

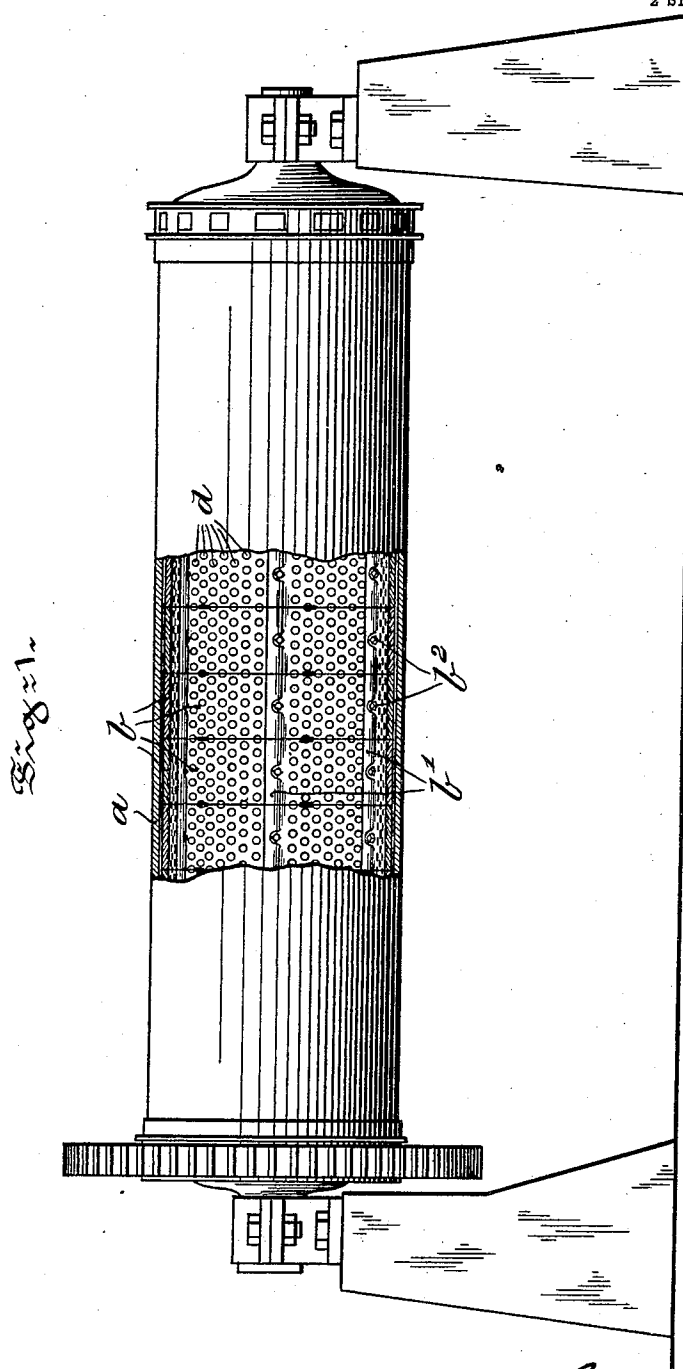
No. 730,900.

PATENTED JUNE 16, 1903.

J. W. FULLER.  
TUMBLING MILL OR BARREL.  
APPLICATION FILED SEPT. 26, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses  
Thomas M. Smith  
Henry E. Evending.

Inventor  
James W. Fuller  
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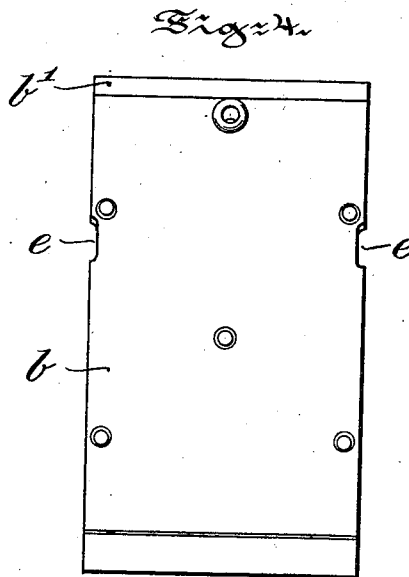
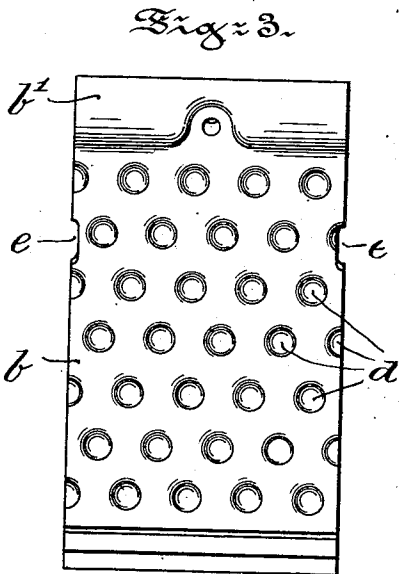
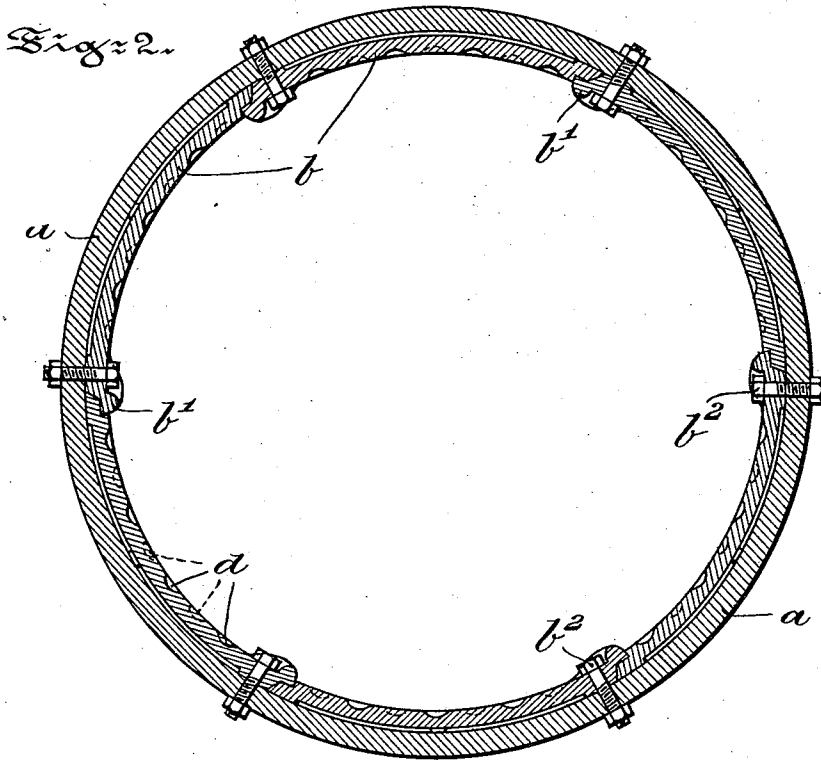
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2 SHEETS—SHEET 2.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

