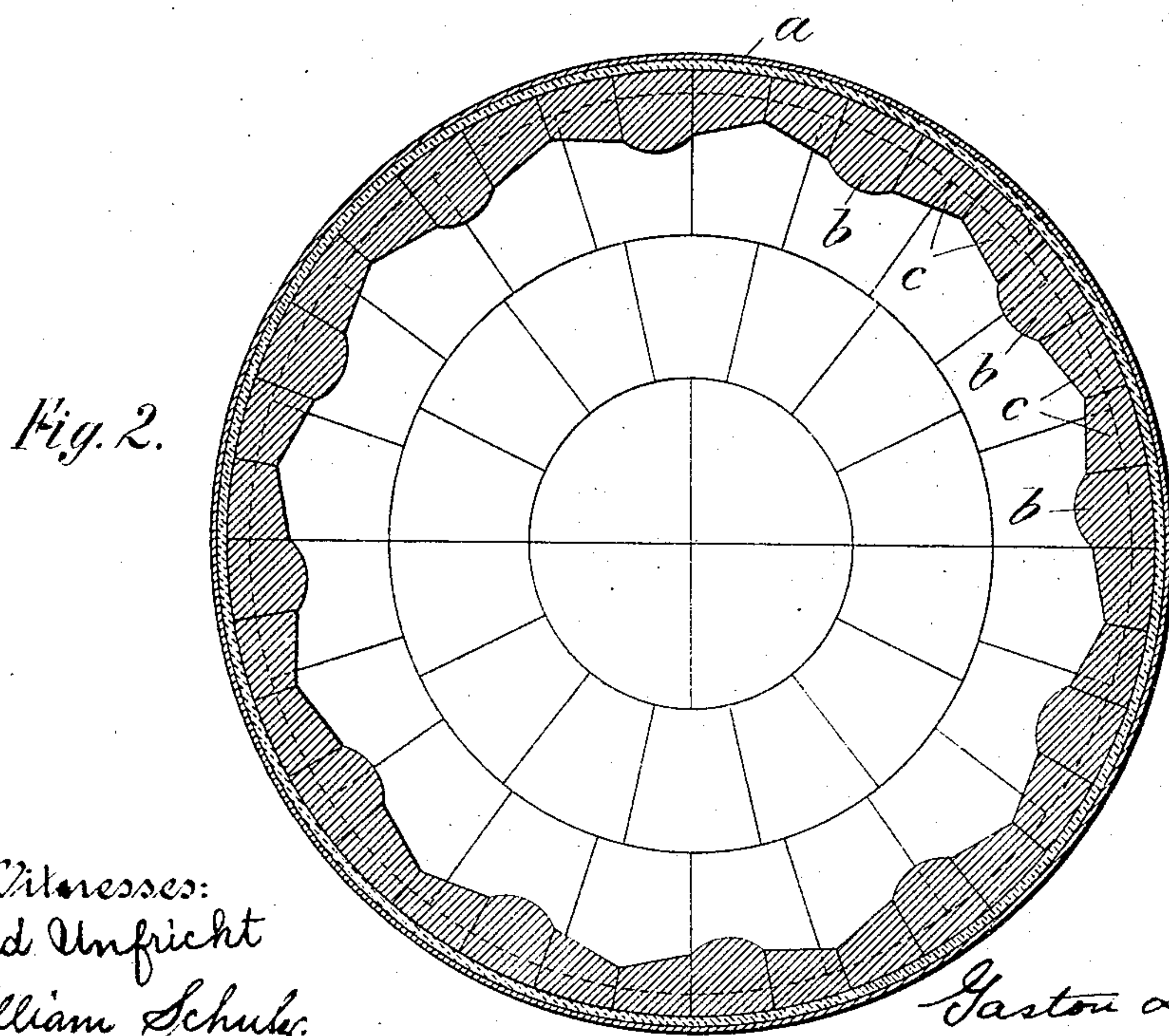
