S. F. Ambler.

Ore Separator.

No. 51,678. Patented Dec. 26, 1865.

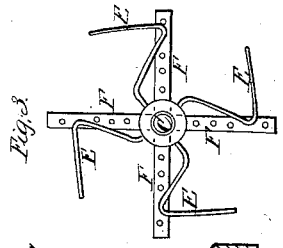

Fig. 3.

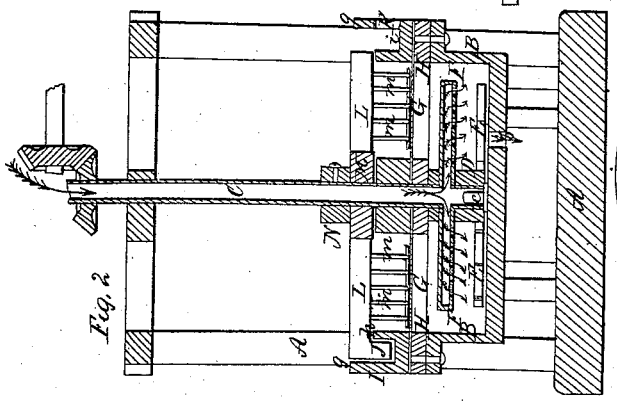

Fig. 2.

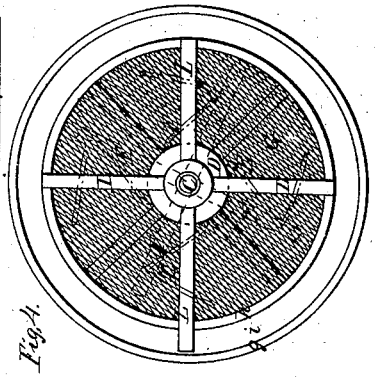

Fig. 4.

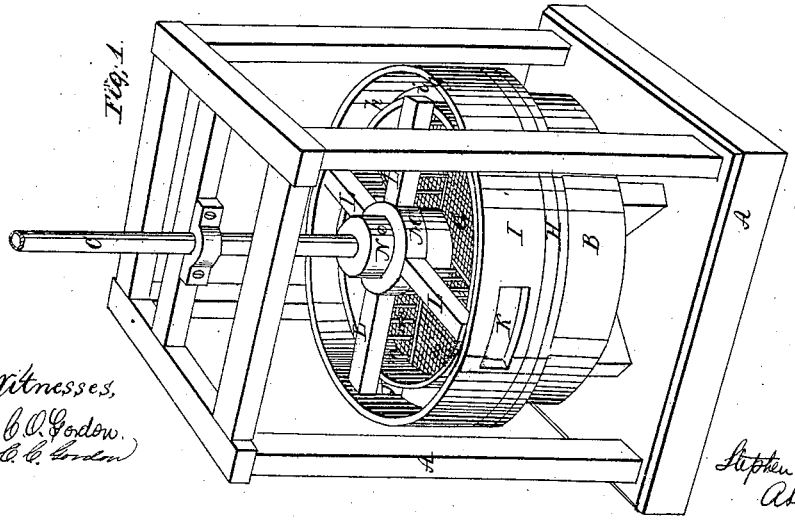

Fig. 1.

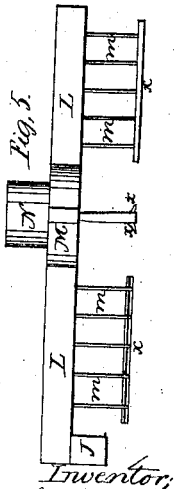

Fig. 5.

Witnesses,
C. O. Gordon.
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UNITED STATES PATENT OFFICE.

STEPHEN F. AMBLER, OF BROOKLYN, NEW YORK.

IMPROVED ORE-SEPARATOR.

Specification forming part of Letters Patent No. **51,678**, dated December 26, 1865.

