(No Model.) 2 Sheets—Sheet 1.

C. B. CAMPBELL.

ROLLER MILL.

No. 272,644. Patented Feb. 20, 1883.

Fig. 1.

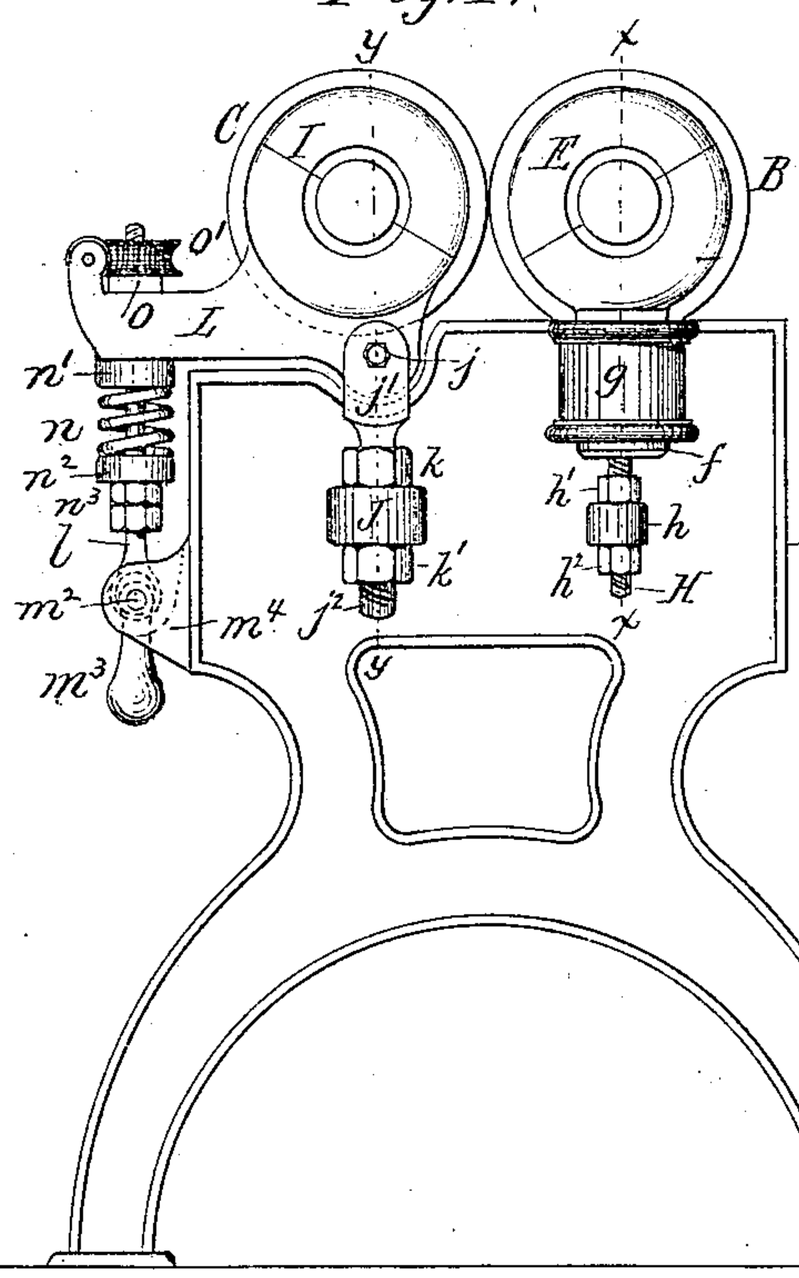


Fig. 7.

