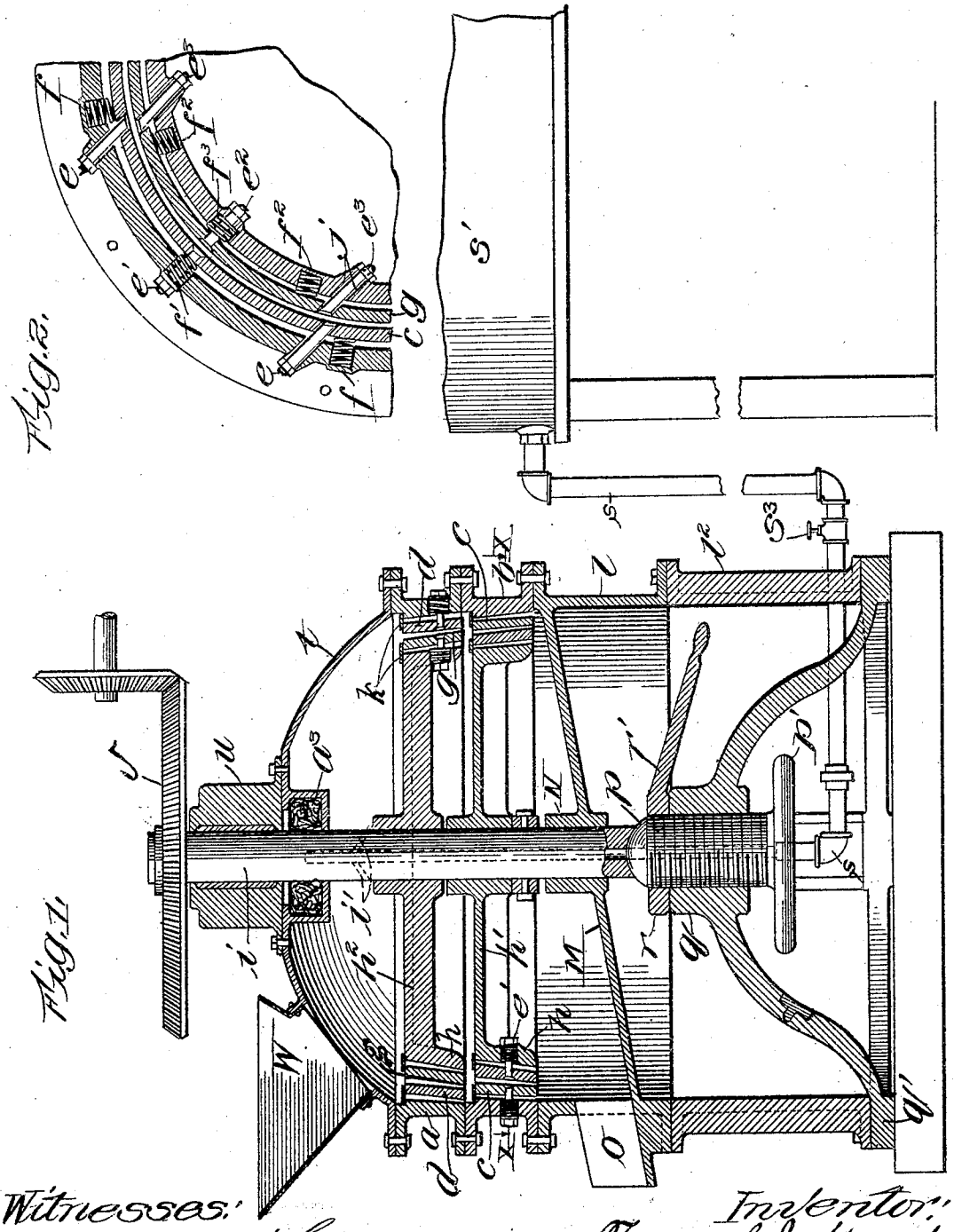
No. 794,714. PATENTED JULY 18, 1905.

F. J. HOYT.

ORE GRINDER.

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UNITED STATES PATENT OFFICE.

FREDERICK J. HOYT, OF REDLANDS, CALIFORNIA.

ORE-GRINDER.

SPECIFICATION forming part of Letters Patent No. 794,714, dated July 18, 1905.

Application filed August 8, 1904. Serial No. 219,910.

To all whom it may concern:

Be it known that I, FREDERICK J. HOYT, a citizen of the United States, residing at Redlands, San Bernardino county, California, have invented certain new and useful Improvements in Ore-Grinders, of which the following is a specification.

My invention relates to that class of ore-grinders in which the grinding mechanism is adjustable to horizontally-rotating disks having at their peripheries removable cast and case-hardened shoes or quadrant-faces which work against opposed and regulably-fixed like pieces of grinders or quadrants and other mechanism to operate with said several parts.

