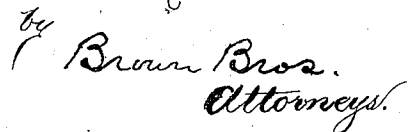


S. G. ROLLINS.
ORE CRUSHER.

Patented Mar. 2, 1886.



UNITED STATES PATENT OFFICE.

SAMUEL G. ROLLINS, OF BOSTON, MASSACHUSETTS.

ORE-CRUSHER.

SPECIFICATION forming part of Letters Patent No. 337,085, dated March 2, 1886.

Application filed May 25, 1885. Serial No. 166,629. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL G. ROLLINS, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Ore-Crushers, of which the following is a full, clear, and exact description.

This invention relates to that class of ore-crushers in which wheels or disks are mounted on horizontal shafts and are caused to move around in a suitable casing into which the ore is thrown, all as well known.

Under this invention the crusher is provided with two grinding wheels or disks, each of which is mounted on and attached to a separate horizontal shaft that turns in a separate bearing-block adapted to have an up-and-down movement on a common support arranged to be rotated in any suitable manner, and the two shafts are joined together at their ends by a common coupling-box constructed and adapted to allow each shaft with its wheel to turn or rotate independently of the other and to hold or confine them against lateral movement through the box, all substantially as hereinafter fully described and claimed.

In the drawings, Figure 1 is in part a side elevation, and in part a central vertical section, of an ore-crusher constructed according to the present invention. Fig. 2 is a plan view. Figs. 3 and 4 are views in detail, hereinafter referred to; and Fig. 5 is a plan view illustrating the addition of grinding wheels or disks at opposite sides and between the two grinding-wheels shown in Figs. 1 and 2. Fig. 6 is a plan view in detail of parts shown in Fig. 5.

In the drawings, A is a casing or pan having a step, B, receiving the lower end of a vertical shaft, C, which carries a supporting-frame, D, for the grinding wheels or disks E E and their respective horizontal shafts F, to which they are attached; and the shaft C at its upper end turns in a suitable stationary bearing, G, and it is adapted, in any suitable manner—as, for instance, with bevel gear-wheels H J, driving-shaft K, and loose and fast pulleys L M—to be driven or rotated, turning within its bearings G B.

The perimeter or edge *a* of each grinding-wheel is made rounding from side to side and

the wheel in operation travels by its said edge around and in a concave-shaped gutter or depression, *b*, in the bed N of the casing A, and, as it so travels, its horizontal shaft F turns in a bearing-block, O, of a support or carrier, D, which carries also a similar bearing-block, O, for the shaft of the other wheel.

P is a box or casing making a bearing for the inner ends of both shafts F F and coupling them together.

Each bearing-block O is adapted to slide up and down upon a separate vertical post, Q, of the common support D for the two grinding-wheel shafts F, and, as particularly shown, this slide of the block is adapted to the outer vertical edge, *d*, of such post, which and the block are made with a dovetail groove and tenon, *f*, Fig. 4.

The coupling box or casing P is made in two parts secured together in any suitable manner, and it has interior peripheral grooves, *h h*, receiving correspondingly-shaped flanges *kk* on each shaft of the grinding-wheels. The inner ends of the shafts F are flanged, as shown, and butted end to end, and each shaft is free to turn of itself within the common coupling-box P, and the interlocking flanges and grooves confine each shaft against lateral movement in and through the coupling-box, and the coupling-box is free to rise and fall with the shafts and their guided sliding bearing blocks or boxes O.

The grinding wheels or disks, arranged and carried as above described, are both carried around within the gutter *b* of the bed N of the casing A by the travel of their common support D, driven as has been described, and as they so travel each wheel and its carrying-shaft is free to turn independently of the other wheel and at the same time with its bearing and coupling boxes O P to rise and fall, as may be necessary in the operation of grinding or crushing the ore entered into the pan.

The pan is made otherwise than described in any of the ordinary ways—as, for instance, with a screen or screens located about and around the sides thereof, and except, as has been particularly stated, the ore-crushing machine operates as is well known in ore-crushing machines using grinding-wheels arranged to travel around in a casing into which the ore is entered.

In Fig. 5 four grinding-wheels are shown. Two are arranged as has been already described, and the remaining two, $E^2 E^2$, are located at opposite sides between the wheels E E , and at right angles thereto, and each is carried by a separate shaft, F^2 , which turns in a vertical sliding bearing-block, O , of the common supporting-frame D , suitably shaped therefor, and it is hung at its inner end in a bearing-block, n , which is suspended between adjustable center-pins, l , carried by ear-pieces m , that project from the side of the coupling-box P , common to the two shafts F of the wheels E . The extra wheels $E^2 E^2$ and their shafts, arranged as above described, in operation can rise and fall to accommodate the wheels to the depth of ore in the gutter b of the bed N . Having thus described my invention, I claim—

In a machine for grinding or crushing ore, &c., in combination, grinding-wheels $E E$ and their separate horizontal shafts F , vertical sliding bearing blocks or boxes O , one for each rotating shaft, rotating support D , common to both boxes O , bearing-box P , connecting both of said shafts and interlocking with each and free to rise and fall therewith, and a casing or pan, A , having gutter or grinding-surface b , substantially as described, for the purpose specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

S. G. ROLLINS.

Witnesses:

A. N. ROLLINS,
WM. S. BELLOWES.