

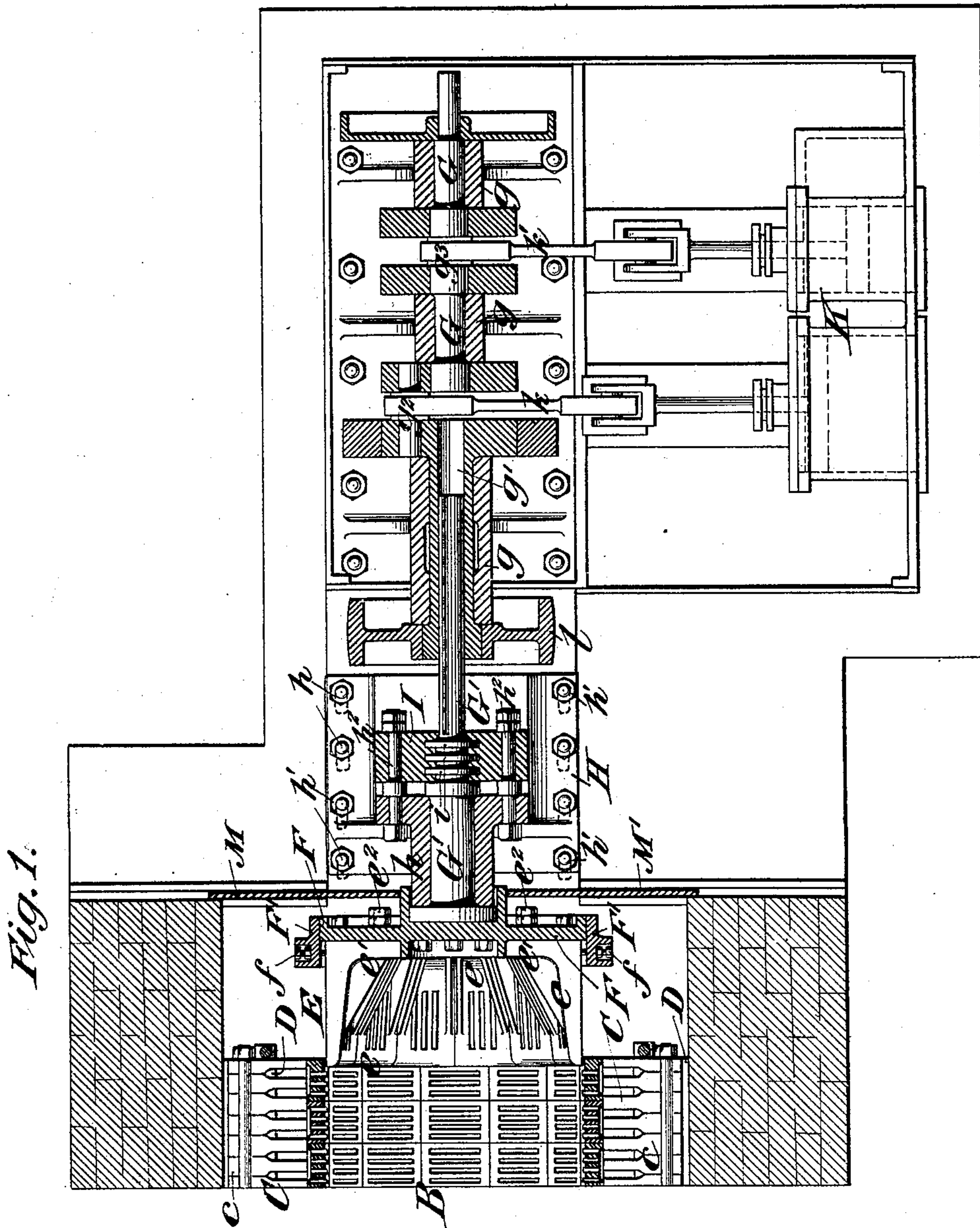
(No Model.)

3 Sheets—Sheet 1.

W. H. HOFFMAN.
ATTRITION MILL.

No. 486,580.

Patented Nov. 22, 1892.



