

No. 851,637.

PATENTED APR. 30, 1907.

M. F. ABBÉ.
LINING FOR PEBBLE MILLS.
APPLICATION FILED JAN. 9, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

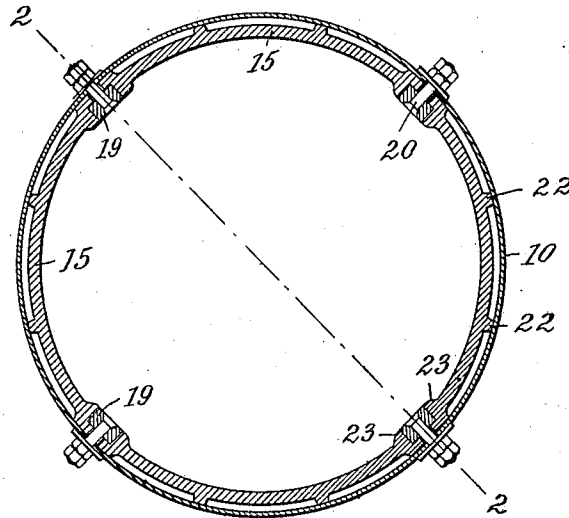
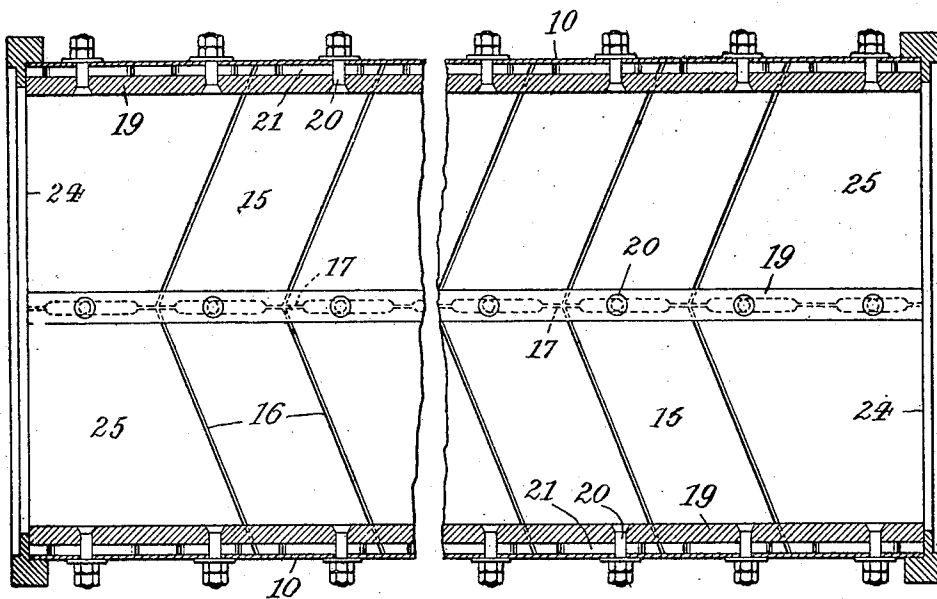


Fig. 2.



Witnesses:

Arthur E. Gumpfer.
William Schulz.

Inventor.

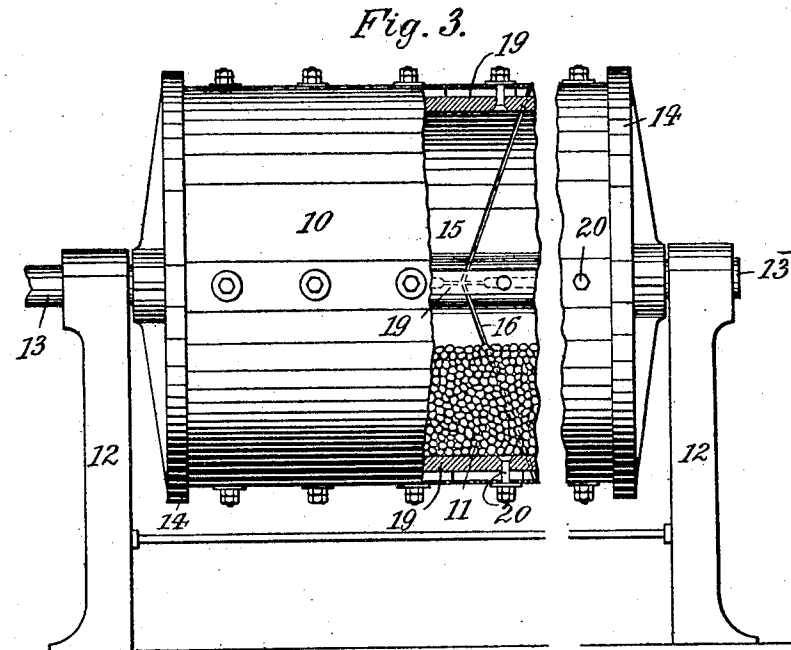
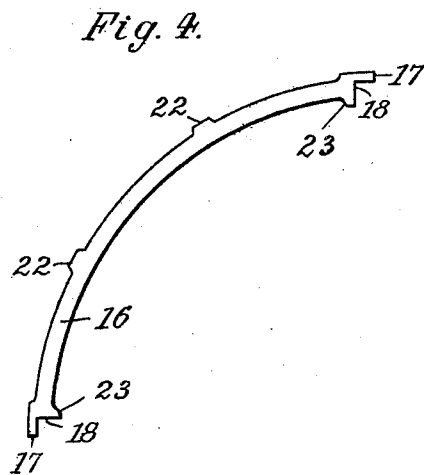
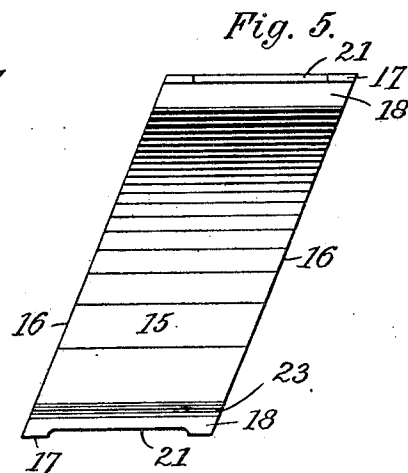
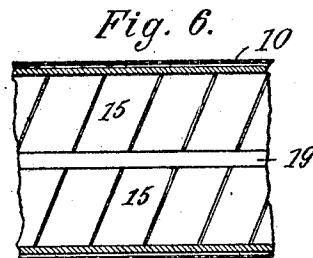
Max F. Abbé,
by *Frank P. Briesen* Atty.

