No. 785,522. PATENTED MAR. 21, 1905.

V. A. ROBINSON.

ORE AGITATOR AND FILTER.

APPLICATION FILED NOV. 3, 1904.

Fig. 1.

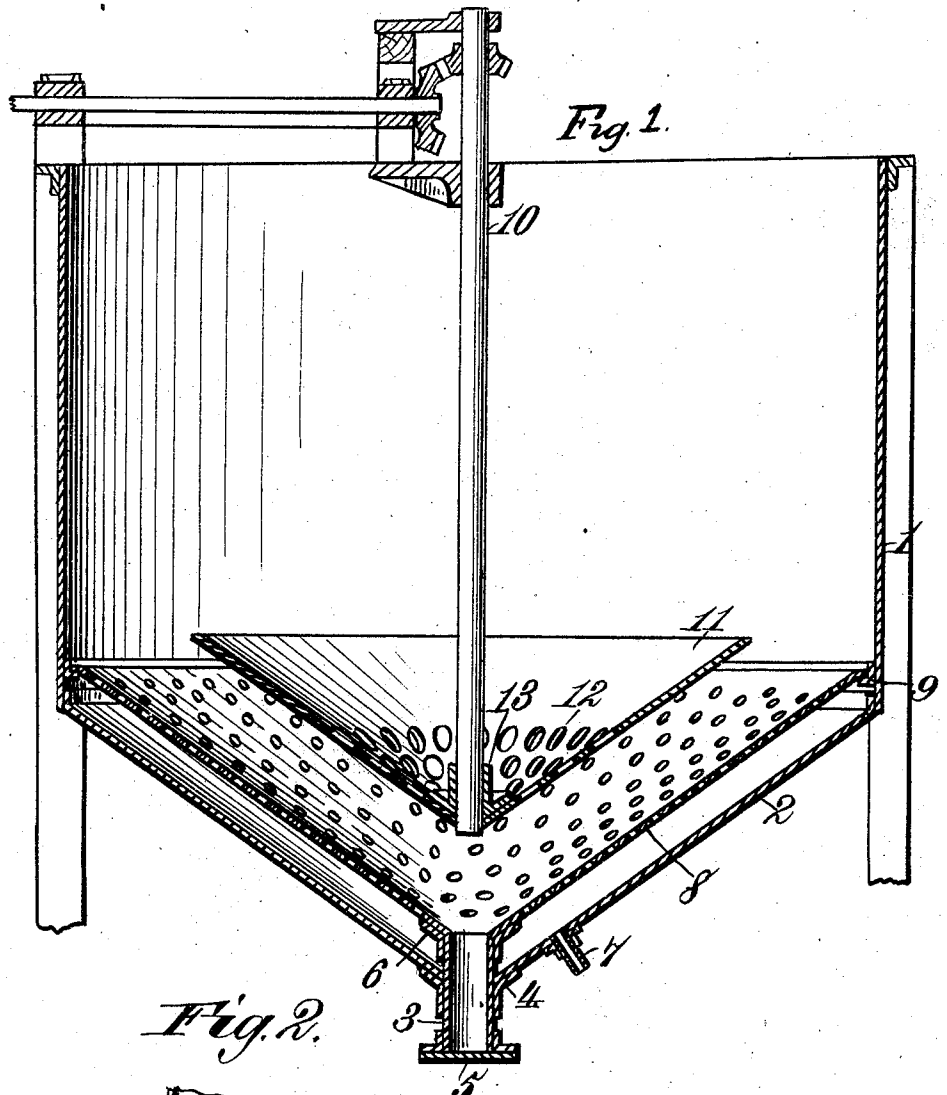
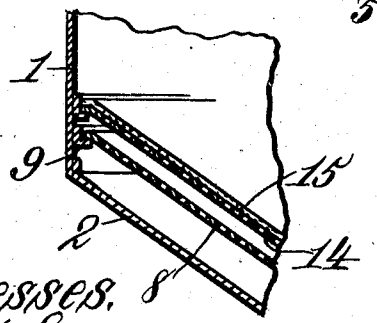


Fig. 2.



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No. 785,522. Patented March 21, 1905.