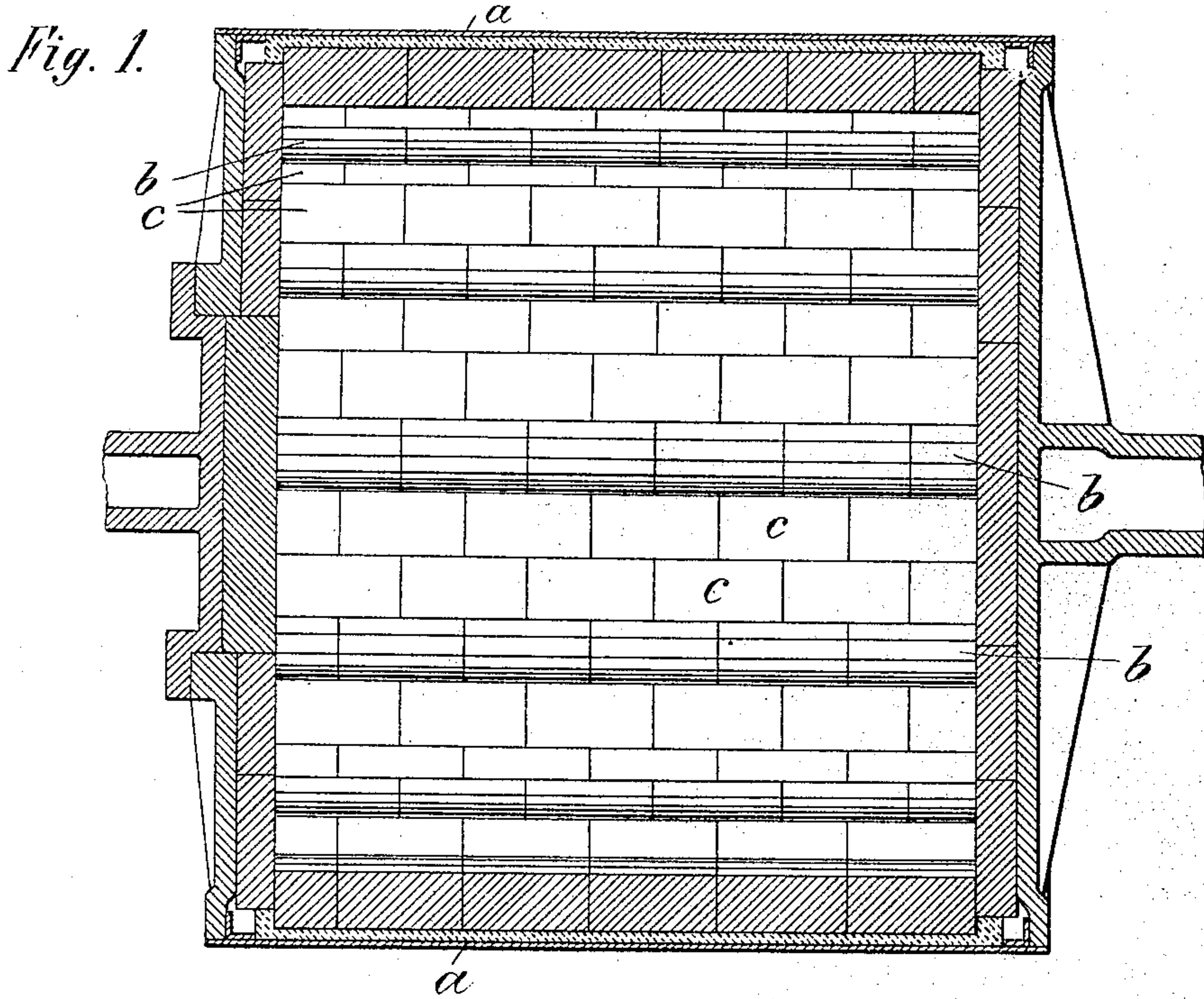


