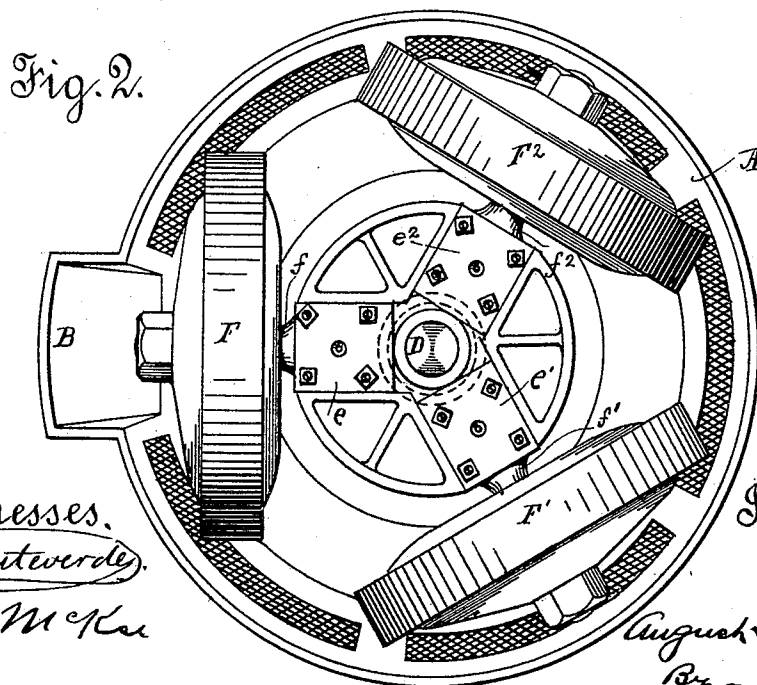
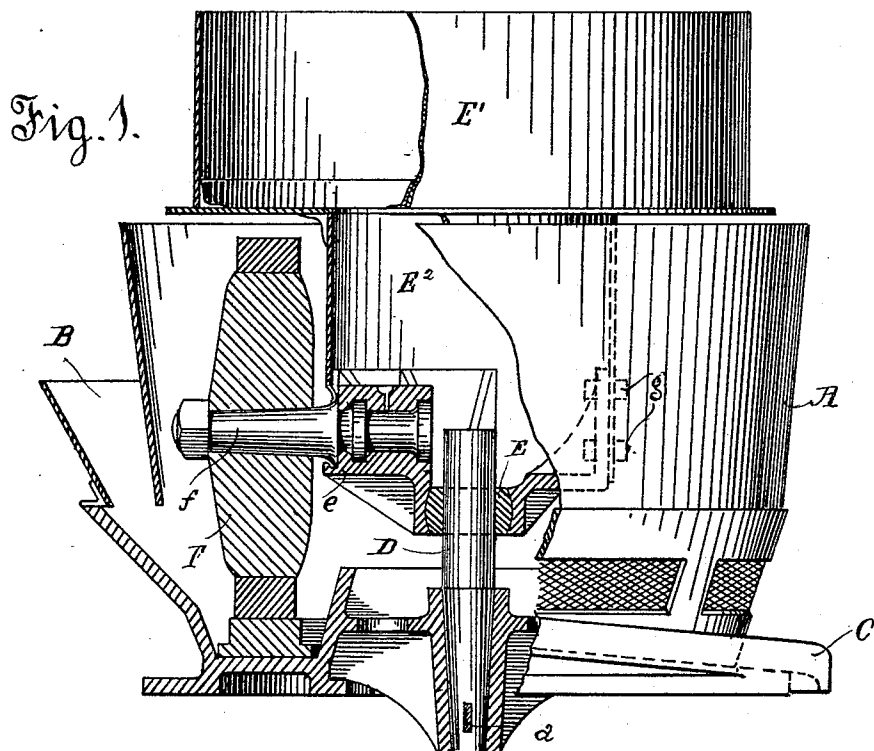


(No Model.)

A. H. SCHIERHOLZ.
ORE CRUSHER.

No. 459,657.

Patented Sept. 15, 1891.



Witnesses.
Steffenwerde
J. B. McKee

Inventor

August H. Schierholz
By *M. A. McKee*

UNITED STATES PATENT OFFICE.

