

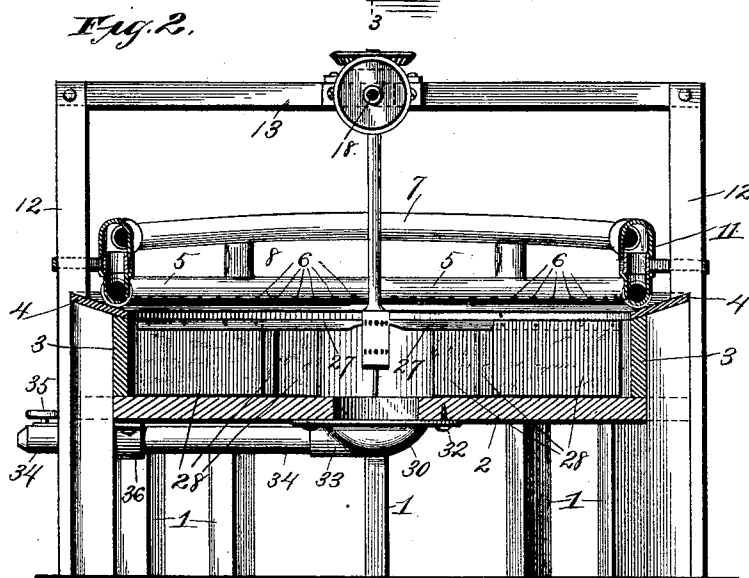
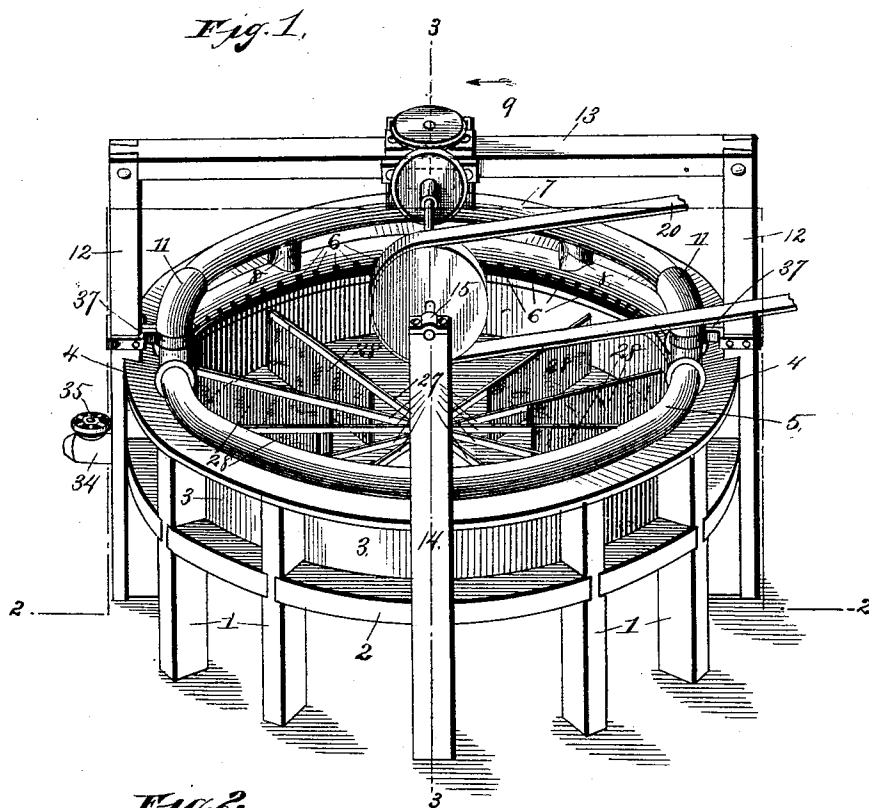
(No Model.)

2 Sheets—Sheet 1.

C. B. WALKER.
ORE CONCENTRATOR.

No. 480,301.

Patented Aug. 9, 1892.



Witnesses:

