W. A. NEILL.

ORE DEHYDRATING MACHINE.

APPLICATION FILED OCT. 6, 1906.

915,371. Patented Mar. 16, 1909.

2 SHEETS—SHEET 1.

Fig. II.

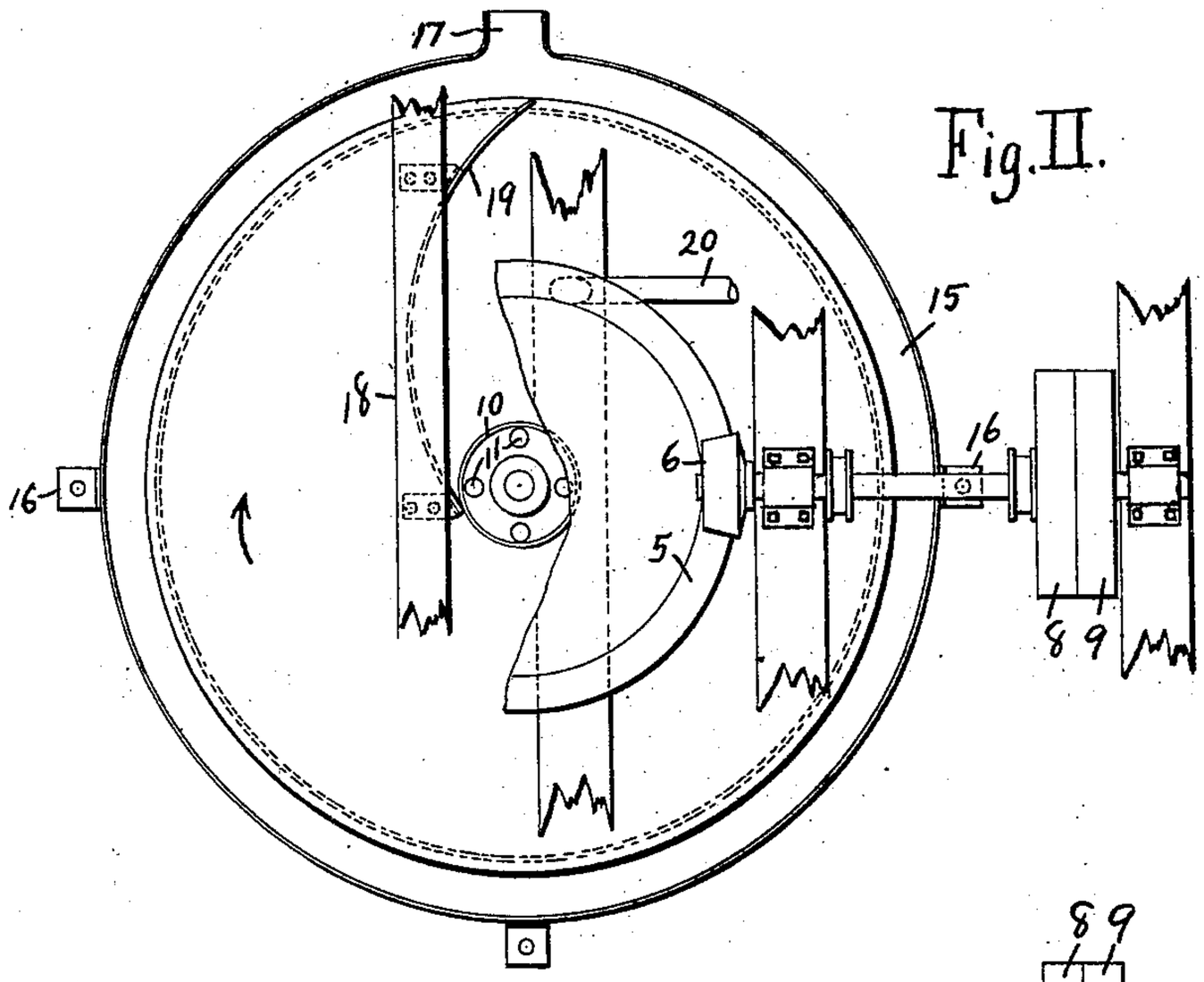
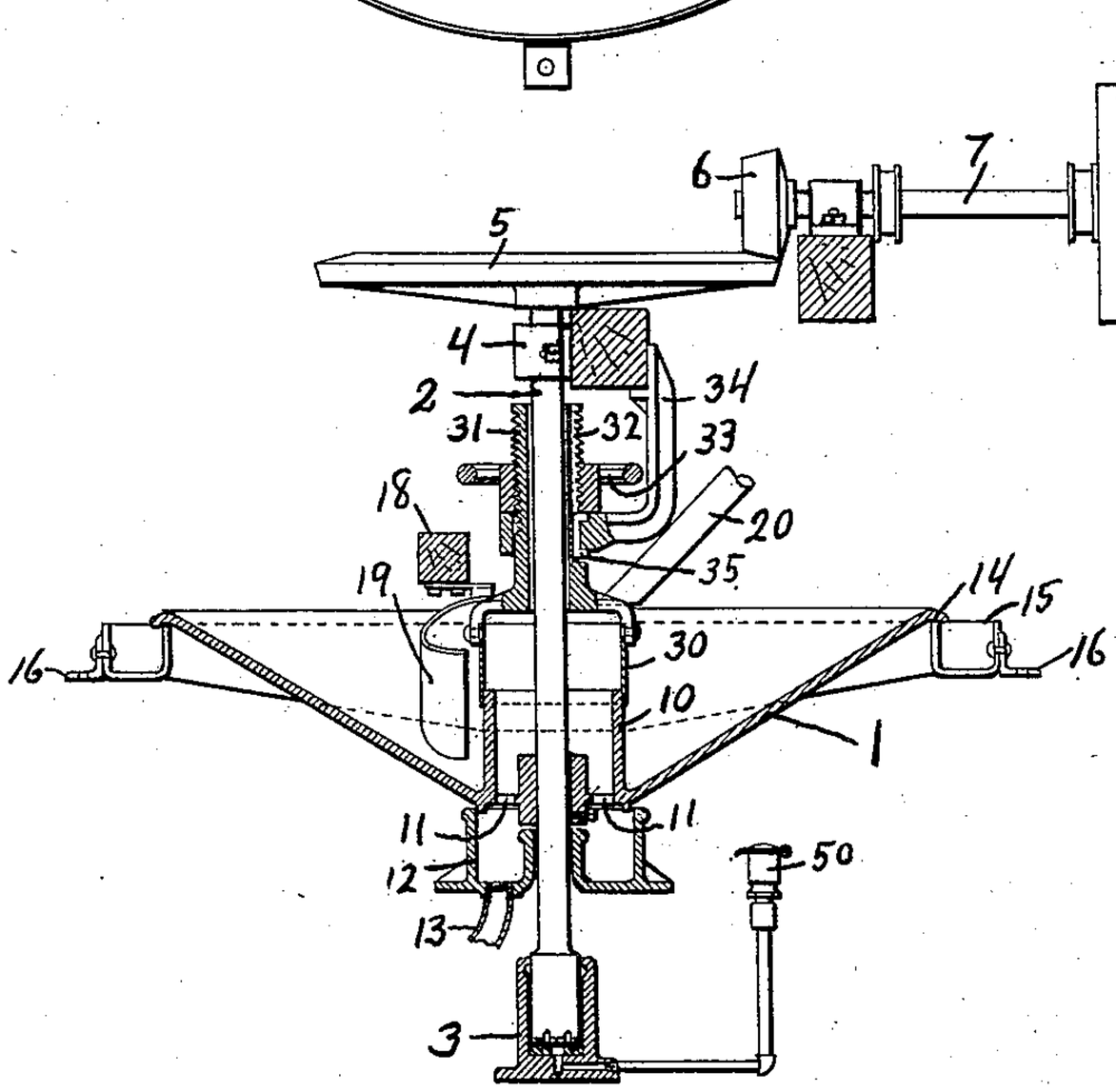


