

(No Model.)

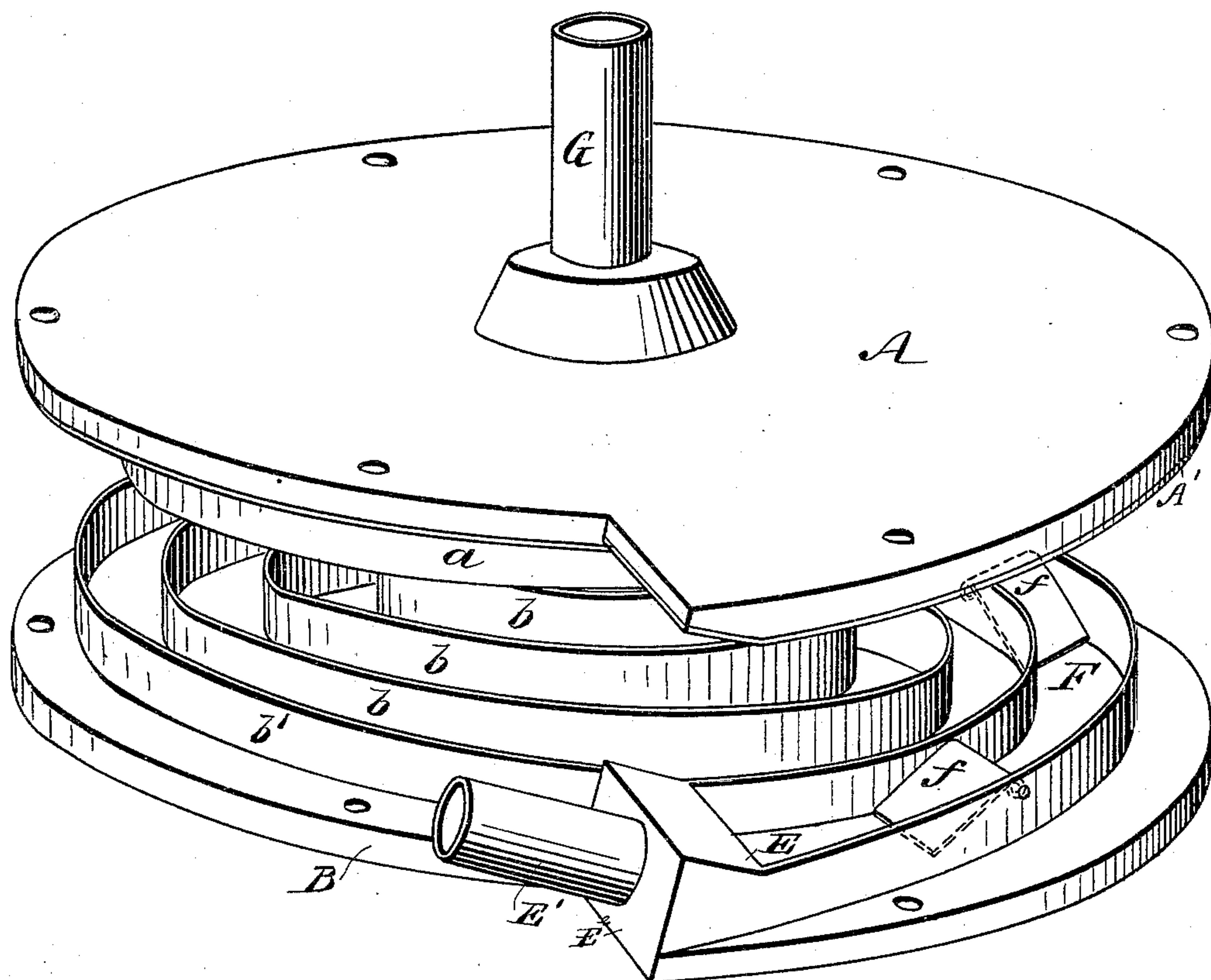
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S. L. TOWNSEND.  
AMALGAMATOR.

No. 431,294.

Patented July 1, 1890.

