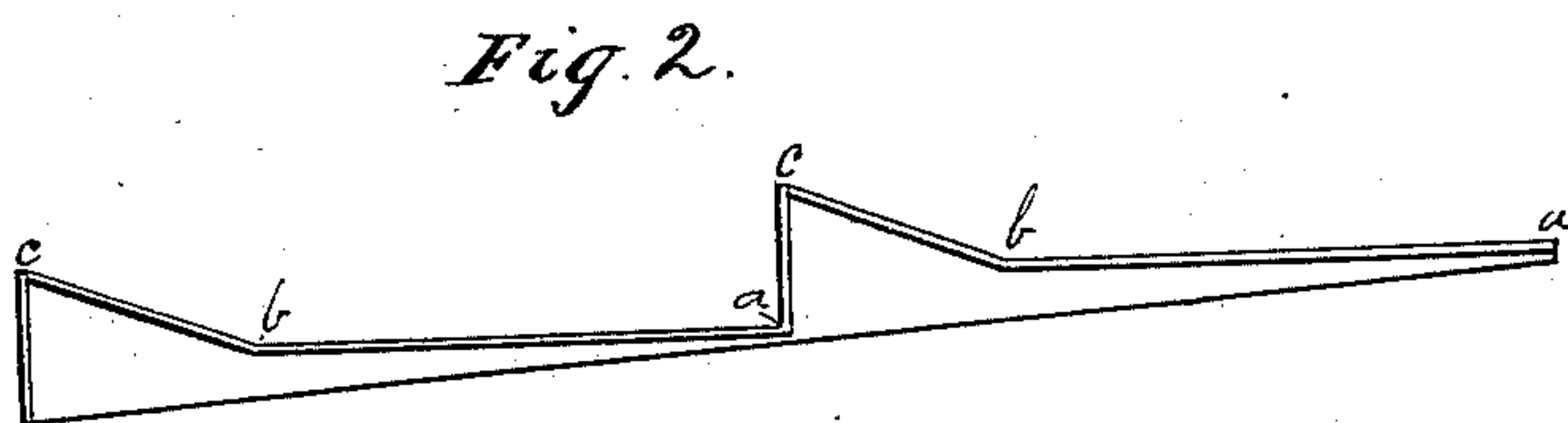
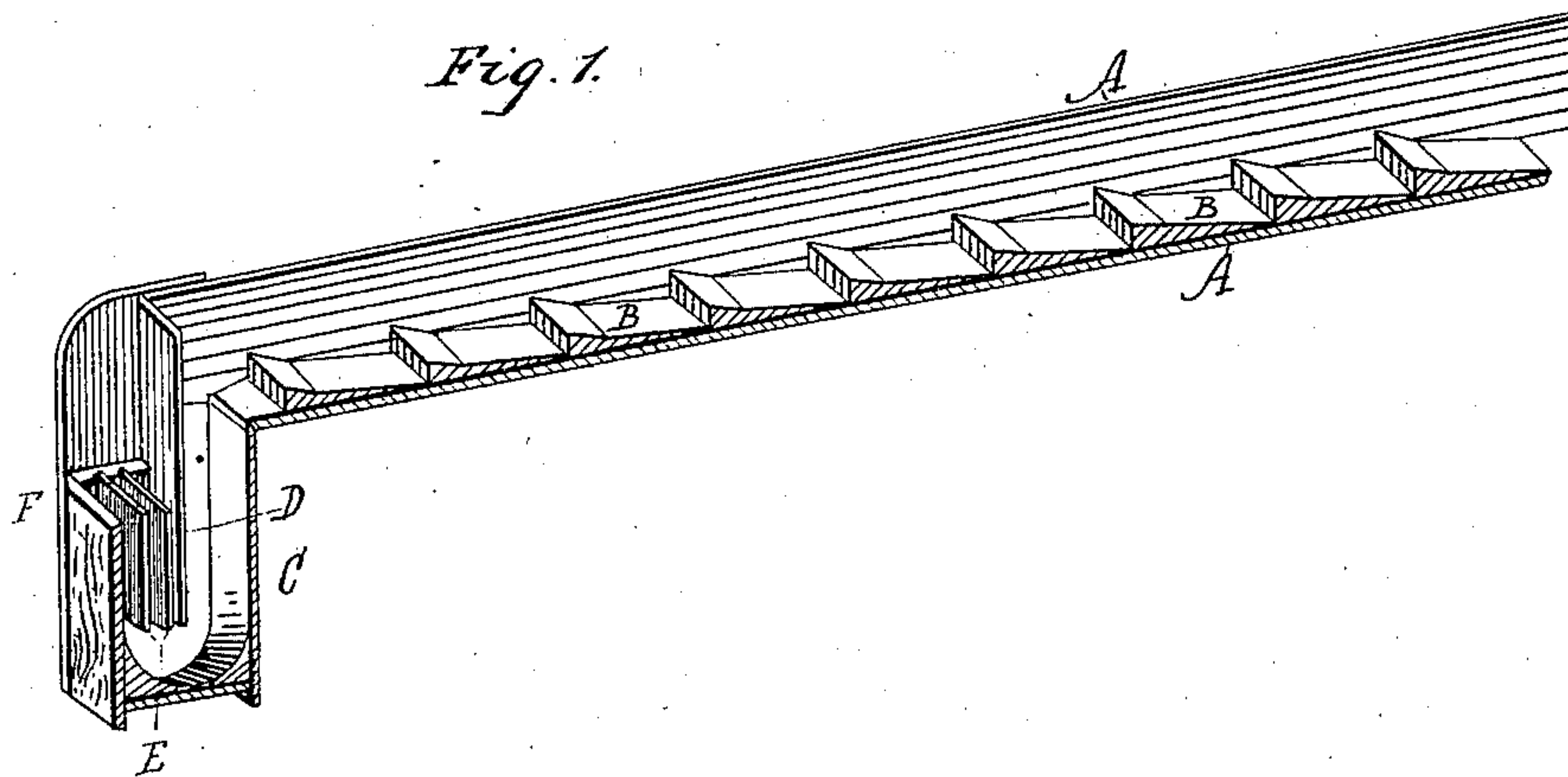