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2 SHEETS—SHEET 2.



Witnesses:
Arthur E. Gump.
William Schuly.

Inventor:
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UNITED STATES PATENT OFFICE.

MAX F. ABBÉ, OF NEW YORK, N. Y.

LINING FOR PEBBLE-MILLS.

No. 851,637.

Specification of Letters Patent.

Patented April 30, 1907.

Application filed January 9, 1907. Serial No. 351,432.

To all whom it may concern:

Be it known that I, MAX F. ABBÉ, a citizen of the United States, residing at New York city, Manhattan, county and State of New York, have invented new and useful Improvements in Linings for Pebble-Mills, of which the following is a specification.

This invention relates to a lining for pebble or ball mills, which is not apt to wear out along the seams and which may be readily fitted into the mill without requiring lengthy adjustment.

In the accompanying drawings: Figure 1 is a cross section of a pebble mill provided with my improved lining; Fig. 2 a longitudinal section of the main body of the mill on line 2—2, Fig. 1; Fig. 3 a front elevation, partly broken away, of the mill; Fig. 4 an end view of one of the liners; Fig. 5 a face view thereof, and Fig. 6 a detail of a modification of the lining.

While operating a grinding mill, each of the pebbles, as well as each of the particles to be ground, will move substantially in a plane at right angles to the axis of rotation. If the joints between the liners therefore coincide with such planes of movement, a tendency arises for the charge to rapidly wear out the mortar at the joints, as well as the edges of the liners by cutting grooved paths into the seams. By my invention this objection is overcome, the liners being so constructed that the joints between them are inclined, and must be crossed by the moving particles while the mill is in operation.

As shown in the drawings, the cylindrical shell 10 of the mill containing the pebbles or balls 11, is rotatably mounted on standards 12 by gudgeons 13 projecting axially from the heads 14. The liners 15, which may be composed of metal, stone or other material, are so shaped and fitted in position, that the seams formed between their sides, extend obliquely partly across the mill, or in other words, in a direction from one of the heads 14 toward the other head. To effect this result, the two sides 16 of the liner join the ends 17, at obtuse angles, and the liners are so laid that the ends 17 will assume a position parallel to the axis of the mill, when the sides 16 will assume the lateral deflection desired. This deflection may extend in opposite directions in adjoining courses to obtain a zigzag effect, (Fig. 2), or it may extend in the same direction to obtain an oblique effect, (Fig. 6).

In order to provide means for readily at-

taching a liner to the mill, each of its ends 17 is rabbeted as at 18, (Fig. 4), the two rabbets of laterally adjoining liners forming a longitudinal key-groove between them. Into this groove is fitted a key or longitudinal bar 19 which extends over the reduced ends of adjoining liners and is, perforated in alignment with perforations of shell 10, for the reception of connecting bolts 20. These bolts likewise pass through openings formed by notches or recesses 21 at the edges of adjacent liners, which extend parallel to the axis of the drum. These notches are of such a length as to amply accommodate the bolts and permit the liners to be shifted to the position required. In this way any difficult boring of bolt-holes in the liner so as to have them register with those in the shell, is entirely obviated, and as the bar holds the liner down from end to end, the stability and strength of the lining is greatly increased.

The liners should be curved to conform to the curvature of shell 10, and they are provided on their convex back with reinforcing ribs 22, that engage said shell. At their ends, the liners are provided with inwardly extending bulges 23 that flank and protect bar 19, besides forming offsets for preventing any objectionable sliding action of the contents of the mill. Of course the outer edge 24 of each end liner 25, extends parallel to head 14 against which it abuts.

I claim:

1. A pebble mill provided with liners having ends that extend parallel to the axis of the mill, and sides that are inclined to such ends, substantially as specified.

2. A pebble mill provided with liners having reduced and notched ends, a bar extending over the reduced ends of adjoining liners, and bolts that secure the bar to the mill and pass through the openings formed by the notches of adjoining liners parallel to the axis of the mill, substantially as specified.

3. A pebble mill provided with liners having reduced ends, bulges flanking the same, a bar extending over the reduced ends of adjoining liners, and bolts that secure said bar to the mill, substantially as specified.

Signed by me at New York city, (Manhattan,) N. Y., this 8th day of January, 1907.

MAX F. ABBÉ.

Witnesses:

FRANK V. BRIESEN,
WILLIAM SCHULZ.