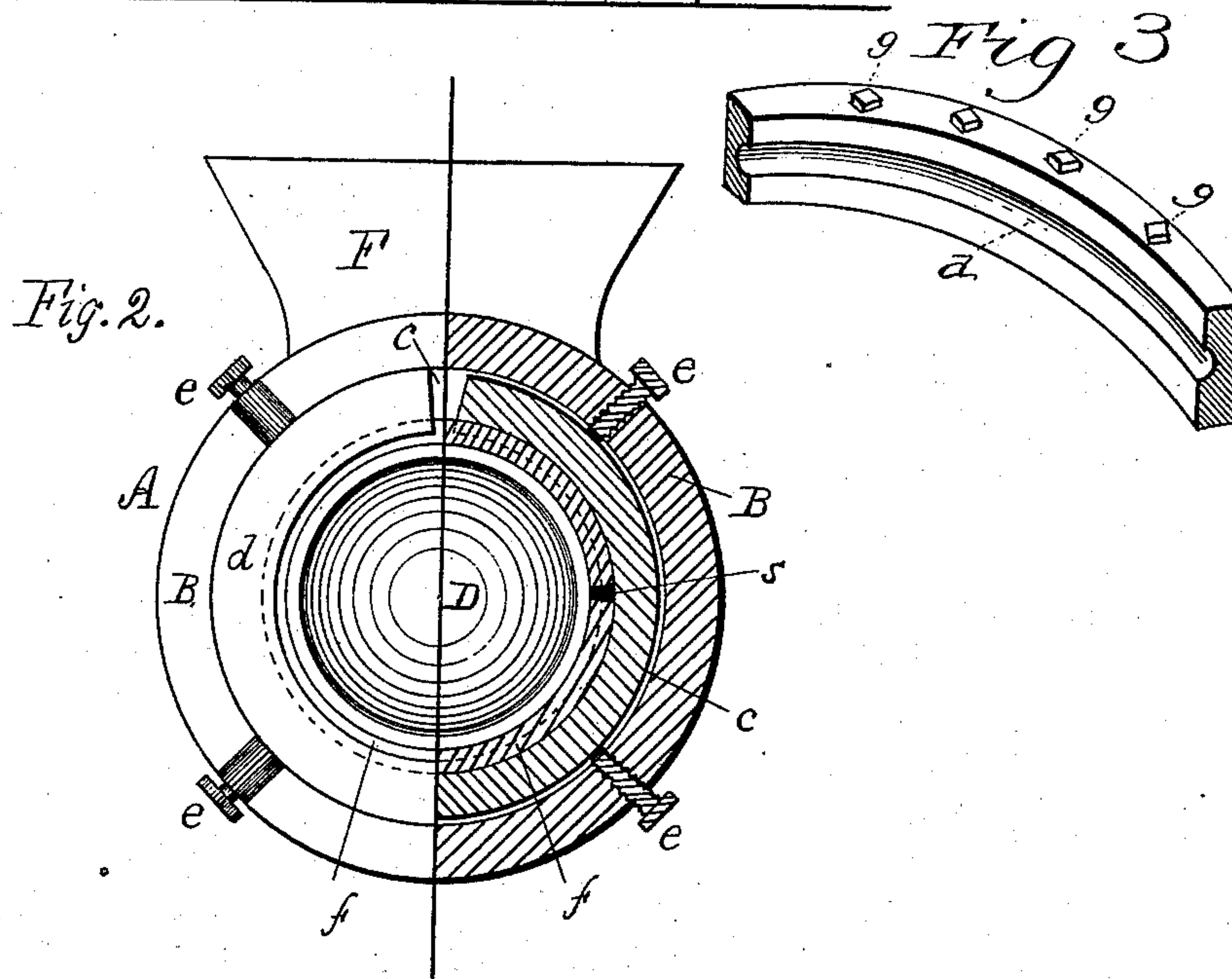
