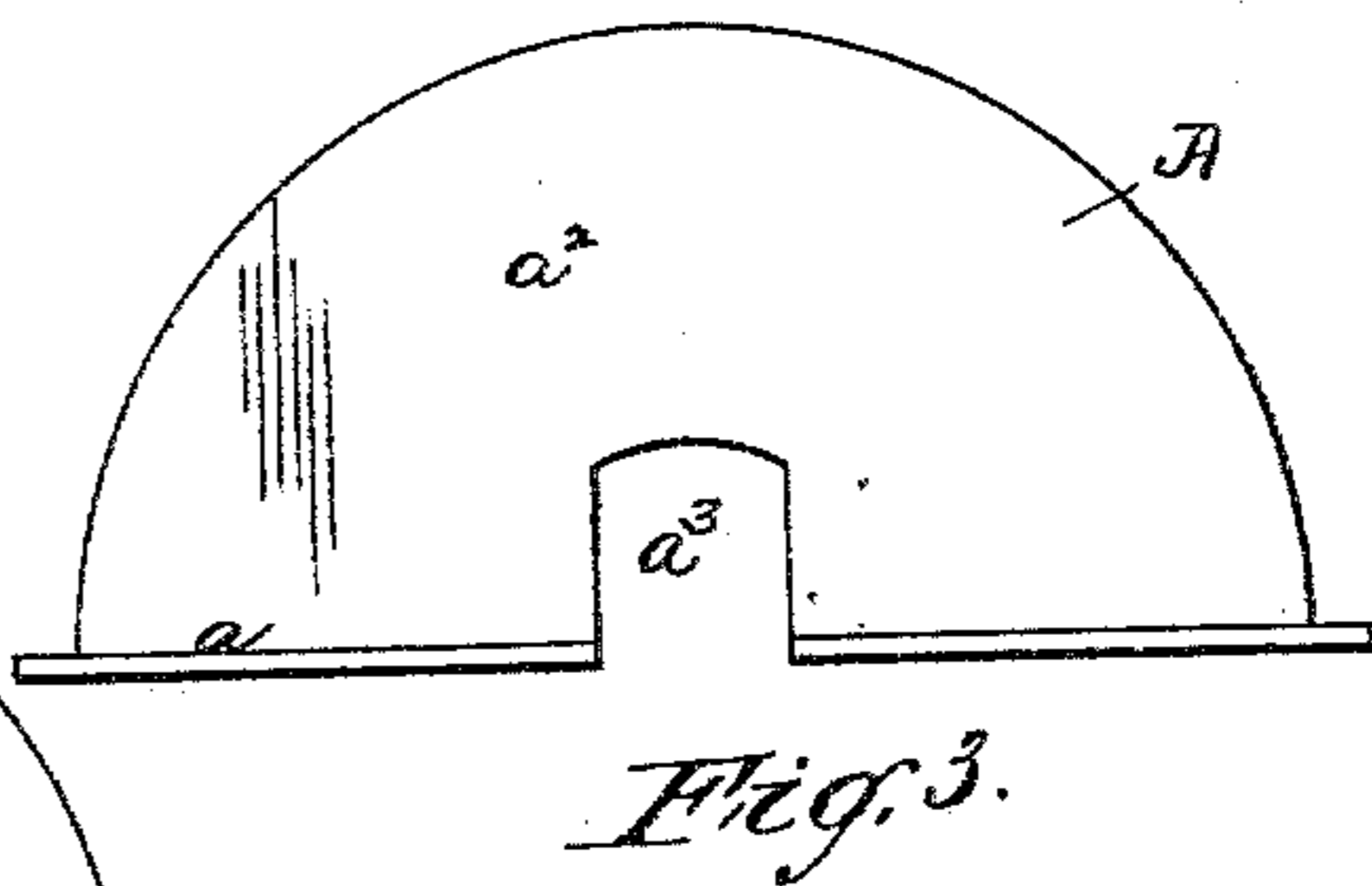
