

(No Model.)

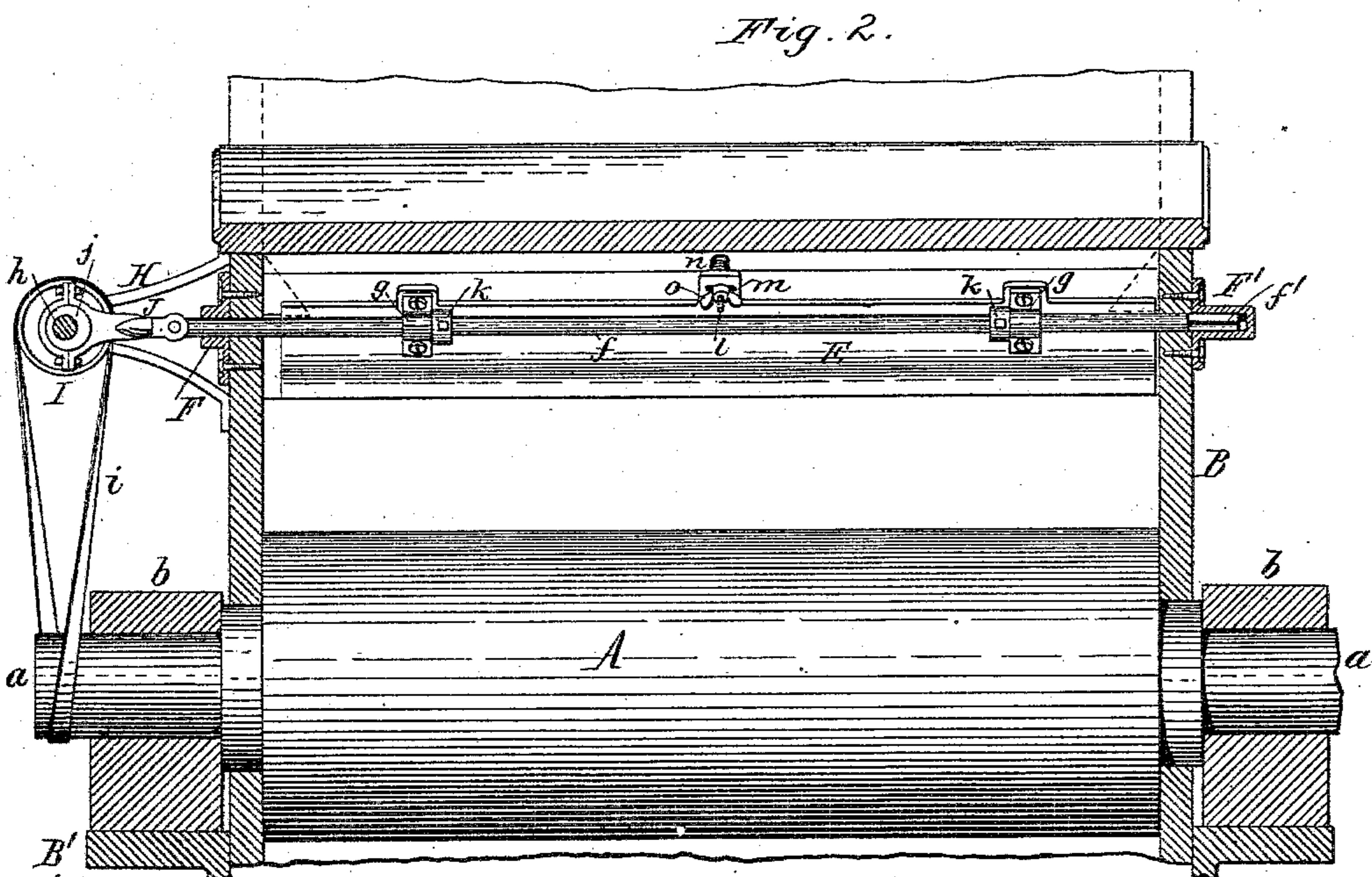