Fig. I.



WITNESSES:
Frank E. Dennett
John C. Rennie

W. A. Neill INVENTOR

BY
G. F. DeMeza ATTORNEY.

W. A. NEILL.

ORE DEHYDRATING MACHINE.

APPLICATION FILED OCT. 6, 1906.

915,371.

Patented Mar. 16, 1909.

2 SHEETS—SHEET 2.

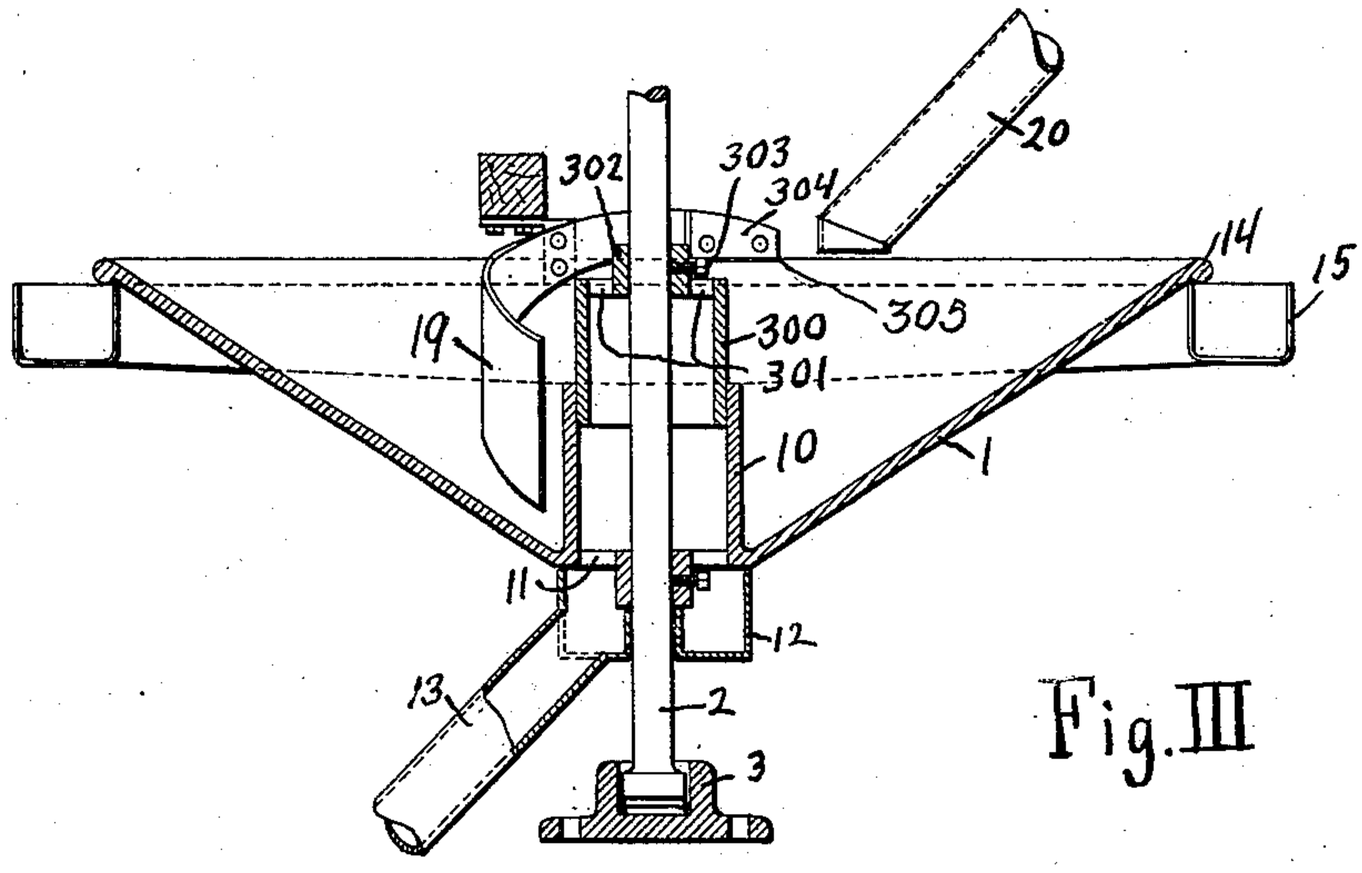


Fig. III

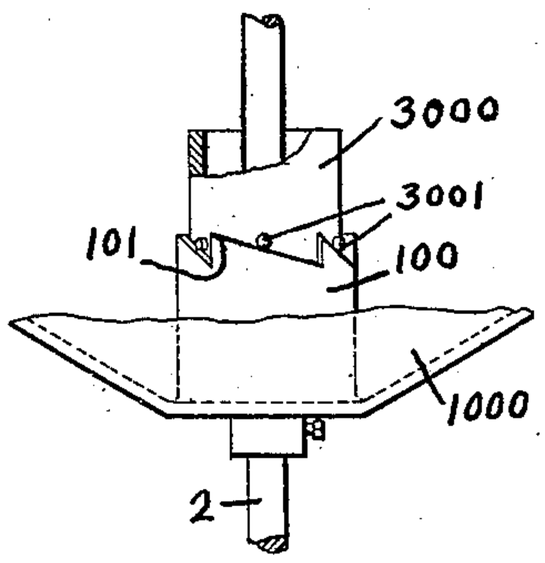


Fig. IV.

