

(No Model.)

2 Sheets—Sheet 1.

H. A. DUC, Jr.
ROLLER MILL.

No. 429,680.

Patented June 10, 1890.

Fig. 1

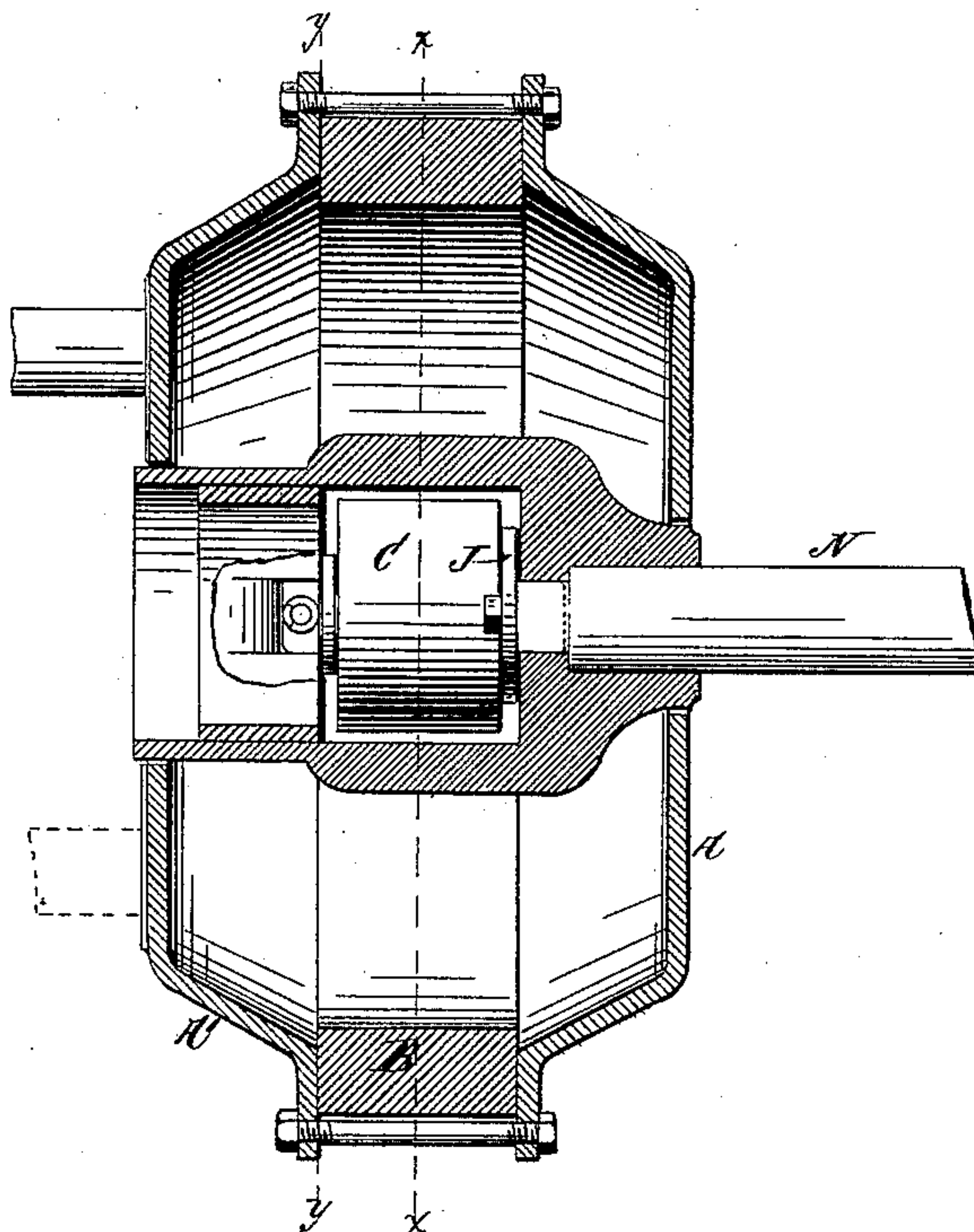
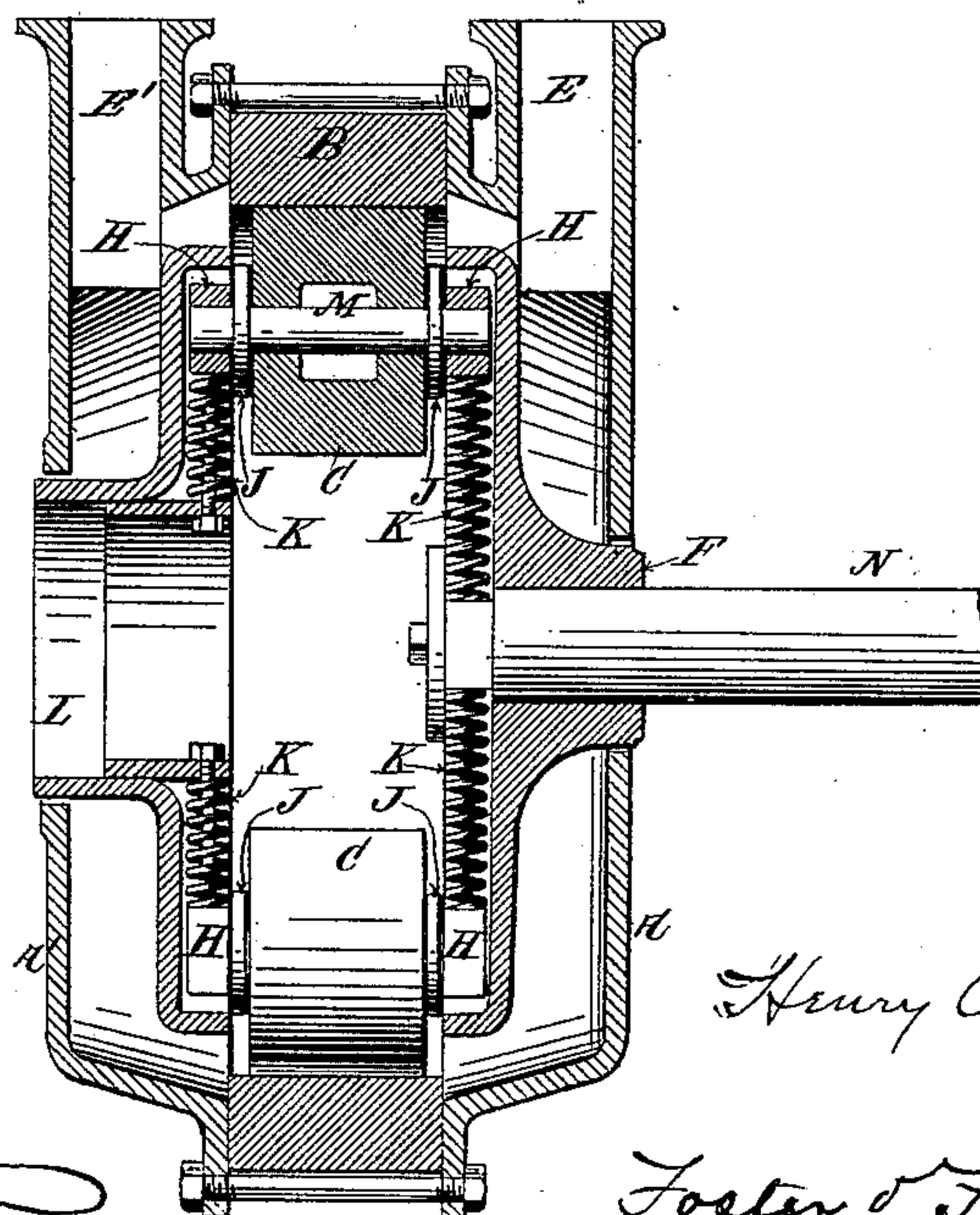


