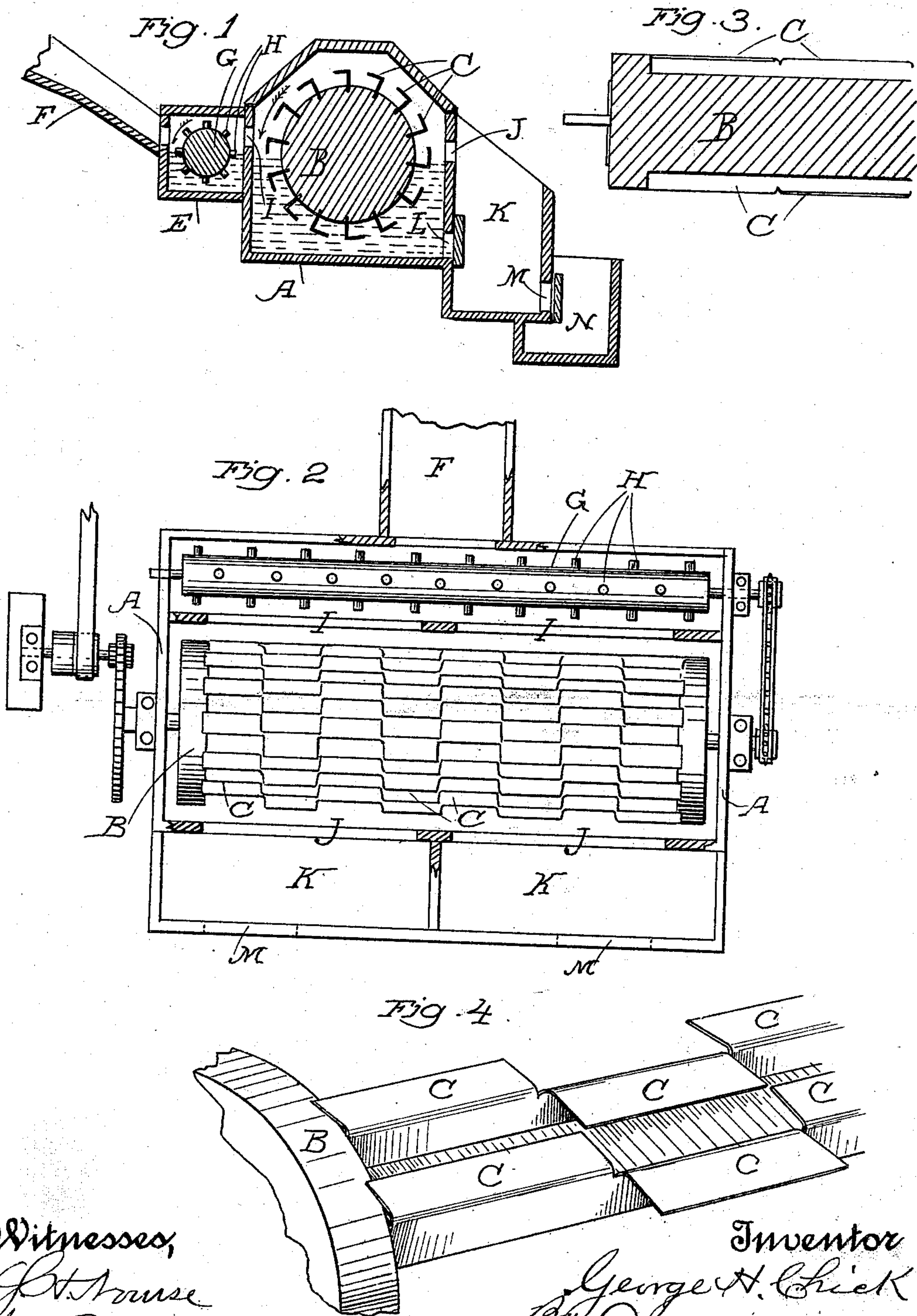


(No Model.)

G. H. CHICK.
AMALGAMATOR.

No. 545,011.

Patented Aug. 20, 1895.



Witnesses,
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UNITED STATES PATENT OFFICE.

GEORGE H. CHICK, OF SAN FRANCISCO, CALIFORNIA.

AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 545,011, dated August 20, 1895.

Application filed February 9, 1894. Renewed July 17, 1895. Serial No. 556,254. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. CHICK, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Amalgamators; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an apparatus specially designed for saving precious or valuable metals where they occur in a finely-divided condition mixed with fine sands or tailings.

It consists of rotary agitating and collecting cylinders in suitable containing-chambers and driving mechanism and supply and discharge sluices and details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is vertical section of the apparatus, taken transverse to the axes of the cylinders. Fig. 2 is a top or plan view, part of the casing being broken away to show the openings in the tanks. Fig. 3 is a partial longitudinal section of the cylinder. Fig. 4 is a view illustrating the arrangement of the parts upon the collecting-cylinder.