UNITED STATES PATENT OFFICE.

VERNER A. ROBINSON, OF FLORENCE, COLORADO.

ORE AGITATOR AND FILTER.

SPECIFICATION forming part of Letters Patent No. 785,522, dated March 21, 1905.

Application filed November 3, 1904. Serial No. 231,292.

To all whom it may concern:

Be it known that I, VERNER A. ROBINSON, a citizen of the United States, residing at Florence, in the county of Fremont and State of Colorado, have invented new and useful Improvements in Ore Agitators and Filters, of which the following is a specification.

This invention relates to ore agitators and filters, and has for its object to construct an apparatus of such class particularly adapted for agitating ore, as well as mechanically filtering the valuable from the refuse portions of ore-slimes, cyanid solutions containing fine pulverized ores, or other substances for which an apparatus constructed in accordance with this invention is applicable.

The invention further aims to construct an apparatus for the purpose set forth which shall be simple in its construction, strong, durable, efficient in use and operation, readily set up, and comparatively inexpensive to manufacture.

With the foregoing and other objects in view the invention consists of the novel combination and arrangement of parts hereinafter more specifically described, illustrated in the accompanying drawings, and particularly pointed out in the claims hereunto appended.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and wherein like reference characters denote corresponding parts throughout both views, and in which—

Figure 1 is a sectional elevation of an apparatus constructed in accordance with this invention, and Fig. 2 is a sectional detail of a portion of an apparatus constructed in accordance with this invention, showing a modification.

Referring to the drawings by reference characters, 1 denotes a receptacle preferably open at its top and having its bottom 2 of inverted-cone shape. Centrally of the bottom 2 an opening is provided, and through said opening extends a pipe 3, which is secured to the bottom 2 through the medium of the annular and angular collar 4. The pipe 3 carries on its lower end a removable closure or cap 5, and at its upper end is provided with an annular and angular supporting-collar 6. The pipe 3 extends a suitable distance within the receptacle 1 and forms a central support for a foraminous supplemental bottom to be hereinafter referred to. The pipe 3 is used, preferably, as an outlet for the material, but it can also be used for the inlet. The bottom 2 is further provided with an outlet 7 for the liquid, and said outlet 7 is arranged below the supplemental bottom to be hereinafter referred to, while said pipe 3 is so arranged that it forms an outlet for the material from above the supplemental bottom, or, in other words, the outlet for the liquid is arranged below the supplemental bottom, while the outlet for the material opens into the receptacle centrally of the supplemental bottom.

With the receptacle 1, at a point removed from the bottom 2, is arranged a foraminous supplemental bottom 8, which acts as a filtering medium, and said supplemental bottom corresponds in contour to the shape of the bottom 2—that is to say, said supplemental bottom 8 is of inverted-cone shape. The supplemental bottom 8 at its upper end is secured upon the ledge 9, formed by an angle-iron suitably secured to the inner face of the body portion of the receptacle 1, and said bottom 8 centrally thereof is provided with an opening into which extends the pipe 3, and said bottom 8 is supported centrally thereof upon the collar 6, carried by the pipe 3. The supplemental bottom 8 is not only supported upon the collar 6 and the ledge 9, but is suitably secured to said ledge 9 and said collar 6.

Extending with the receptacle 1 is a revoluble vertical shaft 10, which is rotated in any suitable manner, as well as being supported by any suitable means, and said shaft 10 carries on its lower end an inverted-cone-shaped agitator 11, which is perforated, as at 12. The agitator 11, centrally thereof, is provided with a vertically-extending sleeve 13, through which extends the lower end of the shaft 10, said shaft 10 being secured in any suitable manner to said sleeve 13. The agitator 11 is

arranged a suitable distance above the supplemental bottom 8.

The operation of the apparatus is as follows: The material for treatment is introduced into the receptacle 1 while the agitator 11 is in motion, the pipe 3 being previously closed. The agitator revolving at the necessary speed will, owing to centrifugal action, throw the material away from the center of the agitator, over the sides thereof, then passing downwardly outside of the agitator, then into the agitator through the perforations thereof, then out of the agitator in a manner as hereinbefore set forth, the mass being thus rapidly and continuously circulated in the manner as set forth and also having a movement in a circular direction within the circumference of the tank. This constant circulation above the supplemental bottom 8 acts as a means for keeping the foraminous supplemental bottom 8 free from clogging and the mass from settling on said bottom and at the same time allowing the rapid filtration of the clear liquid through the filter-bottom, where it is drawn off from the receptacle.