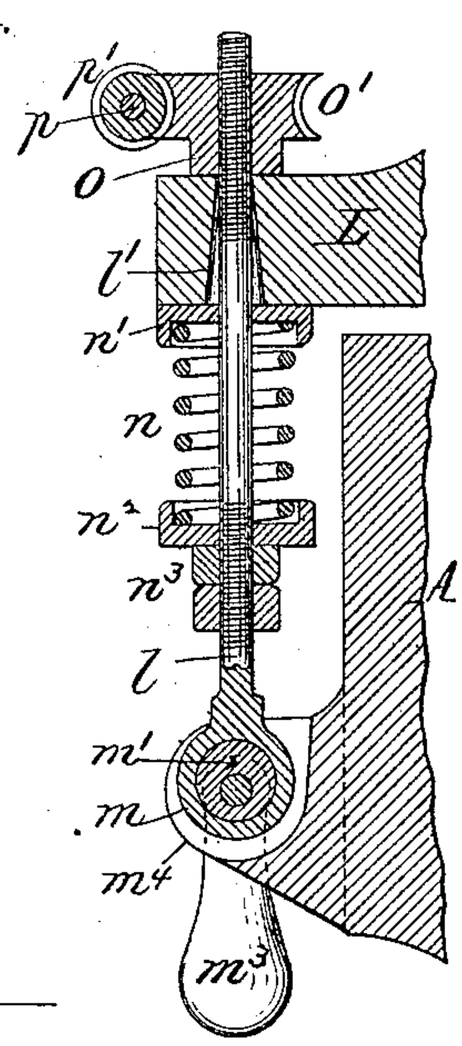
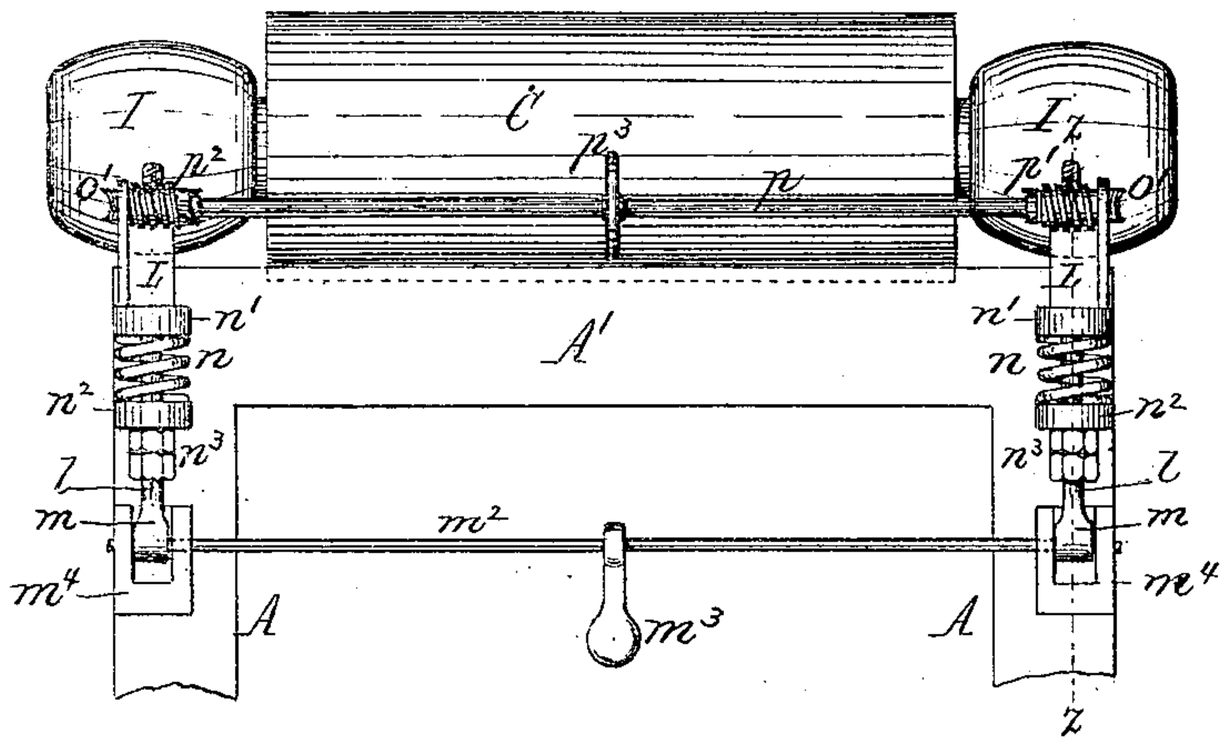


Fig. 2.



Witnesses.
Chas. J. Buchheit.
Edw. J. Brady.

