

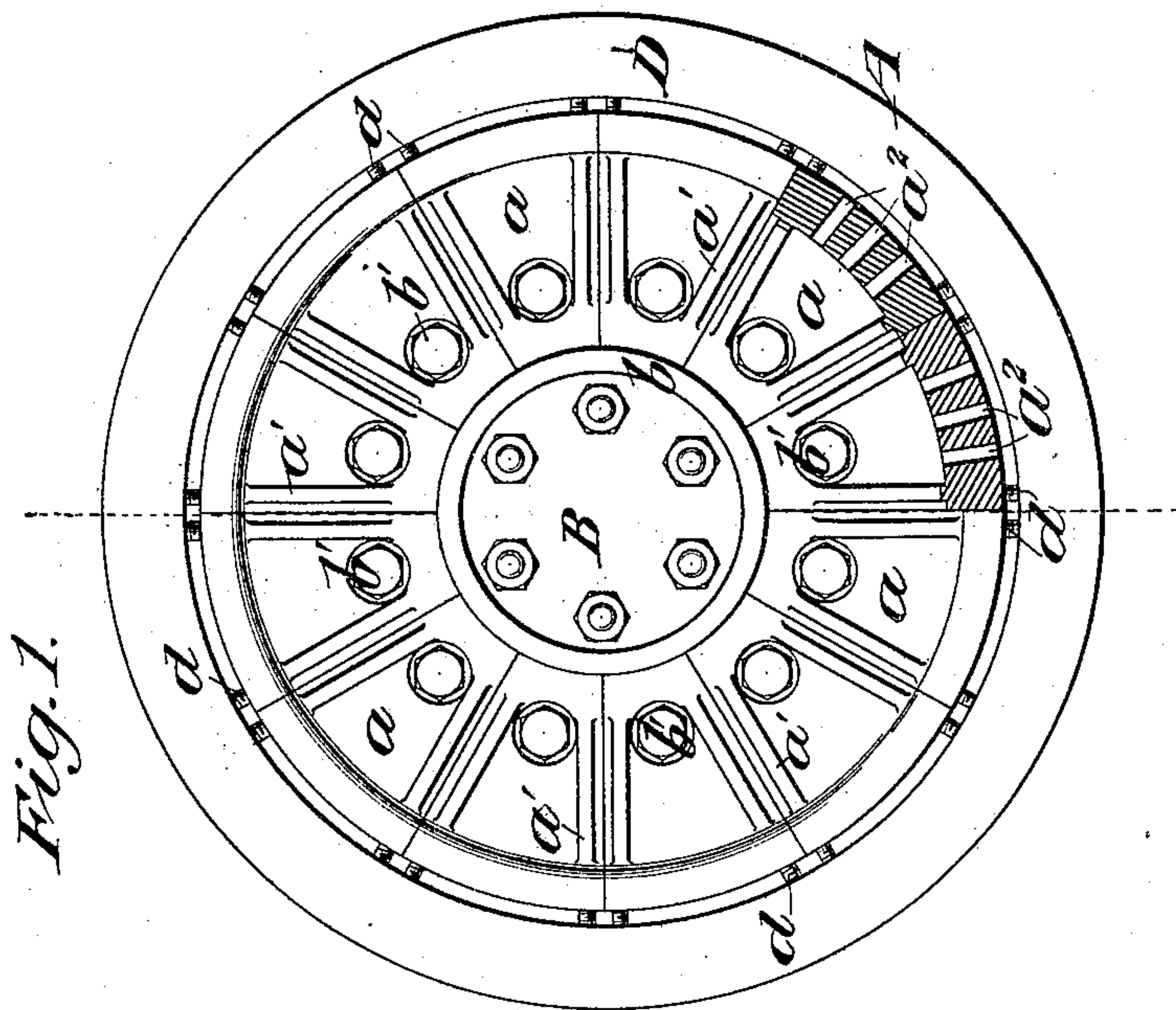
