

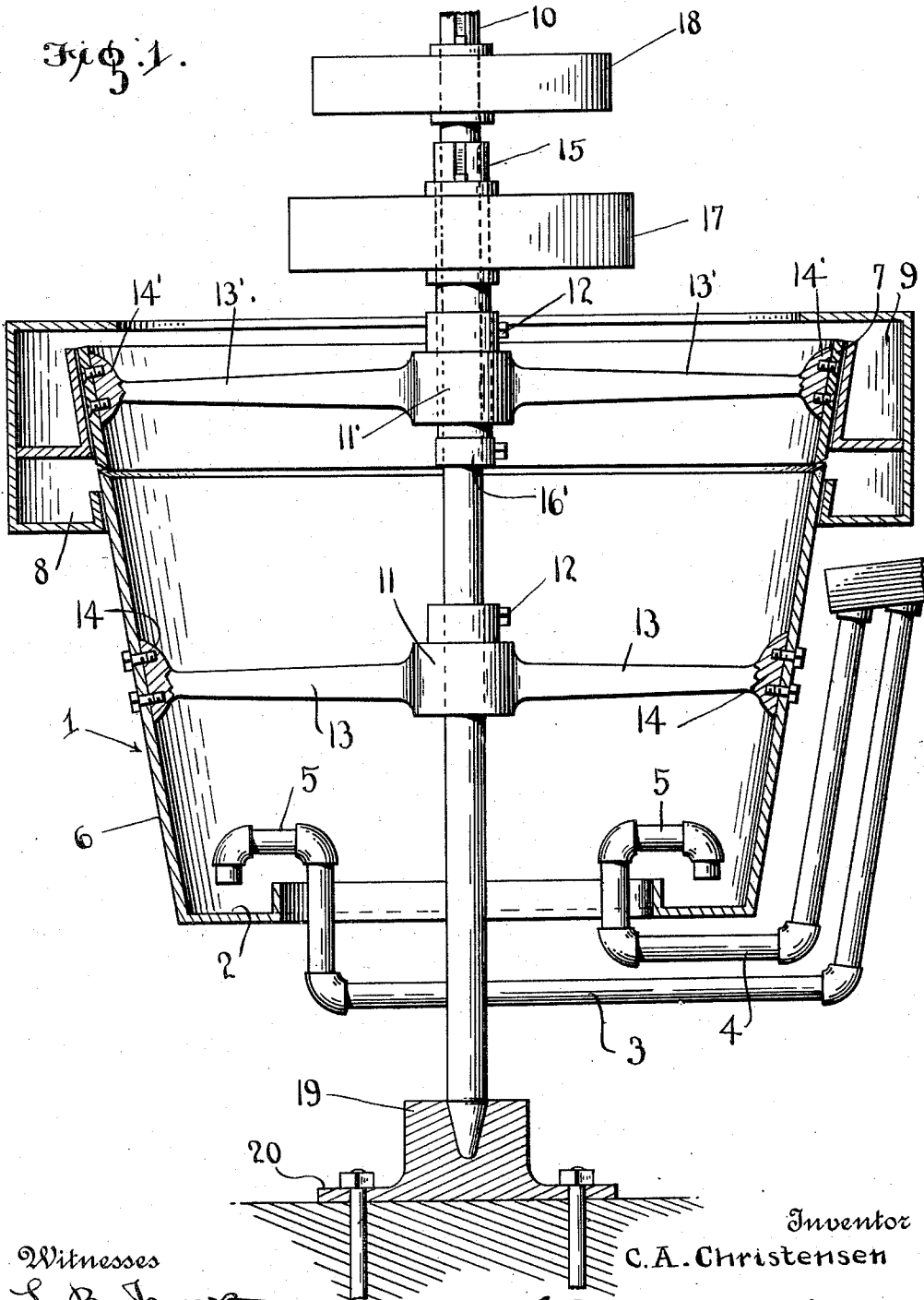
C. A. CHRISTENSEN.
CENTRIFUGAL ORE AND SLIME CONCENTRATOR.
APPLICATION FILED JUNE 29, 1911.

1,018,878.

Patented Feb. 27, 1912.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

L. B. James

O. B. Hopkins

Inventor

C. A. Christensen

by *A. B. Wilson & Co.*

Attorneys

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2 SHEETS—SHEET 2.

Fig. 2.