Witnesses:-
O. H. Kaybrook
J. B. Decker

Inventor:-
William H. Hoffman
by attorneys
Brown & Dewar

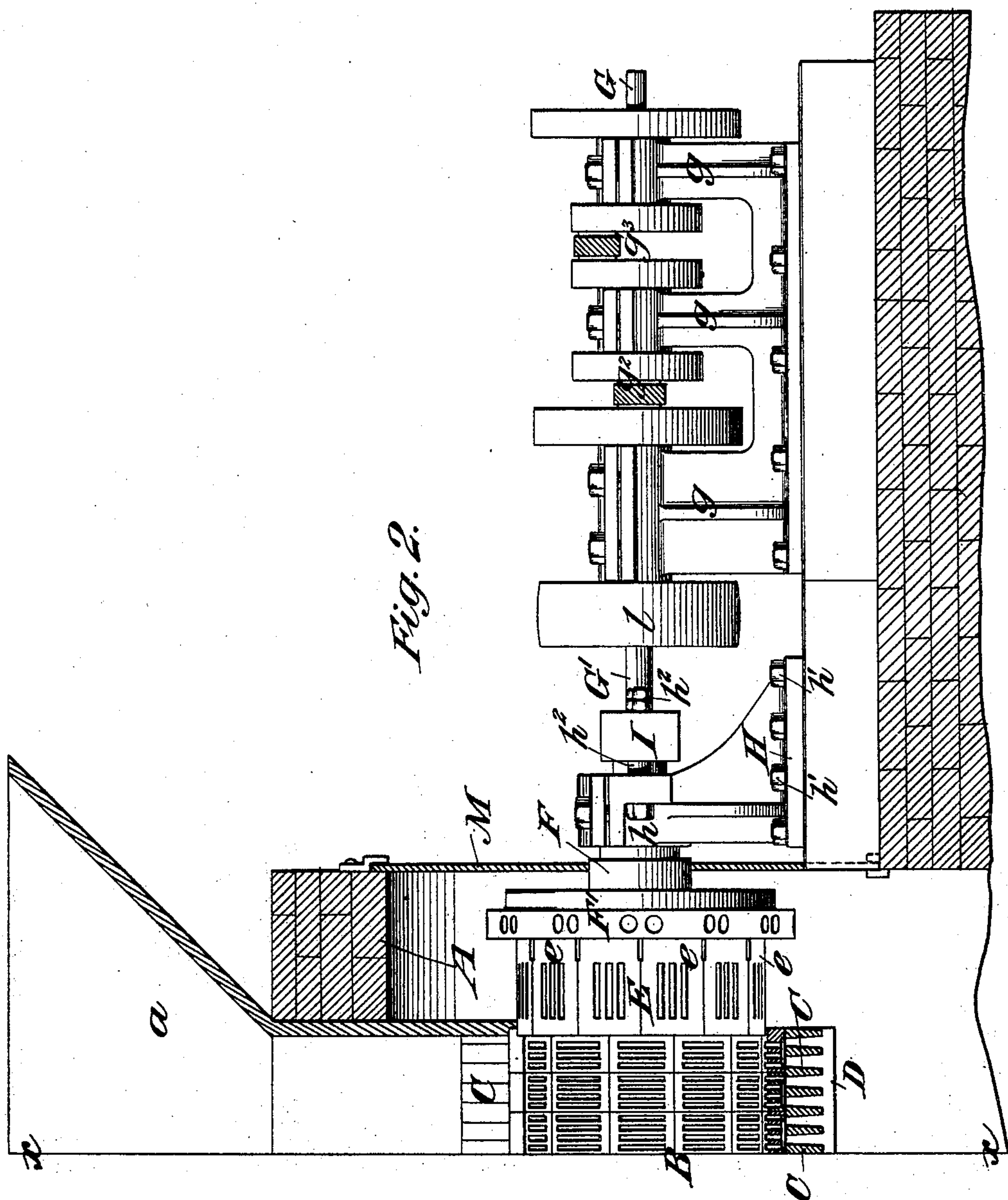
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3 Sheets—Sheet 2.

W. H. HOFFMAN.
ATTRITION MILL.

No. 486,580.

Patented Nov. 22, 1892.