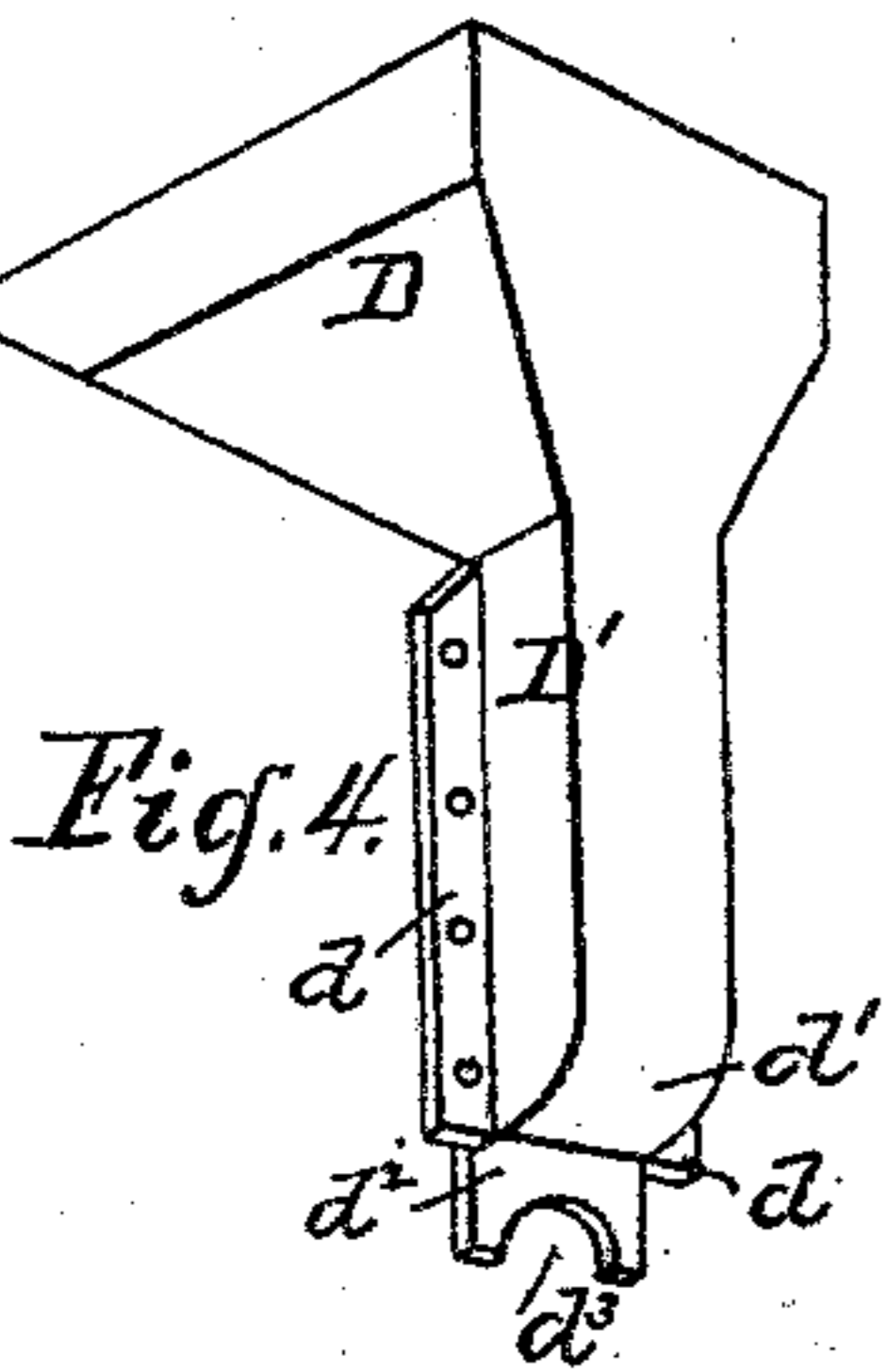
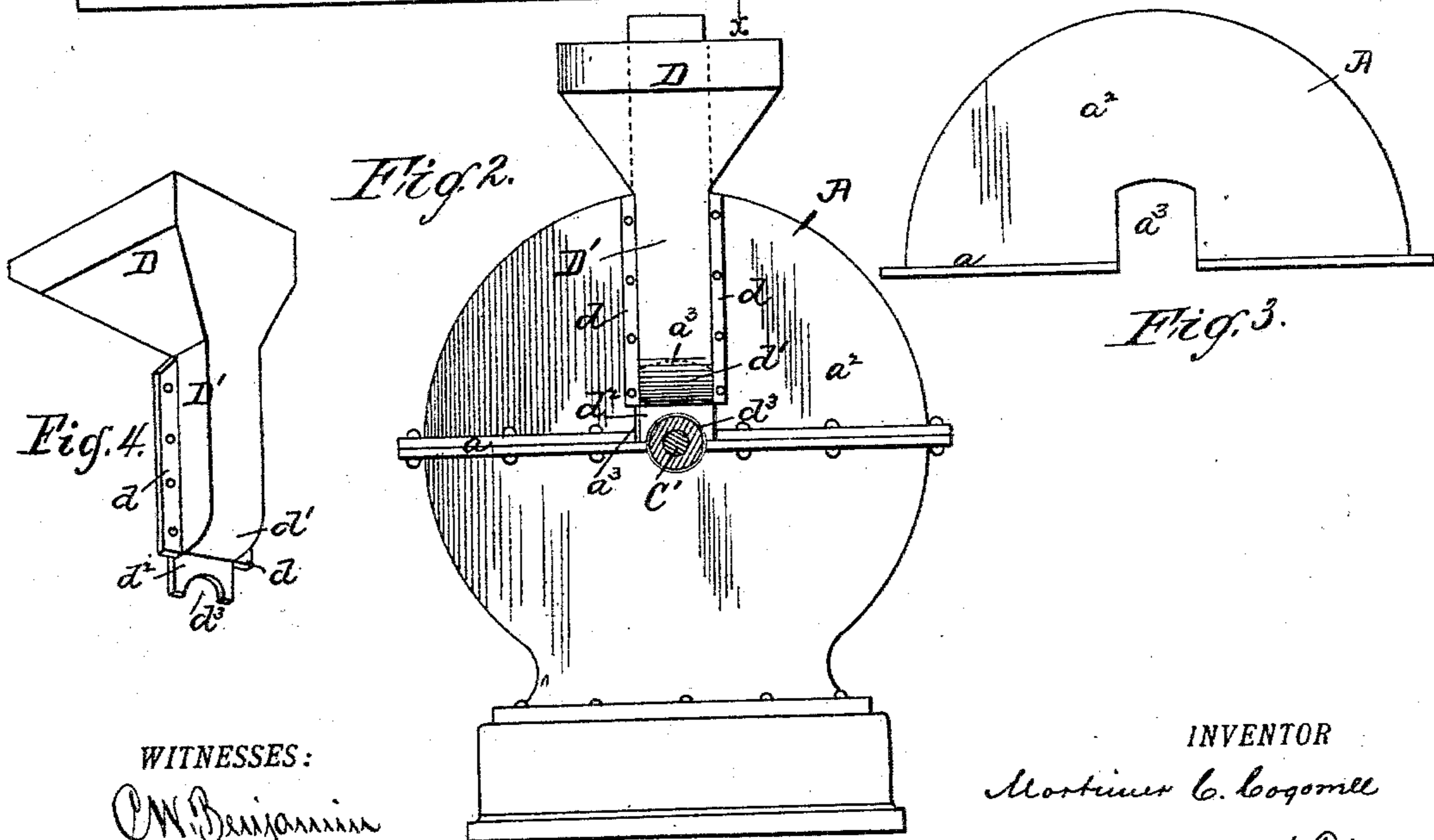