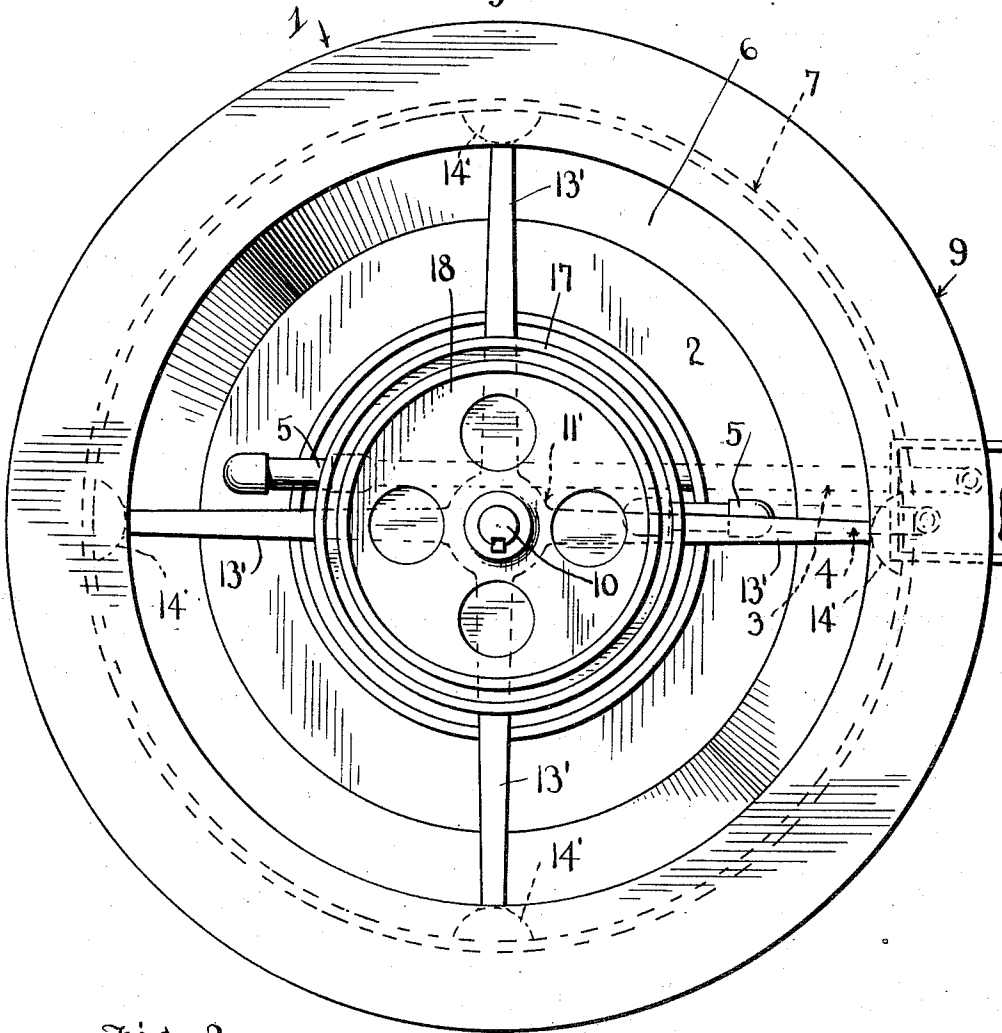
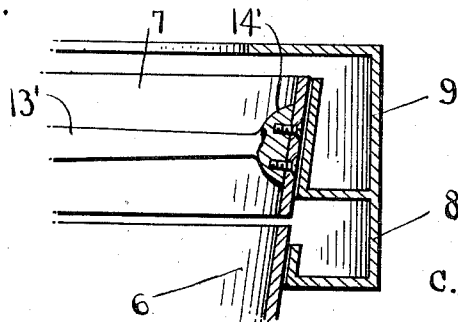


Fig. 3.



Witnesses
L. B. James
O. B. Hopkins

Inventor
C. A. Christensen

by *H. B. Wilson*
Attorneys

UNITED STATES PATENT OFFICE.

CHRISTOFFER A. CHRISTENSEN, OF PORTLAND, OREGON.

CENTRIFUGAL ORE AND SLIME CONCENTRATOR.

1,018,878.

Specification of Letters Patent.

Patented Feb. 27, 1912.

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To all whom it may concern:

Be it known that I, CHRISTOFFER A. CHRISTENSEN, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Centrifugal Ore and Slime Concentrators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to centrifugal ore and slime separators.

The object of the invention is to provide a simply constructed and efficient ore separator which will thoroughly separate the minerals before being discharged from the apparatus and which is so constructed as to avoid any danger of the material clogging the outlet through which it is discharged.

