(No Model.)

A. S. HOBBY.

ROLL FOR CRUSHING MILLS.

No. 303,280. Patented Aug. 12, 1884.

Fig. 1.

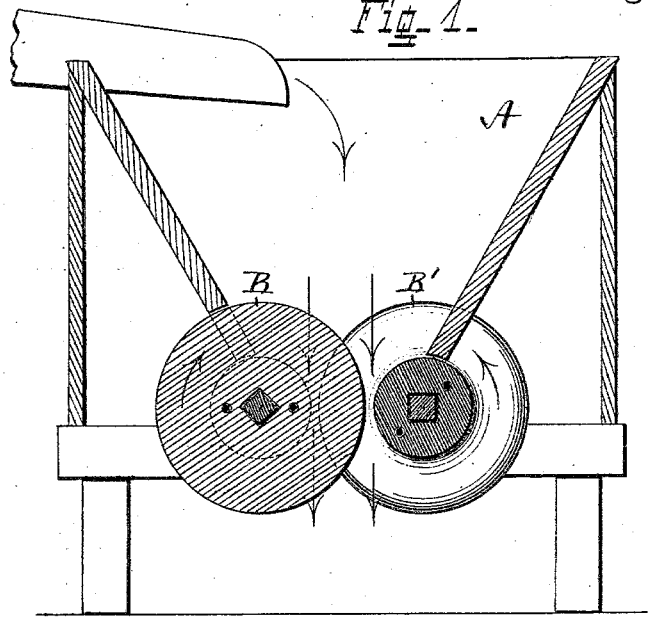


Fig. 2.

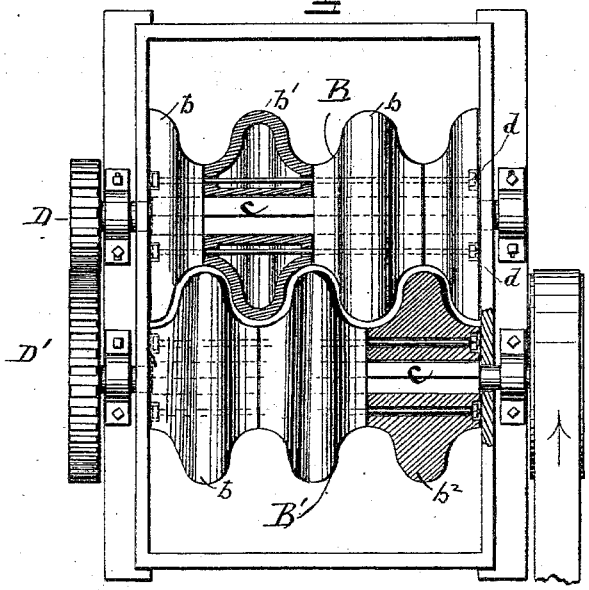
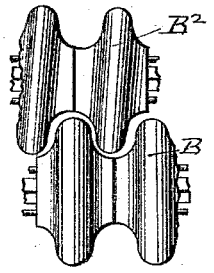


Fig. 3.



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UNITED STATES PATENT OFFICE.

ARTHUR S. HOBBY, OF CINCINNATI, OHIO.

ROLL FOR CRUSHING-MILLS.

SPECIFICATION forming part of Letters Patent No. 303,280, dated August 12, 1884.

Application filed August 11, 1883. (No Model.)

To all whom it may concern:

Be it known that I, ARTHUR S. HOBBY, a citizen of the United States, residing at Cincinnati, Ohio, have invented new and useful Improvements in Rolls for Crushing-Mills, of which the following is a specification.

My invention relates to roller crushing-mills used for various purposes in the arts, its object being to enhance their usefulness and efficiency by an improved form and construction of the rolls.

To this end my invention consists in certain constructions and combinations of parts, as hereinafter pointed out and claimed.

Mechanism embodying my invention is illustrated in the accompanying drawings, in which Figure 1 is a cross-sectional elevation of a crushing-mill employing a pair of rolls. Fig. 2 is a plan view of a mill, showing two of the roller constituents in axial section. Fig. 3 is a partial view of contiguous rolls, one of which has its corrugations somewhat inclined to the perpendicular plane of division, the inclination being in excess of that shown in Fig. 2.

The parts herein referred to are designated upon the drawings by letters of reference.

The hopper A is of the usual or any desired construction, its inclined side walls, which guide the material to the rolls, having their lower edges molded or notched in such form as to correspond to the contour of the rolls. The rolls B B′ are formed with peripheral corrugations, consisting of alternate ribs and grooves in circumferential planes, these registering on adjacent rolls, as indicated in Fig. 2—the rib of one with the groove of its opposite. By this construction it will be apparent that not only is there a larger amount of crushing-surface in a given length of roll than if the rolls were cylindrical, but that a grinding or abrading action is introduced by the relative sliding action of portions of the surfaces. This function is rendered more efficient by giving to the corrugations of one of the rolls a slight inclination to the axis, as indicated at B^2, Fig. 3. The periphery of the roll-sections will thus have what is known as a "staggered" motion—*i. e.*, a longitudinal oscillation—when the shaft rotates, which will also assist to agitate the superincumbent material and prevent packing, thereby insuring a more regular feed. The rolls are preferably made by casting the body of the roll in separate sections, *b*, divided in planes slightly oblique as to one of the rolls and perpendicular in the other to the common axis, and perforated for mounting upon a shaft, *c*. These sections may be cast hollow, as at *b′*, or solid, as at b^2, Fig. 2, as may be desired. They are placed upon the shaft side by side, and are preferably secured together by long bolts *d*, extending through the series parallel to the shaft, through suitable perforations for this purpose. It is preferable to use a squared shaft with corresponding perforations in the roller-sections, and while the shaft is generally passed through the rolls centrally, it will be obvious that the rolls may be arranged eccentrically to each other, if desired.

The form of the corrugations may be varied at will; and it will be obvious that the length of the rolls may be also varied at will by increasing or diminishing the number of the sections and the length of the shaft. The roll-shafts are preferably set in sliding bearings to take up lost motion and regulate the space between the rolls; and worn-out rolls may be at any time renewed by replacing the sections *b*. In the present instance I have shown the rolls B B′ provided with intermeshing spur-gears D D′ at one end only of their shafts; but similar gearing may be provided at both ends, when the length of the rolls renders it necessary, to avoid twisting strains upon the shafts. Other details of construction of the mill or hopper are common to similar structures, and require no special description.

As shown in the drawings herewith, the rolls B B′ are geared to revolve at different speeds; but it is obvious that they may be geared to revolve at the same speed, if desired.

The sections *b* may be formed of iron or steel, and wrought or cast, as required by the nature of the intended use, half-sections, as shown in Fig. 2, being provided to bring one roll into proper registering relation with its mate.

I claim as my invention and desire to secure by Letters Patent—

1. The combination, in a roller crushing-mill, of a roll having corrugations arranged circumferentially with a roll having its corru-

gations arranged slightly oblique to the axis thereof, the two rolls intermeshing, substantially as described, and for the purpose set forth.

2. The combination, in a crushing-roll, of a polygonal shaft, a series of sections on said shaft which form corrugations, said sections arranged obliquely and having polygonal perforations for the passage of the shaft, and clamping mechanism, substantially as described, whereby the sections are held together, all substantially as set forth.

3. In a roll for a crushing-mill, the combination, with a central shaft, of a series of sections which form corrugations, said corrugations arranged obliquely, whereby they have a staggered motion as the shaft rotates and serve to agitate the material, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses:

ARTHUR S. HOBBY.

Witnesses:
L. M. HOSEA,
ALEX. HAMILTON.