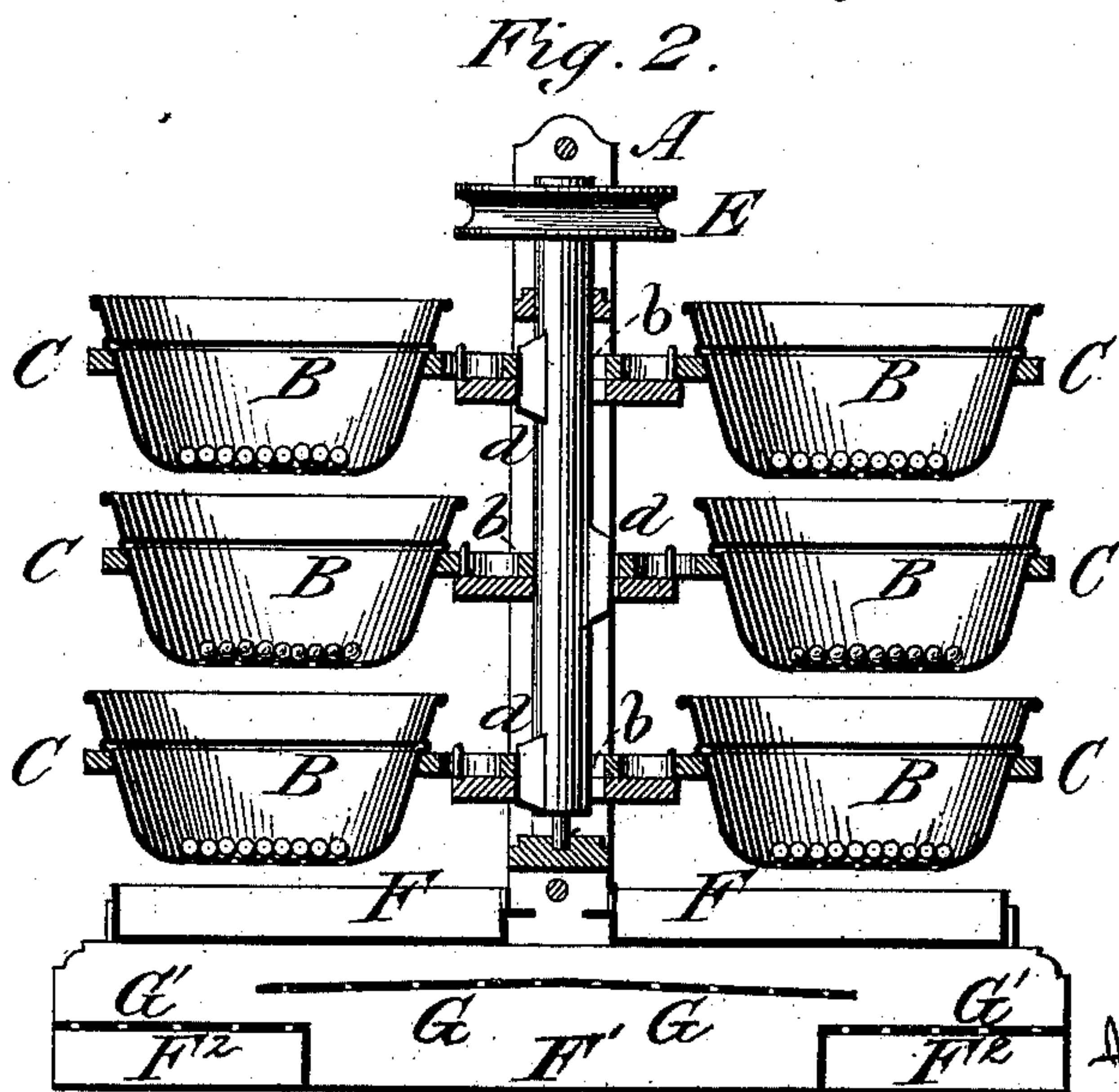