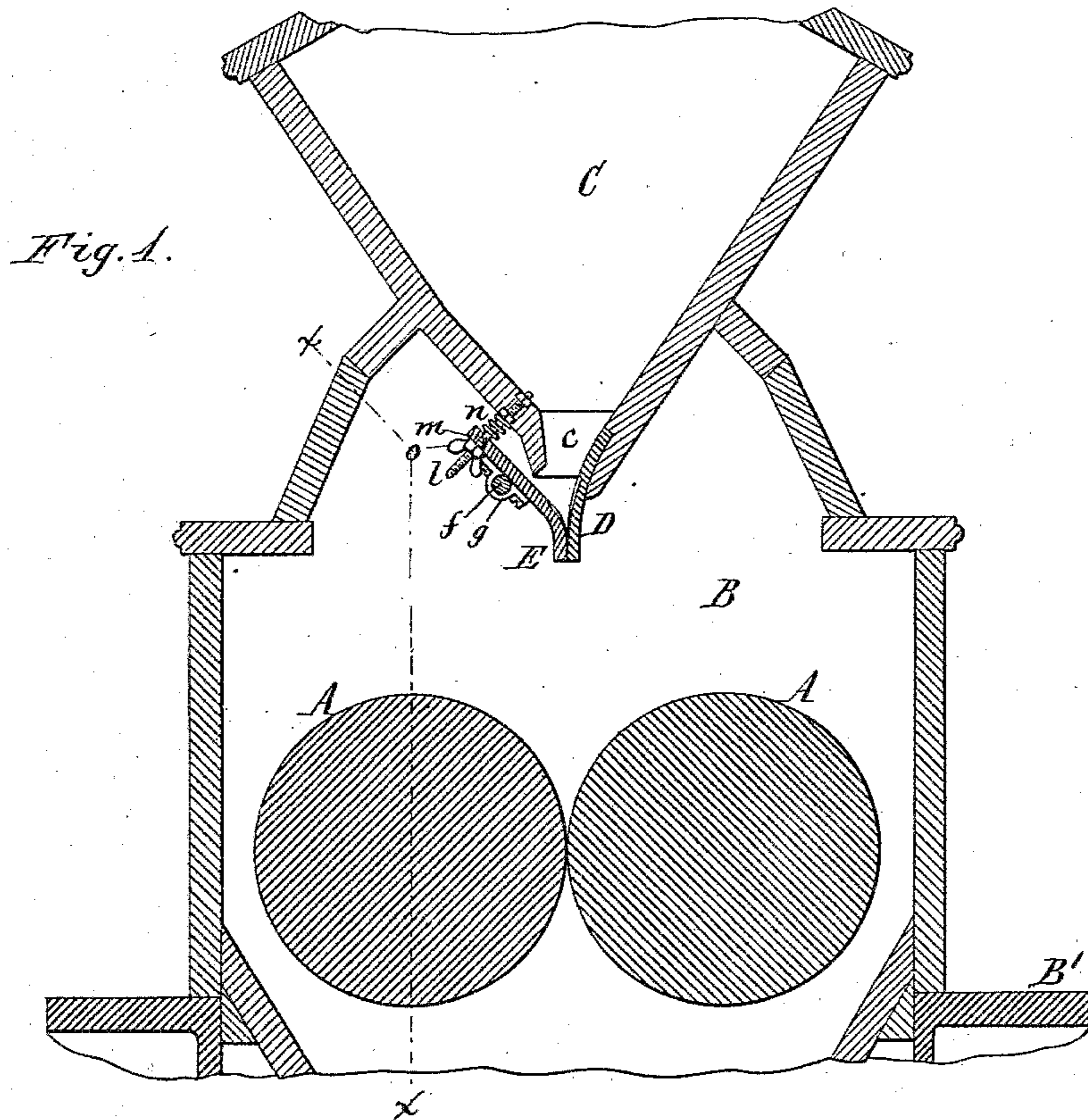
2 Sheets—Sheet 1.

