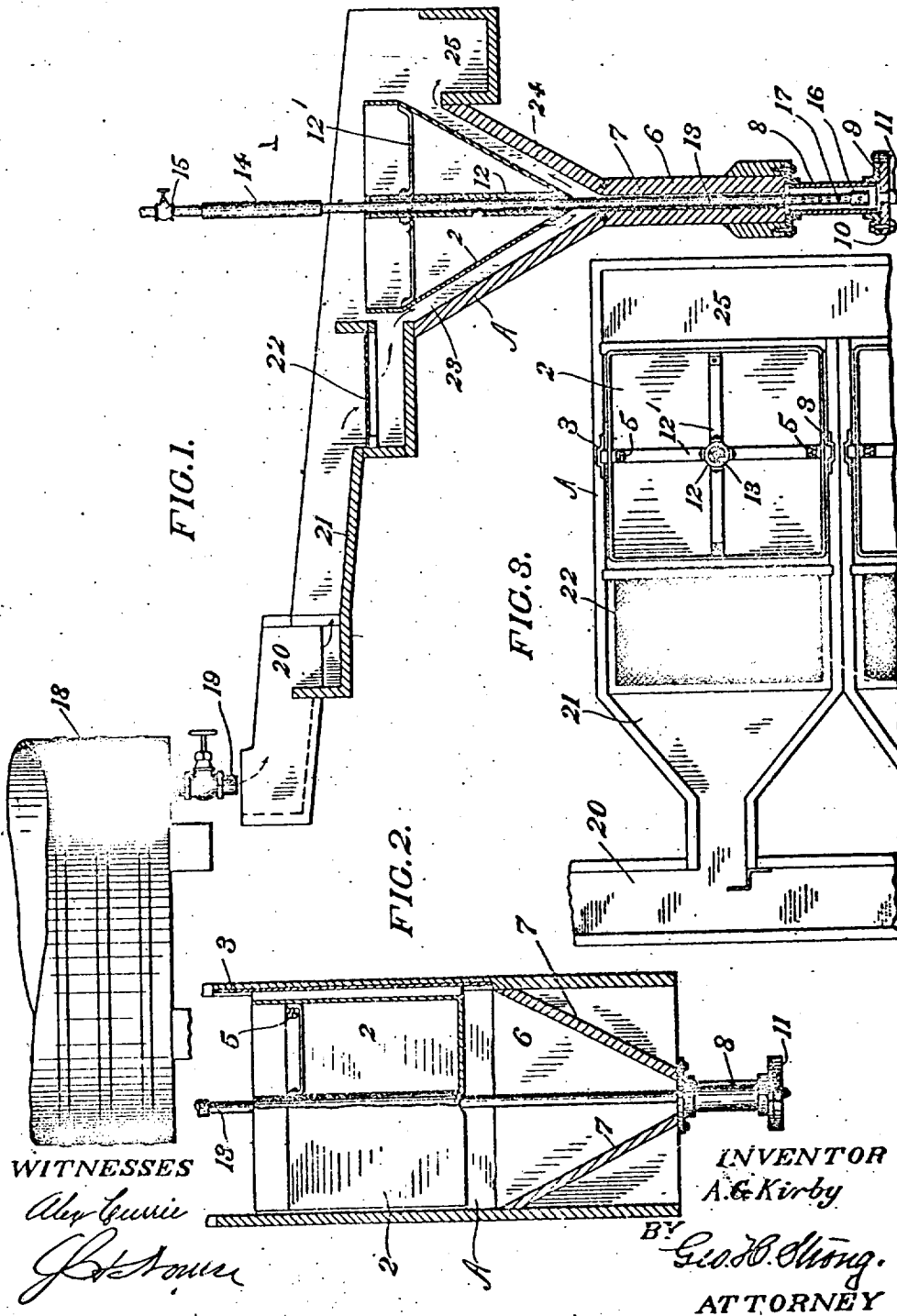


A. G. KIRBY.  
PULP CLASSIFIER.  
APPLICATION FILED FEB. 14, 1908.



WITNESSES

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# UNITED STATES PATENT OFFICE.

ALFRED G. KIRBY, OF GOLDFIELD, NEVADA.

## PULP-CLASSIFIER.

No. 895,092.

Specification of Letters Patent.

Patented Aug. 4, 1908.

Application filed February 14, 1906. Serial No. 414,900.

To all whom it may concern:

Be it known that I, ALFRED G. KIRBY, citizen of United States, residing at Goldfield, in the county of Esmeralda and State of Nevada, have invented new and useful improvements in Pulp-Classifiers, of which the following is a specification.