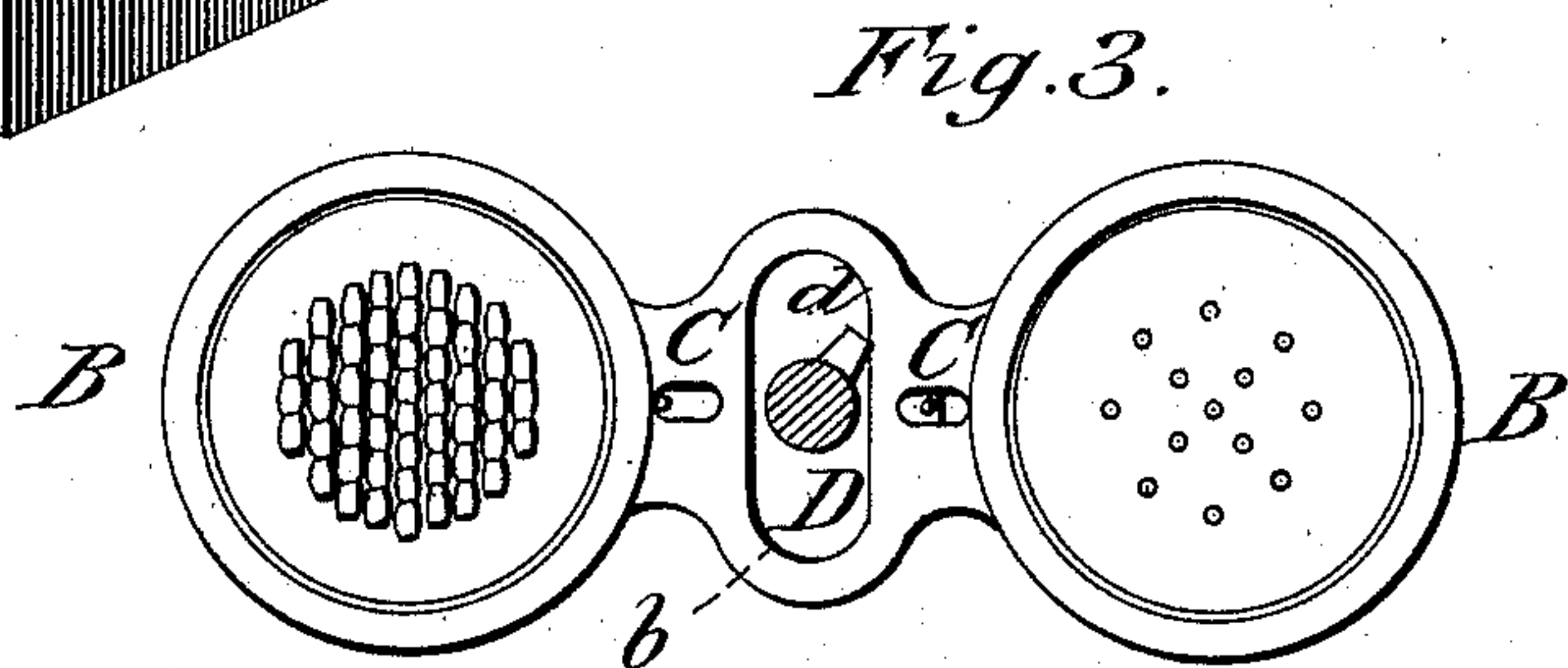
