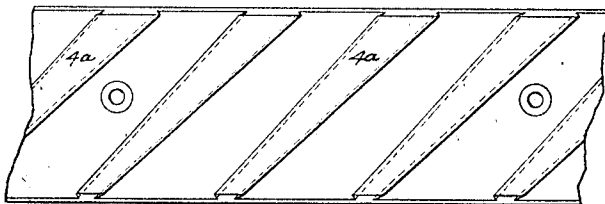
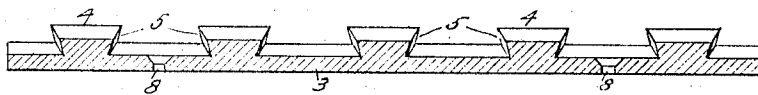
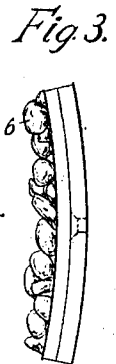
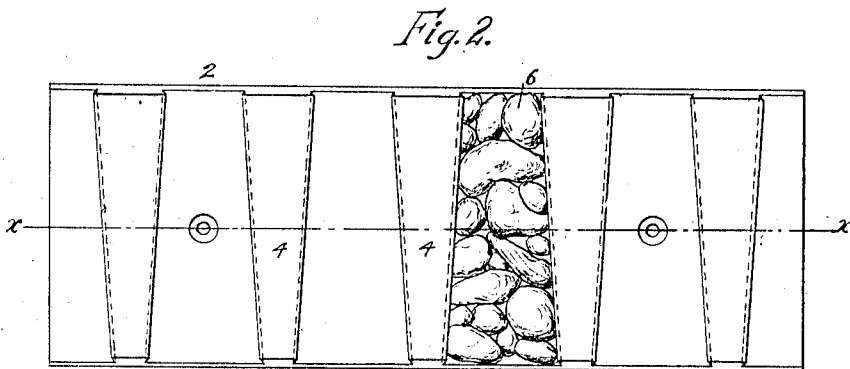
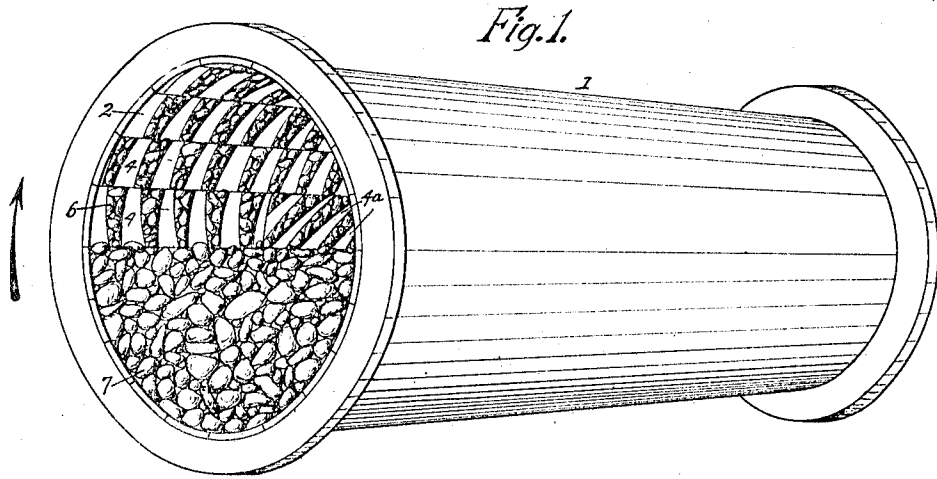


A. R. GLOBE.
LINER FOR GRINDING MILLS.
APPLICATION FILED AUG. 21, 1911.

1,055,395.

Patented Mar. 11, 1913.



Witnesses:
O. Leon Kieselbach.
Wm Hapell

Inventor
Alexander R. Globe.
By his Attorney
Wm Dodge

UNITED STATES PATENT OFFICE.

ALEXANDER RANKINE GLOBE, OF COBALT, ONTARIO, CANADA, ASSIGNOR OF ONE-HALF TO JOHN G. MUELLER, OF COBALT, ONTARIO, CANADA.

LINER FOR GRINDING-MILLS.

1,055,395.

Specification of Letters Patent.

Patented Mar. 11, 1913.

Application filed August 21, 1911. Serial No. 645,197.

To all whom it may concern:

Be it known that I, ALEXANDER R. GLOBE, British subject, and resident of Cobalt, district of Nipissing, Province of Ontario, and Dominion of Canada, have invented certain new and useful Improvements in Liners for Grinding-Mills, of which the following is a specification.

