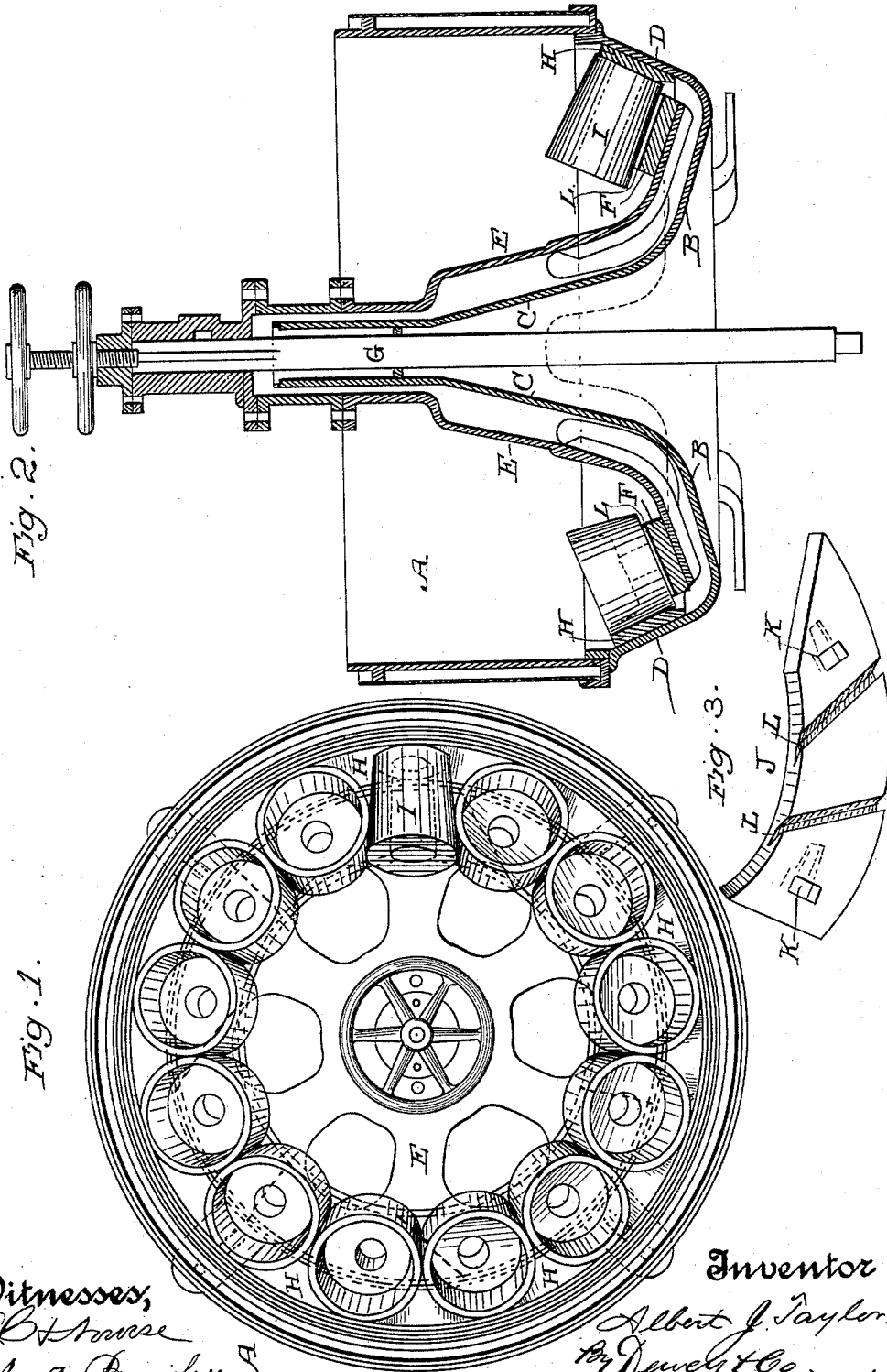


(No Model.)

A. J. TAYLOR.
GRINDING PAN.

No. 485;069.

Patented Oct. 25, 1892.