B. F. ORTMAN.

FEED MECHANISM FOR ROLLER MILLS.

No. 295,043.

Patented Mar. 11, 1884.



Theo. L. Popp
Chas. Buchheit Witnesses.

B. F. Ortman Inventor.
By Wilhelm Ortmann Attorneys.

2 Sheets—Sheet 2.

FEED MECHANISM FOR ROLLER MILLS.

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Fig. 3.

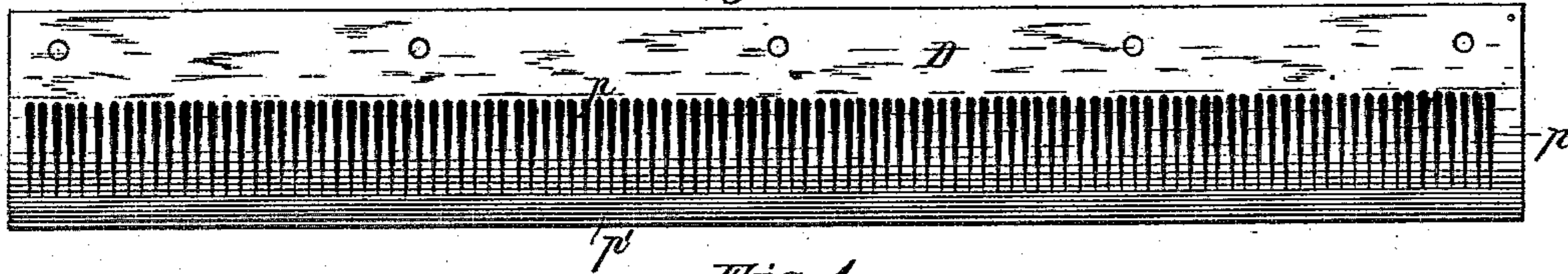


Fig. 1.

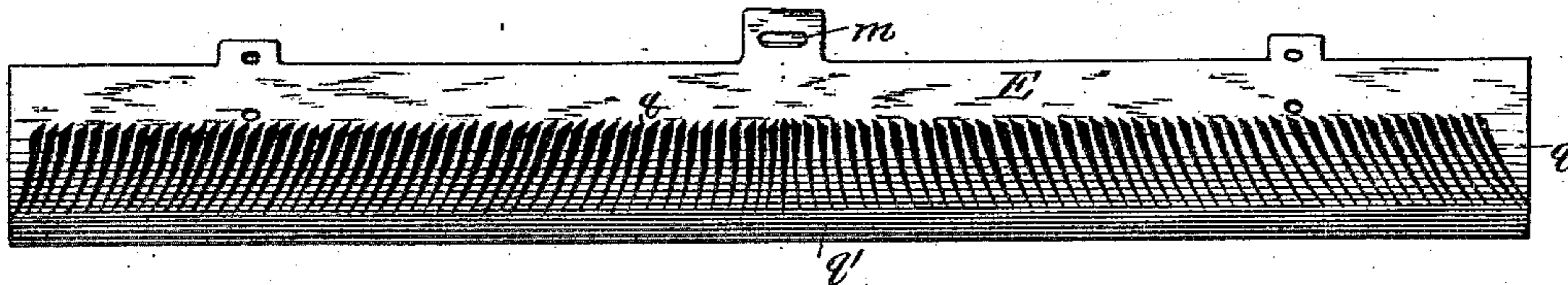


Fig. 5.



Fig. 6.