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

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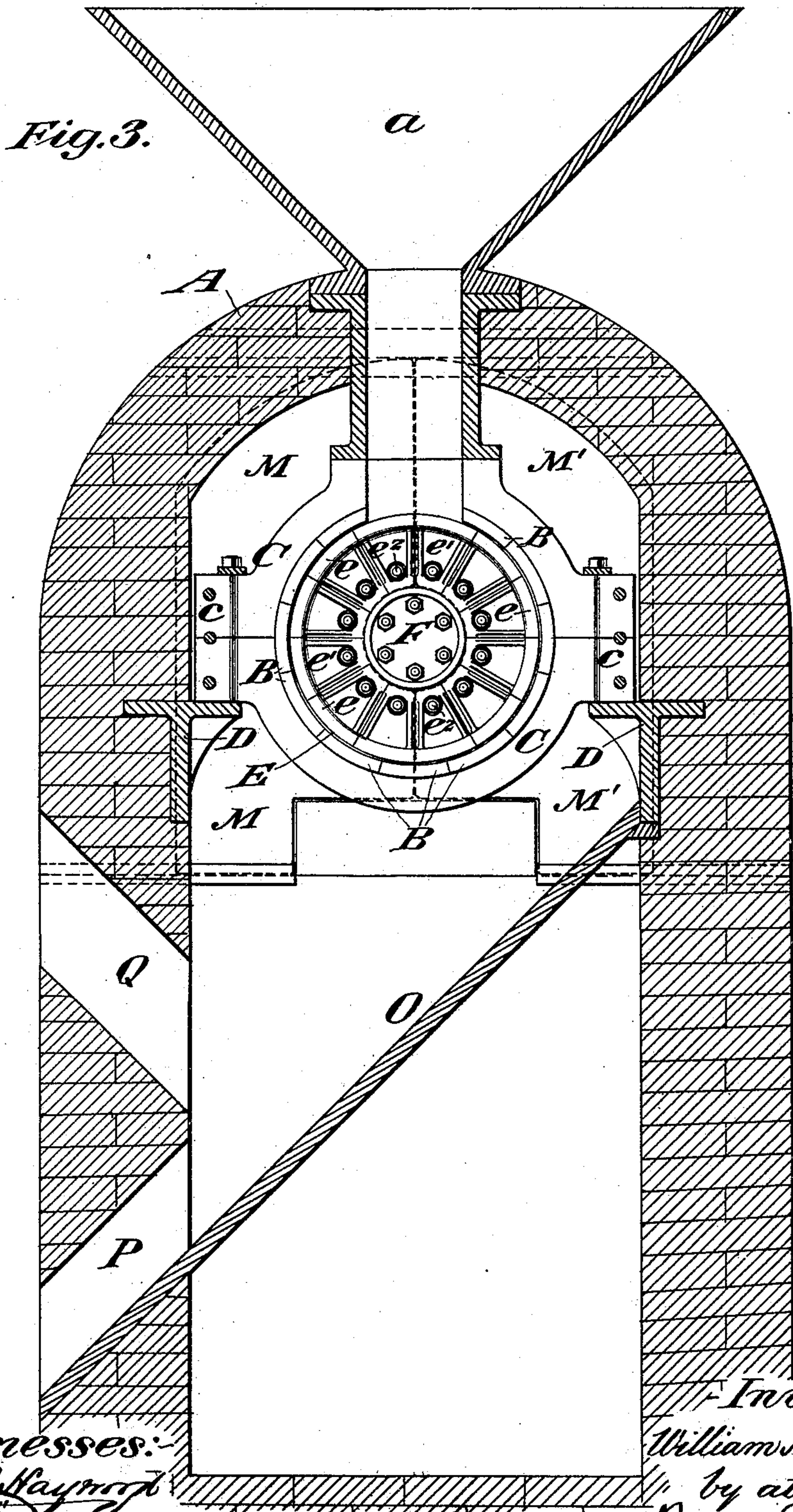
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3 Sheets—Sheet 3.

W. H. HOFFMAN.
ATTRITION MILL.

No. 486,580.

Patented Nov. 22, 1892.



Witnesses:
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Inventor:
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UNITED STATES PATENT OFFICE.

WILLIAM H. HOFFMAN, OF BREWSTER, NEW YORK.

ATTRITION-MILL.

SPECIFICATION forming part of Letters Patent No. 486,580, dated November 22, 1892.

Application filed December 18, 1891. Serial No. 415,453. (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 Attrition-Mills, of which the following is a specification.

My invention relates to an improvement in attrition-mills of the general type known in the art as the "Sturtevant mill," shown and described in Letters Patent No. 316,921, granted to T. L. Sturtevant April 28, 1885.

The object is to render it feasible to construct mills of this character of large size and to provide for driving the bushings by a motor directly connected with the bushing-shaft and at the same time permit the bushing to be adjusted toward and away from the casing without disturbing the portion of the shaft connected with the motor.

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

Figure 1 is a view of a portion of a mill in horizontal section. Fig. 2 is a view of the same in side elevation, partly in section; and Fig. 3 is a transverse vertical section on line $x x$ of Fig. 2.

In the drawings I have represented one of the bushings and its mounting, adjusting, and driving mechanism. In a complete mill of this type there would be a similar bushing and its attendant parts located upon the opposite side of the casing, into which the material to be operated upon is fed, and such bushing and its attendant parts would be quite similar to those shown and arranged symmetrically with respect thereto.

The bed-support for the mill is formed of masonry, and the portion opposite the screen-blocks and bushings is extended up and over in the form of an arch A to form the casing of the mill.