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By Wilhelm & Bonner.
Attorneys.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

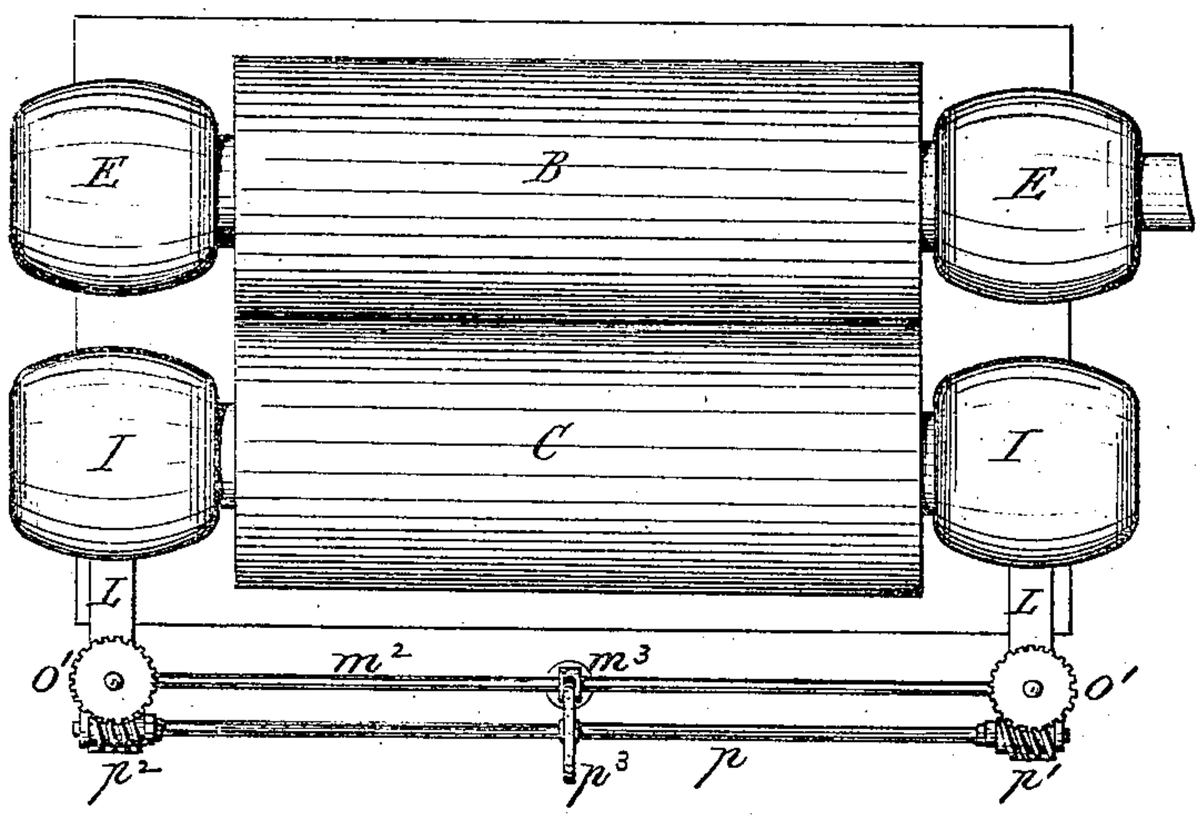


Fig. 4.

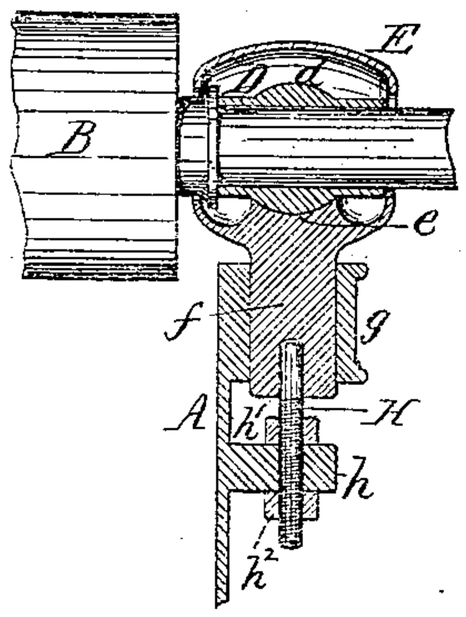


Fig. 5.