(No Model.)

C. H. WETZEL.
CONCENTRATOR.

No. 290,825.

Patented Dec. 25, 1883.



WITNESSES:

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INVENTOR

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CHARLES H. WETZEL, OF BUTTE CITY, MONTANA TERRITORY, ASSIGNOR OF
ONE-HALF TO ERNST RUMMELMEYER, OF SAME PLACE.

CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 290,825, dated December 25, 1883.

Application filed June 19, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HENRY WETZEL, a citizen of the United States, residing at Butte City, in the county of Silver Bow and Territory of Montana, have invented certain new and useful Improvements in Concentrators; and I do hereby 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, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to that class of concentrating apparatus in which the pulp passes through a sluice-box or series of sluice-boxes; and it consists in the peculiar construction, arrangement, and combination of parts, hereinafter more particularly described and claimed.

In the accompanying drawings, Figure 1 shows a perspective view of a single sluice-box and its settler constructed according to my improvement, but having one side removed; and Fig. 2, a diagrammatic side view of the riffles detached.

A represents one side and the bottom of the sluice-box; B, the riffles, each of which is made of substantially the shape shown in Fig. 2, and has its acting surface covered with copper.

At the lower end of the riffle is a copper-lined curved bottom settler, C, provided with a copper gate, D, placed about six inches from the lower end of the end of the sluice-box, and at right angles thereto, arranged so as to extend downward to within from four to six inches of the bottom of the settler.

At E are shown two upright copper plates set in grooves in the sides of the settler, which plates extend downward to about the same depth as the gate, and rise upward as high as the top of the discharge-rim at F.

I prefer to construct my riffles about fourteen inches long, and to arrange them so that there will be a fall of about one-eighth of an inch from *a* to *b*, which is about ten inches, and a rise from *b* to *c* of about one and one-half inch. The bottom of the settler I pre-

fer to make about two feet below the bottom of the sluice-box. These dimensions, however, may be varied without departing from the spirit of my invention.

The operation is as follows: The copper plates and linings having been properly mercuriated, and the bottom of the settler having from three to ten pounds of mercury placed therein, the material being acted on is allowed to run through the sluice-boxes, and as it runs down the riffles from *a* to *b* there is a current produced by the descent that carries the pulp partly up the opposite incline from *b* to *c* until the space shown between *a* and *c* is filled, when a reaction in the flow of the water takes place, which creates a return current toward the end of the preceding riffle until it meets with descending current and again descends with it. By the action of these upper and lower currents of water, every particle of mineral in transit through the sluice-box is at one time or another brought into contact with the mercuriated plates, and at the same time the pulp is prevented from "baking" or settling on the riffles. After passing through the sluice-box, the pulp passes down to the bottom of the settler, and the descent of two feet creates a current that forces every particle of mineral in direct contact with the mercury contained in the bottom of the settler; but anything that may chance to escape and pass off with the water will be caught by the mercuriated plates E, which act as a sieve to strain and retain the metal, while the waste material passes off over the rim at F to another sluice-box below, or to a waste-pipe, as preferred.

By the above construction and arrangement all the coarse and fine gold found in placer-mining or quartz-milling will be caught, and also all silver escaping the amalgamating process, and all amalgam and quicksilver passing through the apparatus, whether the same has escaped from a quartz-mill or from other sluices.

I am aware that it is not new to provide concentrators with settlers having curved bottoms and a dividing-plate, or to use in a reciprocating table arranged in steps pans having their bottoms level for a portion of their

length, and then inclined toward their end, as shown in Patent No. 170,642, and make no claim to these constructions.

What I claim as new is—

5 1. A sluice-box for amalgamators, having a gradually - declining bottom, and provided with a series of riffles, each having a gentle incline downward on the same plane for about two-thirds of its length, and a sharp incline
10 in the opposite or upward direction for the remainder of its length, substantially as and for the purpose specified.

2. The settler C, provided with a curved bottom and a gate dividing it into substan-

tially equal portions, one of which is con- 15
structed to give the pulp a clear passage to the mercury at the bottom, and the other is provided with mercuriated plates to catch the metal that escapes from the mercury.

3. The settler C, having a curved bottom 20
lined with mercuriated plates, and a dividing-gate, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. WETZEL.

Witnesses:

GREEN MAJOR,
JAMES M. FISH.