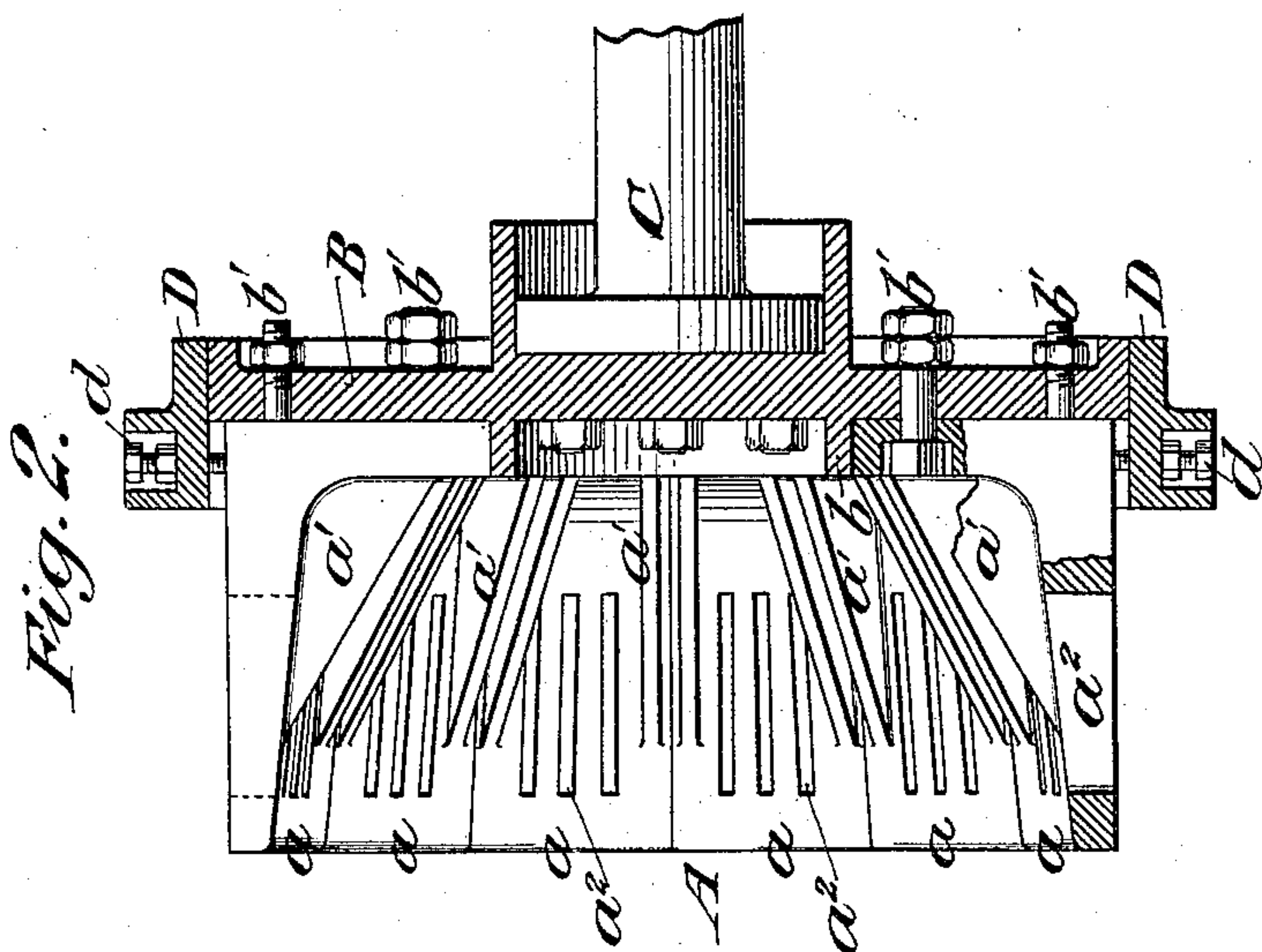
(No Model.)