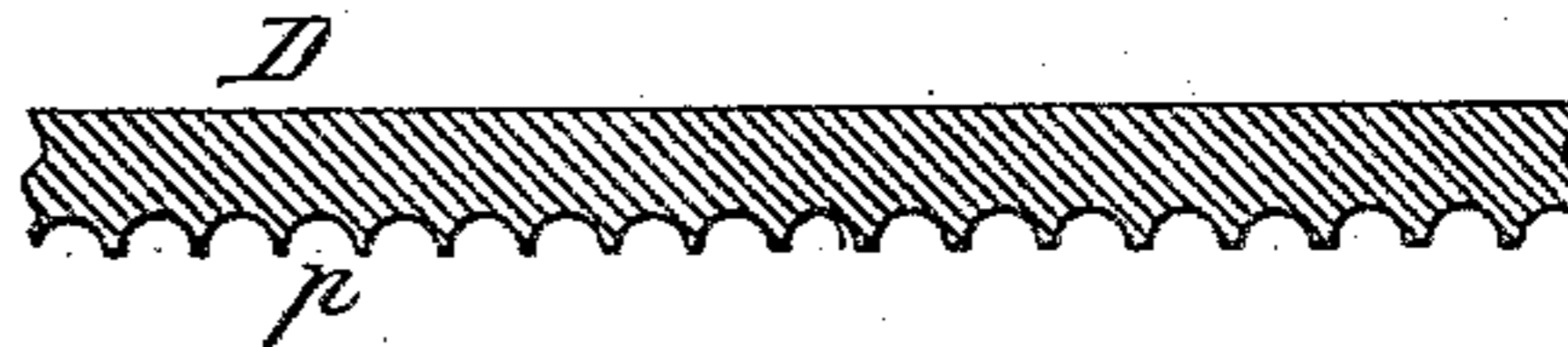


Fig. 7.

