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J. BURNS.

Improvement in Grinding Mills.

No. 122,811.

Patented Jan. 16, 1872.

Fig. 1.

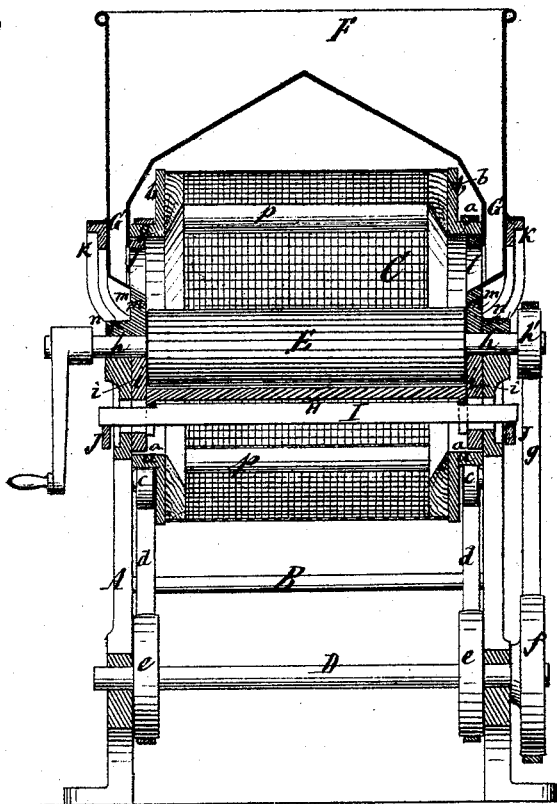


Fig. 2.

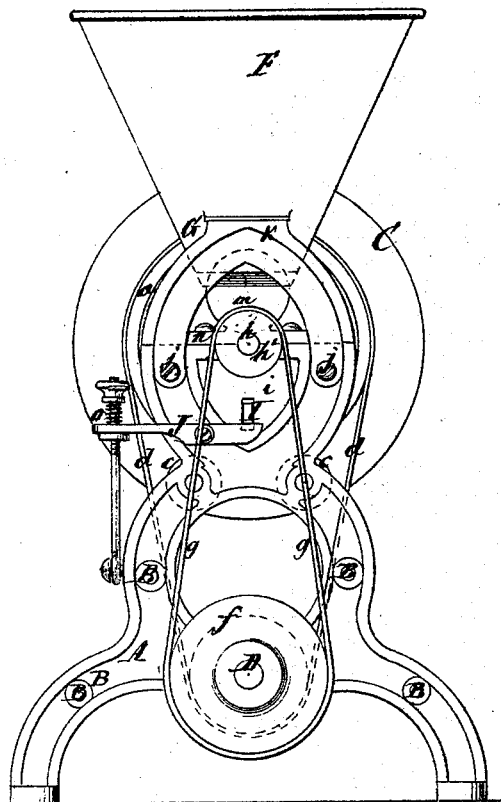
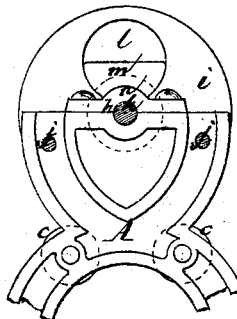


Fig. 3.



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UNITED STATES PATENT OFFICE.

JABEZ BURNS, OF NEW YORK, N. Y.

IMPROVEMENT IN GRINDING-MILLS.

Specification forming part of Letters Patent No. 122,811, dated January 16, 1872.

To all whom it may concern:

Be it known that I, JABEZ BURNS, of the city, county, and State of New York, have invented a new and useful Improvement in Grinding-Mills; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a longitudinal vertical section of this invention. Fig. 2 is an end view of the same. Fig. 3 is an elevation of one of the journal-boxes for the shaft of the crushing-roller detached.

Similar letters indicate corresponding parts.