2 Sheets—Sheet 1.

W. H. HOFFMAN.
BUSHING FOR ATTRITION MILLS.

No. 486,581.

Patented Nov. 22, 1892.



Witnesses:-
O. H. Haywood
D. B. Decker

Inventor:-
William H. Hoffman
by attorneys
Fount & Leonard

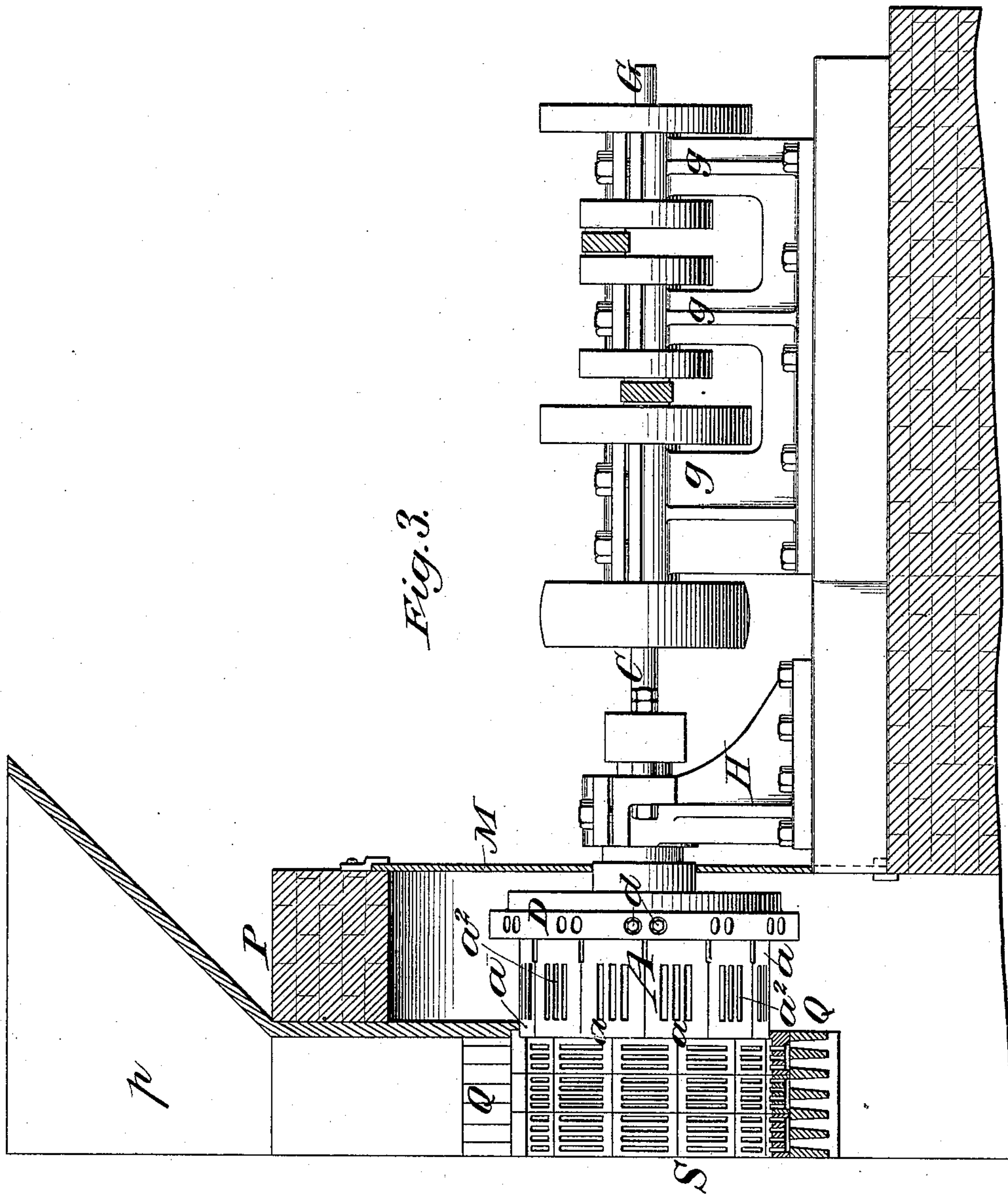
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2 Sheets—Sheet 2.

W. H. HOFFMAN.
BUSHING FOR ATTRITION MILLS.

No. 486,581.

Patented Nov. 22, 1892.



Witnesses:-
D. H. Raybrook
C. Sundgren

Inventor:-
William H. Hoffman
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UNITED STATES PATENT OFFICE.

WILLIAM H. HOFFMAN, OF BREWSTER, NEW YORK.

BUSHING FOR ATTRITION-MILLS.

SPECIFICATION forming part of Letters Patent No. 486,581, dated November 22, 1892.

Application filed December 18, 1891. Serial No. 415,454. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. HOFFMAN, of Brewster, in the county of Putnam and State of New York, have invented a new and useful Improvement in Bushings for Attrition-Mills, of which the following is a specification.

