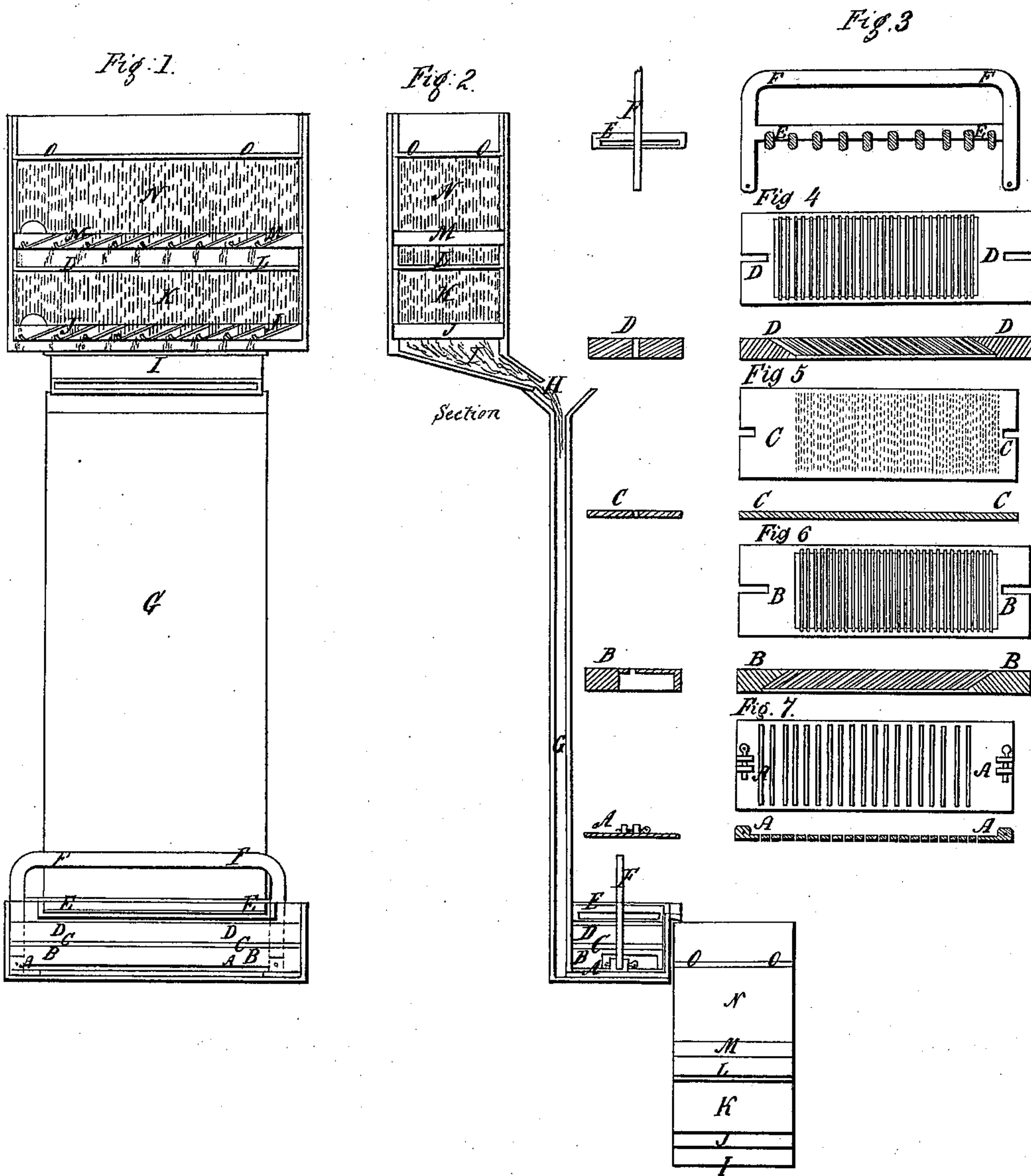


Ore Amalgamator.

No. 46,546.

Patented Feb. 28, 1865.



Witnesses:

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UNITED STATES PATENT OFFICE.

AUGUSTINE B CROSBY, OF BOSTON, MASSACHUSETTS.

IMPROVED MACHINE FOR AMALGAMATING GOLD AND SILVER.

Specification forming part of Letters Patent No. 46,546, dated February 28, 1865.

To all whom it may concern:

Be it known that I, AUGUSTINE B. CROSBY, of Boston, Suffolk county, State of Massachusetts, have invented a new and useful Improvement on Crosby and Ladd's machine for amalgamating gold or other of the precious metals so as to effect their separation from the ores containing them, for the purpose of amalgamating the gold and other precious metals that exist in the form of an impalpable powder, as well as the coarser in their associated ores, and to prevent the loss or waste of quicksilver usual to amalgamators; and I hereby declare the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings and to the letters of reference marked thereon.