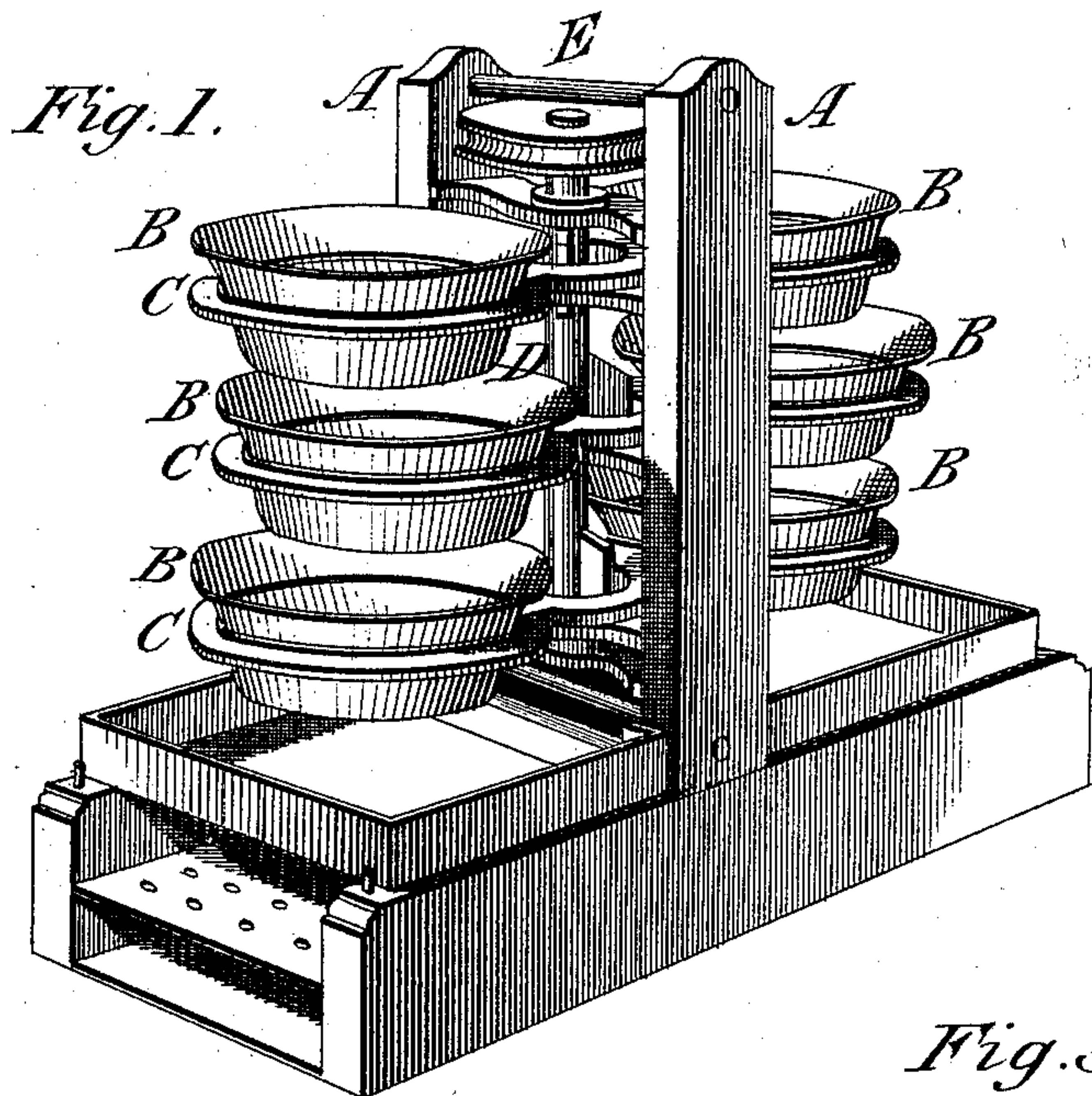