This invention relates to an improvement in that class of grinding-mills which are composed of a crushing-roller, a concave, and a revolving sieve, with internal flanges, so that the material to be ground, after having passed through between the crushing-roller and the concave, is separated by the sieve, those particles which have reached the desired degree of fineness being allowed to discharge through the meshes of the sieve, while the coarse particles are returned to the grinding mechanism by the action of the internal flanges on the revolving sieve. My improvement consists in the arrangement of two flat annular rims on the heads of the cylindrical sieve, in combination with supporting-rollers and with two belts, extending over said annular rims and over pulleys, mounted on a shaft below, which receives motion from the driving-shaft of the mill in such a manner that by said belts the rims of the cylindrical sieve are held down upon the supporting-rollers, and that a uniform and steady motion is imparted to said sieve; and, at the same time, the parts are so arranged that the mill can be readily taken apart. The caps of the journal-boxes of the shaft of the crushing-rollers are provided with semicircular flanges to close up the lower halves of the feed-openings leading into the cylindrical sieve in such a manner that, by removing the hopper and the caps of the journal-boxes, openings are produced in the sides of the frame large enough to allow of withdrawing the crushing-roller, and by these means the operation of taking the mill apart is materially facilitated.

In the drawing, the letters A A designate the standards, which form the bearings for the working parts of my mill; said standards being connected by four (more or less) traverses, B, which serve to retain the same in the proper relation toward each other. Between the standards is fitted a cylindrical sieve, C, which is provided with flat annular rims *a a*, projecting from its heads *b b*. These rims rest upon rollers *c c*, mounted upon studs secured in the inner surfaces of the standards A A, so that the sieve will revolve freely on said rollers. Over the rims *a a* are stretched belts *d d*, which extend through under pulleys *e e*, mounted on a shaft, D, that has its bearings in the lower parts of the standards A A, and on one end of which is mounted a pulley, *f*, that connects, by a belt, *g*, with a pulley, *h'*, mounted on a shaft, *h*, of the crushing-roller E, to which the driving-power is applied. By means of the belts *d d* the rims *a a* are depressed upon the supporting-rollers *c c*, and held in close contact with the same, and the motion of the sieve C is rendered steady and uniform. The open spaces enclosed by the annular rims *a a* are filled up by circular disks *i i*, which are secured to the inner surfaces of the standards A A by means of screws *j j*, which also retain the yokes *k k* that serve to support the hopper F. The bottom of this hopper is roof-shaped, so that the material thrown thereon will slide down toward both ends, and from these ends extend spouts G G, which communicate, through apertures *l l* in the disks *i i*, with the interior of the sieve C. Said apertures are circular, but their lower halves are filled up by semicircular flanges *m m*, projecting from the caps *n n* of the journal-boxes of the shaft of the crushing-roller E, so that the material on passing into the sieve will not run against the ends of the crushing-roller; but, at the same time, by removing the caps *n n*, the apertures *l l* are thrown open and the crushing-roller can be taken out, and, after the crushing-roller has been removed, the remaining portions of the mill can be readily taken apart. The crushing-roller E works in conjunction with a concave, H, which is pressed up against the circumference of said roller by a cross-bar, I, and levers J, which levers are rendered yielding by means of springs *o o*, Fig. 2, whereby injury to the grinding-surfaces

is avoided in case a nail or other hard substance should pass in between them. On the inner surface of the sieve G are secured flat strips or flanges *p*, which carry up those particles of the crushed material which are not fine enough to pass through the meshes of the sieve and return the same to the grinding-surfaces until they have been rendered fine enough to pass through the meshes of the sieve.

This mill is intended particularly for granulating coffee, but it can be used for granulating or grinding grain, corn, or other materials.

What I claim as new, and desire to secure by Letters Patent, is—

1. The annular rims *a a* on the heads of the

revolving sieve C, inclosing the crushing-roller E and concave H, in combination with supporting-rollers *c c*, belts *d d*, pulleys *e e f*, belt *g*, and driving-pulley *h'*, all constructed and operating substantially in the manner herein shown and described.

2. The semicircular flanges *m*, projecting from the caps *n*, in combination with circular apertures *l l* in the disks *i i*, and with the crushing-roller E and sieve C, substantially as and for the purpose herein set forth.

JABEZ BURNS.

Witnesses:

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