WITNESSES:
Frank E. Dennett
John C Pennie

W. A. Neill INVENTOR

BY
G. F. DeStein ATTORNEY.

UNITED STATES PATENT OFFICE.

WILLIAM A. NEILL, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO ALLIS-CHALMERS COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF NEW JERSEY.

ORE-DEHYDRATING MACHINE.

No. 915,371. Specification of Letters Patent. Patented March 16, 1909.

Application filed October 6, 1906. Serial No. 337,751.

To all whom it may concern:

Be it known that I, WILLIAM A. NEILL, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a certain new and useful Ore-Dehydrating Machine, of which the following is a specification.

This invention relates to a mechanism for dehydrating ores, or, in other words, for separating ores from a body of water with which they are mingled in order that the ores may be subjected to the requisite processes for the extraction of the metals contained therein.

It is customary in the treatment of ores to pulverize them in stamp mills, for example, to which water is admitted, and then to separate the ore or mineral bearing material from the barren rock while in a finely divided state by subjecting the material to the action of a jigging machine or concentrating table or similar contrivance, during which processes considerable water is used for suspending and conveying the materials being treated.

It is the purpose of the present invention to provide a machine by which large quantities of mixed ore and water may be treated cheaply so as to effect a substantially complete separation of the water from the ore.

In the drawings which form a part of this specification and on which the same reference characters are used to indicate the same elements in each of the several views,—Figure 1 represents an elevation in section of a dehydrating machine embodying this invention. Fig. 2 represents a plan view of the same, parts of the motion transmitting mechanism being broken away. Fig. 3 represents a modification of the means for controlling the discharge of water from the apparatus; and Fig. 4 represents a further modification of said means.

In the drawings the reference character 1 represents a conical pan which is secured to and adapted to be revolved by a vertical shaft 2, said shaft being supported in suitable bearings, as a step bearing 3, and a through bearing 4. Upon the upper end of this shaft as shown is secured a bevel wheel 5 which meshes with a bevel wheel 6 secured to a shaft 7 on which are the fast and loose pulleys 8 and 9 respectively.

Any form of motion transmitting mechanism may be used, the specific mechanism shown by the drawings being cheap and convenient.

The conical pan 1 is provided at the center thereof with the upstanding cylindrical wall 10 which terminates considerably below the top of the pan. The bottom of the pan is provided with perforations 11 located inside of this cylinder through which water which enters the interior of said cylinder may escape from the pan. Supported below these apertures 11 is any suitable form of collecting receptacle, as the annular receptacle 12, for example, which is provided with a drain pipe 13.

The upper edge of the conical pan 1 is flanged outwardly to provide a lip as at 14, and overhangs an annular trough 15, which is adapted to receive the ore which may be forced over the flange or lip 14, in the manner to be described. This trough may be supported in any suitable way, angle irons 16 being shown by Fig. 1 for attaching it to any convenient support. The bottom of this trough is inclined at a considerable angle toward one or more discharge openings 17, so that the ore will slide down and be discharged by gravity.

Secured to a suitable support, as the beam 18 located above the pan 1, is a curved scraper 19 which may be constructed from a piece of sheet iron or steel of the requisite thickness, and this scraper which is curved, as clearly shown by Figs. 1, 2 and 3, may have its upper edge approximately in a horizontal plane, but its lower edge should fit rather closely to the conical pan 1.

The mixed ore and water is fed into the pan 1 through the pipe 20 and as the pan is rotated through the mechanism shown, in the direction shown by the arrow on Fig. 2, the ore will be carried around and against the scraper 19, and as a result of the motion of the pan the ore will be gradually forced up the side of the pan and over the lip 14 into the trough 15.