W. S. Hooper,
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Inventor,

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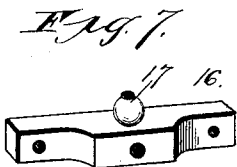
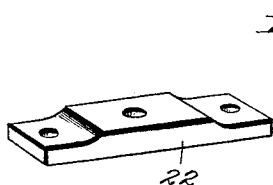
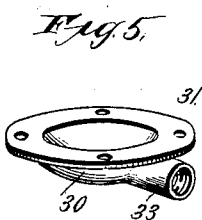
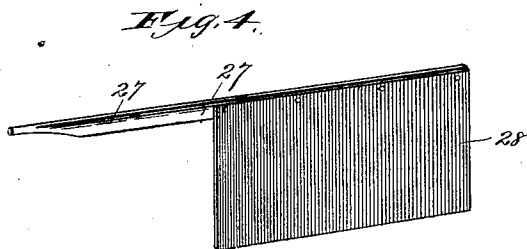
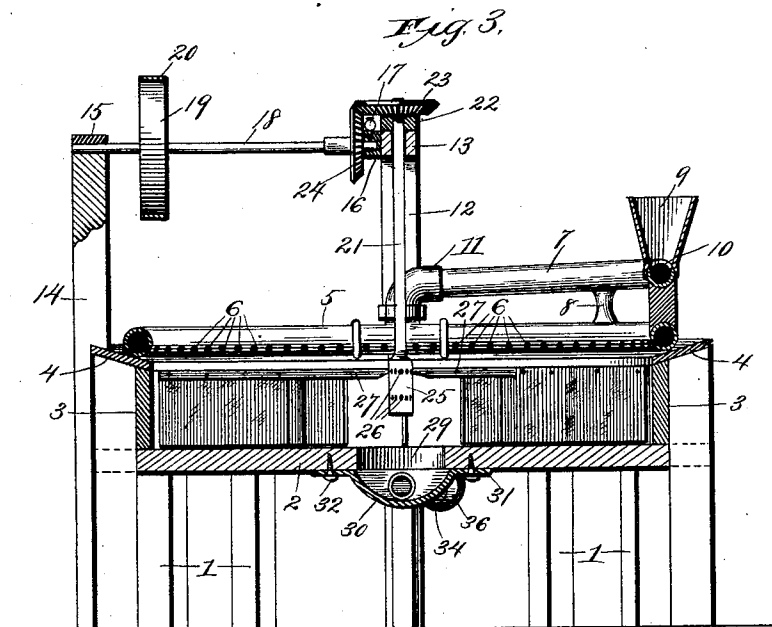
(No Model.)

2 Sheets—Sheet 2.

C. B. WALKER.
ORE CONCENTRATOR.

No. 480,301.

Patented Aug. 9, 1892.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES B. WALKER, OF TRINIDAD, COLORADO.

ORE-CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 480,301, dated August 9, 1892.

Application filed February 13, 1892. Serial No. 421,472. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. WALKER, of Trinidad, Las Animas county, Colorado, have invented certain new and useful Improvements in Ore-Concentrators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to machines for sorting ores according to their richness or for separating the metallic portions of powdered ores from the gangue, and more particularly to that class of machines which accomplish the above-named results by what is known as the "wet process," utilizing the differences in the specific gravities of the various grades of ore as the basis of operation.

The objects of my invention are to produce an ore-concentrator which shall be simple, strong, durable, and comparatively inexpensive in construction, and which shall also be rapid and very effective in its operation, and which shall require the least expenditure of power for its proper operation.

To the above purposes my invention consists in certain peculiar and novel features of construction and arrangement, as hereinafter described and claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a perspective view of an ore-concentrator embodying my invention. Fig. 2 is a transverse vertical section of the same on the line 2 2 of Fig. 1. Fig. 3 is a transverse vertical section of the same on the line 3 3 of Fig. 1 and on a plane at right angles to the plane of the section of Fig. 2. Fig. 4 is a detached perspective view of one of the agitator-carrying arms and its agitator. Fig. 5 is a detached perspective view of the pocket for receiving the concentrated ore and the outlet-pipe of said pocket. Fig. 6 is a detached perspective view of the journal-bearing of the vertical agitator-actuating shaft. Fig. 7 is a detached perspective view of the journal-bearing of the horizontal agitator-actuating shaft.

In the said drawings, 1 designates a number of stout standards, which may be either

of wood or metal, as preferred, and which are arranged in circular order, as shown.

2 designates the bottom of the concentrator, the said bottom being of circular form marginally and supported in horizontal position upon the standards 1 at a suitable point between their upper and lower ends, the said posts or standards being shown as notched at opposite sides and the margin of the bottom being also shown as notched or recessed to embrace the posts or standards at their notches.

3 designates the sides of the concentrator, the said sides being of circular form and of any suitable or preferred height, in order that the interior of the concentrator shall properly receive the mingled ore and water for treatment.

4 designates the top or rim of the concentrator, the said top or rim being also of circular form and resting upon the upper edge of the side of the machine and being, furthermore, inclined inwardly and downwardly, as shown. Upon this inclined top 4 is placed a circular discharge-pipe 5, the inner side of which is provided with numerous discharge openings or perforations 6 for a purpose to be hereinafter explained, and above this discharge-pipe is placed a feed-pipe 7. This feed-pipe 7 is preferably of semicircular form and is supported upon the discharge-pipe 5 by a suitable number of short interposed standards 8, the said standards preferably diminishing in height from the middle of the pipe, so as to cause the feed-pipe to correspondingly incline downward from its middle toward its ends. Upon the middle of this feed-pipe 7 is mounted a hopper 9, the interior of which communicates with the interior of the feed-pipe through an opening 10 in the middle of the feed-pipe, at its upper side. To the ends of this feed-pipe are connected couplings or bends 11, which establish communication between the interior of the discharge-pipe (at opposite points thereof) and the ends of the feed-pipe.

