(No Model.) 2 Sheets—Sheet 1

C. B. CAMPBELL.

FRICTION GEARING FOR ROLLER MILLS, &c.

No. 260,532. Patented July 4, 1882.

Fig. 1.

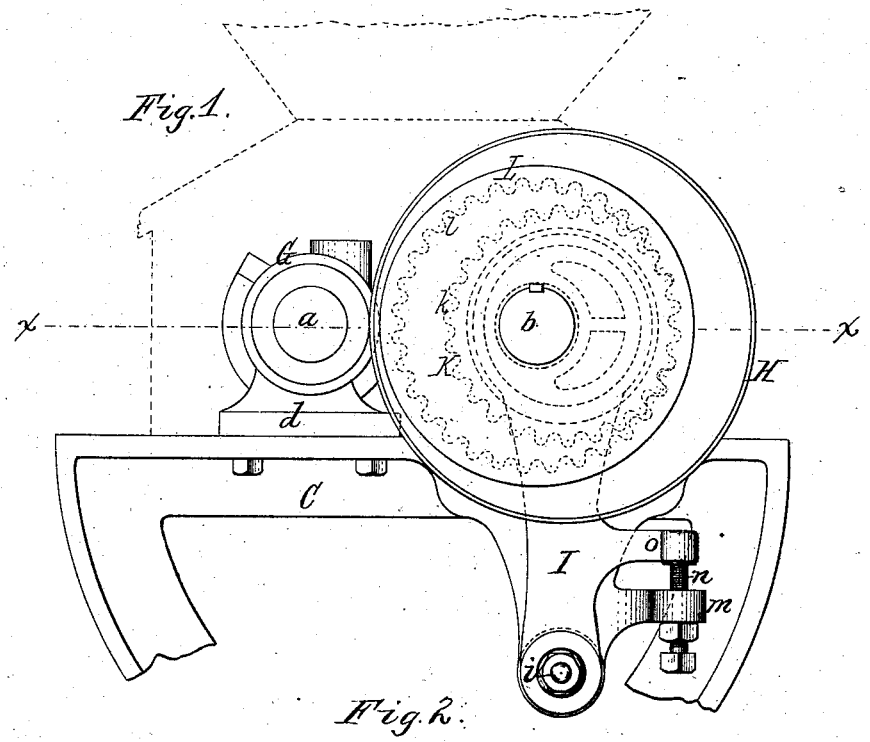
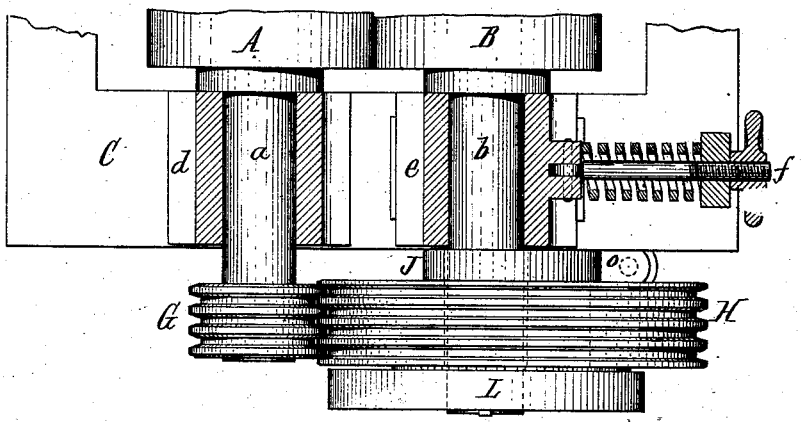