The screen-blocks B, which form the wall of the chamber into which the material is fed through the hopper a , are held in position by a series of binders C, made in half-sections and provided with meeting flanges c , by means of which the half-sections may be secured together by bolts or other well-known fastening device and which further serve to support the binders upon brackets D, let in or firmly fixed to the interior wall of the mason-work.

The bushing, represented as a whole by E, is made up of horizontal sections e , which when assembled form a cylinder. The outer ends of the sections e have flanges e' , which extend toward the axis of the bushing and receive bolts e^2 , which extend through the head or chuck F to fasten the sections firmly to the head. A rim F', preferably of wrought metal, surrounds the outer ends of the sections and is preferably shrunk or tightly fitted onto the head. Through the rim F' extend binding-screws f into engagement with the several sections of the bushing and serve in connection with the bolts e^2 to hold the sections securely in place.

The shaft for driving the bushing is made in two sections G and G'. The section G is mounted in fixed bearings g , so as to rotate freely, but is held against longitudinal movement. The section G' is so connected with the section G as to be caused to rotate therewith and is at the same time allowed a longitudinal adjustment relatively to said section G. The bushing is fixed to one end of the shaft-section G', and the motor is connected directly with the section G. The shaft-section G', carrying the bushing, is mounted in a bearing h on a movable support H, the latter adapted to be fixed in the desired adjustment to bring the bushing into the proper relation to the chamber walled by the screen-blocks. Such adjustment may be effected by bolts h' , extending through the base of the support into the bed-frame. To take up wear and hold the bushing up to its work, I provide a thrust-block I, through which the shaft-section G' extends and with the recessed interior of which the annular flanges or rings i on the shaft engage. The thrust-block is secured to the support H by means of draw-bolts h^2 . The shaft-section G is provided with a bore g' , extending inwardly from its end toward the bushing and adapted to receive with a close-sliding fit the end of the shaft-section G'. The ordinary feather and groove may be utilized to connect the shaft-section G' with the section G. The shaft-section G is provided with one or more cranks—in the present instance with two g^2 and g^3 —set at right angles to each other, and to these cranks the connecting-rods $k k'$ of a compound engine K are attached. The motor, however, is a mat-

ter of choice and may be an electric, a compressed-air, or a water motor instead of a steam-engine. A driving-pulley *l* is fixed on the hollow portion of the shaft-section *G'* for imparting motion to an elevator (not shown) used to convey the material to be operated upon to the hopper. The end of the arched casing is closed by a pair of doors *M M'*, which may be made of sheet or plate metal and which may be utilized to gain admission to the interior of the casing. A slanting guide *O* within the casing below the screen-blocks and bushing directs the mass which escapes through the screen-blocks to a discharge-opening *P*, and an air-exhaust conduit *Q* connects with the interior of the casing above the discharge-opening.

By the above construction and arrangement I am enabled to apply the motive power directly to a bushing-shaft while that portion of the latter to which the power is applied is held against longitudinal movement, and at the same time that portion of the shaft to which the bushing is fixed may be moved longitudinally to withdraw the bushing from the grinding-chamber to gain access to the chamber and to advance it within the end of said chamber as it becomes worn.

The bushing built up of sections renders it convenient to cast, ship, and assemble the parts and provides for the renewal of any badly-worn section without the furnishing of an entirely-new bushing, and the mason-work casing, while furnishing a firm and substantial support for the screen-blocks, preventing any considerable tremble under the force of the rapidly-revolving mass, also withstands the action of the mass escaping through the screen-blocks and wears away much more slowly than a metal wall in the same position.

What I claim is—

1. The combination, with the casing and the screen-blocks located therein, of a sectional shaft, one section having a longitudinal movement relative to the other section, a bushing fixed to the longitudinally-movable section in position to move toward and away from the screen-blocks within the casing, and means for holding said movable shaft-section in its adjustments, substantially as set forth.

2. The combination, with the sectional shaft, one section having a longitudinal movement relative to the other section, of a bushing fixed to the longitudinally-movable section, a movable support for said movable section, a thrust-block engaged with said section and with the movable support, and means for actuating the shaft, substantially as set forth.

3. The combination, with the mason-work casing and the screen-blocks supported therein, of the bushing removably housed within said casing, substantially as set forth.

4. The combination, with the mason-work casing, the screen-blocks supported therein, and the bushing having a movement toward and away from the screen-blocks, of the doors forming a closure at the end of the casing for housing the bushing within the casing, substantially as set forth.

5. The combination, with the casing and the supporting-brackets fixed to the opposite walls thereof, of the screen-blocks and the series of sectional independent binders resting upon the supporting-brackets and holding the screen-blocks in position, substantially as set forth.

WILLIAM H. HOFFMAN.

Witnesses:

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GEORGE BARRY.