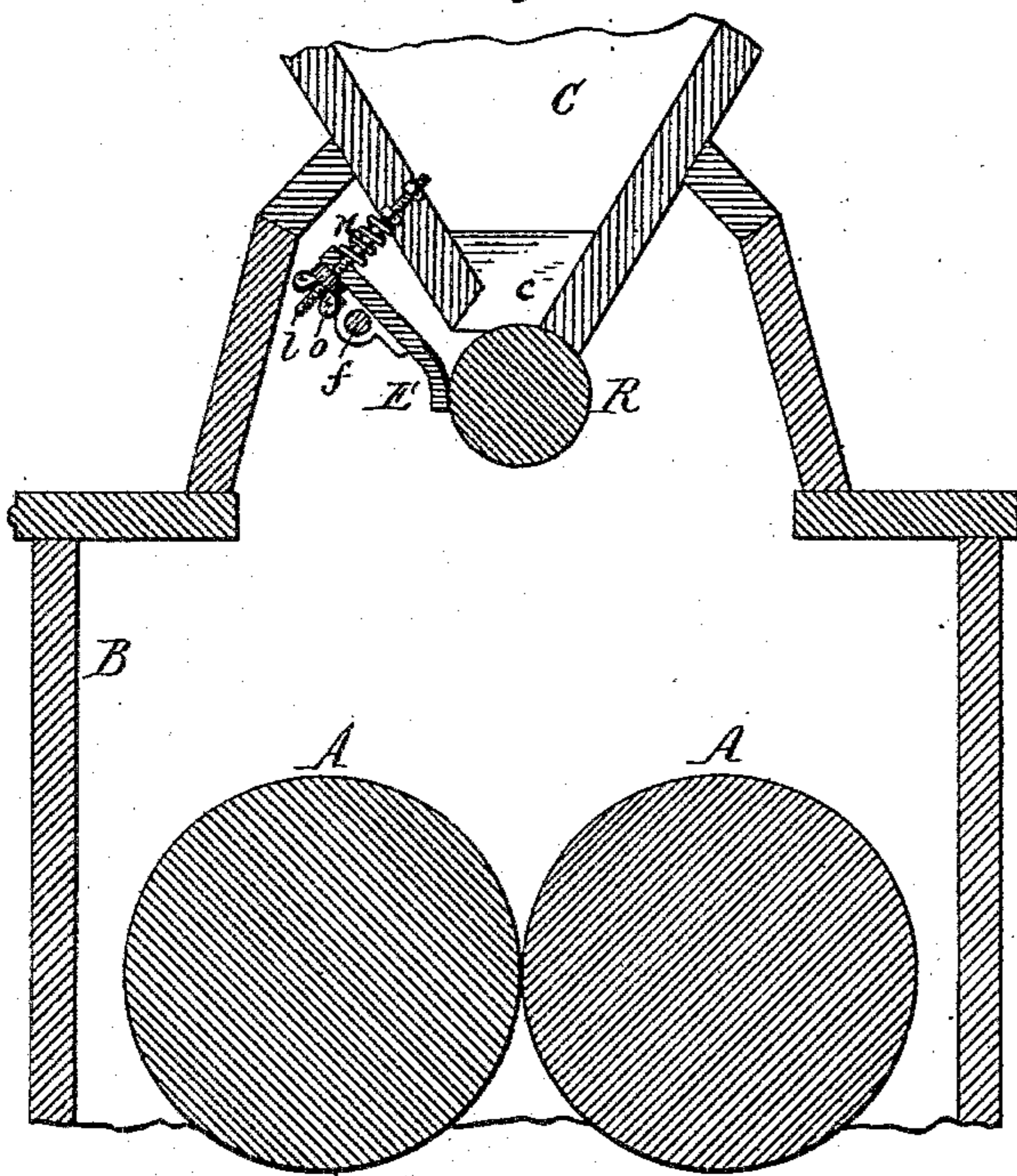
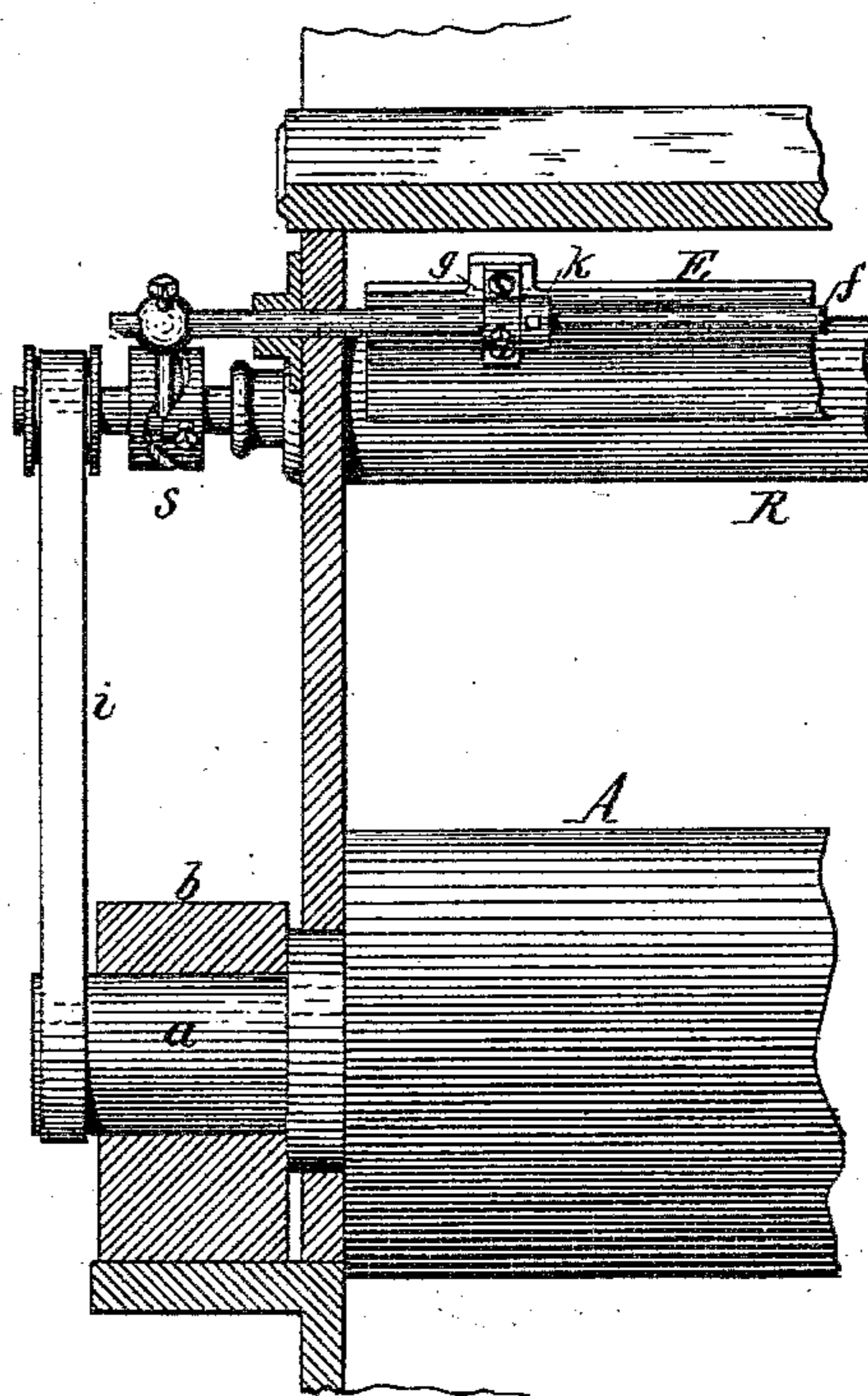


Fig. 8.