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

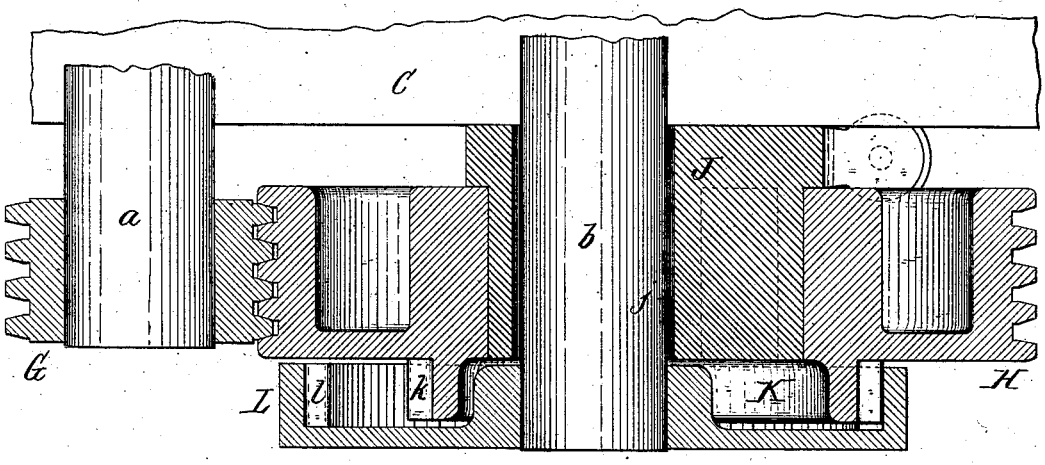
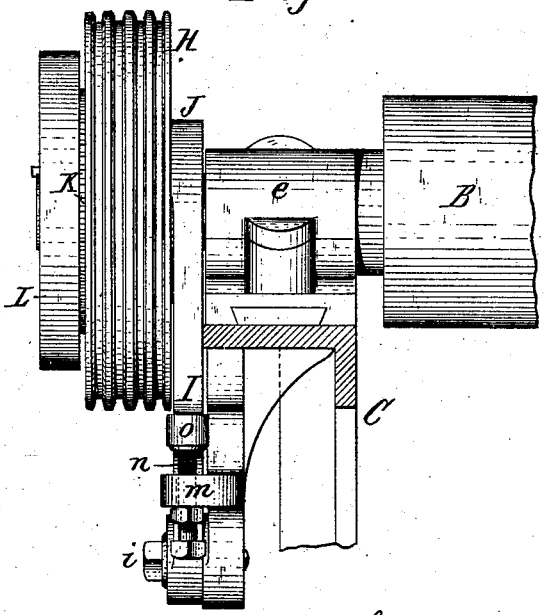


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES B. CAMPBELL, OF BUFFALO, NEW YORK.

FRICTION-GEARING FOR ROLLER-MILLS, &c.

SPECIFICATION forming part of Letters Patent No. 260,532, dated July 4, 1882.

Application filed March 11, 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 Friction-Gearing for Roller-Mills and other Machines, of which the following is a specification.

This invention relates to an improvement in that class of friction-gearing which consists of two friction-wheels running in peripheral contact with each other.

The object of this invention is to so construct the friction-gearing that the distance between the two shafts, which are connected by the friction-wheels, can be increased or reduced within certain limits without disturbing the adjustment of the friction-wheels, and in which the pressure of the friction-wheels can be adjusted without altering the position of the shafts.

My invention is more particularly designed for use in that class of roller-mills which are employed for the reduction of grain and similar substances. In these roller-mills the grain or other material to be reduced passes between two rollers, one of which is supported in stationary bearings and the other in bearings which are made adjustable in such manner that the space between the rolls can be increased or reduced as the nature of the work may require, the required adjustment being comparatively slight. The invention is, however, applicable to other machines in which a similar independent adjustment of two shafts and of the friction-wheels connecting the same is desirable.

My invention consists of the peculiar construction of the friction-gearing, as will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 is a side elevation of my improved friction-gearing. Fig. 2 is a top plan view thereof. Fig. 3 is a horizontal section on an enlarged scale in line *x x*, Fig. 1. Fig. 4 is an end elevation of the gearing.

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

a and *b* represent the parallel shafts of a pair of rollers, A and B, the rollers mounted respectively on the shafts *a* and *b*, and C is the stationary frame of the machine.

d represents one of the stationary bearings in which the roller-shaft *a* is supported, and *e* is one of the movable bearings in which the roller B is supported. The roller-bearing *d* is secured firmly to the frame C of the machine, and the roller-bearing *e* is made adjustable by a screw, *f*, or in any other suitable and well-known manner, so that the roller B can be adjusted toward and from the roller A, thereby reducing or increasing the space between the rollers, as may be required.

G represents a friction-wheel of any suitable and well-known construction secured to the end of the shaft *a*, and H is a similar wheel running in peripheral contact with the wheel G.