The object of my invention is to first thoroughly agitate the pulp in which the valuable material is contained, then deliver it to a rotating collecting-cylinder with amalgamated or plated metallic pockets, so that the preliminary agitation which is also kept up by the rotation of the collecting-cylinder brings the metallic particles into contact with the silvered or amalgamated pockets, to which the particles will adhere and be retained, while the worthless waste portion will be discharged through suitable outlets.

A is a casing, which is made of wood or other suitable material. Within this casing is a wooden cylinder B, mounted upon a suitable shaft, which is journaled in the ends of the casing and extends through to the outside. This cylinder is provided with a series of metallic cups or pockets C, which are fixed to it in rows extending from end to end of the cylinder, and when the apparatus is at work these pockets are preferably loaded with amalgam. These rows of pockets are so arranged that each alternate row encircling the

cylinder has the open sides of its pockets facing in the opposite direction, so that as the cylinder rotates one set of the pockets present their open mouths toward the material in the tank as the cylinder is submerged, and the next adjacent row of pockets presents the open mouths in the opposite direction, and so on, alternating from one end of the cylinder to the other. By this construction the agitated pulp or material in which the cylinder rotates, and in which the pockets dip, is received directly into those pockets which open in the direction of the cylinder's rotation, while it flows into those which face in the reverse direction with a sort of eddying movement from the rear which throws the particles of metal into contact with the amalgamated or silvered interior of the pockets, where it will be retained, while the worthless material will pass out as the cylinder rises out of the material upon the opposite side. The material which remains in the pockets, which are so faced as to retain it when the cylinder rises, will be discharged as the cylinder passes the top and the pockets will again be in condition to take in a new supply when they are again plunged into the material. This constant rotation of the cylinder with its pockets produces the agitation of the material which keeps the light float gold, floured quicksilver, and other light valuable metal in a state of constant agitation, so that all particles are eventually brought into contact with the amalgamated buckets. The cylinder may be partially or wholly submerged, according to the character of the material which is being operated upon.

E is a receiving box or tank into which the sluice F delivers the material to be treated, with a sufficient supply of water to give it the proper consistency. Within this receiver is journaled a drum G, having projecting pins H, or it may be made in other suitable form, so that its rotation will thoroughly agitate and stir up the pulp before it is delivered from this preliminary receiver into the chamber containing the rotating pocket-cylinder. From the receiver to the second chamber the material passes through a passage or passages I. Upon the opposite side of the main chamber are other passages or openings J, from which the material is finally delivered

into tanks or sluices K. At the bottom of the main chamber A are passages L, discharging also into the sluices K, and through these any material settling to the bottom of the main chamber may be, from time to time, delivered into the sluices or receivers K. From these receivers K other passages again open, as shown at M, and deliver into a supplemental receiver or receivers N. Each of these passages is provided with a suitable closing-gate whereby the contents may be retained in either of the chambers or discharged therefrom at pleasure.

The two revolving cylinders have sprocket-wheels fixed upon their shafts exterior to the chambers and connected by a driving-chain; or they may be driven by belts or intermediate gearing, if preferred. Power is applied to one of the shafts upon the exterior of the casing from any suitable source, so as to cause the cylinders to rotate at the proper rate of speed to produce the agitation of the material so as to bring it into intimate contact with the silvered or amalgamated surfaces to which it is desired to have the valuable material adhere.

When one cylinder has become sufficiently loaded with amalgam, it is removed by taking off the cover or top of the containing-box. Any amalgam and heavy material which may have settled in the bottom of the box are swept out through the bottom gate L, and a freshly-prepared cylinder is introduced, and the work continued. The buckets are easily slipped out of the wooden cylinder and separately cleaned, and any amalgam adhering to the wood is easily brushed off.

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

1. An amalgamator consisting of a chamber, a cylinder, the shaft of which is journaled across the chamber, silvered or amalgamated pockets or cups secured upon the periphery of the cylinder in series which alternately face so as to present the open mouths of the cups in opposite directions, substantially as herein described.

2. An amalgamator consisting of a chamber, a cylinder provided with silvered or amalgamated cups fixed upon its periphery in series so that the cups open alternately in opposite directions, a preliminary receiving chamber into which the pulp to be treated is delivered, an agitating cylinder with arms rotating so as to stir up the material in the preliminary chamber, passages through which the material is delivered into the main chamber, other passages by which the waste discharges from said chamber, and a mechanism whereby the cylinders are constantly rotated, substantially as herein described.

3. An amalgamator consisting of a wooden cylinder adapted to rotate in a pulp containing chamber, and having removable oppositely facing amalgamated metallic cups or pockets attached to it.

In witness whereof I have hereunto set my hand.

GEORGE H. CHICK.

Witnesses:

S. H. NOURSE,
H. F. ASCHECK.