J. B. LE CLERC & M. A. CACHOT.  
Ore Amalgamator.

No. 199,724.

Patented Jan. 29, 1878.



*Attest:*

Edward E. Osborn  
L. A. Skinner

*Inventors.*

Jean Baptiste Bellere  
and Maximilian A. Cachot.

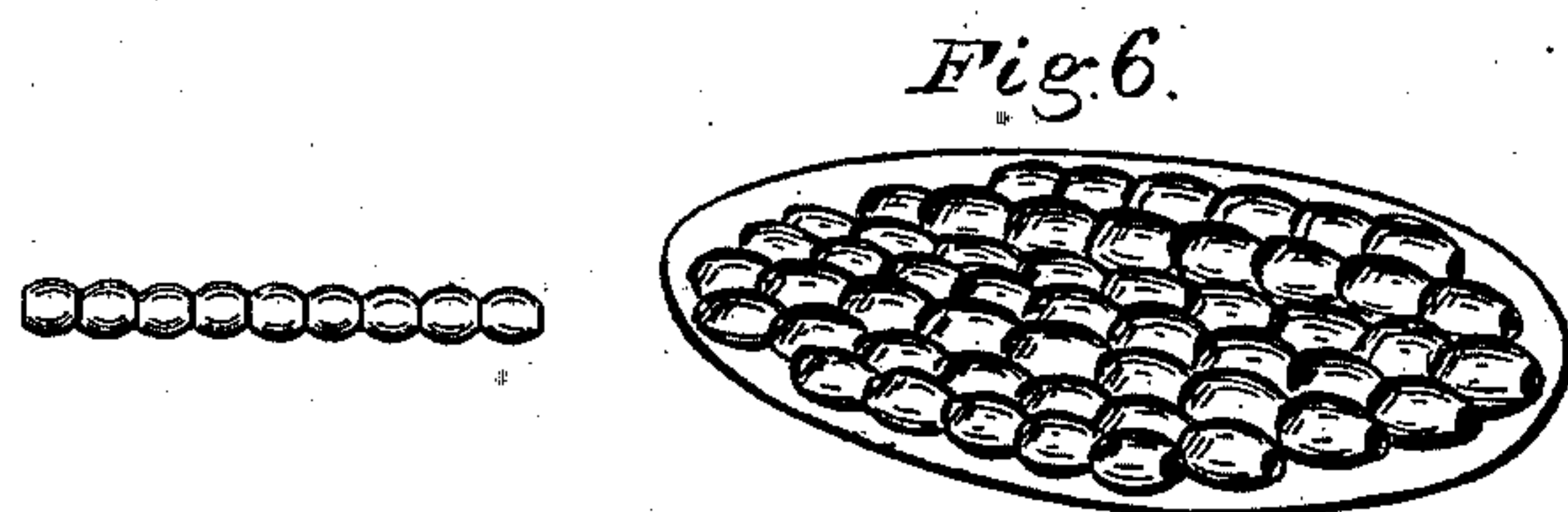
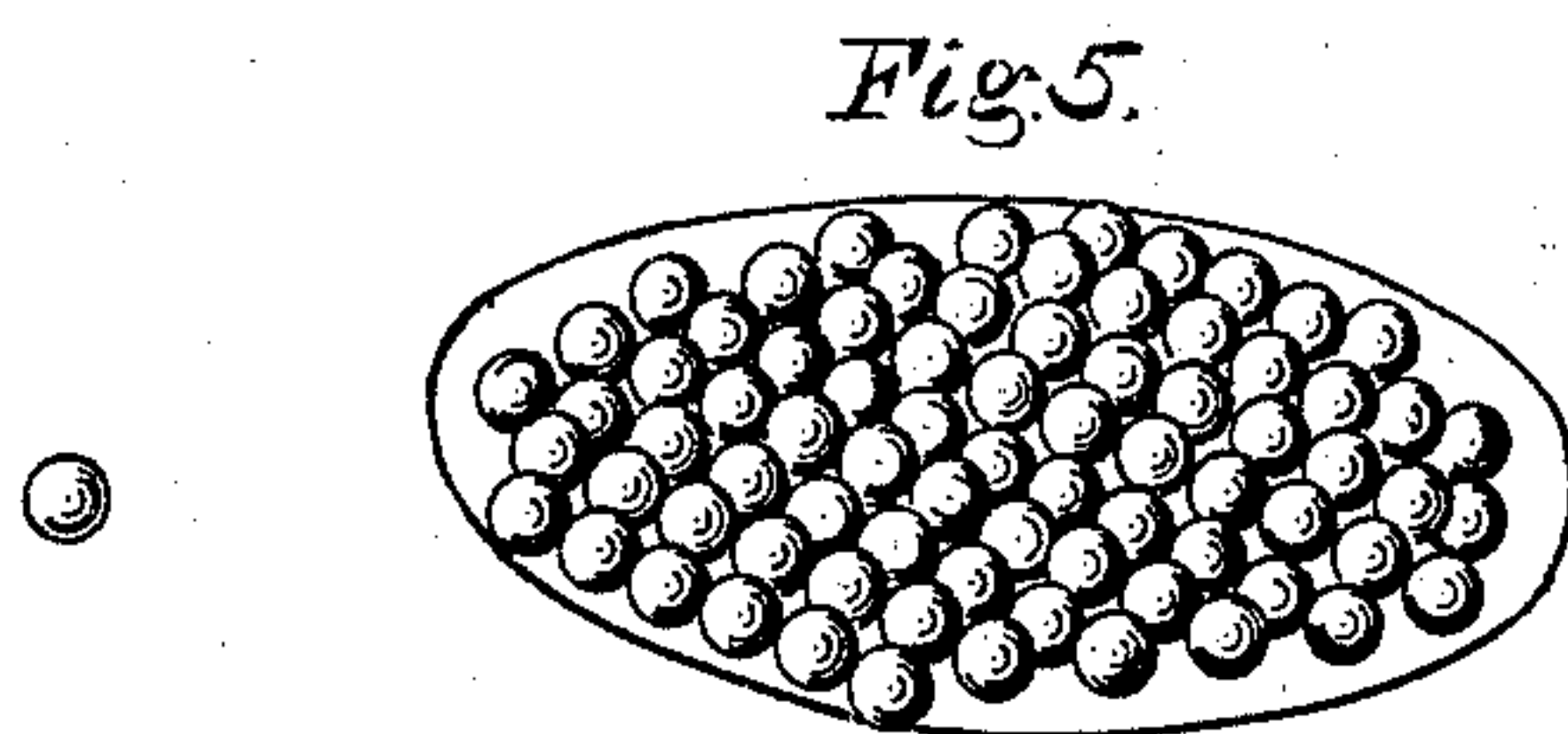
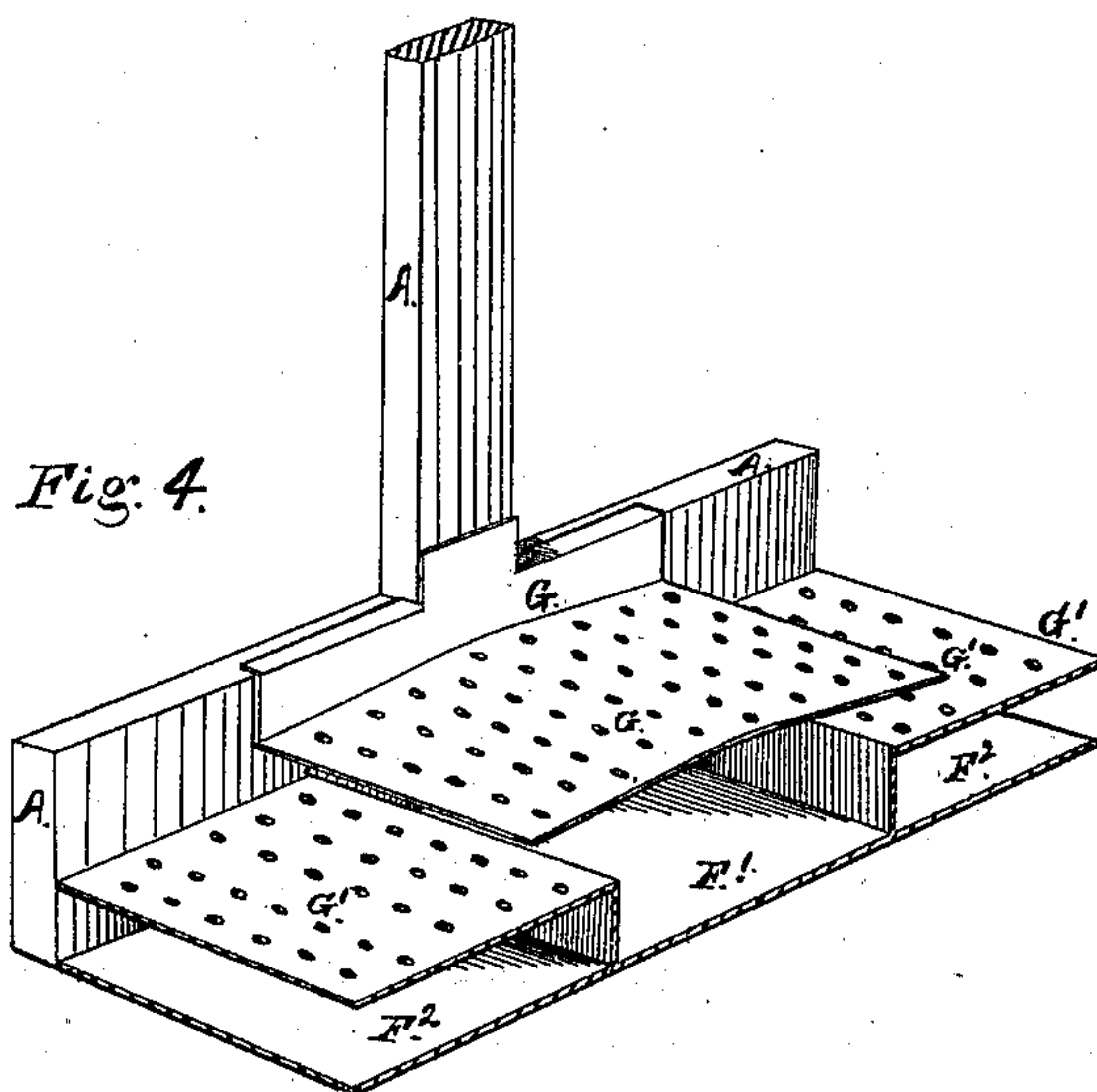
By *b. N. M. Smith* their Att

