

G. A. BROWNE & P. C. FORRESTER

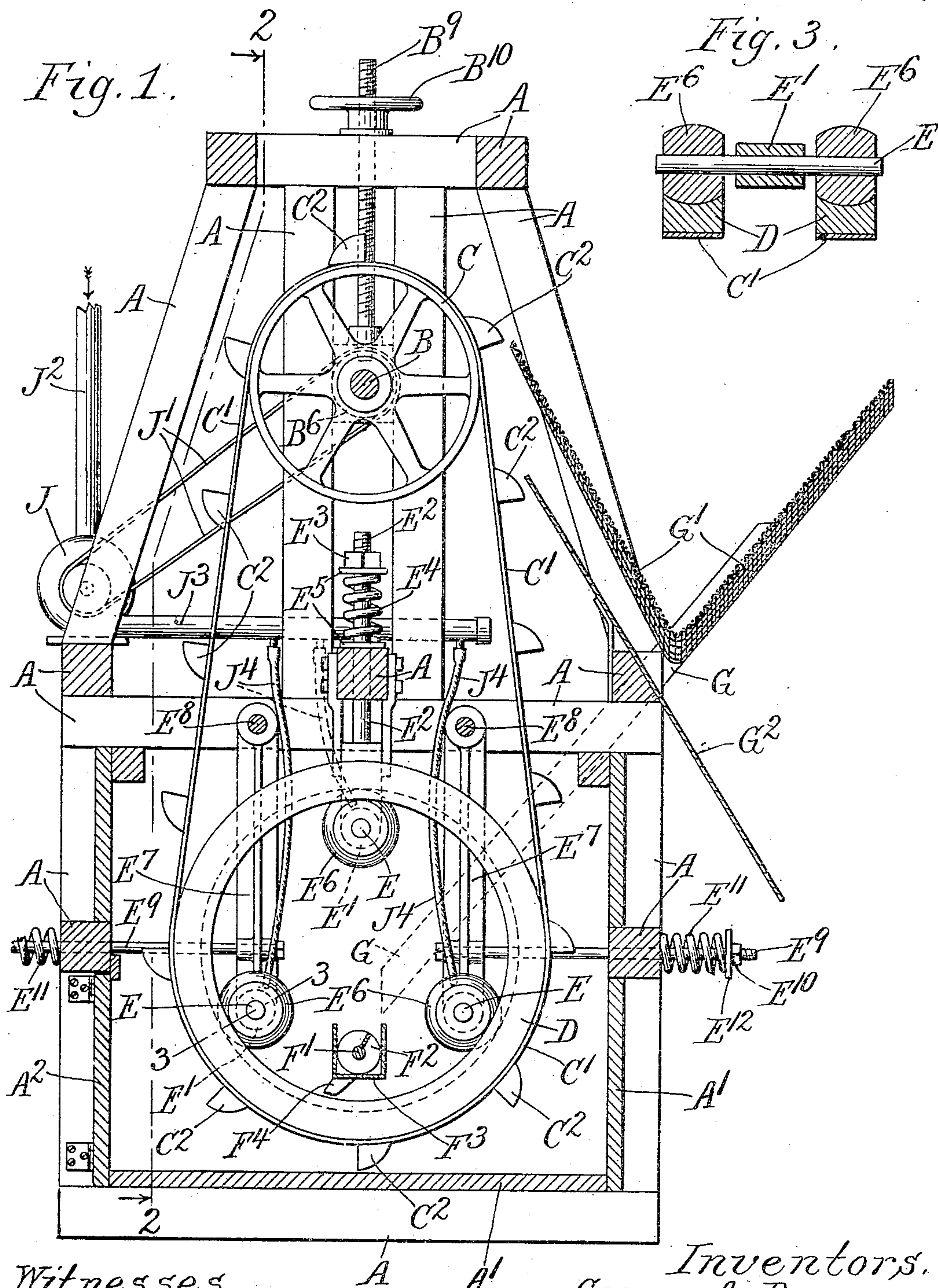
PULVERIZER.

APPLICATION FILED SEPT. 24, 1908.

955,497.

Patented Apr. 19, 1910.

2 SHEETS—SHEET 1.



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Attorneys.

