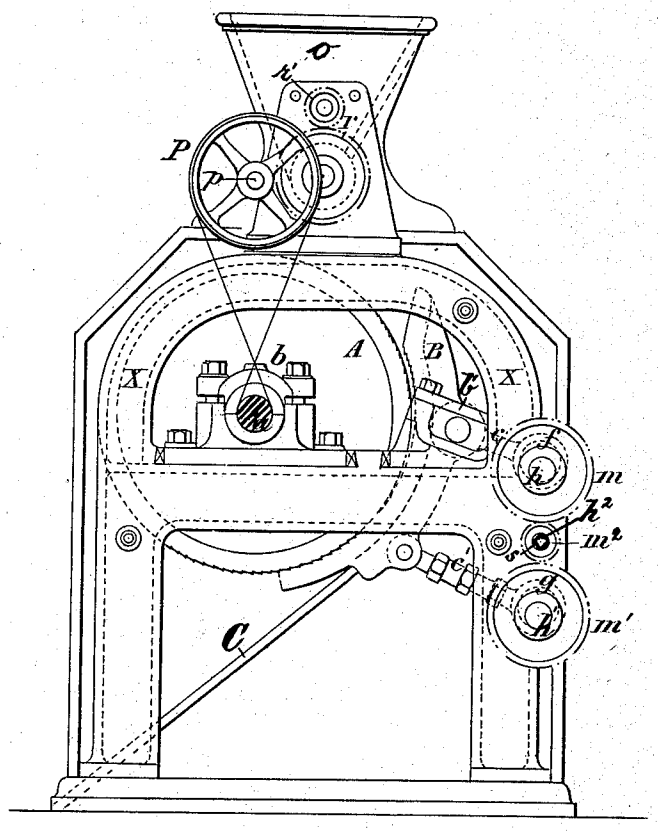
(No Model.) 2 Sheets—Sheet 1.

G. ZONCA & G. BELLA.

GRINDING MILL.

No. 384,949. Patented June 19, 1888.

Fig. 1



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(No Model.) 2 Sheets—Sheet 2.

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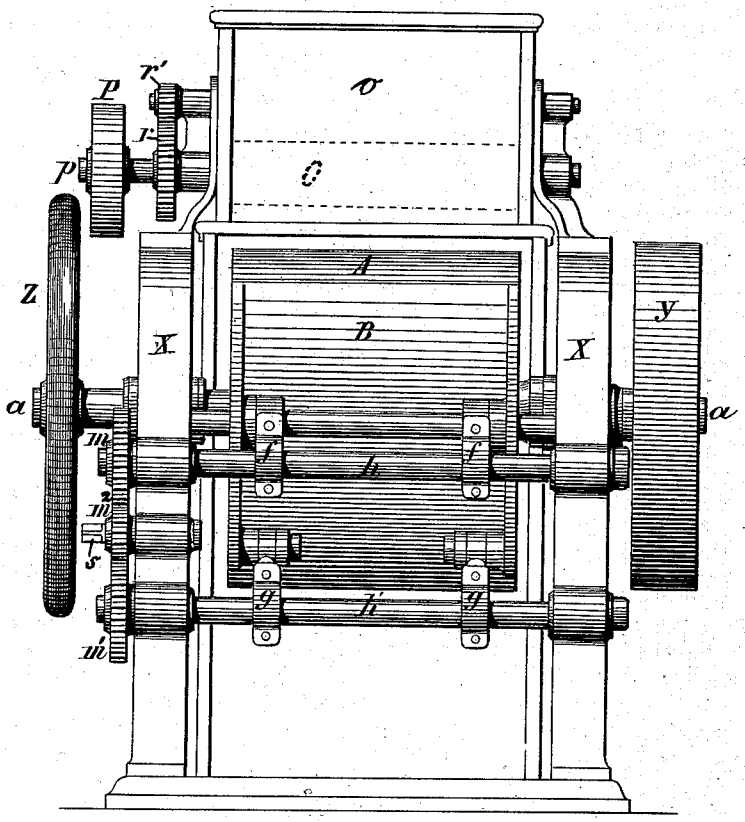
Fig. 2



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UNITED STATES PATENT OFFICE.

GAUDENZIO ZONCA AND GUISEPPE BELLA, OF VENICE, ITALY.

GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 384,949, dated June 19, 1888.

Application filed July 11, 1887. Serial No. 243,983. (No model.) Patented in Italy August 20, 1885, XXXVII, 101.

To all whom it may concern:

Be it known that we, GAUDENZIO ZONCA and GUISEPPE BELLA, citizens of the Kingdom of Italy, residing at Venice, in Italy, have invented certain new and useful Improvements in Grinding-Mills; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

In the drawings hereto annexed we have illustrated our improved grinding-mill, in Figure 1 by a side elevation partly in section, and in Fig. 2 by an end elevation.

The invention relates to grinding-mills employed for grinding various substances or materials, though we have confined the illustrations and description thereof to mills more especially designed for grinding cereals, and in which a revoluble grinding cylinder or drum operates in conjunction with a stationary concave to effect the reduction of the material; and it consists in the construction and arrangement of the grinding mechanism and means for adjusting the same, substantially as hereinafter fully described, and as set forth in the claim.

In the drawings, X indicates the main frame, of suitable construction for supporting the operative devices and for feeding the grain to the grinding mechanism.

On top of the frame is arranged the feed-hopper *o*, and within said hopper are arranged distributing devices of any desired construction to distribute the grain in an even sheet over the full length of the grinding devices.

In the drawings we have shown in dotted lines a distributing-roller, O, located in the discharge end of the feed-hopper *o*, for the purpose of distributing the grain to the grinding mechanism.

In suitable bearings, *b*, in the main frame X is mounted the main shaft *a*, that carries a toothed or serrated grinding-cylinder, A, with which co-operates a correspondingly toothed or serrated concave, B, so arranged relatively to the grinding-cylinder that the space between them is gradually reduced from the point at which the grain passes between the cylinder and concave to the point at which the ground material escapes from between them, as more plainly shown in Fig. 1.

The concave B is journaled in bearings *b'* on the main frame, and its position relatively to the grinding-cylinder A is made adjustable in the following manner: In the main frame X are mounted two shafts, *h* and *h'*. The shaft *h* carries a pinion, *m*, and the shaft *h'* a pinion, *m'*, that mesh with an intermediate idler, m^2, mounted on a short shaft, h^2, in said main frame, said short shaft having its end squared, as shown at *s*, for the application of a crank.

On the shaft *h* are secured two eccentrics, *f*, and on the shaft *h'* two eccentrics, *g*, whose straps or rods *c c'* are pivoted to the concave B, as shown, and whereby the space between the concave and the cylinder A may be regulated or adjusted as desired for coarse and fine grinding.

The concave B is of such size as to encompass about five-sixteenths of the periphery of the cylinder A, and its teeth or serrations are set in a direction the reverse of those on the grinding-cylinder, as will be readily understood.

C is the discharge-chute; Z, the fly-wheel, which is removable from shaft *a* in Fig. 1; and Y is the main driving pulley that is mounted on said shaft *a*.

Motion is communicated from shaft *a* to the distributing-roll in the feed-hopper through the medium of a pulley, P, belted to said shaft *a*, and a pinion (not seen in the drawings) on shaft *p* of pulley P, which pinion meshes with a pinion, *r*, on the shaft or journal of the distributing-roll O, and said pinion *r* meshes with an idler, *r'*, as shown in Fig. 2.

We have found by experience that the operation of grinding in the machine above described is more expeditious, that the losses are not as great as in ordinary grinding-mills, that the flour is not heated, but issues from the grinding mechanism in a cool state, and that the grain may be reduced to any desired degree of fineness.

Having now particularly described our invention, what we claim is—

The combination, with the grinding-cylinder A, of the concave B, the shafts $h\,h'$, the eccentrics f and g, the eccentric-straps $c\,c'$, pivoted to the concave, the pinions $m\,m'$, mounted on shafts h h', respectively, and the idler m^2, mounted on shaft h^2 and gearing with pinions $m\,m'$, and means for rotating said shaft h^2, said parts being arranged for co operation as and for the purpose specified.

In testimony whereof we affix our signatures in presence of two witnesses.

GAUDENZIO ZONCA.
GUISEPPE BELLA.

Witnesses:
H. ABERT JOHNSON,
GUISEPPE SARRI DALT'ARMÉ.