Figure 1 shows my said new ore-pulverizer in central sectional elevation, together with a fragment of its water-tank. Fig. 2 shows a quadrant of the grinding-faces in horizontal section through the bolts on the plane $x\ x$.

Like reference-letters denote like parts of mechanism.

The object of my invention is to provide an ore-grinder adapted to reduce material from half-inch size to eighty or one hundred mesh fine and to do this in as large quantities as fifty tons or more per day without the use of screens and to provide in my said new device operating faces which when worn can both easily and cheaply be replaced and wherein said working members are provided with means whereby they are rendered capable of yielding to a foreign substance, as pieces of pick-points or other bits of such unyielding metal.

I attain said ends in a construction substantially as follows, namely: Within internally-coned superimposed short cylinders $a\ b$ are removably secured spring-cushioned quadrants of cylinders or shoes $c\ d$ of nearly the same height as $a\ b$, held by a set of three bolts whereof the central one e' is radial in direction and whereto both end bolts e are parallel, and on said central bolt is a strong coiled spring f', which presses inward and holds the quadrant c firmly to the position it is set to by said bolts. Near the bolts e are springs f, which also push inward to hold the ends of the quadrant in place. Said springs f are also set radially and all the bolts have their heads countersunk within the faces of said quadrants. Opposed to said quadrant is its counterpart or opposite and active companion g, held by its central radial bolt e^2, and thereto parallel end bolts e^3, which pass through the flanges h of the rotary disks $h'\ h^2$, each disk secured on the central vertical shaft i. Said radial bolt e^2 has its parallel end bolts e^3 on each side, and there is a spring f^3 on the bolt e^2 and there are radial springs f^2 near each of the end bolts e^3. On each side of said end bolts in the horizontal plane of said bolts is a chamber j to give those bolts their necessary side play. The disk h^2 is but a duplicate of disk h' in every respect, to which are attached in like manner similar quadrants to those already shown. On the top of the entire circle of each set of said grinding-quadrants is placed a ring of sheet metal k to keep the material to be ground out of the open space they cover, so that said spaces may not be clogged, and thereby stop the yielding working action of said sections.

Below the cylinder b is the long cylinder l, provided with an inclined diaphragm M and a central hub N, in which turns the lower end of the shaft i, and at the lowest edge of said diaphragm is an opening and spout o to discharge the ground material. The shaft i has its lower end concaved and hardened and it turns on the convexed screw end p, which passes through the hub q of the spider, the legs of which form an integral part of the ring of the base q'. A hand-wheel p' adjusts the screw p, through which are raised or lowered into proper adjustment the said opposed grinders $c\ g$. A set-nut r, provided with a lever r', holds the screw to its adjustment. Said screw p and shaft i are bored axially, and said passage is connected by a pipe s to an elevated tank s', and above the upper disk are spray-pipes i', through which water from the tank s' is sprayed on the material to be ground. A valve s^3 regulates the flow of the water.

On top of the cylinder a is bolted a dome t, and on it is mounted a separable shaft-box u and above it is a pair of bevel-gears v for driving the shaft i. The grinders are fed through a hopper w set into the dome t.

Centrifugal force will send the material to the circumference of the grinders, from whence it will fall into the wedge-shaped annular slot between said grinders, from which it will fall into the slot formed by the lower grinders, where it receives its finished reduction and falls upon the diaphragm M, from whence it is passed through the spout *o*.

The cylinder *l* rests on four or more posts l^2, which are bolted to the base-ring *q'* and the box *a'* is packed with waste to catch the oil which flows from the box *u*.

The interiors of the cones are tapered upwardly, and thereby is provided an easier entrance of the centrifugally-actuated material. The grinding-quadrants being held by bolts can be removed and easily replaced with new ones, and in this form of construction they can be applied as cast, machining being unnecessary, and as said parts are the wearing parts of this mechanism, which requires frequent renewing, it will be an item of great saving in expense, although the said parts are case-hardened.

What I claim is—

1. The combination with flanged and rotatable disks provided with sectors of radially-adjustable spring-cushioned grinding-faces, of opposed non-rotatable spring-cushioned and radially-adjustable grinding-faces.

2. The combination with flanged and rotatable disks provided with sectors of spring-cushioned and radially and axially adjustable grinding-faces, of non-rotatable, opposed, spring-cushioned and radially-adjustable grinding-faces.

3. The combination with flanged and rotatable disks provided with sectors of radially-adjustable, coned, spring-cushioned grinding-faces, of opposed spring-cushioned and radially-adjustable grinding-surfaces.

4. The combination with flanged rotatable disks provided with radially-adjustable, spring-cushioned grinding-faces, of axial water supply and sprays therefrom.

5. The combination with an axially-bored shaft and spray-pipes therefrom, of flanged disks on said shaft provided with spring-cushioned and adjustable grinding-faces and means to supply said sprays.

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