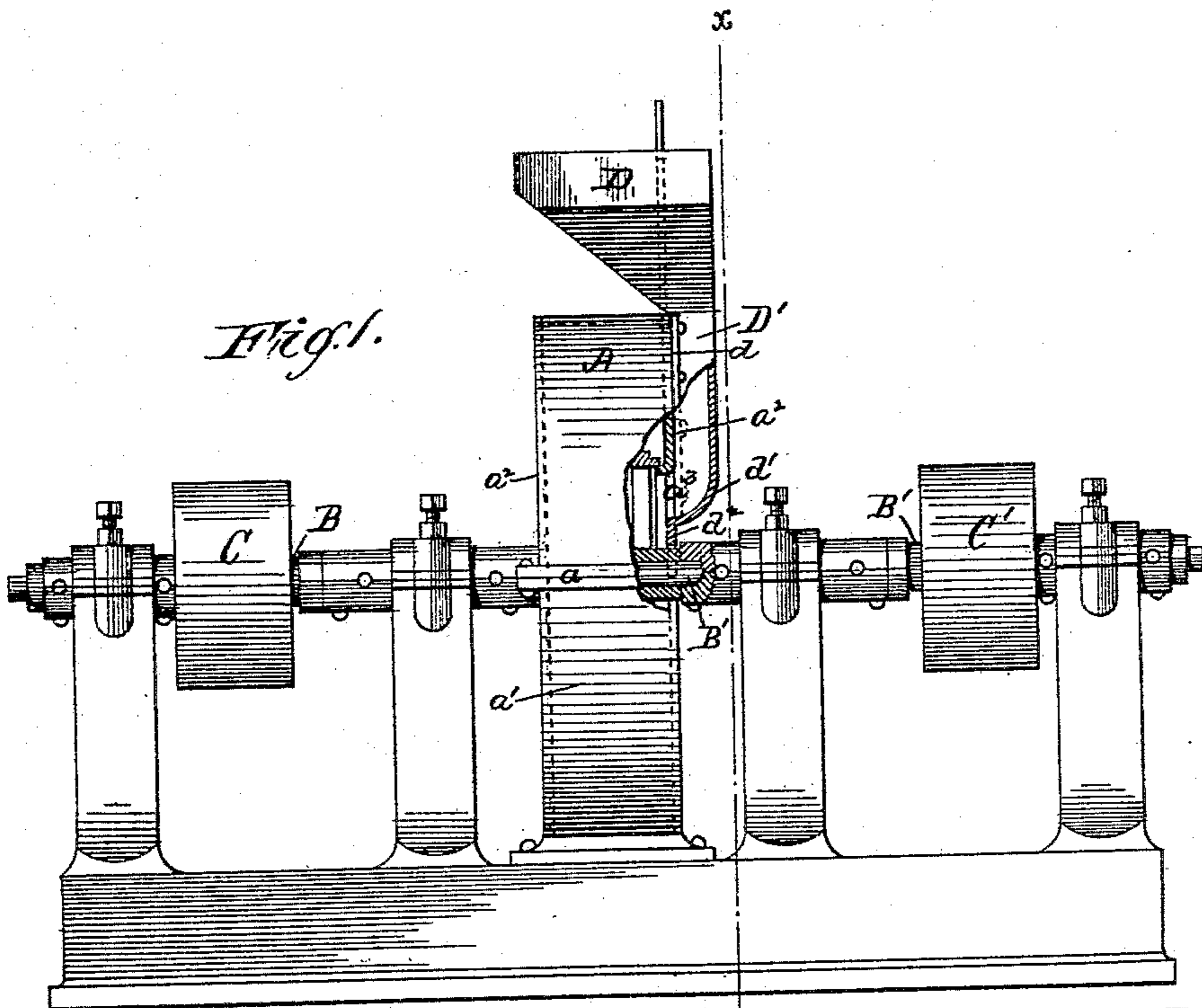


