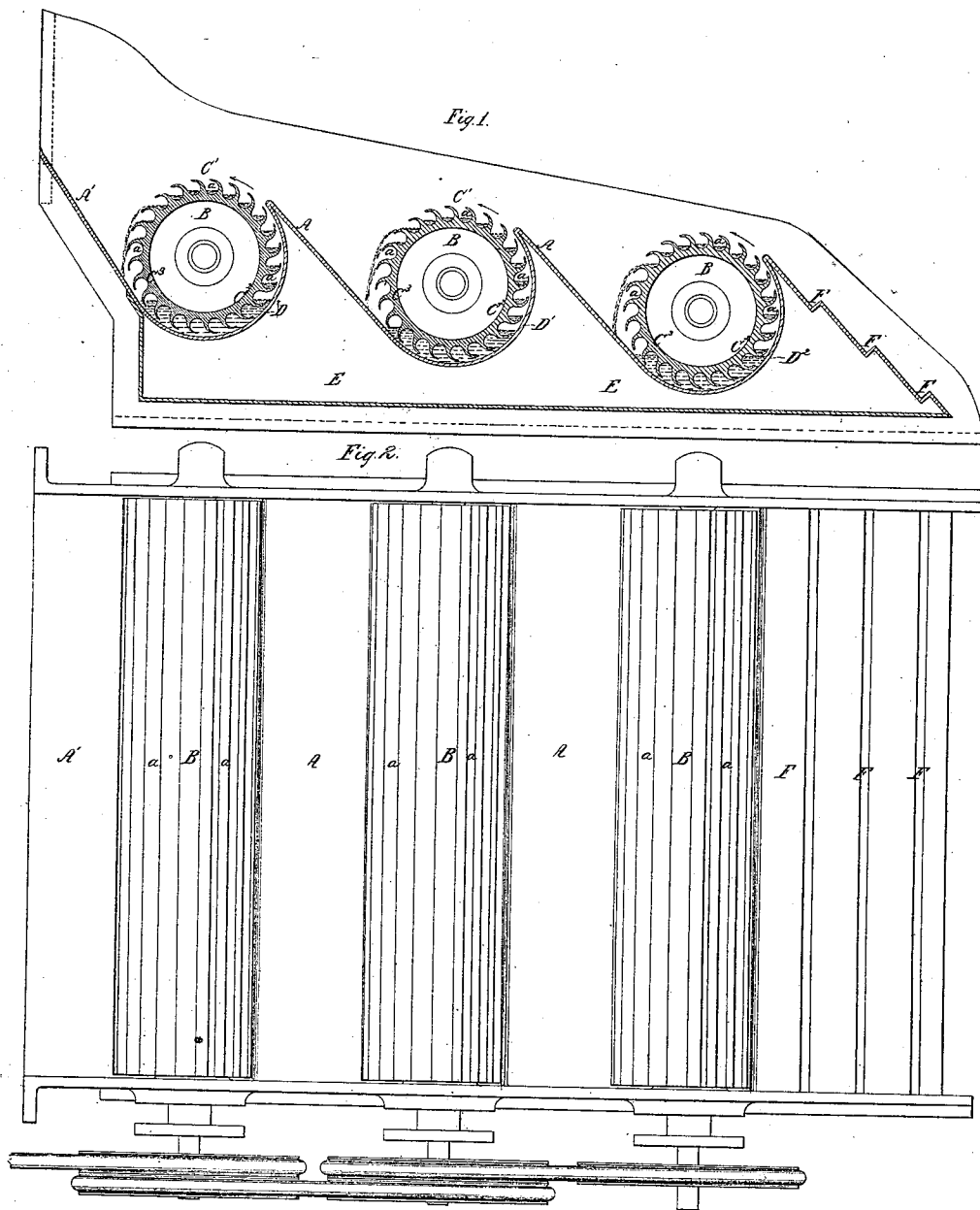


R. H. COLLYER.
ORE AMALGAMATOR.

No. 11,034.

Patented June 6, 1854.



Inventor;
Robt H Collyer

UNITED STATES PATENT OFFICE.