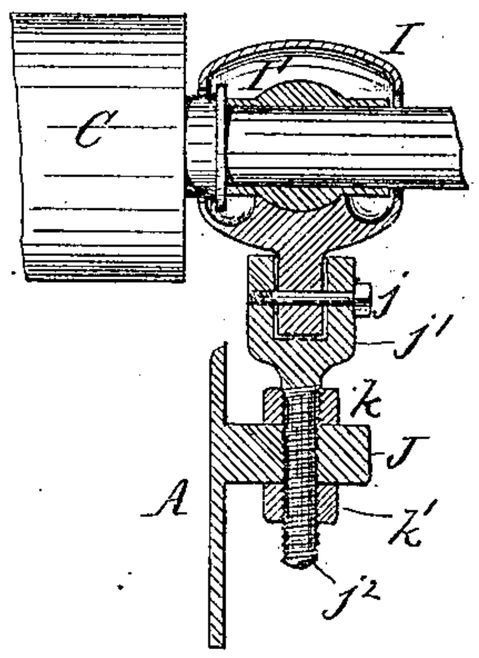
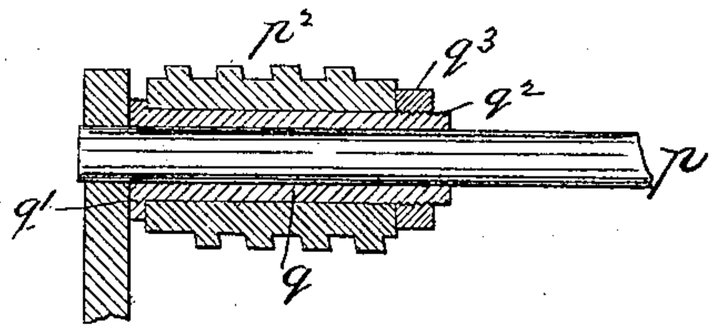


Fig. 6.



Witnesses.
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UNITED STATES PATENT OFFICE.

CHARLES B. CAMPBELL, OF BUFFALO, NEW YORK.

ROLLER-MILL.

SPECIFICATION forming part of Letters Patent No. 272,644, dated February 20, 1883.

Application filed February 25, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. CAMPBELL, of the city of Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Roller-Mills, of which the following is a specification.

This invention relates to an improvement in roller-mills, whereby the roller-bearings are rendered vertically adjustable, and whereby the movable roller can be readily adjusted toward and from the stationary roller, and be separated from the stationary roller, for facilitating the starting of the mill without disturbing the adjustment of the movable roller.

My invention consists of the particular construction of the mechanism whereby these adjustments are effected, as will be hereinafter fully set forth and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a roller-mill provided with my improvement. Fig. 2 is an end elevation, and Fig. 3 a top plan view, thereof. Figs. 4 and 5 are vertical sections in lines *x x* and *y y*, Fig. 1, respectively. Fig. 6 is a sectional elevation of the detachable worm-wheel. Fig. 7 is a vertical section in line *z z*, Fig. 2, on an larged scale.

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

The supporting-frame of the roller-mill consists of side frames, A A, and connecting top cross-pieces, A′ A′, preferably cast together in one piece.

B represents the roller which has no horizontal adjustment, and C the roller which is made movable toward and from the roller B. The latter is supported in bearings D, provided with a spherical enlargement, *d*, which is seated in a box, E, inclosing the bearings D, and having a spherical recess, *e*, in which the spherical enlargements of the bearings D turn, and whereby the bearings are enabled to adjust themselves to the roller-journals. Any other suitable construction of bearings may, however, be adopted, if preferred.

f represents a vertical cylindrical shank formed on the lower portion of the box E, and *g* is a cylindrical socket cast with the side frame, A, and receiving the shank *f*, which can be adjusted vertically in the socket *g*, to raise and lower the journal-box.

H is a screw-bolt projecting downward from the shank, to which it is secured, and passing loosely through a lug, *h*, cast with the side frame, A.

h′ h² are screw-nuts applied to the bolt H respectively above and below the lug *h*, and bearing against the latter, whereby the journal-box is firmly supported in the desired position. By adjusting the screw-nuts *h′ h²* on the bolts H, the journal-boxes D E and the roller B, supported therein, are raised and lowered, as may be desired.

