A. H. PHINNEY.
ORE SIZER AND CONCENTRATOR.
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Witnesses

Inventor
A. H. Phinney.

By
Attorney
A. H. Phinney.
ORE SIZER AND CONCENTRATOR.


To all whom it may concern:

Be it known that I, ANSEL H. PHINNEY, a citizen of the United States, residing at Turner, in the county of Arenac and State of Michigan, have invented certain new and useful Improvements in Ore Sizers and 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.

My invention is an improved ore sizer and concentrator especially adapted for use for wet crushed ores, but also adapted for use for "floating" or collecting the solids from aqueous mixtures, as is the manufacture of paraffin and other materials.

My invention consists in the peculiar construction and arrangement of devices herein-after described and claimed.

In the accompanying drawings, Figure 1 is a vertical longitudinal sectional view of an ore sizer and concentrator embodying my improvements. Fig. 2 is a top plan view of the same. Fig. 3 is a transverse sectional view of the same, taken on the plane indicated by the line a a of Fig. 1.

In the embodiment of my invention I provide a vat or trough 1, of suitable size, which in practice is usually about twenty feet long, four feet wide, and ten inches deep. The bottom of the vat or trough is formed by a plurality of hoppers 2, which extend from end to end thereof, and the sides of which converge downwardly. Each of said hoppers is provided at its lower end with a discharge-opening 3, controlled by a suitable valve or gate 4. The trough or vat is provided also with a false bottom 5, which extends from end to end and side to side thereof, the said false bottom being formed of a number of longitudinally-disposed bars 6, which are triangular in form and suitably spaced apart, as at 7, to admit the passage of ores and other finely-ground material between them. The sides of the said bars 6 converge upwardly, as shown. The trough or vat is supplied at one end with material at the surface of the liquid by a pipe or other suitable duct 8 and is provided at its opposite end at the level of the top of the liquid with a discharge spout 9 or lip 9.

In the operation of my invention the material, together with water, is fed to the trough or vat by a supply-duct 8. The screen formed by the false bottom arrests the descent of the larger particles of quartz and other material. The rate of deposit from the liquid will be controlled by the factors of the size of the particles and also their specific gravity, the larger particles of quartz settling with smaller ones of the much heavier ores. The larger particles of rock may be afterward separated from the deposits in the different hoppers by screening and regrind, if desired. The material which becomes deposited in the various hoppers may be drawn therefrom from time to time or continuously, according to the conditions of the case, by means of the valves or gates 4. It will be understood that the material is thoroughly washed as it passes through the trough or vat and that the lighter worthless particles are carried off by the water from the trough or vat, while the valuable ores or other heavier particles by specific gravity become precipitated in the hoppers. The triangular bars which form the coarse bottom or screen by the provision of their upwardly-converging sides facilitate the passage of the finer particles through said screen. The said bars, in effect, constitute corrugations which are longitudinally disposed in the screen, and the spaces between the bars, in effect, constitute openings in the screen. The said screen cuts off the moving liquid in the vat from the still liquid in the hoppers and the corrugations 10 to prevent counter-currents, it being desirable that the solution should move at an even rate of speed from the inlet to the outlet of the vat. Such a motion is facilitated by the bars of the screen, 99 and a finer deposit is received in each successive hopper. I do not desire to limit myself to this peculiar construction of the screen, and the same may be modified without departing from the spirit of my invention.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the inven-
tion will be readily understood without re-
quiring a more extended explanation.

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

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

1. An ore sizer and concentrator compris-
ing a vat having a discharge element at one
end, means at the opposite end to supply ma-
terial, suspended in liquid, to the vat, a plu-
rality of hoppers below the level of the dis-
charge element and forming a series of water-
chambers, and a screen forming a false bottom
extending over the hoppers and extending
at the bottom into the hoppers and extending
from the feed to the discharge ends of the de-
vice.

2. An ore sizer and concentrator compris-
ing a vat having a discharge element at one
end, a plurality of hoppers below the level of
the discharge element and forming a series of
water-chambers, and a screen forming a false
bottom extending over the hoppers and exten-
ting below the water-level of the vat, said
screen being provided with longitudinally-dis-
posed bars spaced apart and having upwardly-
converging inclined sides, said bars forming
a series of straight guiding-channels opening
at the bottom into the hoppers and extending
from the feed to the discharge ends of the de-
vice.

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

ANSEL H. PHINNEY.

Witnesses:

Geo. H. Hollister,
Asa Hollister.