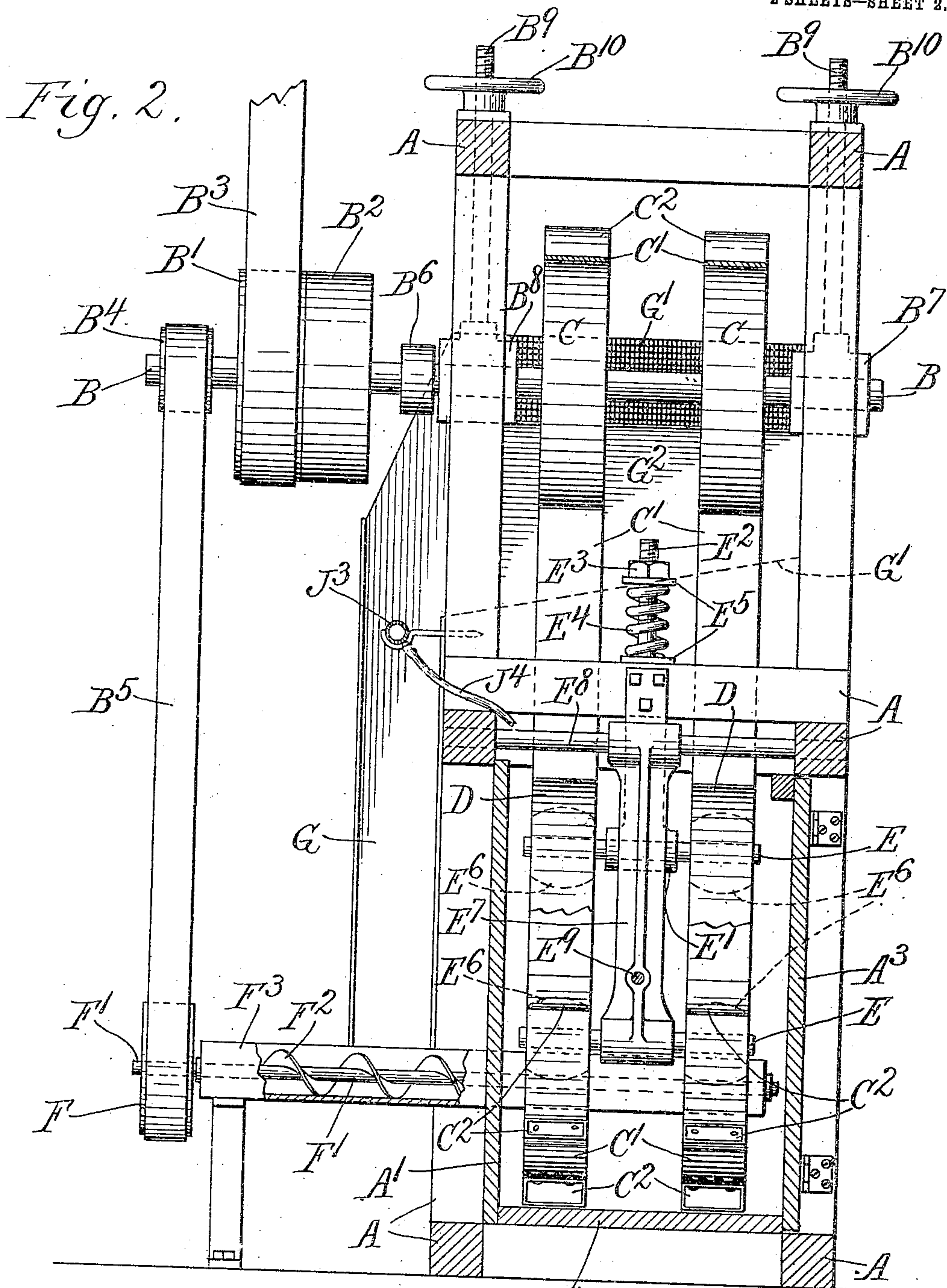
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UNITED STATES PATENT OFFICE.

PETER C. FORRESTER AND GEORGE A. BROWNE, OF TACOMA, WASHINGTON.

PULVERIZER.

955,497.

Specification of Letters Patent. Patented Apr. 19, 1910.

Application filed September 24, 1908. Serial No. 454,627.

To all whom it may concern:

Be it known that we, PETER C. FORRESTER and GEORGE A. BROWNE, citizens of the United States, residing at Tacoma, in the county of Pierce and State of Washington, have invented a certain new and useful Improvement in Pulverizers, of which the following is a specification.

Our invention relates to pulverizers. It is illustrated in the accompanying drawings, wherein—

Figure 1 is a vertical cross section, Fig. 2 a vertical longitudinal section, and Fig. 3 a detail section on the line 3—3 of Fig. 1.

Like parts are indicated by the same letter in all the figures.

A A are framing pieces on which the various parts are supported.

A¹ A¹ are the walls of the lower inclosing chamber.

A² and A³ are doors in the lower chamber.