My invention relates to that type of mining apparatus generally known as "pulp classifiers."

The object of the invention is to provide a classifier adapted to all sizes of product, and which apparatus shall be simple and practical, and of large capacity; and to provide a classifier which shall be adjustable for various kinds of work; which shall be uniform in operation; which will not clog up or necessitate the periodical emptying and starting of the classifier anew; and in which the hydrostatic head of the sorting column is reduced to a minimum.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of the invention. Fig. 2 is a transverse sectional view. Fig. 3 is a plan view.

The classifier proper comprises a tank or outer casing A inclosing a wedge-shaped deflector 2. This deflector 2 is of any suitable size and material, and is slidable in guides 3 in the outer casing or tank A to permit the deflector being moved vertically; the vertical position of the deflector being regulated by suitable means, as the set screws 5, according to the character of the material undergoing treatment. The tank A has its back and front portions or sides parallel with the inclined convergent sides of the deflector 2, and the lower end of the tank is in open communication with a narrow hopper 6 having parallel sides and inclined ends 7 converging to a central outlet in the bottom of the hopper, and which outlet opens into the sorting column or pipe 8. This sorting column is of any desired length and size, and has a flange 9 at its lower end to which is hinged a swinging gate or valve 10, having an opening for the insertion of a plug 11 of suitable size, through which the sand or underflow product is discharged. The deflector 2 has a tubular column 12 extending vertically and centrally through it, and this column 12 is in axial line with the sorting col-

umn 8. 12' are braces for supporting the upper end of the tube 12.

Passing through the tube 12 is a water-pipe 13 connected to any suitable supply of clear water under pressure by a hose 14 and valve 15. This clear water pipe 13 extends down through the hopper, and near to the bottom of the sorting column 8. Its lower end is closed by a cap 16, and the pipe is perforated at 17 in its lower extremity within the sorting column.

The pulp or other material to be treated flows from a reservoir or tank 18 through a valved outlet 19 into a launder 20, and thence over a suitable distributing board 21 and through the screen 22 into the contracted space 23 between the back of the tank A and the adjacent inclined wall of the deflector 2. From the passage 23 the slimes and water pass into the hopper, the sands and heavier stuff passing down into the sorting column, and thence out through the outlet 11; the lighter gangue and waste material, with the surplus water, passing up on the other side of the wedge-shaped deflector through the contracted opening 24, and discharging into the trough 25. The wedge deflector can be moved up and down so as to increase or decrease the velocity of the pulp of crushed ore passing through the classifier, according as the sand or underflow discharged through 11 may contain more or less fine product, or the overflow into trough 25 contain more or less coarse product.

By having the spaces 23—24 equal throughout from intake to overflow, the velocity of the overflow from the apparatus is kept uniform, thereby avoiding any accumulation of fine sand as substrata, and which accumulations would be too light to fall through the high velocity in the hopper and sorting column, and too heavy to go out with the minimum velocity through the overflow passage 24.

It is quite common in classifiers now in use, for these accumulations of fine sand to fall as a mass, blocking the classifier and necessitating the periodical emptying and starting of the classifier anew.

In this apparatus the hydrostatic head on the sorting column 8 is reduced to a minimum, and any slimes or fines that may go down into the sorting column have only to be carried back into the entrance of opening 24, thence discharged with the overflow water and slimes.

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

- 5 1. A classifier having in combination a casing provided with convergent sides, a narrow hopper at the bottom of said casing and communicating therewith, a sorting column forming a continuation of the bottom of the hopper, a wedge-shaped deflector in 10 the casing having its sides substantially parallel with the inner sides of the casing and separated from the latter to form a sinuous passage for the pulp undergoing classification, and a water supply passing through the deflec- 15 tor and hopper and into the sorting column.
2. A classifier having a casing with convergent sides and a narrow hopper extension from the bottom thereof, a sorting column forming a continuation of the hopper, a de- 20 flector having a tubular column, and a water-

supply pipe passing through said tubular column and hopper and into the sorting column.

3. In a classifier, the combination of an 25 outer casing having convergent sides, a narrow hopper at the bottom of the casing and communicating therewith, a sorting column beneath the hopper, said sorting column having a valved outlet, a wedge-shaped deflector in the casing forming sinuous passages for 30 the pulp undergoing classification, and a clear water pipe discharging into the sorting column, said clear water pipe passing down through said wedge-shaped deflector.

In testimony whereof I have hereunto set my hand in presence of two subscribing wit- 35 nesses.

ALFRED G. KIRBY.

Witnesses:

CHESTER L. LYMAN,  
J. E. GRANT.