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UNITED STATES PATENT OFFICE.

BARNIM F. ORTMAN, OF BUFFALO, ASSIGNOR OF ONE-HALF TO GEORGE URBAN JR., OF CHEEKTOWAGA, NEW YORK.

FEED MECHANISM FOR ROLLER-MILLS.

SPECIFICATION forming part of Letters Patent No. 295,043, dated March 11, 1884.

Application filed October 13, 1883. (No model.)

To all whom it may concern:

Be it known that I, BARNIM F. ORTMAN, of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Feed Mechanism for Roller-Mills, of which the following is a specification.

This invention relates to an improved construction of a feed mechanism employed in roller-mills for feeding the material to be reduced between grinding and crushing rollers, and has for its object to produce a mechanism whereby the material is fed in a stream of uniform thickness from the feed-hopper to the reducing mechanism evenly across the entire width of the reducing mechanism. Heretofore feed-rollers have been generally employed for this purpose; but it is found in practice that they do not feed uniformly when the material is of a fuzzy or adhesive character.

My invention consists of the improvements in the construction of the feed mechanism, which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 represents a vertical section of a roller-mill provided with my improved feed mechanism, the section being taken at right angles to the axis of the rollers. Fig. 2 is a sectional elevation at right angles to Fig. 1, in line *xx*, Fig. 1, the roller being shown in elevation. Fig. 3 is a face view of the delivery-plate attached to the throat of the feed-hopper. Fig. 4 is a face view of the shaking feed-gate. Fig. 5 is a fragmentary longitudinal section of the shaking feed-gate. Fig. 6 is a fragmentary horizontal section of the delivery-plate. Fig. 7 is a vertical section, showing a modified construction of the feed mechanism. Fig. 8 is a fragmentary sectional elevation, showing a modified construction of the mechanism whereby a reciprocating motion is imparted to the feed-gate.

Like letters of reference refer to like parts in the several figures.

A A represent a pair of crushing or grinding rollers, arranged in a casing, B, and having their journals *a* supported in bearings *b*, secured to the stationary frame B' of the machine.

C represents the feed-hopper, arranged above the rollers A A, with its throat *c* over the line of contact of the rollers.

D is a delivery-plate secured to one side of the feed-hopper C, in the throat *c* of the same, and depending downwardly toward the rollers A A.

E represents the feed-plate, arranged on the opposite side of the throat *c* of the feed-hopper, with its lower portion in close proximity to the delivery-plate D.

f represents a rod or bar arranged lengthwise against the under side of the feed-gate E, and guided in bearings F F', secured to the side walls of the casing B.

g g represent straps or bearings secured to the under side of the feed-gate E, and embracing the rod *f* in such manner that the feed-gate E can swing on the rod *f* as a pivot when adjusting the lower portion of the gate E toward or from the delivery-plate D. The end *f'* of the rod *f*, which is supported in the bearing F', is made square, and the bearing F' is made of a corresponding form, so that the rod *f* can play lengthwise in its bearing, but is prevented from turning therein.

h represents a counter-shaft supported in bearings H in line with the rod *f*, and receiving motion by a belt, *i*, which runs around one of the journals *a* of one of the rollers and a pulley, I, on the counter-shaft.

j is an eccentric mounted on the counter-shaft *h*, and J an eccentric-rod, whereby the eccentric *j* is connected with the rod *f* in such manner that the rotation of the counter-shaft *h* will produce a rapid reciprocating motion of the rod *f*.

k k are stops or collars secured to the rod *f* on the inner sides of the bearings *g*, so that the feed-gate E will take part in the reciprocating movement of the rod *f*.