Fig. 2



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Inventor.
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Fig. 3

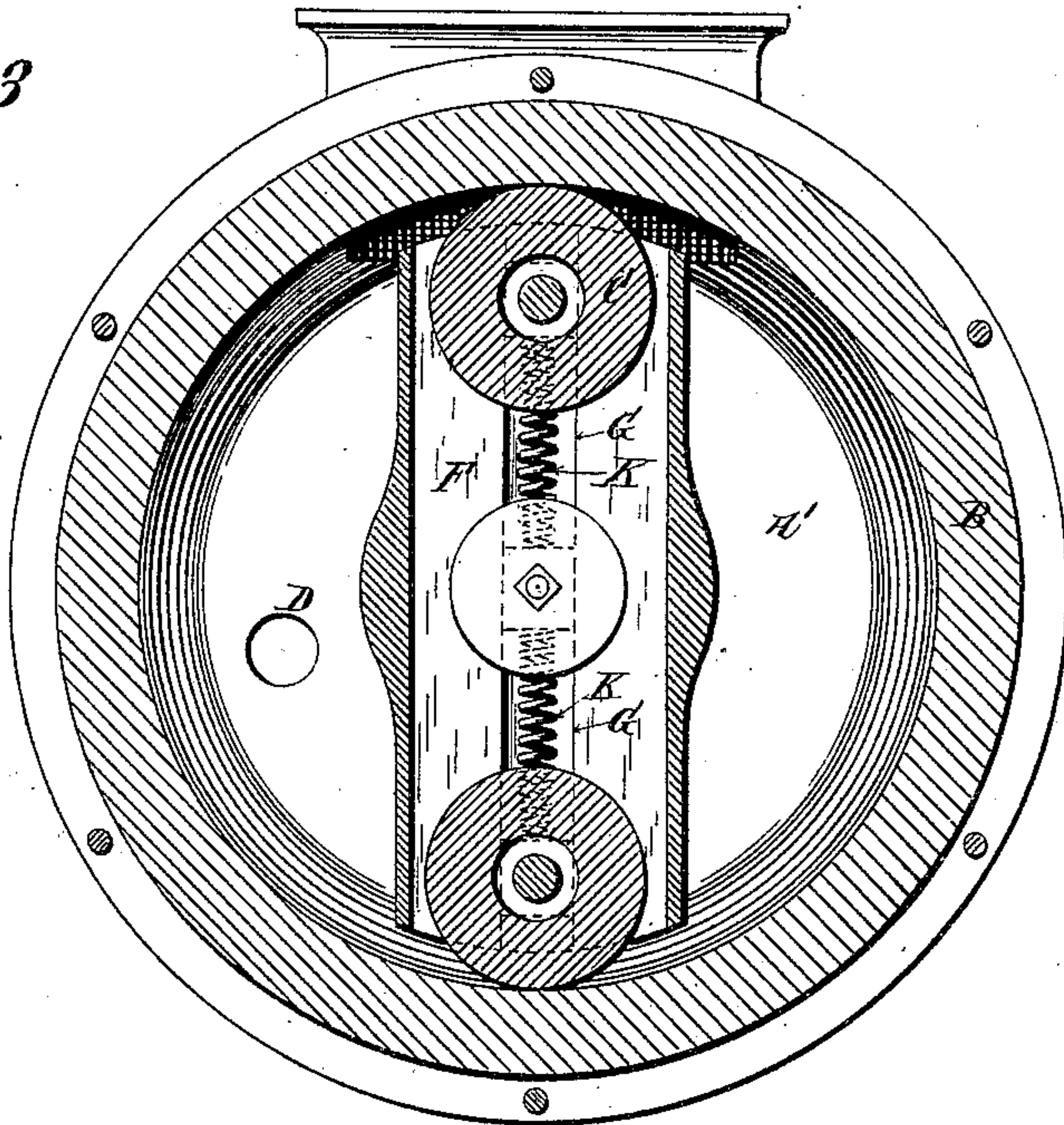
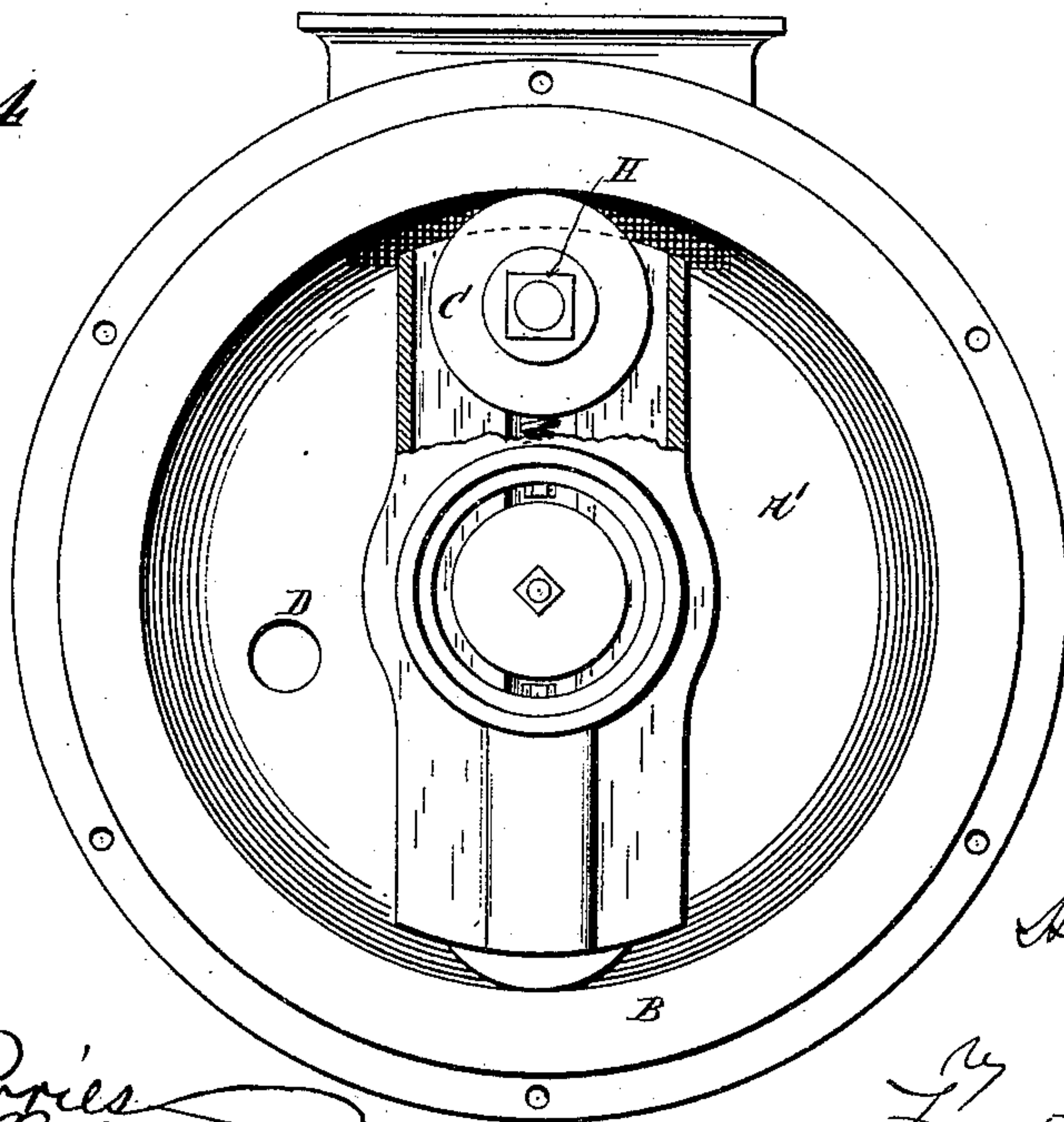