My invention relates to an improvement in bushings for attrition-mills, with the objects in view of preventing them from gaining upon or rotating relatively to the mass of material with which they are engaged, rendering it possible to make them of large diameter and fitting them for use as screens.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 is a face or end view of the bushing, partly in section. Fig. 2 is a central section, taken in the plane of the axis of the bushing; and Fig. 3 shows the application of the bushing to a mill.

The device which I have termed a "bushing," and which is commonly known in the art at the present time by that name, is an open-end cylinder used in connection with the barrel or casing of an attrition-mill for imparting to a mass of material fed into the barrel or casing a whirling motion to grind it against screen-blocks with which the barrel or casing is faced. An attrition-mill of this general character is shown and described in Letters Patent No. 316,921, granted to T. L. Sturtevant April 28, 1885, and such portions of an improved mill of this character as will suffice to show the practical application of the bushing are represented in the present case by Fig. 3.

The bushings are run at a very high speed and their motion is transmitted to the mass of material to be operated upon by the friction of their inner surfaces therewith. If the bushing fail to carry the mass along with it, there is a very considerable increase in wear due to sliding friction and the life of the bushing is materially shortened.

To afford the bushing a better grip upon the mass, I provide its interior with abutments consisting of brackets or webs arranged at intervals and gradually increasing in depth as they extend from the open-end portion of the bushing toward its outer or closed end.

The bushing proper is represented as a whole by A and is secured at its closed end to a chuck or head B, fixed to the end of the drive-shaft C. The brackets or webs above referred to are represented by a' and are here shown as cast integral with the bushing. The bushing A is shown as formed in sections a , so formed that when placed side by side they will form a continuous wall of a cylinder. Their ends toward the chuck or head B are extended toward a central hub b on the head, and they are secured to the head by bolts b' . The sections a are further held against displacement under the strain of centrifugal force by a band D, preferably of wrought metal, iron, or steel, shrunk or closely fitted around the periphery of the chuck or head B and projecting over the ends of the sections a . Set-screws d extend through the band D into engagement with the exterior surfaces of the sections.

The sectional structure of the bushing renders it feasible to construct it of great diameter and at the same time handle it with ease for shipment and setting up. It also admits of the removal of a badly-worn part and its replacement by a new section without the expense of providing an entirely-new bushing. I further provide the bushing, whether it be in a single piece, as heretofore commonly constructed, or in sections, as herein represented, with slots a^2 through its wall, so that the whirling mass which projects more or less within the bushing may, as it becomes disintegrated, find escape through the wall of the bushing and by so much relieve the screen-blocks within the barrel or casing. The slots a^2 also assist the bushing in obtaining a firm grip upon the mass, as their edges present a series of abutments transverse to the direction of the track of the bushing.

The casing of the mill is represented by P, the feed-hopper by p , the screen-blocks by S, the binders for holding the screen-blocks in position by Q, the supports for the bushing-shaft by H and g , the crank portion of the drive-shaft by G, and the portion of the shaft adjacent to the bushing and arranged to telescope into the shaft-section G is denoted by C. The door for inclosing the bushing within the casing is denoted by M.

The structure and arrangement of the parts

of the mill exclusive of the bushing are not a part of my present invention, but form the subject-matter of a separate application, Serial No. 415,453, filed December 18, 1891.

5 What I claim is—

1. A bushing for an attrition-mill, comprising an open-end cylinder provided on its inner face with one or more abutments extending along the curved inner wall of the cylinder toward the closed end of the cylinder for
10 securing a grip upon the material being operated upon, substantially as set forth.

2. A bushing for an attrition-mill, comprising an open-end cylinder having interior webs
15 or brackets connecting the inner curved wall of the cylinder with the closed end of the cylinder and formed integral therewith, substantially as set forth.

3. A bushing for an attrition-mill, comprising

ing an open-end cylinder formed in sections, 20 each section consisting of a portion of the curved body and head of the cylinder, and means for holding the sections in assembled adjustment, substantially as set forth.

4. The combination, with the head or chuck, 25 of the bushing formed in sections and the retaining-band surrounding the sections, substantially as set forth.

5. The bushing comprising an open-end cylinder having elongated slots extending 30 through its curved walls and elongated in the direction of the length of the cylinder, substantially as set forth.

WILLIAM H. HOFFMAN.

Witnesses:

HERBERT F. ANDREWS,
GEORGE BARRY.