With this and other objects in view, the invention consists of certain novel features of construction, and the combination and arrangement of parts as will be more fully described and claimed.

In the accompanying drawings: Figure 1 is a vertical transverse section of a separator constructed in accordance with this invention; Fig. 2 is a top plan view thereof; Fig. 3 is a detail sectional view showing a slight modification.

In the embodiment illustrated, an inverted frusto-conical tubular vessel 1 is shown composed of sheet metal or other suitable material and provided at its lower smaller end on its inner face with an annular trough 2 into which the material to be separated is fed by means of pipes 3 and 4. These pipes are supplied from any suitable source and are provided with hook shaped discharge ends 5 which extend over the edges of the troughs 2 and discharge into said trough without contacting therewith to permit the trough to revolve without interfering with the pipes which are stationary. This tubular vessel 1 is preferably constructed of two sections 6 and 7 with their side walls arranged in alinement and preferably spaced apart at a suitable distance to permit the discharge between them of the finer particles of ore which pass into a suitable launder trough 8 arranged near the outer face of the vessel, the coarser particles passing up over the edge of the section 7 into another trough 9 disposed in suitable position to receive

them. As shown, the meeting edges of the sections 6 and 7 are beveled to form an upwardly and outwardly inclined discharge aperture for the fine ore. These edges may be arranged horizontally as shown in Fig. 3, if desired.

The lower section 6 of the tubular vessel 1 is attached to a centrally disposed supporting shaft 10 on which is arranged a hub 11 which is detachably secured to the shaft by any suitable means, a set screw 12 being here shown. The section 6 of the vessel 1 is attached to the hub 11 by a series of radially projecting connecting arms 13 the outer ends of which are herein shown provided with blocks as 14 which form extended vessel-engaging means and which are secured to the side walls of the vessel by screws, bolts, or other suitable fastenings.

The upper section 7 of the vessel 1 is connected with a hub 11' by means of radially disposed arms 13' having extended vessel-engaging blocks 14' at their outer ends. This hub 11' is detachably secured on a tubular shaft 15 which is revolubly mounted on the shaft 10 being held in adjusted position by a set collar 16. A driving pulley 17 is fixed to the upper end of the tubular shaft 15 and is adapted to be driven from any suitable source (not shown) by means of which the section 7 of the vessel may be revolved independently of the section 6 and the speed of the two sections varied. A pulley 18 is fixed to the shaft 10 at its upper end and is designed to be connected with a suitable driving power for imparting rotary motion to the shaft 10 and the section 6 of the vessel connected therewith.

The shaft 10 is revolubly engaged at its lower end with a stepped bearing 19 arranged on a supporting base 20.

In the operation of this apparatus, the pulp is forced through the pipes 3 and 4 into the trough 2 of the vessel 1 which is continuously rotated by the means above described, and the centrifugal force thereof causes the pulp to be driven up against the side walls of the vessel 1 and the fine particles will be discharged through the aperture formed between the sections 6 and 7 of the vessel. The upper section 7 may be rotated either faster or slower than the section 6, whereby a grinding effect will be produced upon the particles of ore passing out between the two sections which will pulverize said particles and prevent all

danger of the discharge aperture becoming clogged or choked by the outgoing material. The larger particles will be thrown over the section 7 and discharged into the trough 9 from which they may be conveyed to a suitable place of deposit.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the claimed invention.

I claim as my invention:

1. An ore separator comprising an inverted frusto-conical tubular member composed of longitudinally alined sections spaced slightly apart, means for supplying pulp to the lower end of said member, and means for revolving said sections at different speeds.

2. A centrifugal ore separator comprising an inverted frusto-conical tubular vessel composed of longitudinally alined sections having their adjacent ends beveled and

spaced slightly apart to provide an upwardly opening discharge aperture for the inner particles of ore, means for supplying pulp to the lower end of said vessel, and means for revolving said sections at different speeds.

3. A centrifugal ore separator comprising an inverted frusto-conical tubular vessel composed of longitudinally alined sections having their adjacent ends beveled and spaced slightly apart to provide a discharge aperture for the finer particles of ore, a suitably supported centrally disposed shaft, means for connecting one of said sections with said shaft, a hollow shaft revolvably mounted on said first mentioned shaft, means for connecting said hollow shaft with another section of said vessel, and means for connecting said shafts with independent driving means.

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

CHRISTOFFER A. CHRISTENSEN.

Witnesses:

H. KUPHALDT,
BEDA KUPHALDT.