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Witnesses:

Edward C. Osborn  
J. L. Skinner

Inventors:

Jean Baptiste Lellanc  
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Roy B. M. Smith



# UNITED STATES PATENT OFFICE.

JEAN BAPTISTE LE CLERC AND MAXIMILLIAN A. CACHOT, OF SAN FRANCISCO, CALIFORNIA.

## IMPROVEMENT IN ORE-AMALGAMATORS.

Specification forming part of Letters Patent No. **199,724**, dated January 29, 1878; application filed October 9, 1877.

*To all whom it may concern:*

Be it known that we, JEAN BAPTISTE LE CLERC and MAXIMILLIAN A. CACHOT, of the city and county of San Francisco, State of California, have invented a certain new and useful machine or apparatus for saving quicksilver and float-gold or other metals in quartz-mills, which invention is fully set forth in the following specification and accompanying drawings, herein referred to for a better understanding of the invention.

In the said drawings, Figure 1 is a perspective view of our machine or apparatus. Fig. 2 is a vertical longitudinal section through the center of the machine, and just in front of the vertical shaft. Fig. 3 is a top view of one of the frames and its cups or pans. Fig. 4 is a detail view of the lower part of the apparatus, showing the arrangement of the perforated plates and trays; and Figs. 5 and 6 are detail views of the amalgam balls or globules, showing the form of two kinds used in the apparatus.

Similar letters of reference indicate like parts in all the figures.

Our invention has for its object to provide a machine or apparatus for effecting, in a greater degree, the recovery of float-gold, mercury, and other valuable metallic particles that, from their exceeding fine and minute condition, are carried off with the heavier and worthless particles from the "settler" of the mill, and thus lost in the "tailings."

It consists in the combination and arrangement of a series of cups or pans, with perforated bottoms, placed one over and above the other, and containing a quantity of metallic balls or globules coated with mercury, the cups or pans being held in a series of rings or frames, to which an independent reciprocating or vibrating motion is given, one after the other, for the purpose of properly agitating the contents of the pan and aiding the passage of the stream of slime or pulp containing metallic particles through and among the globules, and bringing the amalgamating-surfaces in thorough contact with the particles as the stream passes from one pan into the other one beneath, by producing a rolling motion of the balls or globules; and, in connec-

tion and combination with these cups or pans, the arrangement and employment of a series of inclined perforated plates and trays, to still further divide the stream or slime as it passes out of the machine, and bring the lighter and valuable particles in intimate contact with the metallic amalgamated surfaces thus provided, all of which will be more fully described hereinafter.