Figure 1 is a front vertical view and section. Fig. 2 is a side vertical view and section. Fig. 3 is a longitudinal and cross section of the diaphragm and stirring-carrier. Fig. 4 is a top view, longitudinal and cross section, of the first inclined copper-plate holder. Fig. 5 is a top view, longitudinal and cross section, of the perforated diaphragm and frame. Fig. 6 is a top view, longitudinal and cross section, of the second inclined copper plates. Fig. 7 is a top view, longitudinal and cross section, of the slotted diaphragm.

The nature of my improvement consists in so constructing the mechanism that the gold or other metal-bearing ore, with water sufficient for the purpose, shall first be received into a box with a perforated or slotted bottom and fall in minute streams or sheets onto copper amalgamated plates placed in a frame substantially like as represented in Fig 1 by the letters M and J, these plates having small riffles at the lower edge, these plates to have by any device a vibratory motion, and so placed in frame that duplicate amalgamating parts may be substituted without stopping the flow of gold or other metal-bearing material.

The gold or other metal-bearing material is discharged into the vertical column G, and by hydrostatic pressure forced in a finely-divided state through quicksilver, by means of the submerged, slotted, and perforated diaphragms and copper plates. The material is finely divided and thoroughly, by the column pressure, rubbed onto fresh amalgamated sur-

faces that are being constantly renewed, the quicksilver filling the box an inch or less above the plates D. The gold and other metal-bearing material is then discharged into and through a duplicate of the arrangement, described first in Fig. 1 and represented in Fig 2, for the purpose of saving any quicksilver detached and discharged from the preceding arrangements.

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

O O and L L of Fig. 1 are boxes with perforated bottoms, made to slide into a frame any distance apart or any number of them with or without stirrers as the passing material may need.

M M and J J are two frames containing amalgamated copper plates, their lower edges turned or not, so as to make riffles, placed like blind-lattices, so as to make a large discharge-area for the material. These plate-frames, as well as boxes, are so placed in a sustaining-frame that duplicate parts may be easily substituted and a vibratory motion communicated to them.

G G of Figs. 1 and 2 is a pipe or hollow conduit of oblong section, that conveys the gold or other metal-bearing material to the bottom of box containing A B C D E F, and under the slotted diaphragm A, where it is divided into sheets one-twentieth of an inch thick. The slots of A are one inch (more or less) apart. Stirring-pins are attached to the lower side of A, which, by the motion of A, in common with C and F, of one and a half inches longitudinally, keeps any matter from settling or caking.

B and D of the several figures are frames holding by slots in their sides the copper plates in position, and so made that while they are stationary the carrier F and diaphragms A and C will be free to move one and a half inches, (more or less,) with stirrers E E and C attached—F of the several figures to be attached so as to give motion to A, C, and E, and constructed so as to connect with any driving machinery—all the parts A, B, C, D, E, and F so connected by frame or otherwise that they may be removed together from their containing-box.

When operating, the quicksilver in the con-

taining-box should be about one inch above the plates in frame D. The gold-bearing material or other metal-bearing material is discharged from the above-described box into and through the or a duplicate of what has been described above under the head of J, L, M, and O, with the same frame-connection and vibratory motion, all of the above-described parts to be set in a frame-work sufficient to hold them in position. When in operation, the material to be amalgamated is passing continuously through the whole series, as above described, and constantly being re-divided into minute portions and thoroughly rubbed by hydrostatic pressure against the under surface of the submerged amalgamated copper plates, care being taken that the hydrostatic pressure of the column G shall exceed the quicksilver pressure but little, and so as to make the action slow as possible.

Disclaimer: I disclaim all of the above arrangement involving what is claimed in the original joint patent of Crosby and Ladd, also all mechanical devices hitherto used for the same purposes as being of my invention, except so far as my interest as a joint inventor of Crosby and Ladd's machine may entitle me.

I claim—

1. The application and use of copper plates

or plates of any material placed at an inclination within the body of quicksilver.

2. The application of a proportion of two or more of submerged copper or other plates to one slot of the slotted diaphragm so as to produce an alternate action on each plate of the material passing through.

3. The combination of A, B, C, D, E, F, and G of the several figures of the drawings, or any combination of them for similar purposes.

4. The application of one or more redivisions of the gold or other metal-bearing material in its passage through the quicksilver, in substantially the manner shown by the drawings.

5. The application of copper or other metal amalgamated plates in lattice arrangement, with or without riffles, as shown at J and M of Fig. 1, or substantially the same.

6. The combination or any similar one of the parts shown in the drawings by the letters J, K, L, M, N, and O.

7. The general combination of all the above-described parts as shown by Fig. 2, or any similar one for the same purpose.

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Witnesses:

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