D. LEIBEE.

Ore Amalgamator.

No. 14,023. Patented Jan. 1, 1856.

Fig. 1.

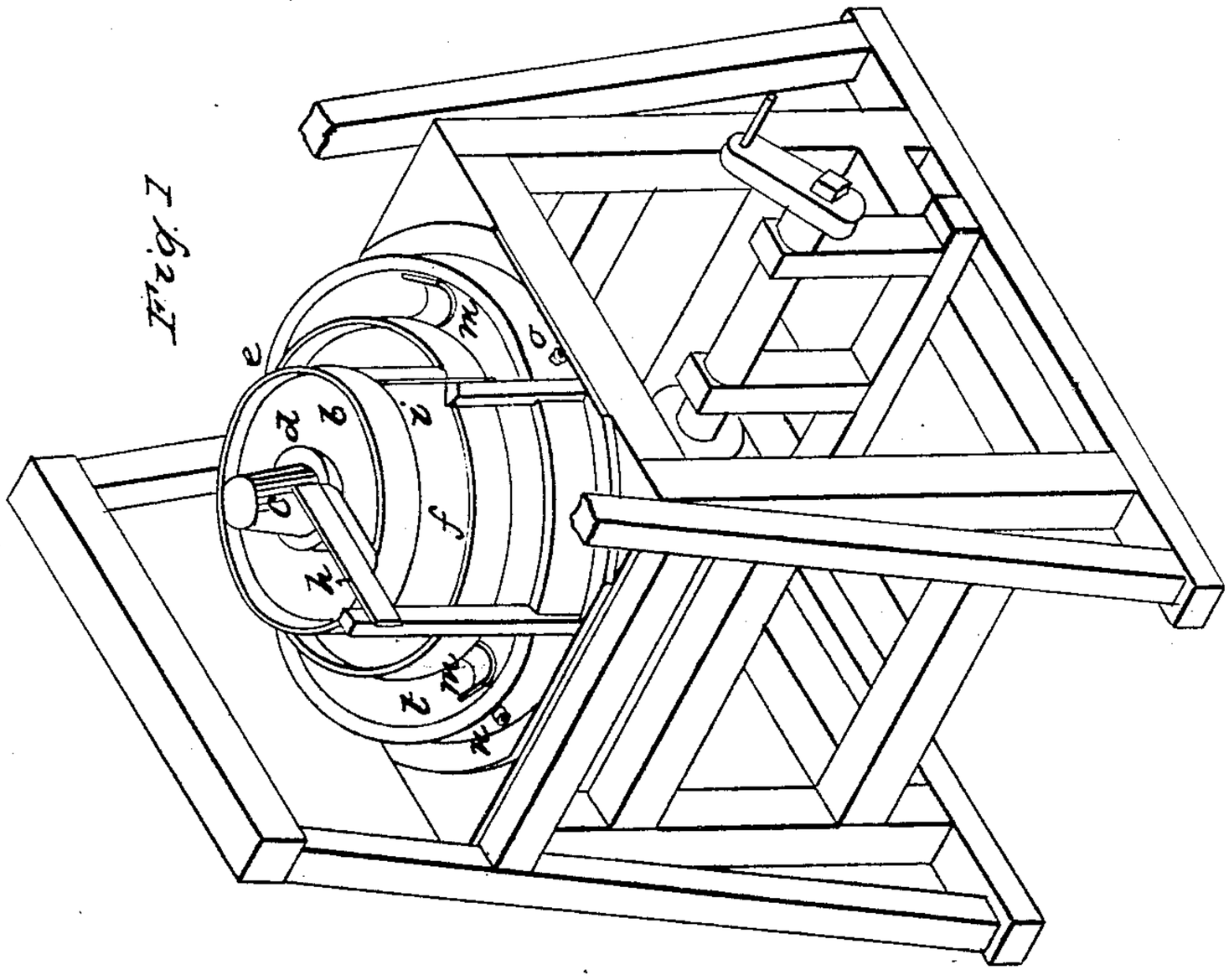
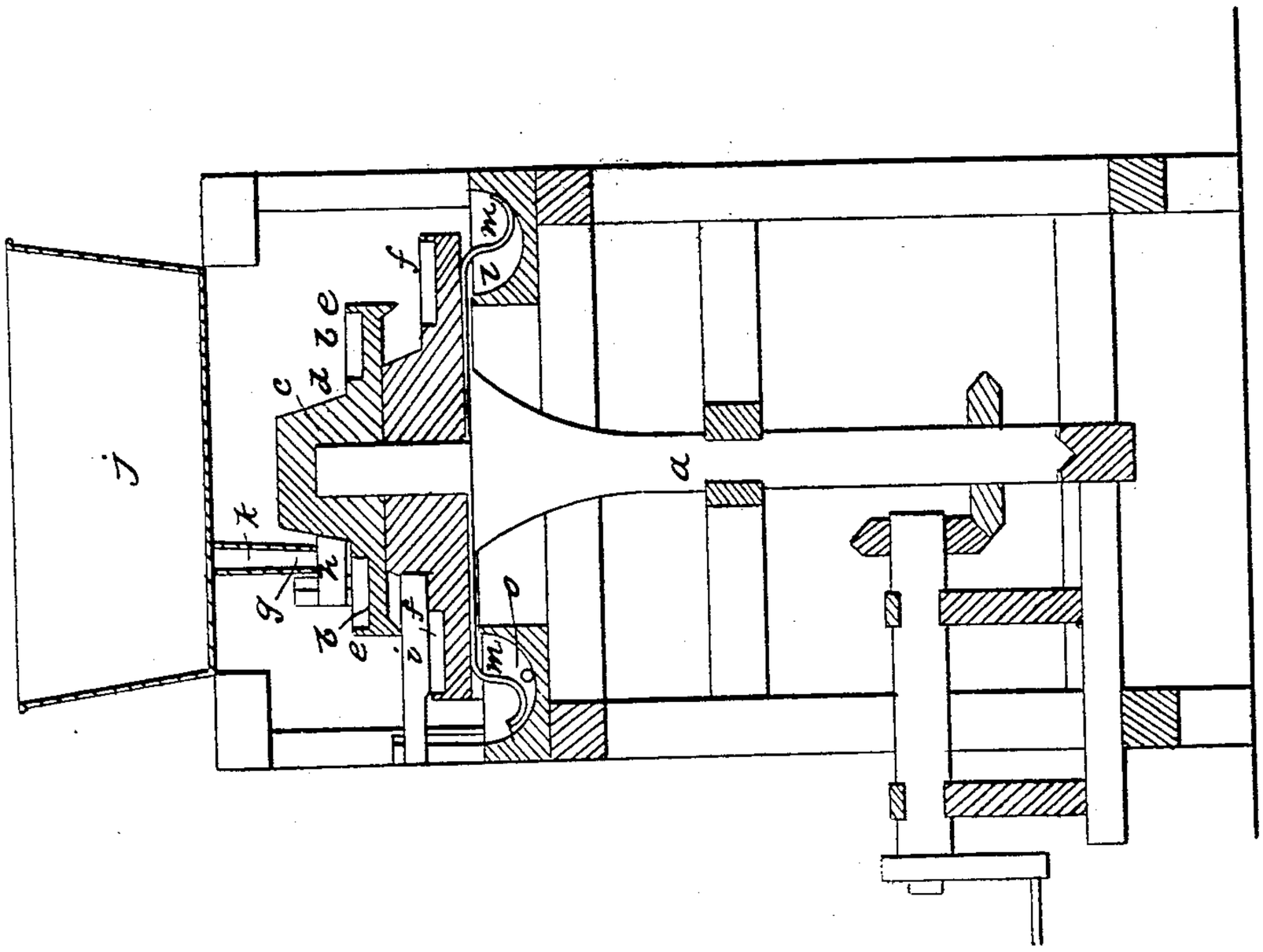


