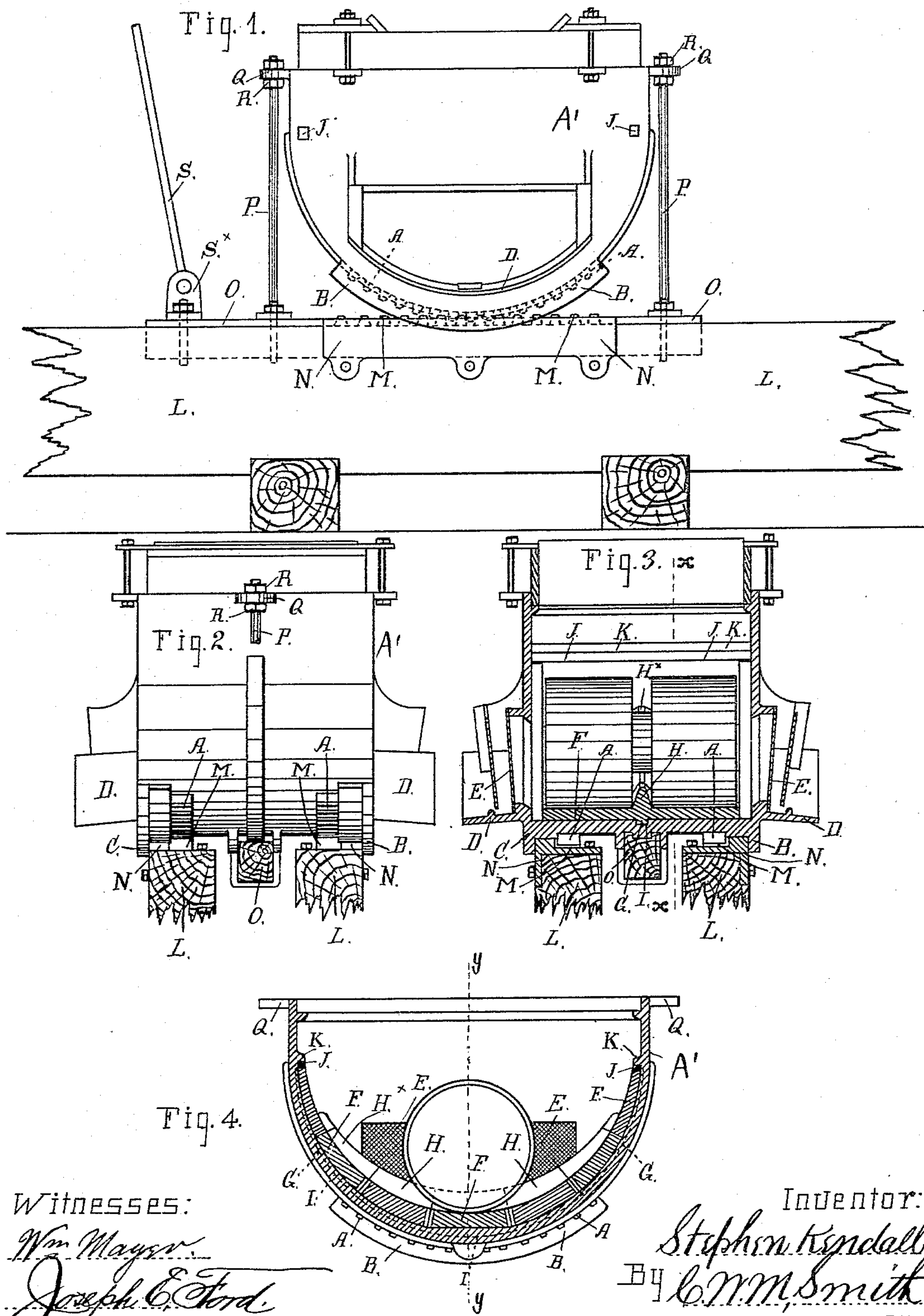


(No Model.)

S. KENDALL.
ORE CRUSHER.

No. 378,450.

Patented Feb. 28, 1888.



Witnesses:

Wm. Mayer
Joseph C. Ford

Inventor:

Stephen Kendall
By C. N. M. Smith
Att'y.

UNITED STATES PATENT OFFICE.

STEPHEN KENDALL, OF SAN FRANCISCO, CALIFORNIA.