JAMES W. FULLER, OF CATASAUQUA, PENNSYLVANIA.

## TUMBLING MILL OR BARREL.

SPECIFICATION forming part of Letters Patent No. 730,900, dated June 16, 1903.

Application filed September 26, 1902. Serial No. 124,915. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES W. FULLER, a citizen of the United States, residing at Catasauqua, in the county of Lehigh and State of Pennsylvania, have invented certain new and useful Improvements in Tumbling Mills or Barrels, of which the following is a specification.

My invention has relation to a tumbling mill or barrel especially adapted for the reduction of hard substances, such as cement, in bulk to powder by trituration, and in such connection it relates more particularly to the construction and arrangement of such a mill or barrel.

The principal objects of my present invention are, first, to provide in a tumbling mill or barrel a lining formed of a series of detachable iron plates each having a flange at one end and overlapping an adjacent unflanged end and arranged to be secured together to form a substantially unbroken cylindrical internal wall for the barrel, and, second, to provide in such a mill or barrel a series of detachable iron sections or plates, each plate having on its interior a series of semispherical indentations or recesses.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a side elevational view, partly broken away, of a tumbling barrel or mill embodying main features of my invention. Fig. 2 is a cross-sectional view, enlarged, of the barrel; and Figs. 3 and 4 are respectively front and rear elevational views, enlarged, of one of the detachable sections or plates.

Referring to the drawings, *a* represents the cylindrical outer casing of a tumbling mill or barrel. The interior of this casing *a* is lined with a series of plates *b*, each curved to form when assembled a cylinder concentric with the casing *a*, as illustrated in Fig. 2. Each plate or section *b* has at one end or edge a flange *b'*, projecting inward and arranged to overlap the unflanged end or edge of an adjacent section. A series of bolts *b<sup>2</sup>* are adapted when advanced through the flanges *b'* and into the casing *a* to lock the adjacent plates together and to secure the same to the

casing *a*. On the interior surface of each plate *b* is formed a series of semispherical indentations or recesses *d*, arranged in rows, which rows are parallel horizontally; but the indentations are in staggered or inclined relationship vertically. At either side of each plate *b* is formed a recess *e*, adapted to receive a correspondingly-shaped lug projecting from the interior of the casing *a*, so as to more securely lock each plate to said casing, as well as to relieve the strain upon the bolts *b<sup>2</sup>*.

In operation the hard cement or similar materials are introduced into the barrel together with a number of balls or "Greenland pebbles." When now the barrel is rotated, the balls or pebbles roll over the inner surface of the plates and are properly deflected by the semispherical indentations *d*, so that the material may be completely ground. The shape of the indentations *d* is such that very little friction between the balls and the plates arises, so that the wear upon the balls and plates is minimized without impairing the trituration action upon the material to be reduced. The plates *b* are preferably formed of chilled iron.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a tumbling barrel or mill, an external cylindrical shell and an internal concentric lining, said lining formed of a series of segmental plates overlapping at the ends to form annular sections for the lining, one section having at one end a flange overlapping an unflanged end of an adjacent section, bolts passing through the flange and through the external shell and adapted to tightly clamp the overlapping sections together and to the shell, and a series of semispherical indentations extending a short distance into the inner face of each plate and arranged in rows, said rows being in staggered relationship to each other.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

JAMES W. FULLER.

Witnesses:

A. N. ULRICH,  
C. N. ULRICH.