(No Model.)

S. P. SPEERS.

Ore Crusher.

No. 238,176. **Patented Feb. 22, 1881.**

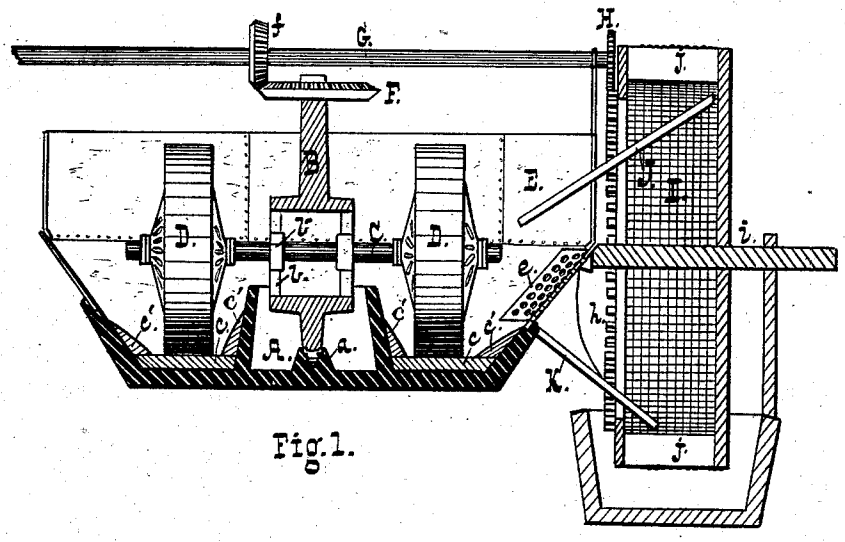


Fig. 1.

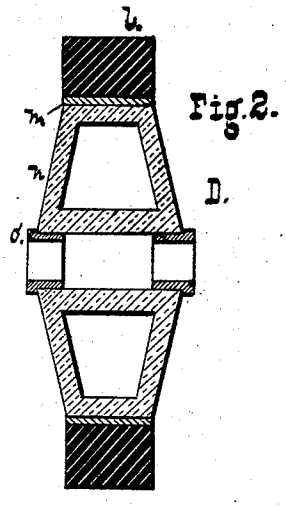


Fig. 2.

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UNITED STATES PATENT OFFICE.

SOLOMON P. SPEERS, OF BALTIMORE COUNTY, MARYLAND.

ORE-CRUSHER.

SPECIFICATION forming part of Letters Patent No. 238,176, dated February 22, 1881.

Application filed November 16, 1880. (No model.)

To all whom it may concern:

Be it known that I, SOLOMON P. SPEERS, of Baltimore county, State of Maryland, have invented certain new and useful Improvements in Ore-Crushers; and I hereby declare the same to be fully, clearly, and exactly described as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a central vertical sectional view, partly in elevation, of the device; and Fig. 2 is a sectional view of one of the edge-runners.

My invention relates to that general class of ore-crushers in which a wheel or disk is mounted on a horizontal shaft, and is caused to travel around in a suitable casing into which the ore is thrown; and my said invention consists in the combination, with the crushing mechanism, of a rotary sieve arranged to automatically separate the fine particles of ore and return the coarser portions to the crusher to be reground, all as hereinafter set forth.

In the accompanying drawings, A is the casing or pan, having a step, *a*, for the central shaft, B, which latter is slotted, as shown at *b*, to receive the bearings *b'* of the horizontal shaft C. The pan is circular in horizontal section, and is furnished with a removable cast-iron bed, *c*, and curbs *c'*, which may be removed as they become worn, and replaced by new ones at a trifling cost. The upper portion of the pan is, by preference, of sheet metal E, and at one side a portion of the same is perforated, as shown at *e*.

On the end of the shaft B is keyed a bevel-gear wheel, F, which meshes with a similar wheel, *f*, on the horizontal shaft G. This latter is driven by any suitable means, and causes the revolution of the shaft B and rollers D, which are caused to travel around in the pan. The crushed ore passes through the perforations at *e* and falls on the chute K, which delivers it into the interior of the rotary screen I, which is mounted in suitable bearings upon the shaft *i*.

On the edge or face of the screen is a gear, *h*, which meshes with a wheel, H, on the end of the shaft G, whereby the screen is caused to revolve. On the interior of the screen are a series of cleats, *j*, which carry up the particles of ore that are too coarse to pass through the screen and deliver them on the chute J, which returns them to the pan A, as will be readily understood. By these means the fine particles of ore are quickly carried out of the pan, automatically sorted, and the coarser portions are returned to be recrushed until they will pass through the screen, which may be of any desired size of mesh.

The bearings of the transverse shaft C rise and fall freely in the slotted portion of the shaft B, so that the rollers may accommodate themselves to the depth of ore in the pan.

Referring, now, to the construction of the rollers D, and to Fig. 2 of the drawings, in which their construction is more clearly shown, the same may be described as follows: The hub and spokes *n* are formed integral of cast-iron, and are fitted with bushings *o* for their attachment to the shaft C. On the periphery is shrunk a wrought-iron ring, *m*, and upon it is shrunk the steel tire *l*, thus securing important ends. It will be seen that the motion of these rollers or disks with reference to the bed of the pan is not merely that of rolling, but the angular motion of the shaft C causes the disks to grind upon the bed. This grinding resulted in a rapid wearing away of the disks as heretofore constructed, which difficulty I have remedied by furnishing the disks with steel tires shrunk upon a malleable metal rim. The tires are thereby made readily removable when worn, and may be replaced by new ones.

What I claim is—

1. In combination with the pan and disks and the revolving screen, the shaft G, and gearing intermediate the latter and the disks and screen for causing the same to revolve, as set forth.

2. In combination with the pan and disks and the slotted shaft, the driving-shaft G, wheels *f* F H, and the screen I, having chutes K J, and gearing *h*, all as set forth.

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