To all whom it may concern:

Be it known that I, STEPHEN F. AMBLER, of Brooklyn, in Kings county, and State of New York, have invented, made, and applied to use a new and Improved Ore-Separator; and I do declare the following to be a full, clear, and correct description of the same, reference being had to the accompanying drawings, making a part of this specification, and to the letters of reference marked thereon, in which—

Figure 1 is a perspective view of my improved ore-separator; Fig. 2, a vertical cut section of the same; Fig. 3, a view of the perforated tubes F and scrapers E; Fig. 4, a top view of the sieve G employed, showing perforated tubes F and scrapers E placed below the same; Fig. 5, a detached view, showing the arms L, agitators *m*, and knives *x*.

In the drawings like parts of the invention are designated by the same letters of reference.

The nature of my invention consists in the construction and operation of an ore-separator, as hereinafter described.

To enable those skilled in the arts to make and use my invention, I will speak of the construction and operation of the same.

A A show a frame-work for supporting the operating parts of my improved apparatus.

B shows a basin provided with an opening, *b*, near its center.

C is a hollow vertical shaft, stepped at *c* within the basin B. This shaft C may be made of metal, and is provided at its lower end with the hub D, which hub D supports the concentrating-scrapers E, and into which hub D, connecting directly with the shaft C, are inserted the branch tubes F.

E show a series of concentrating-scrapers attached to the hub D, and F a series of branch tubes, provided with the perforations *f*, inserted into the hub D and connecting directly with the shaft C.

G shows a wire sieve or screen, supported by the frame H.

I is an outside waste-basin, the space between the outer, *g*, and inner, *h*, rims of which forms a reservoir, *i*, for the waste sand.

J is a scraper attached to one of the arms L, and moving with the same.

K is a discharge-opening.

L shows arms attached to the hub M and moving with the shaft C, which arms support the agitators *m*.

N shows a packing-box through which the shaft C passes.

Attached to the agitators *m* are the knives *x*. These knives incline forward from the agitators *m*, and are employed for the purpose of keeping the material well stirred up as the arms L revolve.

Operation: The ore to be separated is fed into the sieve at or near its center by means of a hopper or otherwise. Water is then introduced into the vertical hollow shaft C, which shaft C is caused to revolve, carrying with it the agitators *m*, scrapers E, and hollow tubes F. The water introduced descends the shaft C, and, being discharged through the branch tubes F, is forced through the sieve G by the pressure of the water above. As the water is forced through the sieve G it permeates the ore, separating the sand therefrom and carrying it (the sand) over the inner rim, *h*, of the waste-basin I into the reservoir *i*, while the ore passes through the sieve G into the basin B.

In order to facilitate the separation of the ore and sand and prevent the formation of channels, I employ the agitators *m* and knives *x*, attached to the arms L and revolving with the shaft C, while, in order that the reservoir *i* may be relieved of the sand, the scraper J is employed and carries the sand to the opening K, whence it is discharged. As the ore passes through the sieve or screen G into the basin B the concentrating-scrapers E, attached to the hub D and revolving with the shaft C, concentrate or collect and carry the ore to the opening *b*, whence it is discharged into a vat or tank, from which it may be removed at pleasure.

The advantages of my invention are that by the use of the branch tubes and agitators, in combination with the hollow shaft, a more perfect diffusion of the water is effected, thus preventing the formation of channels; as the sieve or screen remains stationary, it is less liable to wear out and need replacing; that by the use of the concentrating-scrapers the ore is thoroughly removed from the basin B, thus economizing time and labor; and, finally, that by the combined operation of the various parts of the apparatus the process of separating the ore is made a continuous one—that is to say, that the operator is not compelled every ten or

fifteen minutes to stop the apparatus to remove the sand and ore by hand, but that this operation is effected by my apparatus itself.

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

1. The use and employment of the vertical hollow shaft C, in combination with the basin B, sieve G, agitators *m*, knives *x*, and branch tubes F, arranged and operated as shown, for the purpose described.

2. In combination with the same, the scrapers E, arranged and operated in the manner described, and for the purpose specified.

STEPHEN F. AMBLER.

In presence of—

J. WINCHESTER,

A. SIDNEY DOANE.