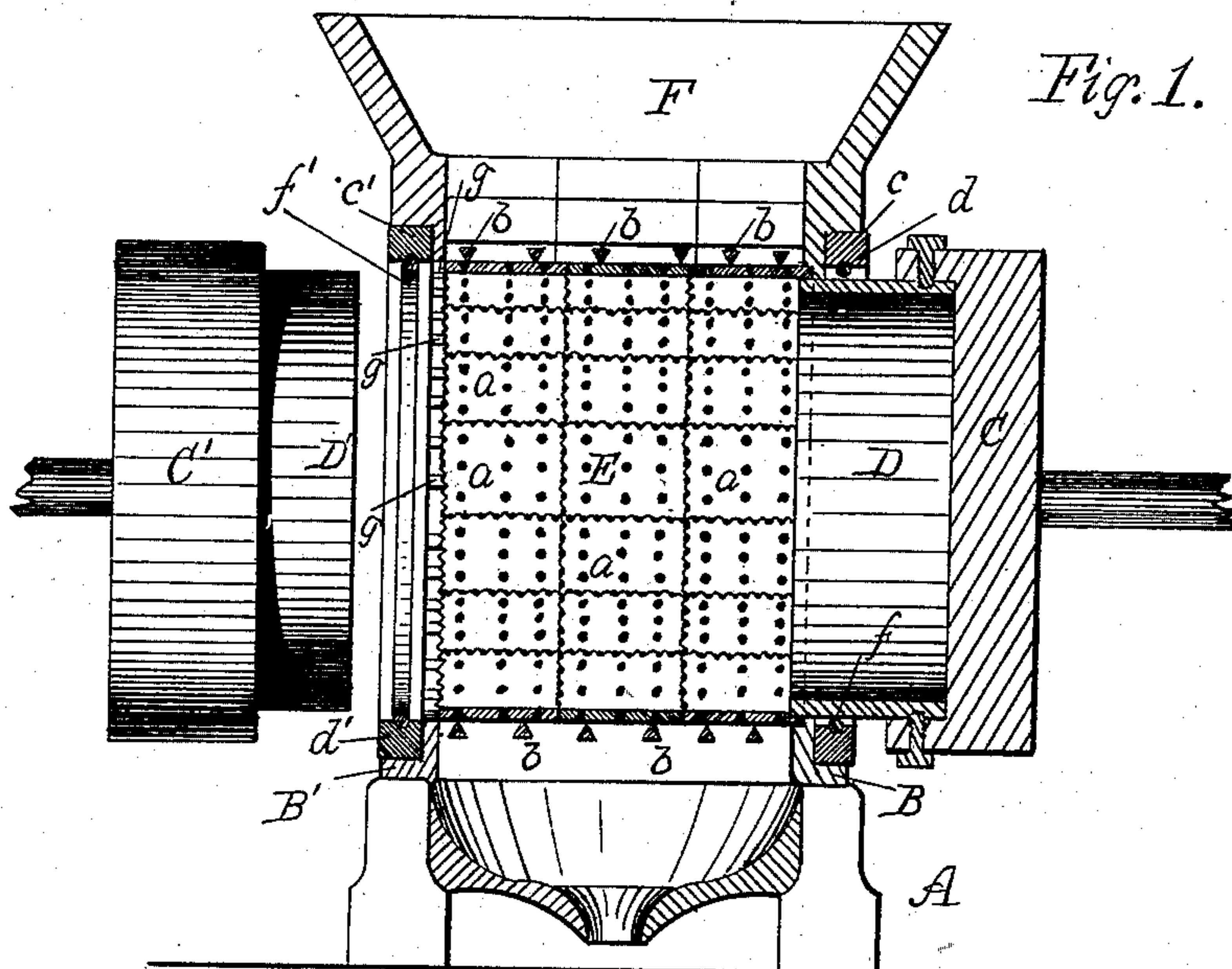
(No Model.)