In the modified construction shown in Fig. 2 the same is used when coarse material is to be treated, and such modified construction consists of a wooden grating or a perforated sheet of metal, as indicated by the reference character 14, and which is placed above the foraminous supplemental bottom 8. Said wooden grating or perforated sheet metal acts as a support for a covering consisting of cocoa-matting, canvas, or other material suitable for the liquors used. The covering is indicated by the reference character 15. The support for the covering corresponds in contour to the shape of the supplemental bottom 8. This modified construction is used to prevent wear of the supplemental bottom 8 or damage thereto from the coarse material, which is evident would occur unless something of an equivalent nature was interposed between the agitator and the bottom 8.

It is thought the many advantages of an apparatus constructed in accordance with the foregoing description, taken in connection with the accompanying drawings, can be readily understood, and it will furthermore be evident that changes, variations, and modifications can be resorted to without departing from the spirit of the invention or sacrificing any of its advantages, and I therefore do not wish to restrict myself to the details of construction hereinbefore referred to, but reserve the right to make such changes, variations, and modifications as come properly within the scope of the protection prayed.

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

1. An ore-agitator involving a receptacle, and an inverted-cone-shaped perforated rotatable agitator arranged within said receptacle.

2. An ore-agitator involving a receptacle having an inverted-cone-shaped bottom, an inverted-cone-shaped foraminous supplemental bottom arranged in said receptacle, and an inverted-cone-shaped perforated agitator arranged in said receptacle in operative relation with respect to said supplemental bottom.

3. An ore-agitator involving a receptacle having an inverted-cone-shaped bottom, an inverted-cone-shaped foraminous supplemental bottom arranged in said receptacle, an inverted-cone-shaped perforated agitator arranged in said receptacle in operative relation with respect to said supplemental bottom, a pipe extending and opening in said receptacle above said supplemental bottom, and said receptacle further provided with an outlet below said supplemental bottom.

4. An ore-agitator involving a receptacle, a supplemental bottom therefor, and a pair of outlets for said receptacle, one of said outlets opening into said receptacle above said supplemental bottom and the other of said outlets opening in said receptacle below said supplemental bottom, combined with an agitator arranged in said receptacle in operative relation with respect to said supplemental bottom.

5. An ore-agitator involving a receptacle, a foraminous supplemental bottom for said receptacle, a pair of outlets for said receptacle, one of said outlets opening into said receptacle above said supplemental bottom and the other of said outlets opening in said receptacle below said supplemental bottom, and a perforated agitator rotatably mounted in said receptacle and arranged in operative relation with respect to said supplemental bottom.

6. An ore-agitator involving a receptacle having an inverted-cone-shaped bottom provided with an outlet, an inverted-cone-shaped foraminous supplemental bottom for said receptacle secured a suitable distance above the bottom proper of said receptacle, a pipe extending through the said bottoms, means for securing said pipe to the bottom proper of said receptacle, means carried by said pipe for supporting said supplemental bottom centrally, and a perforated inverted-cone-shaped agitator suspended in said receptacle and arranged in operative relation with respect to said supplemental bottom.

7. An ore-agitator involving a receptacle having a bottom provided with an outlet, a foraminous supplemental bottom for said receptacle secured a suitable distance above the bottom proper of said receptacle, a pipe extending through said bottoms, means for securing said pipe to the bottom proper of said receptacle, means carried by said pipe for supporting said supplemental bottom cen-

trally, and a perforated agitator suspended in said receptacle and arranged in operative relation with respect to said supplemental bottom.

8. An apparatus of the character described, comprising a receptacle having an inverted-cone-shaped bottom, and an inverted-cone-shaped and perforated agitator arranged within said receptacle.

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

VERNER A. ROBINSON.

Witnesses:
FRANK P. WARNER,
L. M. GRAMPSON.