Referring to the accompanying drawings, A A represent the frame of the machine; B B, the cups or pans with perforated bottoms; C C, the rings or cup-holding frames; D D, the vertical shaft, which gives motion to the rings; and E, the pulley, producing the proper rotation of the shaft.

The parts are arranged one above the other, so that the contents or stream from one pan shall pass through the perforated bottom into the next pan below. They each contain a number of metallic balls or globules coated with quicksilver, to catch and retain the ore particles by amalgamation, while the worthless particles pass out from the machine. These amalgamating-surfaces are used in the pans either in the form of balls, as shown in Fig. 5, separate and detached, or they are composed of globules united together, one to the other, in groups of three or more, of proper size and length to fit the bottom of the pan, as shown in Fig. 6. They are composed of lead, silver, or other metal of suitable weight with which the quicksilver will combine.

The vibrating motion of the pans B is produced by means of the vertical shaft D, which has a series of projections or cams, *d d*, working in slots *b b* in the ring-frames C C. The continuous rotation of the shaft produces a back-and-forth motion of the pans, one pan moving just in advance of the other, but always over the one immediately beneath it, so that the pulp or slime or stream running into the pans will always be caught within the rim of each one in passing to the bottom tray. These pans are arranged vertically, either in a single series or double, as shown in the accompanying drawing, whereby two streams of pulp from the settler can be treated, and they are used and arranged, in any required number, to any height.



In combination with and beneath each set of vibrating pans are arranged several overflow trays or troughs and inclined amalgamated plates, to still further break up the slime or metalliferous stream and separate the valuable particles.

The tray F receives the current flowing through the perforated pans, and holds the heavier particles, while the lighter portion is carried off by the overflow, and is received upon the perforated and coated inclined plates G, which direct the stream upon and to the plate G', which also receives the overflow from the trough F<sup>1</sup>, the heavier particles being each time received within the trays F, F<sup>1</sup>, F<sup>2</sup>, &c., beneath the plates.

The number of these plates and their trays may be increased at pleasure beyond those shown in the machine illustrated in the drawings. They are placed one immediately below and in advance of the other, so that the lighter portion of the current overflowing from the trays will pass over the plates, and thus receive and be exposed more thoroughly to the action of the amalgamating-surface. The position of the perforated plates and trays is clearly shown in Figs. 1, 2, and 4 of the drawings.

By the use of these metallic balls or globules we are enabled to extract and save the finer valuable particles from the slime or stream running from the settler or separator of the mill in a better and more certain manner than is at present done by machines or apparatus now in use, so far as is known to us; and by having the amalgamating-balls removable

from the pans they can be taken out as fast as they become covered, and replaced by new ones, and the operation of the machine can thus be rendered continuous.

Having thus fully described our invention, what we claim as new therein, and desire to secure by Letters Patent, is—

1. The series of cups or pans B B, with perforated bottoms, arranged vertically one over the other in supporting rings or frames C C, to which a vibratory motion is given, the said cups or pans containing and being used in combination with a series or number of balls or globules of lead or silver coated with quick-silver, constructed and arranged to operate together substantially as set forth.

2. In combination with the series of vibrating cups or pans B B, arranged and actuated substantially as hereinbefore described, the series of troughs or trays F F<sup>1</sup> F<sup>2</sup> and inclined perforated and coated plates G G', arranged as herein described, for the purpose set forth.

3. The combination, with the series of frames C, carrying cups or pans B, arranged as described, of the vertical cam-shaft E, for imparting a vibrating motion to such frames and cups, substantially as and for the purposes set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 2d day of August, 1877.

JEAN BAPTISTE LE CLERC.

MAXIMILLIAN A. CACHOT.

Witnesses:

EDWARD E. OSBORNE,  
WILLIAM HARNEY.