AUGUST H. SCHIERHOLZ, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO
THE RISDON IRON WORKS, OF SAME PLACE.

ORE-CRUSHER.

SPECIFICATION forming part of Letters Patent No. 459,657, dated September 15, 1891.

Application filed April 4, 1891. Serial No. 387,637. (No model.)

To all whom it may concern:

Be it known that I, AUGUST H. SCHIERHOLZ, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Ore-Crushers; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

My invention has relation to certain new and useful improvements in rotary ore-crushers, which consists in the details of construction and arrangement of parts as will be hereinafter more fully set forth in the drawings, described and pointed out in the specification and claims.

The invention relates more specifically to certain improvements upon what is known as the "Bryan ore-crusher"; and it consists in so connecting the crushing-rollers as to prevent binding thereof when thrown upward by unusually large pieces of ores, which has heretofore been the objection to crushers of this class.

Referring to the drawings forming a part of this application, wherein similar letters of reference are used to denote corresponding parts throughout the entire specification, Figure 1 is a side view in elevation, partly broken away, of the mill; and Fig. 2 a top plan view with the weight-driving pan removed.

The letter A is used to indicate the stationary ore-receiving pan, which is provided with the feed-chute B, through which the ore to be crushed is fed into the ore receiving or grinding pan, and C is the discharge-chute for the ground or pulverized ore. The vertical shaft D extends centrally through the grinding-pan, and is securely fastened thereto by means of key *a*. Upon this shaft works the sleeve E, upon which works the laterally-extending arms *e e' e²*, which have secured therein and projecting therefrom axles *f f' f²*, upon which work the grinding wheels or rollers F F' F². The driving-pan is represented by the letter E', which is provided with the downwardly-extending wall E², by means of which the driving-pan is secured to the laterally-extending arms *e e' e²*, through the me-

dium of bolts *g*. The pan E' is rotated by any suitable machinery—as, for instance, by means of a power-belt working thereover—thus converting said pan into a hollow drive-wheel. The connection between the laterally-extending arms and sleeve E form a universal joint for the purpose of preventing binding on shaft D, as hereinafter more fully set forth. In order to give the necessary crushing-power to rollers F F' F², I fill the interior of drive-pan E' with pieces of iron, large stones, or the like. Inasmuch as pan E' rests on or is bolted to arms *e e' e²*, it is obvious that the full weight thereof is brought to bear upon the crushing-rollers through the medium of axles *f f' f²*. As the driving-pan is caused to rotate, the laterally-extending arms, connected thereto and working upon the sleeve secured upon the vertical shaft, are moved thereby, which carry therewith the grinding-rollers, secured to axles *f f' f²*, and causes the crushing of the ore. It is obvious that in case the rollers contact with extra large pieces of ores the same will uplift and roll thereover; but by reason of the universal-joint connection between the laterally-extending arms and sleeve E no binding will take place upon the vertical shaft D, as heretofore, thus allowing the roller to lift at an incline while passing over the extra size pieces of ore. It will be seen that the periphery of sleeve E is convex and engages the depending slightly-concave portions of the arms, thus forming practically universal joints. The sleeve E is self-adjustable upon the vertical shaft.

Having thus described my invention, what I claim as new, and desire to secure protection in by Letters Patent of the United States, is—

1. In an ore-crusher, the combination of a receiving-pan, a vertical stationary shaft extending therein, a sleeve working on said shaft and having a convex periphery, laterally-extending arms provided with depending slightly concave portions engaging the convex surface of the sleeve, crushing-rollers connected to the arms, and drive mechanism, substantially as set forth.

2. In an ore-crusher, the combination of a receiving-pan, a vertical stationary shaft extending therein, laterally-extending arms se-

cured to said shaft, so as to turn freely there-
around, axles secured within the arms and
carrying crushing-rollers upon their outer
ends, and a rotatable driving-pan provided
5 with a downwardly-extending wall secured to
the laterally-extending arms, so as to cause
said arms to rotate therewith, substantially
as set forth.

In testimony whereof I affix my signature in
presence of two witnesses.

AUGUST H. SCHIERHOLZ.

Witnesses:

N. A. ACKER,
J. W. KEYS.