I represents the journal-boxes in which the movable roller C is supported, and which inclose spherical bearings I′, of the same construction as the bearings D of the roller B. The boxes I are each pivoted by a horizontal bolt, *j*, to the head *j′* of a vertical screw-bolt, *j²*, which passes loosely through a lug, J, cast on the side frame, A, and which is secured in position by screw-nuts *k k′*, which are applied to the bolt *j²* respectively above and below the lug J, and which bear against the upper and lower sides of the lug, as shown. By adjusting the nuts *k k′* on the bolt *j²*, the latter and the roller bearing attached thereto are raised and lowered, as may be desired.

L represents an outwardly-projecting arm, formed with each bearing I, and *l* is a vertical screw-bolt, which passes loosely with its upper portion through an opening, *l′*, in the arm L. The lower end of the screw-bolt is provided with an eye or ring, *m*, which is fitted on an eccentric, *m′*. The two eccentrics on opposite sides of the machine are mounted on the same shaft, *m²*, so that both eccentrics are simultaneously turned.

m³ is a weighted arm, which is centrally attached to the shaft *m²* in such a position that when it depends from the shaft, as represented in Fig. 1, the eccentrics *m′* will assume their highest position. The shaft *m²* turns in bracket-bearings *m⁴*, cast with or secured to the side frames, A.

n represents a spiral spring which surrounds each bolt *l*, and bears with its upper end against a washer, *n′*, which is interposed between the spring and the lower side of the arm L. The spring *n* rests upon a washer, *n²*, which is supported by one or more screw-nuts, *n³*, applied to the bolt *l*.

O represents a screw-nut which works on the upper threaded end of the bolt *l*, and bears against the upper side of the arm L. The nut O is provided with a gear-wheel, O′, which is cast with or rigidly secured to the nut O.

p represents a horizontal shaft which turns in bracket-bearings secured to or cast with the arms L, and *p′* p^2 are two worm-wheels mounted on the shaft *p* and engaging with the gear-wheels O′.

p^3 is a hand-wheel secured centrally to the shaft *p* for rotating the same. The worm-wheel *p′* is rigidly attached to the shaft *p*, and the worm-wheel p^2 is so attached that it can be loosened when desired. As shown in Fig. 6, the worm-wheel turns on a sleeve, *q*, which is secured to the shaft *p*, and provided at one end with a collar, *q′*, and at the opposite end with a screw-thread, q^2. The worm-wheel is clamped between the collar and a screw-nut, q^3, which is applied to the thread q^2. By turning the shaft *p* in one or the other direction the screw-nuts O are raised or lowered on the bolts *l*, and the outer ends of the arms L are raised or lowered accordingly, whereby the roller C is adjusted toward or from the roller B. If the roller C should happen to be out of line with the roller B, the worm-wheel p^2 is disconnected from the shaft *p* by releasing the nut q^3, when the screw-nut O, which is operated by the wheel p^2, can be turned by hand until the roller C is parallel with the roller B, when the wheel p^2 is again secured to the shaft *p* by tightening the nut q^3. The openings *l′*, through which the bolts *l* pass, in the arms L are preferably made flaring downwardly, as shown, to prevent the bolts from binding therein when the bearings I are raised or lowered by the screw-bolts j^2. Upon turning the shaft m^2 by means of the weighted arm m^3, so as to lower the eccentrics *m′*, the bolts *l* and the outer ends of the arms L, connected therewith, are drawn downward, thereby swinging the roller C away from the roller B without disturbing the adjustment of the roller C. The weighted arm m^3 serves to maintain the eccentrics *m′* in their highest position.

In my improved roller-mill the joints whereby the journal-boxes are attached to the frame and to the adjusting mechanism can all be finished by turning and boring, thereby reducing the cost of construction considerably.

I claim as my invention—

1. The combination, with the roller C, of bearings I, provided with arms L, vertically-adjustable supports *j′*, to which the arms L are pivoted, screw-bolts *l*, screw-nuts O, provided with gear-wheels O′, a shaft, *p*, supported on the arms L, and worm-wheels *p′*, secured to the shaft *p* and meshing with the gear-wheels O′, substantially as set forth.

2. The combination, with the shaft *p*, of the sleeve *q*, secured thereto and provided with a collar, *q′*, and screw-thread q^2, screw-nut q^3, and a gear-wheel, p^2, clamped on the sleeve *q*, between the collar *q′* and the screw-nut q^3, substantially as set forth.

CHARLES B. CAMPBELL.

Witnesses:
JNO. J. BONNER,
EDW. J. BRADY.