Fig. 2



UNITED STATES PATENT OFFICE.

DANIEL LEIBEE, OF MIDDLETOWN, OHIO.

GOLD-AMALGAMATOR.

Specification of Letters Patent No. 14,023, dated January 1, 1856.

To all whom it may concern:

Be it known that I, DANIEL LEIBEE, of Middletown, Butler county, Ohio, have invented new and useful improvements in Gold-Amalgamators; and I do hereby declare the folowing to be a full, clear, and exact description thereof, reference being had to the annexed drawings, making part of this specification.

The objects of my invention are to insure the contact of all the gold especially of the finer particles with the quicksilver and thus not only increase largely the yield but render practicable and highly profitable those extensive beds of auriferous quartz, which although among the richest in metal, are but little worked because with the amalgamating apparatus now employed, the finer particles of gold are floated off with the water and lost.

During five years' practical experience as a miner among the gold placers of California and Australia I have observed even with amalgamating apparatus, the yield of vein stone invariably much less than that which had been indicated by a careful assay. This deficit of the precious metal in the practical working is generally attributed to the incomplete contact with the mercury of the finer particles of gold; the water in the at present most popular amalgamators simply trickling over the surface of the mercury while in those machines which depend mainly on trituration—although the coarser grains are separated, the finer particles of gold become lost among the mass.

In order not only to bring every particle of gold in contact with mercury but also to bring all parts of the mercury necessarily in contact with the descending stream of pulverized vein stone, and at the same time to keep the surface of the mercury clear of all the light unmetalliferous particles I have devised the following mechanism.

Figure 1 is a perspective view of my apparatus without the reservoir. Fig. 2 is an axial section.

Pivoted centrally within a suitable frame is an upright shaft (*a*) to which is attached rectangularly a circular shallow pan (*b*) having a central hub (*c*) surrounded by a ledge (*d*) of equal height with the external rim (*e*). This pan (*b*) is revolved horizontally by the rotation of the shaft (*a*) to which it is attached. Beneath and parallel to this pan (*b*) there projects from the shaft another one (*f*) similar to the first, but of such greater diameter as to adapt it to catch the debris of the upper one. Similar letters refer to like parts in these two pans.

Projecting horizontally from the frame and bearing tangentially against the respective hubs are scrapers (*h*) (*i*) consisting each of a long flat blade, having an L form where it overlies the pan.

The hopper or reservoir (*j*) which contains the pulverized and watered vein stone, discharges into the pan (*b*) through a spout (*k*) projecting downward from the reservoir to within a few inches of the pan, and being situated a little behind the upper scraper. In practice there may be a number of such scrapers each accompanied by a spout as here described.

The nozzle of the spout is covered by a coarse screen (*g*) of wire netting for the purpose of dispersing the discharge of ground and watered vein stone and distributing it in divided streams among the quicksilver.

Immediately below the lower rotating pan, and of such larger diameter as to catch its debris is a stationary annular trough (*l*) having a semicircular section. Depending from the lower side of the revolving pan (*f*) are several agitators (*m*), nearly concentric and revolving in close proximity with the hollow of the trough.

(*n*) is an aperture near the top of this annular trough and (*o*) one at its bottom. The latter one is closed with a plug or faucet except when the trough is desired to be emptied.

The operation is as follows: The pans (*b*) and (*f*) being filled to the brim with quicksilver, the main shaft (*a*) is rotated at the rate of from ten to twenty five revolutions per minute; and the flood gates of the reservoir being opened the pulverized and watered mass is allowed to descend through the small pipe or pipes (*k*) into the top pan. The stationary blades or scrapers (*h i*) which extend diagonally across the tops of the pans serve to shove off and discharge the nonmetallic debris, which having been separated by the sharp edge of the horizontal parts of the blades, is swept or raked off by the raised back portion, and thus is each successive precinct

of the face of the quicksilver cleared of the non-metallic debris just previous to passing underneath the spouts. As the pan (*b*) becomes charged with amalgam a portion of its metallic contents will overflow into the pan (*f*) along with the debris removed by the scrapers, and the debris from this is again scraped into the trough (*l*) and being stirred by the agitators the metallic substances precipitate to the bottom of the trough while the sand and water escape over the edge or through the upper orifice. When the upper pan is found to be charged with amalgam its contents are removed with a scoop or shovel and the pan is refilled with quicksilver. The second dish (*f*) will not commonly need emptying oftener than twice a week.

It is generally admitted by gold miners that a large loss—often five to ten dollars per ton ensues from the escape of the finer particles of gold; and the greater part of these I believe that my apparatus can be made to save.

I am aware that screens have been used in this class of machines for the purpose of distributing the contents of the reservoir or hopper but not that I am aware of in connection with small pipes or tubes giving a specific force or impetus and direction to the mass while the screen distributes it into numerous particles.

I claim as new and of my invention—

The use of the reservoir and spout, in connection with the revolving pan and scrapers, operating with the stationary trough and agitators; constructed and arranged in the manner and for the purpose as set forth.

In testimony whereof I have hereunto set my hand before two subscribing witnesses.

DANIEL LEIBEE.

Attest:

SAMUEL MCQUIRTY, JR.,

DAVID HEATON.