(No Model.)

M. C. COGSWELL.
GRINDING MILL.

No. 412,019.

Patented Oct. 1, 1889.



WITNESSES:
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MORTIMER C. COGSWELL, OF BROOKLYN, NEW YORK.

GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 412,019, dated October 1, 1889.

Application filed April 21, 1888. Serial No. 271,431. (No model.)

To all whom it may concern:

Be it known that I, MORTIMER C. COGSWELL, of Brooklyn, county of Kings, State of New York, a citizen of the United States, have invented certain new and useful Improvements in Grinding-Mills, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to improvements upon the grinding-mill for which Letters Patent of the United States No. 324,363, dated August 18, 1885, and No. 367,189, dated July 26, 1887, were granted to me; and my invention consists in the combination, with the inclosing-case for the grinding-disks, in the heads of which, one or both, is the hereinafter-described opening, and the driving-shaft passing through said opening, of a hopper-spout on the exterior of said case-head and extending thereon to said opening therein, and having the hereinafter-described bottom piece leading into said opening in the case-head alongside the driving-shaft and provided with the hereinafter-described web or lip carried by said bottom and adapted to fit edgewise into and fill said opening between said spout-bottom and the shaft-surface and to conform to the latter, substantially as and for the purpose hereinafter set forth.

Figure 1 is a side elevation of my grinding-mill, with the wall of the disk-inclosing case and hopper-spout cut away to show the parts embodying my present improvement. Fig. 2 is an end elevation of the disk-inclosing case and the hopper, taken on the vertical section line $x x$, Fig. 1. Fig. 3 is a side elevation of the upper half of the inclosing-case, showing the feed and driving-shaft opening formed in accordance with my present invention; and Fig. 4 is an elevation in perspective of the hopper and its spout.