B is a shaft having the driving pulley B¹ thereon, and the loose pulley B², and the driving belt B³ associated therewith. This shaft also carries a small pulley B⁴ which drives the belt B⁵ and the small pulley B⁶. This shaft is mounted in two bearings B⁷ and B⁸ each of which is vertically movable between two of the framing pieces A A as shown, and is secured at the lower end of a screw rod B⁹, each of which passes through the upper framing piece A, and is provided with a screw-threaded hand wheel B¹⁰, whereby the bearings may be raised or lowered.

On the shaft B is mounted two pulleys C C over each of which travels the belt C¹ provided with the elevator buckets C². Hung in each of these belts at their lower ends and in the lower compartment, is a pulverizing ring D, concave on its inner edge as shown.

E is a short shaft carried by the bearing E¹ which is carried by the hanger E² which passes through the frame piece A and is provided with an adjustable nut E³ at its upper end, and a spiral spring E⁴ between the washers E⁵ E⁵, whereby the bearing is elastically and adjustably supported. Grinding rolls E⁶ are mounted at each end of this short shaft, and each has a convex surface as indicated, so as to fit the concave surface of the ring D. Similar hangers with similar bearings carry similar grinding rolls. These hangers, however, indicated by the letter E⁷, are pivoted to the frame E⁸ and are provided each with a laterally projecting rod E⁹, which passes through the frame piece

A, and is in like manner provided with an exterior nut E¹⁰ and a spring E¹¹ between the washers E¹² and the side of the frame. In this manner the two lower rolls E⁶ are elastically and adjustably drawn laterally toward the ring.

F is a pulley on the shaft F¹, and it is driven by the belt B⁵. The shaft F¹ is suitably supported in bearings on the frame or sides of the lower inclosure. It carries a spiral conveyer F² in a case F³, which is provided within the inclosure with two spouts F⁴, one to discharge in each ring.

G is a down spout which opens into the conveyer case F³, leading from the upper edge of the hopper which consists of the screen portion G¹ G¹ and is inclined as indicated in Fig. 2 toward the down spout G. Beneath the screen is a discharge plate G² whence the finer materials are discharged into any receptacle, while the coarser, which do not pass through the screen, are discharged into the down spout G to be re-ground.

In order to protect the operating parts from the dust which is liable to affect the bearings, we provide a blower J mounted on the frame and driven by a belt J¹ from the small pulley B⁶. The inleading pipe J² furnishes the air and the outleading pipe J³ is provided with short flexible pipes J⁴ J⁴, suitably placed to convey each a current of air to one of the roll bearings.

It will be understood that our drawings are to be taken as diagrammatic and intended only in a general way to illustrate the invention, although they show an operative device. We wish our drawings to be considered diagrammatic and illustrative rather than in the nature of a complete, perfect or working drawing.

Some features illustrated in the drawings could obviously be dispensed with, or other modified forms could be substituted without departing from the spirit of our invention.

The use and operation of our invention are as follows: The pulverizer rings are suspended in the elevator belt and are kept in position by the pulverizing rolls. These latter are held elastically and adjustably against the rings so as to retain the rings in position, and effect the pulverizing of the material. The material remains in the convex channel of the rings by reason of centrifugal action, and it is in its pulverized condition forced over the side of the ring by

the rolls whereupon it falls to the bottom of the receptacle. Here it is picked up by the elevator buckets on the elevator belts, and discharged into the hopper which may
5 be of any desired structure, with or without motion. The fine material passes through the screen of the hopper on to the discharge plate G^2 , whereas the coarse and unpulverized material passes into the chute or down
10 spout G . Here, along with such other material as may be supplied from any source, it passes into the conveyer and thence back into the rings.

The position of the three rolls may be
15 altered from time to time as may be necessary, by operating the nuts on their respective rods. The bearings are kept clean when desired by the air blast device.

We claim:

20 1. In a pulverizer, the combination of a suspended pulverizing ring with a driving belt therefor, and pulverizing rolls within ring, and elevator buckets on the driving
25 through which the belt buckets pass.

2. In a pulverizer, the combination of a suspended pulverizing ring with a driving belt therefor, and pulverizing rolls within the ring, pivotally suspended and elastically held against the ring. 30

3. In a pulverizer, the combination of a suspended pulverizing ring, and a driving belt therefor, a pulverizing roll within the ring, and elevator buckets on the driving belt and a receptacle beneath the ring
35 through which the belt buckets pass, and a screen to separate the product and a return spout to lead the unpulverized material back into the ring.

4. In a pulverizer, the combination of a
40 suspended pulverizing ring with a driving belt which encircles, supports and drives the ring, and rolls within the ring to hold it in position laterally, said rolls elastically and adjustably movable toward the ring.

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