l represents an adjusting screw-bolt secured in the wall of the hopper C, and projecting downwardly therefrom through an opening, *m*, in the upper portion of the feed-gate E.

n represents a spring which surrounds the bolt *l*, and tends to press the lower portion of the feed-gate toward the delivery-plate D.

o represents a thumb-nut applied to the screw-bolt *l*, for adjusting the feed-gate. The

opening *m* is elongated, to permit of the reciprocating movement of the feed-gate on the bolt *l*, which latter is rigidly secured to the feed-hopper C. The feed-gate E is made of
 5 such a length that it will project beyond the ends of the throat of the feed-hopper at either extremity of its movement.

p are vertical ribs or corrugations formed in the face of the delivery-plate D, and *q* are
 10 ribs or corrugations formed in the face of the feed-gate E. The ribs or corrugations *q* are inclined or curved outwardly from the middle of the feed-gate toward both ends thereof, so as to cause the material to move toward both
 15 ends of the feed-gate, whereby the material is more evenly distributed over the reducing mechanism and the accumulation of material in the center of the feed-hopper neutralized.

p' and *q'* respectively represent plain faces
 20 arranged lengthwise below the curved faces *p* and *q* in the delivery-plate D and feed-gate E. The feed-gate E and delivery-plate D are so curved that their lower plain faces, *p'* *q'*, can be brought in contact with each other for shut-
 25 ting off the feed, or can be separated to a greater or less extent for regulating the flow of material from the feed-hopper. The reciprocating movement imparted to the feed-gate E causes the material resting on the feed-gate
 30 to be disintegrated and distributed over the entire length of the feed-gate, and effects a uniform and even delivery of material along the entire length of the feed-gate.

A feed-roller, R, may be substituted for the
 35 delivery-plate D, as represented in Fig. 7.

Instead of actuating the rod *f* by means of an eccentric, as represented in Fig. 2, it may be actuated by means of a cam, *s*, as represented in Fig. 8.

40 My improved feed mechanism may be employed in connection with middlings-purifiers in which the fuzzy or adhesive material is required to be delivered in a sheet of uniform thickness from the feed-hopper.

45 It is obvious that the delivery-plate D may be made adjustable toward and from the gate E, when the latter will simply receive a reciprocating movement, and will not be pro-

vided with a device for adjusting it toward and from the delivery-plate.

50

I claim as my invention—

1. The combination, with a feed-hopper, of a feed-gate provided on its face with inclined or curved ribs or corrugations trending from the middle of the feed-gate toward both ends
 55 thereof, and mechanism whereby a longitudinal reciprocating movement is imparted to the feed-gate, substantially as set forth.

2. The combination, with a feed-hopper, of a pivoted feed-gate, means whereby the feed-
 60 gate can be swung on its pivot to regulate the flow of material from the feed-hopper, and mechanism whereby a longitudinal reciprocating movement is imparted to the feed-gate, substantially as set forth.

65

3. The combination, with a feed-hopper, of a delivery-plate having its face provided with ribs or corrugations, an adjustable feed-gate provided on its face with inclined or curved
 70 ribs or corrugations trending from the middle of the feed-gate toward both ends thereof, and mechanism whereby a longitudinal reciprocating movement is imparted to the feed-gate, substantially as set forth.

4. The combination, with a feed-hopper, of
 75 a reciprocating rod, *f*, a feed-gate, E, pivoted to said rod, and mechanism whereby the feed-gate can be adjusted on said rod to regulate the flow of material from the hopper, substantially as set forth.

8c

5. The combination, with a feed-hopper, of a reciprocating rod, *f*, a feed-gate, E, pivoted to said rod, and provided with a slot, *m*, screw-bolt *l*, spring *n*, and thumb-nut *o*, substantially
 85 as set forth.

85

6. The combination, with a feed-hopper, of a delivery-plate, D, having ribs or corrugations *p* and a plain face, *p'*, and a reciprocating feed-gate, E, having ribs or corrugations
 90 *q* and a plain face, *q'*, substantially as set forth.

Witness my hand this 5th day of October, 1883.

B. F. ORTMAN.

Witnesses:

JNO. J. BONNER,
 CARL F. GEYER.