My invention relates to improvements in liners for grinding mills, of the class generally known as pebble or tube mills, in which the grinding of the material is effected by the movement of loose pebbles mounted within the rotating tube or drum, which is provided with a lining containing similar pebbles; and the object of the invention is to provide a lining for more effectively holding the pebbles against the grinding movement of the material within said mill, and which by the rotative action of the drum will automatically tend to replace such pebbles as may become displaced through wear, and assist with the loose pebbles to reduce the material in process of being ground.

In describing the invention in detail, reference is had to the accompanying drawing, forming a part of this specification; wherein like characters of reference are used to designate corresponding parts throughout the several views, and in which:

Figure 1 is a perspective view of a drum provided with the improved lining; Fig. 2, a plan view of a liner section; Fig. 3, an end view of the latter; Fig. 4, a sectional view on line $w-w$ Fig. 2; and Fig. 5 is a fragmental view, showing a modified form of liner section.

Numeral 1 designates the outer shell or drum of an ordinary tube or pebble mill, arranged for rotation in the direction indicated by the arrow, and provided with a lining comprising a plurality of similar sections 2. Each section consists of a base member 3, integrally formed with inwardly-extending ribs 4, constituting the side walls of a series of channels or pockets for receiving and holding the pebbles. These side walls extend circumferentially of the drum and their adjacent faces 5 diverge with respect to each other in the direction of rotation. The faces 5 of the side walls also converge inwardly toward the center or axis of the drum, forming in cross section dove-tailed bearing surfaces for more securely

holding the liner pebbles 6, which are preferably rammed into the channels or pockets in the first instance to facilitate the charging of the liners.

In the grinding action of the mill, the rotation of the drum causes a lifting and backward rolling movement of the loose pebbles 7 over the liner pebbles 6, which movement serves to urge the latter pebbles in closer contact with the diverging or wedge-shaped side walls of the pockets, to securely hold or lock the same therein, and in the event of a displacement of any of the liner pebbles by reason of wear, it will be evident that a self-adjustment of the pebbles within the channels will be effected, and a new pebble-studded grinding surface formed.

The several liner sections 2 are secured upon the inner surface of the drum in well known manner by bolts or screws, which are passed through perforations 8 in the base member 3, and likewise through corresponding perforations in the drum. As shown in Figs. 2 and 1, the ribs 4 are disposed upon the sections and within the drum substantially in line with the rotation thereof. In the modification shown in detail in Fig. 5, the corresponding ribs 4^a are shown at an angle with such rotation, in which relation the wearing action of the loose pebbles upon the exposed surfaces of the ribs is reduced, and the grinding action upon the material treated likewise increased by a more continuous coaction between the relatively fixed and loose pebbles. It will furthermore be evident that this angular relation of the pockets containing the fixed pebbles together with the intervening depressed free spaces may be suitably arranged to control in a measure the travel of the material through the drum.

What I claim as my invention and desire to secure by Letters Patent, is:

1. In a pebble grinding mill, a rotatable drum provided with interior peripheral channels or pockets for receiving the pebbles, said channels being formed with circumferentially-extending side walls, the opposite faces of which are transversely straight and diverge longitudinally with respect to each other in the direction of rotation of said drum.

2. In a pebble grinding mill, a rotatable drum provided with interior peripheral channels or pockets for receiving the peb-

bles, said channels being formed with circumferentially-extending side walls, the opposite faces of which diverge longitudinally with respect to each other in the direction of rotation of said drum and converge transversely toward the axis thereof.

3. In a pebble grinding mill, the combination with a rotatable drum, of a sectional lining therefor, each section comprising a base member, inwardly-extending ribs formed on said base member and disposed circumferentially of said drum, the opposite faces of the adjacent ribs being transversely straight and diverging longitudinally with respect to each other in the direction of rotation of said drum and constituting pockets or channels for holding the pebbles.

4. In a pebble grinding mill, the combination with a rotatable drum, of a sectional lining therefor, each section comprising a base member, inwardly-extending ribs formed on said base member and disposed circumferentially of said drum, the opposite faces of the adjacent ribs diverging longitudinally with respect to each other in the direction of rotation of said drum and converging transversely toward the axis

thereof to form pockets or channels for holding the pebbles.

5. A liner section for a grinding mill or drum comprising a base, inwardly-projecting ribs thereon forming channels or pockets extending circumferentially of said drum, the opposite faces of the adjacent ribs diverging longitudinally with respect to each other in the direction of their rotation and converging transversely toward the axis of the drum.

6. In a rotatable pebble grinding mill or drum, a liner therefor comprising a base, inwardly-projecting ribs thereon arranged circumferentially of said drum and at an angle with the rotation thereof, the opposite faces of the adjacent ribs diverging with respect to each other in the direction of their rotation and converging toward the axis of the drum.

Signed at the town of Cobalt, in the district of Nipissing and Province of Ontario, this 12th day of August A. D. 1911.

ALEXANDER RANKINE GLOBE.

Witnesses:

A. BEAN,

F. J. POIRIET.