At opposite sides of the framework of the machine are placed two vertical standards 12, which are either of wood or metal, as preferred, and which are of such height as to rise considerably above the framework of the machine, as shown. Upon the upper ends of

these standards rests and is bolted or otherwise suitably secured a horizontal cross beam or bar 13, while at a point midway between the two standards 12 and preferably at the opposite side of the framework from the hopper 9 is placed a third standard 14, which is similar in form, height, and construction to the two standards 12 just described.

Upon the top or upper end of the standard 14 is bolted a suitable journal-bearing 15, while upon the cross-bar 13, midway of the length thereof, is bolted a suitable journal bearing or box 16, this latter journal bearing or box being either of the precise form shown and provided with an oiler or lubricator 17 or of any other suitable or preferred type, and being also secured to that side of the cross-bar which faces the standard 14.

18 designates the main power-shaft of the machine, the inner end of said shaft working in the journal-bearing 16, and said shaft extending thence horizontally to the journal-bearing 15 upon the standard 14. This power-shaft carries at its outer portion a belt-pulley 19, over which runs a belt 20, which latter leads to a pulley upon a line-shafting or to the belt-wheel of an engine or other moter.

21 designates the vertical shaft which actuates the agitator of the machine. This shaft is shown as passing at its upper end through the cross bar or beam 13 and also as working at its upper end in a suitable bearing 22, which is bolted or otherwise secured upon the upper side of the said cross-bar 13 midway of its length. Upon its upper end this shaft carries a horizontal beveled gear-wheel 23, the teeth of which mesh with the teeth of a vertical beveled gear-wheel 24, which is secured to the inner end of the power-shaft 18, the rotary movement of the power-shaft being thus communicated to the agitator-shaft. The lower end of this shaft 21 is formed or otherwise provided with a hub 25, in the sides of which are formed two or more sets of sockets 26. In each of these sockets is inserted the inner end of one of a number of horizontal agitator-carrying arms 27, which extend radially from the hub 25 within the bed of the machine and a suitable distance above the bottom of the same. At its outer end each arm 27 carries an agitator 28, which is pendent from the agitator-arm and which is composed of suitable rods, bars, or fagots arranged to extend toward the bottom of the machine.

The purpose in providing the hub 25 with more than one set of sockets 26 is to permit the number of radial agitator-carrying arms 27 to be increased, as desired, and also to enable the arms to be set nearer to or farther from the bottom of the machine, as the particular character of material being operated upon may demand.

In the center of the bottom 2 is formed an opening 29, beneath which is bolted or otherwise suitably secured a concave receptacle or pocket 30, which is designed to receive the concentrated ore, said pocket being shown as provided with a circular marginal flange 31, through which the attaching-bolts 32 are passed. This pocket is formed with a laterally-extending tubular outlet 33, which is internally screw-threaded at its outer end. To the outer end of this outlet 33 is connected an outlet-pipe 34, which extends horizontally outward beneath the framework of the machine and the outer end of which is provided with a suitable valve, the hand-wheel of which is shown at 35. The outlet-pipe is supported in proper position by a strap-bracket 36, which is bolted or otherwise suitably secured beneath the bed of the machine. It is to be noted that the bends 11 of the feed-pipe are preferably retained in proper position by strap-brackets 37, which at their inner portions surround the bends and the outer portions of which are bolted to the standards 12.

It will be seen from the above description that the pulverized ore mixed with water is fed upon the bottom of the hopper, the heavier valuable particles sinking to the bottom and the lighter worthless refuse floating upon the liquid and being discharged with such liquid into the pocket 30, and thence out of the machine through the outlets 33 and 34. The agitators serve to assist these operations and prevent the formation of channels in the material during its treatment.

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

1. An ore-concentrator comprising a circular bed or base, a circular perforated discharge-pipe located above the bed or base, and a curved feed-pipe communicating with the discharge-pipe, substantially as set forth.

2. An ore-concentrator comprising a circular bed or base, a circular perforated discharge-pipe located above the said bed or base, a semicircular feed-pipe located above the discharge-pipe and communicating at its ends with said pipe, and a hopper mounted upon and communicating with the feed-pipe, substantially as set forth.

3. An ore-concentrator comprising a circular bed or base having a bottom provided with a central outlet-opening, a concave pocket secured beneath said opening, and an outlet-pipe leading from said pocket, substantially as set forth.

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

CHARLES B. WALKER.

Witnesses:

EDWIN B. FRANKS,
JESSE G. MATHEWS.