ORE-CRUSHER.

SPECIFICATION forming part of Letters Patent No. 378,450, dated February 28, 1888.

Application filed December 11, 1886. Serial No. 221,342. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN KENDALL, 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, of which the following is a specification.

This invention relates to certain improvements in that class of ore-crushers composed of a rocking-pan for which Letters Patent of the United States were granted to me on the 24th day of August, 1886, numbered 347,809.

My present invention consists in the construction and combination of parts, substantially as will be hereinafter described and claimed.

Referring to the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation of my ore-crusher. Fig. 2 is a front elevation of the same. Fig. 3 is a transverse vertical section on line *yy* of Fig. 4. Fig. 4 is a longitudinal section through line *xx*, Fig. 3.

Similar letters refer to similar parts throughout the several views.

The pan or shell A is cast entire, open at both sides, and with the curved toothed sections A upon the bottom, and the sides and end flanges B C, the latter carrying and supporting the spouts D D, also cast with the shell, and within which are placed the meshed screens E E, through which the comminuted particles of ore pass mingled with water as the machine is operated. The die F, with which the interior of the pan is lined, is cast in sections, with square lugs G upon the lower faces and central transverse rounded projections or lugs H upon the upper faces, so that when laid side by side the lugs G will fit into a square groove, I, made lengthwise in the bottom of the pan, while the upper rounded projections or lugs H will form a continuous ridge or guide H^x, along which the grooved crushing-roller operates, and prevent it from end movement and consequent damage by striking the screens or sides of the pan. These sectional dies extend up both ends of the pan and are confined closely together by the transverse keys J engaging the lugs K, cast upon the inner face of the shell, and thus a continuous track and crushing-surface are formed for the grooved roller from end to end of the pan, and when any of the series

of plates becomes worn or broken it can be easily replaced by loosening the keys and substituting new plates for those that have become worthless.

To the parallel bed plates or timbers L L, upon which the pan is supported and operated, are bolted the toothed racks M M and angle-iron plates N N. The teeth of the sections A mesh with the teeth of the racks as the pan rocks to and fro upon the timbers and angle-plates, being guided in its movement by the vertical guiding-flanges B and C, and thus all side or lateral movement of the pan is prevented. It will thus be seen that the entire weight of the pan is sustained by the parallel timbers L L.

For imparting a rocking motion to the pan, the beam or lever O is employed. The bottom of the pan rests in a curved depression or hollow made in the face of this beam O, in which position it is held by the vertical tie-rods P P, which latter are strapped to the beam O and pass up through the lugs Q Q, connected to the ends of the pan. These rods are provided with take-up nuts R R, so that the pan can be brought to the desired pitch or angle of inclination, and also be held firmly to the beam O when motion is imparted to it.

To the outer end of the beam or lever is attached the pitman-rod S within the stirrup S^x, while the upper end of the rod connects, by a pin upon the face of a crank-wheel, with a belt-and-pulley attachment (not shown) in such a manner that the play or movement of the lower end of the pitman-rod will be parallel with the longitudinal axis of the pan and the motion be reduced to a minimum and power communicated in a nearly vertical line with the axis or center of movement. It will thus be seen that the inner end of the operating-lever or beam is free, and as motion is imparted by the crank-wheel to the connecting-rod at the outer end of the beam this end of the beam will be depressed and raised alternately and carry the pan with it and cause the grooved crushing-roller to roll forward and backward on the crushing-dies in the bottom of the pan, guided and kept in central line by the guiding-flange H^x.

The ore is first reduced to suitable fineness by a rock-breaking machine and then gradually fed to the rocking pan along with water,

which is introduced through the medium of a hose-pipe. The pan is slowly rocked, which causes the grooved crushing-roller to pass forward and backward slowly over the dies which
5 line the bottom of the pan, guided by the central ridge or flange, and to crush the ore and force it out mingled with the water through the mesh-openings in the sides of the pan.

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

The combination of the rocking pan with the

movable die or lining formed in sections, each having a rib or rounded projection on its upper face to form a flange or dividing-ridge, and
15 a grooved roller in said pan straddling the flange as a guide for the roller, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

STEPHEN KENDALL. [L. s.]

Witnesses:

C. W. M. SMITH,

CHAS. E. KELLY.