ROBERT H. COLLYER, OF NEW YORK, N. Y.

GOLD-AMALGAMATOR.

Specification of Letters Patent No. 11,034, dated June 6, 1854.

To all whom it may concern:

Be it known that I, ROBERT H. COLLYER, of the city, county, and State of New York, have invented a new and useful Improvement in Amalgamators for Extracting Gold or other Metals from Quartz and other Foreign Matter; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a vertical section of an amalgamator, constructed according to my invention. Fig. 2, is a plan of the same.

Similar letters of reference indicate corresponding parts in both figures.

My invention consists in the employment of one or more cylinders, which are fluted longitudinally in such a way, or furnished with buckets of such form, that, as they rotate within concave amalgamating vessels, containing a quantity of mercury, and receiving a stream of water sufficient to cause a constant overflow, they will take up a quantity of the mercury on their rising side, and discharge it on their descending side. The crushed quartz or ore, or auriferous earth, is supplied to the amalgamating vessels by inclined plates in such a way as to meet the mercury as it is discharged from the flutes or buckets on the descending side of the cylinders, and is carried through the whole body of mercury in the amalgamating vessels by the flutes or buckets, which, in the meantime, agitate the mercury, so as to bring it and the mineral in diffused contact, and thereby facilitate the amalgamation, while the quartz sand or other foreign mineral is carried away by the overflow of water.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

D, D', D², in the accompanying drawing, represent parallel concave troughs, each containing a cylinder, B, which extends from end to end thereof, and is furnished with journals fitting in bearings in the ends of its trough. The cylinders are fluted longitudinally from end to end, as represented in Fig. 1; each flute, *a*, forming a bucket capable of raising a considerable quantity of fluid, and carrying it over the center. The bottoms of the troughs are of nearly semicircular form, and the cylinders are within a

short distance therefrom. The troughs, when more than one is used, as shown, are placed each a little above the one behind it, and an inclined plane, A, leads from each to its back neighbor, to carry away the overflow; the front trough, B, having an inclined plane in front of it, down which the crushed quartz or ore, or auriferous earth is first supplied.

The several cylinders rotate in the direction of the arrows represented near them in Fig. 2, being all geared together, and driven by suitable motive power. The ground quartz or ore, or earth containing the gold, is fed in down the inclined plane, A', where it meets the mercury discharged by the descending buckets, *a*, *a*, as represented in blue color in Fig. 1, and with it, enters the concave trough, D, to be carried under, and through the mercury in the trough as the buckets severally arrive at the position indicated by C³. Before the buckets severally arrive at the position indicated by C², a very perfect admixture of the quartz, or ore, and the mercury, has been effected, and the greater portion of the gold amalgamated, the quartz, or other foreign matter rising to the surface of the mercury and being washed away by the overflow of water to the next trough. Any of the gold that is not at once amalgamated, is either carried up again by the ascending buckets, and over the center, as represented at C', and discharged in front, to be again submitted to the same operation; or, is washed away with the foreign lighter matter, down the incline, A, to the next trough, where the same operation is repeated. Any gold that may escape from the foremost pan is caught by riffles, F, F, F, in an inclined plane at the rear of the machine, which contain small quantities of mercury for amalgamation.

In order to facilitate the amalgamation, a steam chamber, E, is placed below the troughs to heat the mercury.

The troughs and cylinders may be used singly, or in a series of any number.

The advantages possessed by my amalgamator, are, 1st, it does not allow the packing or collection of the sand and refuse; 2d, the mercury is kept in bulk, instead of being separated in globules; 3d, the fine gold is collected with certainty.

What I claim as my invention, and desire to secure by Letters Patent, is:—

Effecting the amalgamation of the gold,
or other metal, and the separation of the
ores, or other foreign matter, by means of
a cylinder or cylinders, B, B, B, fluted to
5 form buckets, *a, a*, or otherwise provided
with such buckets, and revolving within a
concave trough, or concave troughs, D, D',

D², which contain the necessary quantity of
mercury—said cylinders operating in the
manner herein substantially described.

ROBT. H. COLLYER.

Witnesses:

S. H. WALES,

JNO. W. HAMILTON.