T. L. STURTEVANT.

ATTRITION MILL.

No. 316,921.

Patented Apr. 28, 1885.



Witnesses.
H. C. Lodge.
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UNITED STATES PATENT OFFICE.

THOMAS LEGGETT STURTEVANT, OF FRAMINGHAM, MASSACHUSETTS, ASSIGNOR TO THE STURTEVANT MILL COMPANY, OF PORTLAND, MAINE.

ATTRITION-MILL.

SPECIFICATION forming part of Letters Patent No. 316,921, dated April 28, 1885.

Application filed August 16, 1884. (No model.)

To all whom it may concern:

Be it known that I, THOMAS LEGGETT STURTEVANT, a citizen of the United States, residing at Framingham, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Attrition-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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention, which relates to "attrition-mills," so called, may be considered as an improvement of that invention embodied in Letters Patent No. 269,481, issued to me on the 19th day of December, 1882, in which the edge of the rotary head most exposed to wear may be removed, as wear ensues, by the employment of a false or movable bushing to such head.

The object of my present improvements is to prevent the escape of fine-ground particles, as well as to provide means for compensating for wear about the movable bushing.

The drawings represent, in Figure 1, a central vertical section of an attrition-mill embodying my invention, and Fig. 2 is a vertical sectional elevation of the packing-ring and the outer casing. Fig. 3 is a detail perspective view of a part of one of the collars, showing the lugs or projections which are on the inner faces thereof.

In the drawings, A represents an attrition-mill of the class before premised, in which the side casings are shown at B B', with the rotary heads C C', containing the movable rings or bushings at D D'. The internal circular periphery of the casing of the mill is occupied with the sectional screening-surface E, more particularly shown and described in my application filed August 16, 1884, No. 140,749. These plates *a a a*, &c., are supported upon knife-edge hoops or bands *b b b*, &c.

Heretofore it has been found that the tendency of fine particles during the process of reduction has been to work out between the

joint formed by the casing and the rotary head and bushing. The constant passage or escape of such particles causes wear to the interior periphery of the casing, thereby enlarging it, and so impairs the joint that a new ring is required, entailing loss of time in running, and expense. To obviate these defects I have formed circular depressions *c c'* on the front sides of the casings B B', and inserted therein annular spring-plates or plain collars *d d'*, which are provided on their interior peripheries with grooves to receive the wire-spring packing; and when it is desired to have the collars reduced in size materially they may be cut and a piece taken out, and the adjusting-screws then may be made to contract the collars and fit the wire packings as closely against the bushings as may be required.

To contract the collars *d d'* centrally and bring them in contact with or closely to the peripheries of the bushing, when so desired, I have disposed radial bolts *e e e*, &c., in the casings, and by turning and adjusting them the collars can be fitted to a nicety upon the bushings, by which means the wear is easily compensated for and the joints maintained closed.

In case the collars *d d'* and the bushings D D' were in contact, the friction would be great and new collars frequently required. To overcome this objection I have inserted centrally upon the interior peripheries of the annular plates or collars D D' spring-wires *f f'*, these latter projecting within the inner surfaces of the plates. After the rotary heads C C', with their bushings D D', are properly adjusted, the nuts *e e e*, &c., are turned down against the tension of the spring-plates *d d'* until the wire packings *f f'* are brought into close proximity to the peripheries of the bushings sufficiently to prevent escape of material when the mill is set in operation.

To maintain the sectional screen-plates in position and prevent tendency to separate from each other laterally, thereby permitting the escape of unground material, I have cast and arranged a series of short lugs or projections, *g g g*, (shown in Fig. 1,) upon the inner vertical faces of the collars *d d'*, which, when

the latter are in position, rest against the edges of the outer sectional plates and secure and retain the latter rigidly in close juxtaposition with each other.

5 As the metal packing-rings $f f'$ wear away, new ones are easily inserted, and the inherent elasticity of the metal composing them maintains them in place and a cheap and effective packing is secured. However, I find
10 it generally expedient to cut the packings somewhat shorter than the length of the groove receiving it, and then drive in a short locking-piece, s , which prevents the ends of the packing from projecting and injuring the periph-
15 ery of the bushing, which sometimes occurs, owing to the heating of the metal. The insertion of this piece forms a packing with a continuous periphery, and in case it is desired to contract its diameter about the bushing,
20 the locking-piece s is removed, shortened slightly, and again inserted.

I claim—

1. In an attrition-mill, the combination of

the rotary head and bushing with the adjustable interiorly-grooved plate or collar, and 25 a packing-ring, substantially as set forth.

2. In an attrition-mill, the combination of the rotary head and bushing with a plate or collar adapted to encircle said bushing, an elastic ring, f' , which acts on the inner face of 30 said collar, and adjusting-screws e , which act on the outer face of said collar, substantially as set forth.

3. In an attrition-mill, the collars $d d'$, formed with inward lugs, g , in combination with the 35 screening-plates a , said lugs preventing the lateral displacement of said plates, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS LEGGETT STURTEVANT.

Witnesses:

H. E. LODGE,
A. F. HAYDEN.