In order to regulate the depth of water in the pan 1, means are provided for increasing or decreasing the effective height of the cylinder 10, and, as shown by Fig. 1 of the drawings these means consist of an auxiliary cylinder 30 fitting comparatively closely to the outside of cylinder 10, but the two cylinders are spaced apart sufficiently to permit relative movement between them. The cylin-

der 30 is secured to spider arms extended from the sleeve 31 which is movably mounted on the shaft 2 and is threaded on its exterior at 32 and provided with a nut 33 which engages with said threaded portion. This sleeve 31 passes through an aperture in a supporting arm 34 and is splined against rotation therein by the spline 35.

The nut 33 which is engaged with the screw threads of the sleeve 31, rests upon the upper horizontal surface of the support 34, so that by rotating said nut the cylinder 30 may be raised or lowered, its top edge thereby establishing the water line which will be maintained in the pan 1.

Reference character 50 represents an oil cup connected by a pipe with the step bearing 3 for supplying oil thereto.

In Fig. 3 is shown a modification of the cylinder 30 shown by Fig. 1 and its adjusting means. In this case 300 represents a cylinder which fits rather loosely within the cylinder 10 and which is secured by spider arms 301 to the hub 302, which is secured upon shaft 2 in any adjusted position by the set screw 303. In Fig. 3 is also shown at the exterior end of the scraper 19 a plate 304, between which and the body of the scraper 19 may be secured a wiper 305 of rubber or other suitable material to prevent water accumulating on the lip 14 of the pan 1.

In Fig. 4 is shown another modification of the cylinder 30 and its adjusting mechanism as shown by Fig. 1. In this figure the cylinder 100 which forms a part of the pan 1000 is provided at its upper end with ratchet or saw shaped teeth 101, and the cylinder 3000 is provided with pins 3001 which are adapted to rest upon the inclined faces of the teeth 101, the inclination of said faces being too small for the weight of the cylinder 3000 to cause the pins 3001 to slide downwardly thereon.

What I claim is:

1. The combination with a pan provided with an inclined bottom of a scraper shaped to conform to the shape of said bottom and supported closely adjacent thereto and extending to the edge thereof, said pan and scraper being so supported that one of them is capable of being continuously rotated with respect to the other, said pan being provided with an aperture to permit water to escape from the interior thereof, adjustable means adapted to coöperate with said aperture to establish and maintain the desired depth of water in said pan and helical means for maintaining said adjustable means in its adjusted position.

2. The combination with a pan provided with an inclined bottom of a scraper shaped to conform to the shape of said bottom and supported closely adjacent thereto and extending to the edge thereof, said pan and scraper being so supported that one of them is capable of being continuously rotated with respect to the other, said pan being provided with an aperture to permit water to escape from the interior thereof, adjustable means provided with a threaded extension adapted to coöperate with said aperture to establish and maintain the desired depth of water in said pan, a fixed support and a nut coöperating with said support and said threaded extension for maintaining said adjustable means in its adjusted position.

3. The combination with a rotatable pan provided with an inclined bottom of a scraper shaped to conform to the shape of said bottom and curved in the direction of rotation of said pan to deflect and direct to the periphery of the pan the material carried thereby, said scraper being rigidly supported and maintained closely adjacent to the inclined bottom of said pan, said pan being provided with an aperture to permit water to escape from the interior thereof, an adjustable cylinder provided with a threaded extension adapted to coöperate with said aperture to establish and maintain the desired depth of water in said pan, a fixed support provided with an aperture through which is projected the threaded extension of the adjustable cylinder, a nut engaging said threaded extension and fixed support for adjusting said adjustable cylinder to the desired position and maintaining it in said position and a spline for preventing said threaded extension from rotating with respect to said fixed support.

4. The combination with a rotatable pan provided with an inclined bottom, of a scraper shaped to conform to the shape of said bottom and immovably supported adjacent thereto, said pan being provided with an aperture to permit water to escape from the interior thereof, adjustable means to coöperate with said aperture to establish and maintain the desired depth of water in said pan, helical means for maintaining said adjustable means in its adjusted position, and a rotatable member adapted to coöperate with said helical means for changing the depth of water in said pan.

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

WILLIAM A. NEILL.

Witnesses:
G. F. De Wein,
Frank E. Dennett.