G. S. EMERICK.

TUBE MILL.

APPLICATION FILED JUNE 25, 1908.

927,516. Patented July 13, 1909.

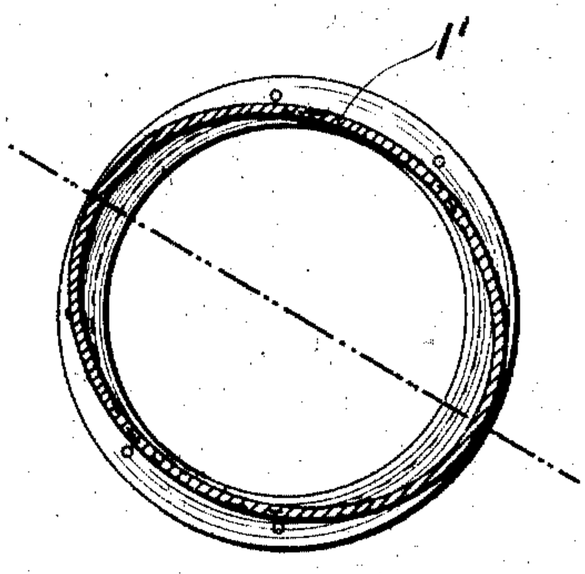

FIG. 2.

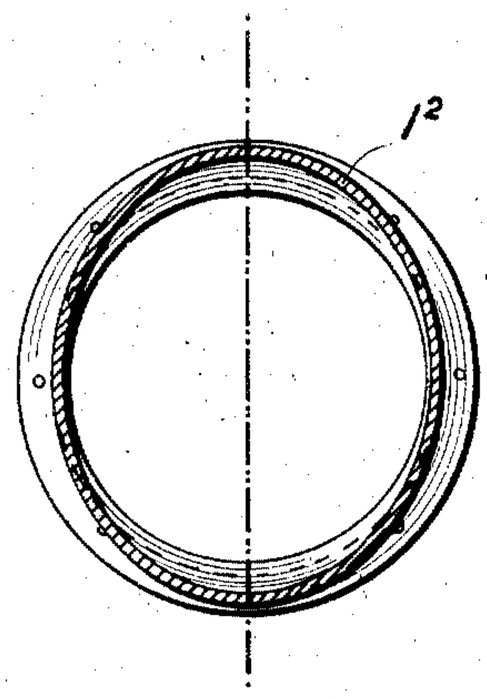

FIG. 3.

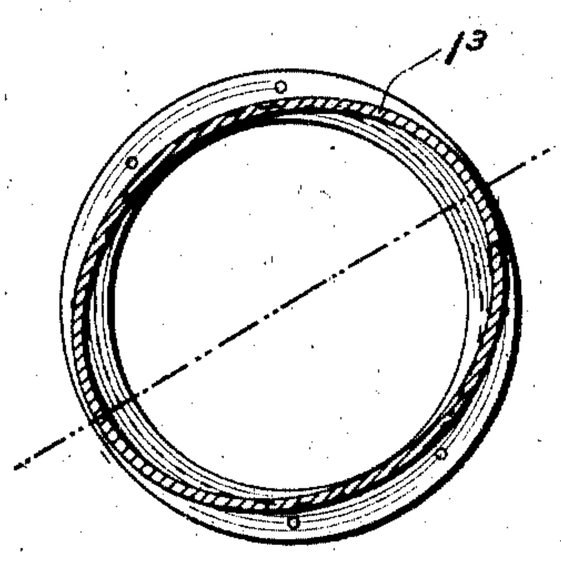

FIG. 4.