Witnesses,
G. H. H. H.
J. A. Bayless

Inventor,
Albert J. Taylor.
By *Dewey & Co.* atty

UNITED STATES PATENT OFFICE.

ALBERT J. TAYLOR, OF SILVER CITY, NEVADA.

GRINDING-PAN.

SPECIFICATION forming part of Letters Patent No. 485,069, dated October 25, 1892.

Application filed May 31, 1892. Serial No. 435,060. (No model.)

To all whom it may concern:

Be it known that I, ALBERT J. TAYLOR, a citizen of the United States, residing in Silver City, Lyon county, State of Nevada, have invented an Improvement in Grinding-Pans; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an improved apparatus for crushing and grinding ores in pans. It consists in certain details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a plan view of my pan, showing the arrangement of the grinding-rollers. Fig. 2 is a vertical section of the same. Fig. 3 is a view of one of the muller-shoe sections.

A is the body of the pan, which is made essentially cylindrical in shape, and B is the bottom, which forms a continuation of the central cone C and declines toward the outer edge from the base of this cone. The outer edge of the bottom B meets the inclined sides D, which extend below the vertical sides A of the pan, and the bottom and the sides B and D form a sort of conical channel all the way around the pan.

E is a muller, which fits over the cone, following the outline of the interior of the bottom of the pan and carrying upon its outer edge the dies F. This muller is fixed to a central shaft G, driven in the usual manner in such pans by gearing below. (Not here shown.)

H is a ring-die extending around the inner periphery of the inclined sides D, and against these and upon the bottom dies the crushing and grinding take place.

Heretofore it has been customary to employ a series of rollers set within the pan so that their peripheries roll against the side die H; but the irregularity of the pressure and of the amount of material which comes between the dies and the rollers is such that after a short use the die will be worn into wavy surfaces, the irregularity of which is such that if the pan is run at any reasonable degree of speed it will throw the rollers entirely out of place, and the pans become practically useless so soon that this style has been altogether abandoned.

In my invention I employ one or more hori-

zontal rollers I, lying on the side on the bottom die and having their ends adapted to travel against the side die H. These rollers are placed at intervals between the vertical rollers or bowls which stand with the ends upon the bottom die and the sides rolling against the side die H. The rollers I, placed in this manner, cause a rubbing friction between their ends and the side die, and thus keep it worn smooth and level at all times. Efficient grinding takes place between the ends of these rollers and the side die, while the vertical rollers or bowls grind upon the bottom die. By thus preventing the circular side die from becoming irregular the grinding is carried on as perfectly at all times as when the die is new, and the dies may be entirely worn out without ever becoming irregular.

In order to preserve the muller-shoes and keep them perfectly in place, I have made these shoes in long sections, as shown at J, with two or more fastening-lugs K to each section. These sections are slotted, as shown at L, to form channels through which the pulp works outwardly to the outside of the pan. This construction is much better than making the shoes in short independent sections each having but a single fastening-lug, which does not hold them sufficiently well in place.

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

1. A crushing and grinding pan having the inclined bottom and sides and a muller rotating within the pan above the bottom, having a circular die upon the top around its periphery and a circular inclined die around the inner periphery of the lower sides of the pan, in combination with a series of rollers standing upon the bottom die with their axes at right angles thereto, and one or more intermediate rollers placed between the first rollers and having the axes at right angles with the side die against which the ends of the roller travel, substantially as herein described.

2. A crushing and grinding pan having the inclined bottom and sides, a muller rotating within the pan, having shoes formed in sections with two or more lugs, by which they are secured to the muller, and inclined slots

made in the face of the shoes, a ring-die fitting upon the top of the muller around its outer periphery, a sidedie around the interior of the lower inclined sides, standing approximately at right angles with the muller-die, a series of rollers placed on end upon the muller-die with their axes at right angles thereto, and one or more rollers intermediate between the first-named rollers, having their ends
10 abutting against the sidedies with their axes

at right angles thereto and the sides traveling upon the muller-die, substantially as herein described.

In witness whereof I have hereunto set my hand.

ALBERT J. TAYLOR.

Witnesses:

S. H. NOURSE,

J. A. BAYLESS.