



No. 847,436.

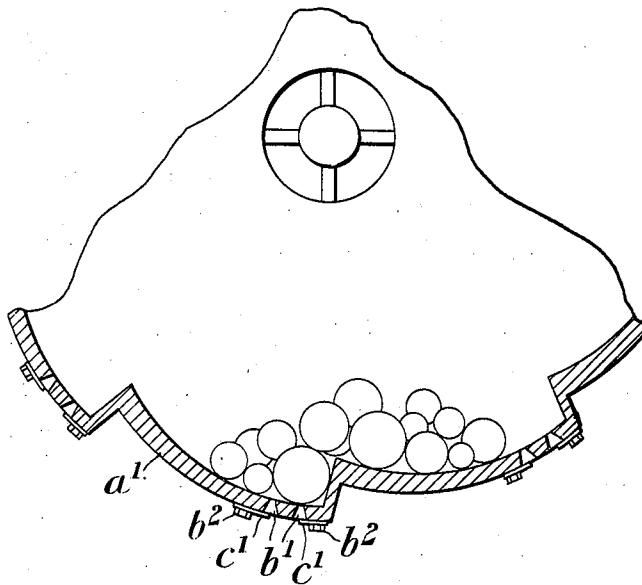
PATENTED MAR. 19, 1907.

O. PFEIFFER.  
GRINDING MILL.

APPLICATION FILED JAN. 2, 1906.

2 SHEETS—SHEET 2.

Fig. 4.



Witnesses

Edith M. Ryan  
Edith Hubbard

Inventor.

Oskar Pfeiffer  
By *Walter H. Wood*  
Att'y.

# UNITED STATES PATENT OFFICE.

OSKAR PFEIFFER, OF KAISERSLAUTERN, GERMANY.

## GRINDING-MILL.

No. 847,436.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed January 2, 1906. Serial No. 294,297.

*To all whom it may concern:*

Be it known that I, OSKAR PFEIFFER, a subject of the Emperor of Germany, residing at Kaiserslautern, Rheinpfalz, Germany, have invented new and useful Improvements in Grinding-Mills, of which the following is a specification.

My invention relates to improvements in grinding-mills.

In ball and like grinding-mills as heretofore made a number of holes or slits are provided in the grinding-plates or races for the outlet of the ground material. This arrangement possesses a number of defects, among which may be mentioned the fact that the said holes or slits are partially or wholly hammered together by the balls, so that the outlet of the ground material is rendered more or less difficult or is completely prevented. Furthermore, the manufacture of the plates by drilling or casting in the holes or slits presents considerable difficulties, and their durability and strength to resist the continual impact of the balls is slight.

Now this invention has for its object to obviate these disadvantages and consists in the improvements hereinafter described.

In the accompanying drawing, Figure 1 is a diagrammatic sectional view of a drum grinding-mill constructed according to the invention. Fig. 2 is an enlarged view illustrating the outlet-regulating devices. Fig. 3 is a diagrammatic view of a plant showing my improved grinding-mill in use therewith. Fig. 4 is a sectional view of a modified form of grinding-mill.

*a a* are the grinding-plates, which in lieu of being provided with openings for the outlet of the ground material are made in segments or steps, each consisting of a solid piece. The outlets for the ground material are formed by the spaces or openings *b* between the sections or steps, these openings being provided with adjustable valves or slides *c*. By this means the outlet-openings *b* can be adjusted to suit the degree of fineness of the ground substance.

The ground material is conveyed from an elevator *d*, Fig. 3, down the chute *e* into the hopper *F* of a separator. The fine and coarse material are separated in this machine, the former passing through the outlet *g* into sacks or the like for transport and the coarser material passing down the outlet-

tube *h* back into the grinding-mill for further treatment. In this manner the employment of the hitherto usual sieves and the like for obtaining finely-ground material is obviated.

My invention may be carried out in other forms without departing from the essential feature of the invention, the chief characteristic of which consists in dispensing with the sieve and the like and in the regulation of the degree of fineness by adjusting the area of the outlet-openings *b*.

As a modification perforated grinding-plates *a' a'* may be employed, (see Fig. 4,) and the openings *b'* provided in these plates may be more or less closed, as required, by means of the covers *c' c'*, which are secured to the grinding-plates *a'* by means of screws *c'' c''*.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The combination with a grinding-mill having stepped grinding-faces and peripheral discharge-openings, of means for regulating the size of said openings, whereby said mill may be regulated to directly discharge ground material not exceeding any predetermined size, substantially as described.

2. The combination with a grinding-mill having stepped grinding-faces and peripheral discharge-openings, of adjustable plates constructed to project over said openings, whereby said mill may be regulated to directly discharge ground material not exceeding any predetermined size, substantially as described.

3. In a grinding-mill the combination with stepped grinding-faces, having discharge-openings between adjacent ends of adjacent stepped faces, of adjustable plates adapted to lap over said openings to regulate the size thereof, substantially as described.

4. In a grinding-mill, the combination with stepped grinding-faces having discharge-openings between the adjacent ends of adjacent stepped faces of sliding plates adapted to lap over said openings to regulate the size thereof, substantially as described.

OSKAR PFEIFFER.

Witnesses:

PAUL EODELT,

MICHAEL ZIMMERMANN.