A represents the case which incloses the revoluble grinding-disks, said disks being driven by the shafts B B', respectively, mounted in bearings, as shown, and provided with driving-pulleys C C', respectively. The grinding-disks (not shown) are capable of being revolved rapidly in opposite directions within their inclosing-case A, and the grain

or other material to be ground is fed into the case at or near the center of one or both of the heads of the case, and thence through a central aperture in one of the disks to and between the disks, where the reduction to meal or powder is accomplished by attrition.

A further description of the operation of the grinding devices of the mill is not required herein for the understanding of my present specific improvements.

The case A, inclosing the grinding-disks, I have constructed in the form of two hemicylinders, flanged at their contiguous rims and bolted together at such flanges, as shown at a . The inclosing-case thus formed consists of a cylindrical rim a' and sides or heads a^2 . The shafts B B' enter the case from opposite sides thereof through central openings formed in the heads, as shown. The hopper D is seated upon the top or upper edge of the case A, and its spout D' leads down to near the center of one of the case-heads, where it communicates with the interior of the case through an opening in the head somewhat above the line of the driving-shaft.

Heretofore in constructing my mill I have formed the feed-opening in the case-head just above the semicircular opening in the upper half thereof, which, in connection with a corresponding circular opening in the lower half, constitutes the aperture for the driving-shaft; but I have found that the thin or narrow web of metal (the case being preferably a thin iron casting) between the semicircular shaft-opening and the feed-opening in the upper half of the case-head is exceedingly liable to be fractured, thus injuring the durability and the effectiveness of operation of the mill structure, inasmuch as the opening resulting from the fracture of this described web of metal around the shaft in the case-head renders the contents of the case undergoing grinding liable to escape from the case. For the purpose of obviating this structural defect in the inclosing-case I have devised my present invention.

Upon one side, preferably the upper, of the shaft as it passes through the case-head a^2 , I form in the case-head the wide and deep notch or opening a^3 , extending from the me-

dian or axial line of the shaft to the point in the head at such distance from the shaft as will enable the material to be ground to enter the case above or at the side of the shaft.

5 The spout D' of the hopper is preferably constituted of a flanged trough, which is bolted at its flanges d to the exterior of the head a^2 , the head thus constituting one wall of the spout. The outer wall d' of the spout is
 10 curved or inclined inward at its lower end toward the case-wall, thus constituting a bottom piece, which extends to and into the opening a^3 in the head and terminates in said opening a little distance to one side or above
 15 the shaft, as shown. The lower end of the spout is provided with the angular lip d^2 , the plane of which is at right angles to the axis of the shaft, and said lip is adapted in outline and area to fit into and close that portion
 20 of the opening a^3 in the case-head a^2 which is between the lower extremity of the spout and the shaft, and said lip is furthermore provided on the edge thereof adjacent to the shaft with the semicircular aperture or
 25 recess d^3 , adapted to fit loosely upon and without actual contact with the shaft. It is preferable that the trough-piece constituting the spout D' , as described, and the lip d^2 should be a metal casting—such as thin
 30 iron—the lip being integral with the spout itself. By the means described the opening a^3 around the side of the shaft is effectively closed, and the lip d^2 being joined throughout its width to the spout-piece the liability
 35 of its fracture from any cause is much less

than that of a metal web in the head between the shaft and the feed openings, and joined to said head only at the narrow ends or extremities of the web.

As it is important that the feed-opening 40 admitting the material to be ground to the case and between the grinding-disks should be as near the center of the case and disks as possible, for the effectiveness of the mill, such opening is necessarily close to the shaft. By 45 the means I have described this arrangement of the said opening is secured, and the space between the shaft and said opening is closed in a durable and effective manner.

What I claim as my invention, and desire 50 to secure by Letters Patent, is—

In a grinding-mill, the combination, with the inclosing-case A, in the head a^2 of which is the described opening a^3 , and the driving-shaft B, passing through said opening, of the 55 hopper-spout D' on the exterior of said case-head and extending thereon to said opening therein, and having the described bottom d' leading into said opening in the case-head alongside said shaft, and provided with the 60 web or lip d^2 , carried by said bottom and adapted to fit edgewise into and fill said opening in the case-head between said spout-bottom and the shaft-surface, and to conform to the latter, substantially as and for the purpose 65 specified.

MORTIMER C. COGSWELL.

Witnesses:

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 A. T. FALES.