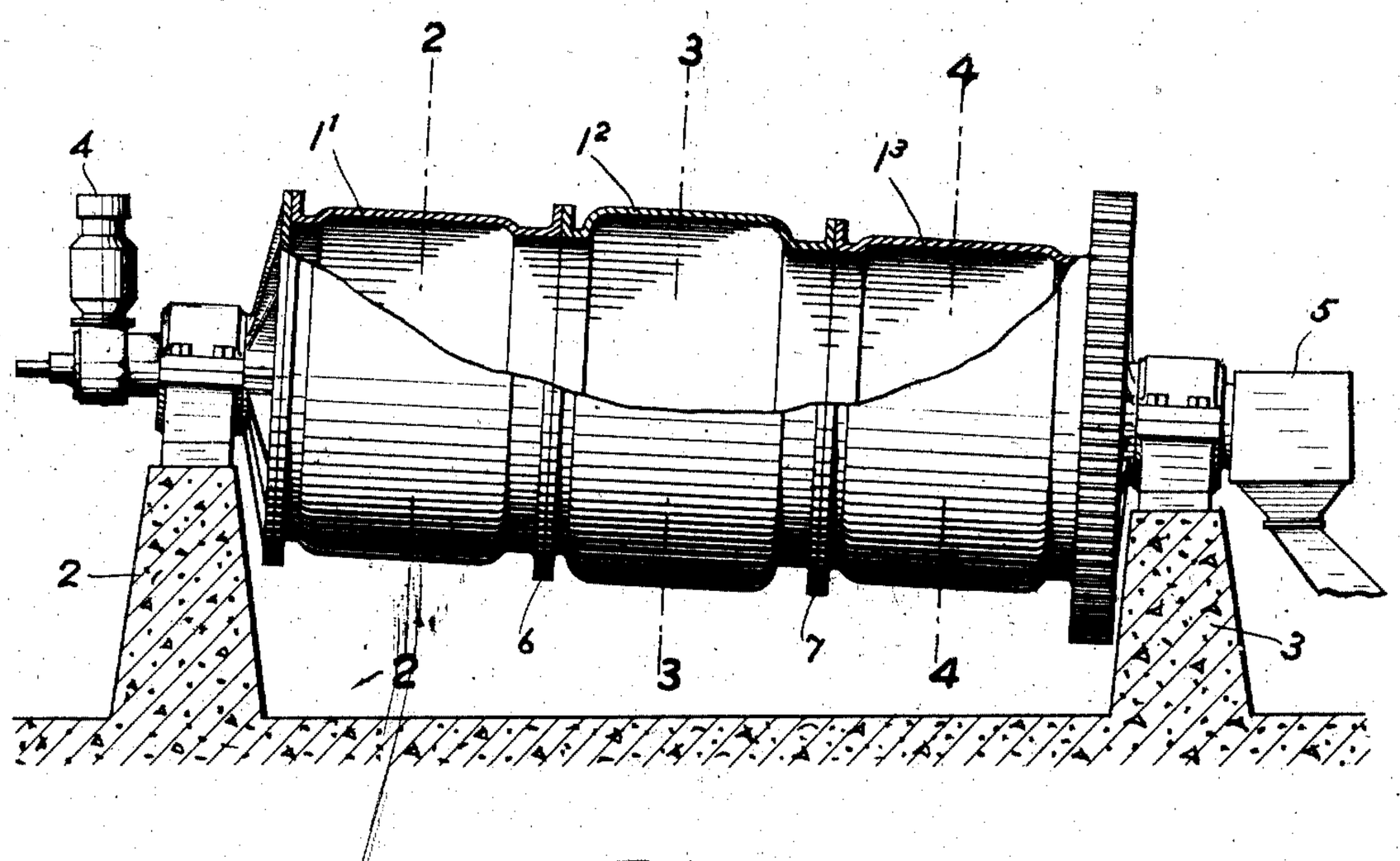

FIG. 1.

WITNESSES:

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TUBE-MILL.

No. 927,516. Specification of Letters Patent. Patented July 13, 1909.

Application filed June 25, 1908. Serial No. 440,228.

To all whom it may concern:

Be it known that I, GEORGE S. EMERICK, a citizen of the United States, residing at Nazareth, in the county of Northampton and State of Pennsylvania, have invented a new and Improved Tube-Mill, of which the following is a specification.

My invention relates to that class of comminuting or reducing machinery known as tube or pebble mills, wherein the grinding or reduction is accomplished by a mass of pebbles or steel balls within a relatively horizontal rotating cylinder. In mills of this class the action of the pebbles tends to wear the interior of the mill quite smooth, with the result that the mass of pebbles shift slightly as the mill rotates and neither mix thoroughly with the material to be ground nor, in consequence, effectively reduce the latter. To overcome this defect ribs or flanges are sometimes disposed upon the inner surface of the mill and parallel with the axis thereof, their object being to carry up and dump the pebbles as the mill rotates and thereby more completely mix the pebbles and the material to be ground. I have obviated this defect in existing mills of this class by an entirely novel means, hereinbelow described, and shown in the accompanying drawings, in which—

Figure 1 is a view, in longitudinal section, of the entire mill, and Figs. 2, 3 and 4 are views, in cross-section, of the several compartments of the mill, on the lines 2—2, 3—3 and 4—4, respectively in Fig. 1.

In Fig. 1 the body of the mill, formed in the sections or compartments 1^1, 1^2 and 1^3, is mounted in the ordinary manner upon the supports 2, 3 and is adapted to be rotated in the ordinary manner by any suitable mechanism (not shown). The mill is provided with the feed inlet 4 and discharge outlet 5. The sections 1^1, 1^2 and 1^3 are elliptical in cross section and so arranged that the major axes of the successive sections are separated by an angle of 60°. The sections 1^1, 1^2 and 1^3 are provided with circular external flanges in order that the sections may be firmly bolted or secured each to each, as at 6 and 7, Fig. 1, forming a rigid and continuous mill body. By thus forming the inter-communicating sections or compartments of my tube mill the mass of pebbles in each section is kept effectively in motion, being carried up and rolled over upon itself with the result of greatly increasing the grinding or comminuting action and proportionately increasing the output of the mill. In order to counter-balance the throw or jerk of each section, separately considered, I have formed the mill in separate inter-communicating sections with major axes forming such an angle with each other that the throw in each compartment takes place at equidistant intervals in a single complete revolution of the mill.

The essence of my invention consists first, in having the sections of the tube mill elliptical in cross section, and secondly, in so disposing the successive sections relatively to each other as to counter balance the mill when in use. For example: if the mill is composed of two sections, their major axes will be separated by an angle of 90°. If three sections are employed, their major axes will be separated by angles of 60°, and so on. I therefore do not confine myself to any particular number of sections wherewith to compose the mill.

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

1. A tube mill composed of a plurality of inter-communicating sections or compartments elliptical in cross-section and having their corresponding axes angularly disposed.

2. A tube mill composed of inter-communicating sections elliptical in cross-section and so disposed relatively to each other that the major axes of the successive sections are separated by equal angles, substantially as described.

GEORGE S. EMERICK.

Witnesses:
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CHRIS. E. STIVER.