No. 764,715.

PATENTED JULY 12, 1904.

G. DESCAMPS.  
CYLINDER FOR BALL MILLS.  
APPLICATION FILED MAR. 31, 1904.

NO MODEL.



Witnesses:  
Fred Unfricht  
William Schulz.

Inventor:  
Gaston Descamps  
by *Antoine Biersen* Atty.



# UNITED STATES PATENT OFFICE.

GASTON DESCAMPS, OF MONS, BELGIUM.

## CYLINDER FOR BALL-MILLS.

SPECIFICATION forming part of Letters Patent No. 764,715, dated July 12, 1904.

Application filed March 31, 1904. Serial No. 200,874. (No model.)

*To all whom it may concern:*

Be it known that I, GASTON DESCAMPS, a citizen of Belgium, residing at Mons, Belgium, have invented new and useful Improvements in Cylinders for Ball-Mills, of which the following is a specification.

This invention relates to a cylinder for ball-mills such as are used in the manufacture of cement, porcelain, enamel, &c., and in which the material is ground between the lining or working surface of the cylinder and balls or pebbles inclosed by the cylinder. This lining is composed of flint, quartz, or similar hard stone; and the object of the invention is to increase the area of the working surface and to thereby correspondingly increase the output of the mill.

The invention consists, essentially, in so shaping the stones that the working surface is not concentric to the cylinder, but is undulated, being composed of a series of ridges and intervening recesses or valleys. The form and arrangement of the stones is such that points and sharp edges are avoided and that the impact of the balls against the lining will not be apt to break pieces from the same.

By my invention the working surface of the mill is increased with a minimum weight of the cylinder and without unduly decreasing the thickness of the lining.

In constructing the lining I alternate a row of stones having bulged heads with two rows of stones which are beveled in opposite directions to form an intervening V-shaped valley. The upper edges of the beveled stones should be flush with the adjoining edges of the bulged heads, while the two adjoining lower edges of the beveled stones should be of the same height. In this way the surfaces of the beveled stones join at an obtuse angle to form the valleys of the grinding-surface.

In the accompanying drawings, Figure 1 is a longitudinal section of my improved cylinder for ball-mills, and Fig. 2 a cross-section thereof.

The letter *a* represents the cylinder of the ball-mill, adapted to be rotated in suitable manner and to contain grinding balls or pebbles, all as usual.

The lining of the cylinder *a* is composed of stones curved at their outer side to correspond to the curvature of the cylinder and cut at their longitudinal ends to correspond to the cylinder radius. The inner sides of the stones are so shaped as to form an undulated working surface. To effect this result, I provide two sets of stones *b* and *c*, so arranged that one row of stones *b* alternates with two rows of stones *c*. The stones *b* have a bulged ridge or head, so that each row of stones forms a continuous longitudinal rib. The stones *c* have inclined straight inner surfaces and are so set that they adjoin the stones *b* at their highest end and adjoin one another at their lowest end. In this way each two adjoining rows of stones *c* are beveled in opposite directions, so as to form longitudinal depressions or V-shaped valleys intermediate the bulged ridges. The maximum height of the stones *c* corresponds to the height of stones *b* at the base of their bulged head, so that the stones merge into one another and sharp edges are avoided. The curvature radius of the heads of stones *b*, as well as the bevel of stones *c*, is dependent upon the work to be performed and upon the strength of lining desired. It will be seen that in constructing the lining adjoining rows of stones *c* are reversed or set in opposite directions, so that while the straight working face of the first row will be inclined outward the face of the second row will incline inward. Thus by the use of but two forms of stone I produce three forms of rows—viz., a bulged row, an outwardly-inclined row, and an inwardly-inclined row.

By my invention the working surface of the cylinder is greatly increased, so that the grinding effect of the balls or pebbles is thoroughly utilized. Further, by alternating the ridges with intervening grooves or valleys I obtain

a beating effect of the balls, which accelerates the grinding process during each rotation of the cylinder.

What I claim is—

- 5 A cylinder for ball-mills provided with rows of lining-stones having bulged heads and intermediate opposing rows of lining-stones arranged in pairs and having straight beveled

faces, to form V-shaped valleys, substantially as described. 10

Signed by me at Brussels, Belgium, this 16th day of March, 1904.

GASTON DESCAMPS.

Witnesses:

JOHN SMITH,  
J. COUDET.