I represents an upright arm, pivoted with its lower end to the side frame, C, by a bolt, *i*, and J is a circular hub or arbor formed at the upper end of the arm I. The center of the hub J is arranged eccentric with the shaft *b* and farther from the shaft *a* than the shaft *b*, as is indicated by dotted lines in Fig. 1. The shaft *b* passes through an opening, *j*, in the hub J, which opening is made larger than the shaft, so that the shaft *b* can play in the same toward and from the shaft *a* sufficiently to permit of the requisite adjustment of the shaft *b* without causing this shaft to come in contact with the walls of the opening *j*. The friction-wheel H turns loosely on the outer cylindrical surface of the hub J. The center of the friction-wheel H is thereby located farther from the shaft *a* than the center of the shaft *b*, whereby the friction-wheel is made larger in diameter than if it were mounted directly on the shaft *b*.

K represents a gear-wheel cast or otherwise secured to the outer side of the friction-wheel H, concentric with the same, and provided with exterior teeth, *k*.

L represents a gear-wheel secured to the outer end of the shaft *b* and made somewhat larger than the wheel K. The wheel L is provided with interior teeth, *l*, which mesh with the teeth *k* of the wheel K, as indicated by dotted lines in Fig. 1.

m is a lug cast with or otherwise secured to the frame C of the machine, and *n* is a set-screw, which passes upward through the lug *m*, and bearing against the arm *o*, which is formed on the upright arm I. By adjusting the set-screw *n* upwardly or downwardly the upper end of the arm I is swung toward or from the

shaft *a*, whereby the friction-wheel H is pressed with greater or less force against the wheel G, as may be required. This adjustment of the friction-wheel H is effected without affecting the position of the shaft *b* or disturbing the adjustment of the roller mounted on said shaft. On the other hand, the shaft *b* can be moved toward or from the shaft *a* within the opening *j*, as may be necessary to properly adjust the rollers, without affecting the position of the friction-wheel H. The proper degree of friction is by this means easily maintained between the wheels G and H in all positions of the rollers. Power is applied by a pulley and endless belt or any other suitable means to the shaft *a*. The motion of the shaft *a* is transmitted by the wheel G to the wheel H, and from the latter by the gear-wheel K to the gear-wheel L, mounted on the shaft *b*.

The hub J is preferably constructed with one or more cavities, which can be utilized as oil-reservoirs, and which render the hub light.

I claim as my invention—

1. The combination, with the shafts *a* and *b*, of a friction-wheel, G, secured to the shaft *a*, a friction-wheel, H, arranged eccentrically around the shaft *b* and turning loosely on an eccentric hub or arbor, J, and means whereby the motion of the loose friction-wheel H is transmitted to the shaft *b*, substantially as set forth.

2. The combination, with the shafts *a* and *b*, of a friction-wheel, G, secured to the shaft *a*, a friction-wheel, H, turning loosely on a hub, J, and provided with a gear-wheel, K, and a gear-wheel, L, secured to the shaft *b* and meshing with the gear-wheel K, substantially as set forth.

3. The combination, with the shafts *a* and *b*, of a friction-wheel, G, secured to the shaft *a*, a hub, J, arranged eccentric with the shaft *b*, and provided with an opening, *j*, which permits of the adjustment of the shaft *b* within said opening, a friction-wheel, H, turning on the hub J, and means whereby the motion of the wheel H is transmitted to the shaft *b*, substantially as set forth.

4. The combination, with the shafts *a* and *b*, of a friction-wheel, G, secured to the shaft *a*, an adjustable arm, I, provided with a hub, J, a friction-wheel, H, turning on the hub J, and provided with a gear-wheel, K, and a gear-wheel, L, secured to the shaft *b*, substantially as set forth.

5. The combination, with the shafts *a* and *b*, of a friction-wheel, G, secured to the shaft *a*, a friction-wheel, H, running in peripheral contact with the wheel G, means whereby the motion of the wheel H is transmitted to the shaft *b*, and adjusting devices whereby the pressure of the friction-wheels against each other and the distance between the shafts *a* and *b* can be regulated each independent of the other, substantially as set forth.

CHARLES B. CAMPBELL.

Witnesses:
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