Fig. 4



Witnesses:
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UNITED STATES PATENT OFFICE.

HENRY A. DUC, JR., OF CHARLESTON, SOUTH CAROLINA.

ROLLER-MILL.

SPECIFICATION forming part of Letters Patent No. 429,680, dated June 10, 1890.

Application filed June 24, 1887. Serial No. 242,376. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. DUC, Jr., of Charleston, in the State of South Carolina, have invented a new and useful Improvement in Roller-Mills, of which the following is a full and exact description, reference being had to the accompanying drawings.

My invention relates to an improvement in that class of mills in which one or more rollers are caused to revolve at high velocity in contact with a surface, between which surface and a roller the material to be ground is pressed and disintegrated. A serious difficulty is encountered in this class of mills in the rapid destruction of the journals and bearings in which the rollers are supported. Difficulty is likewise experienced in the proper adjustment of the roller, and in the known devices much more power is expended than is requisite to do the grinding. By my improvement the grit and dust are kept away from the roller-journals, and the machine itself is compact and easily manipulated and repaired.

Figure 1 represents a view, partly in section, showing the internal construction of the casing and the rollers; Fig. 2, a view at right angles to Fig. 1, showing the delivery-openings; Fig. 3, a section through Fig. 1 on the line $x x$ at right angles, showing the rolling-surface in position; Fig. 4, a section through Fig. 1 on the line $y y$.

Similar letters refer to similar parts in the different drawings.

The mill consists, essentially, of a casing $A A'$, carrying the grinding-surface B . The casing $A A'$ consists of two dish-shaped castings bolted together by their flanges upon the grinding-ring B , upon which the rollers C are run. The casing A is pierced at its center to allow of the introduction of the revolving shaft. The casing A' has a corresponding larger opening on the opposite side, allowing the projection of a revolving cylinder attached to the frame which revolves the rollers. A feed-opening D is arranged in the casing A' . Both the casings $A A'$ are provided with delivery-ports $E E'$, which open, as shown, in proximity to the grinding-surface of the wearing-ring B .

The roller-frame F is provided with longitudinal slots G to receive the boxes H , placed

at both ends of the shafts carrying the rollers. The shafts themselves, which rest on these boxes H , are provided with washers J , by means of which the friction between the rollers C and the sides of the frame is diminished. The bearing-blocks H are forced out radially by springs K , thereby preventing the rollers from falling to the center when the machine is at rest.

The revolving frame itself extends outward by the cylinder L open to the atmosphere, the construction of which is manifest from the drawings, Fig. 2. The opening through the cylinder L is made large enough to permit of the withdrawal of the rollers C for repair or alteration.

The openings M in the rollers C may be filled with plumbago or other good lubricant.

The operation of my mill will now be readily understood. The material to be ground is fed through the opening D . On account of the oblate form of the shell it tends to fall upon the grinding-ring B . The rollers are caused to revolve at a high velocity by means of the shaft N , and the roller-frame acts as a fan, drawing in the air through the cylinder L and driving it out past the bearings of the rollers. This air-current, escaping by the delivery-ports $E E'$, serves to blow out the fine dust there, and likewise prevents the grinding and destruction of the revolving rolls. The material itself is constantly being ground between the rollers C and the ring B , and tends to fall back again by gravity upon the lower part of the ring B . When it has been sufficiently reduced, however, it is driven upward and out of the mill by the air-currents caused by the revolving rollers. Additional exhausters upon the delivery-pipes $E E'$ may be employed, if desired.

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

1. In a roller-mill, the combination, with a casing having a grinding-surface and an air-outlet, of a hollow revolving frame within the casing, one side of which is open and communicates with the external air, forming the air-inlet, and the ends of said frame being open and communicating with the interior of the casing, and rollers journaled in the ends of the frame, substantially as described.

2. In a roller-mill, the combination, with a

casing having a grinding-surface and an air-outlet, of a hollow revolving frame within the casing, one side of which is provided with a cylinder forming a journal and an air-inlet, 5 and rollers journaled in the ends of the frame, substantially as described.

3. In a roller-mill, the combination, with a casing having a grinding-surface and an air-outlet, of a hollow revolving frame within the 10 casing, one side of which communicates with the external atmosphere and forms the air-inlet, longitudinal slots in the sides of the frame, blocks in the slots, and rollers journaled in the blocks, substantially as described.

15 4. In a roller-mill, the combination, with a casing having a grinding-surface and an air-outlet, a hollow revolving frame within the casing, the shaft of which is journaled in the sides of the casing and forms the air-inlet at

one end, rollers journaled in the ends of the 20 frame, washers at the sides of the rollers, and a shaft connected with one end of the shaft of the frame for operating it, substantially as described.

5. The combination, in a roller-mill, of a 25 casing having an air-passage therethrough, with a hollow roller-frame within the casing forming a portion of the air-passage, and rollers journaled within the frame, substantially as described.

In testimony whereof I have signed my 30 name to this specification in the presence of two subscribing witnesses.

HENRY A. DUC, JR.

Witnesses:

GEO. S. SMITH,
A. C. SHIRER.