*Fig. 1*



WITNESSES:  
*John H. Deemer*  
*C. Sedgwick*

INVENTOR:  
*S. L. Townsend*  
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ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

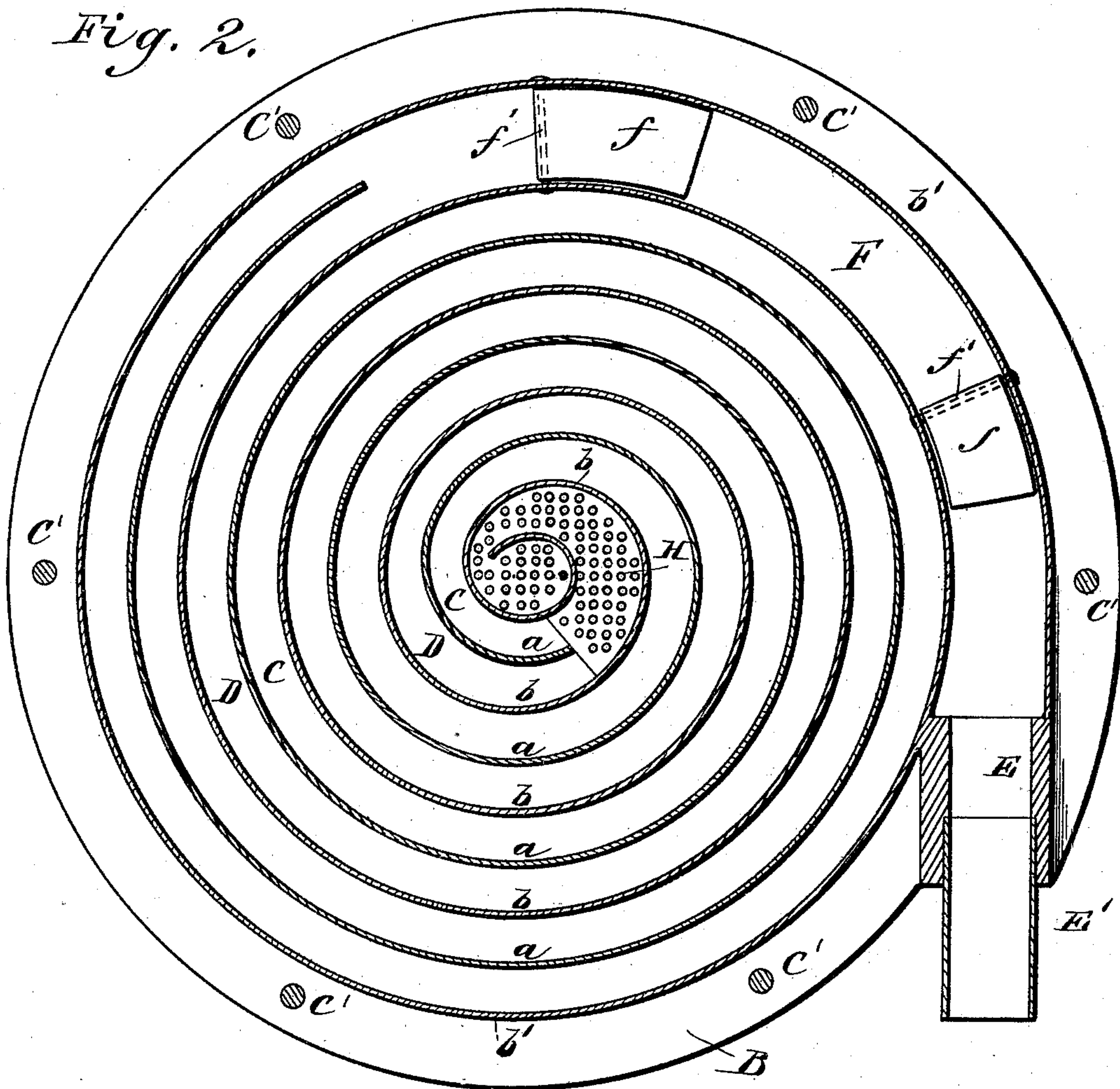
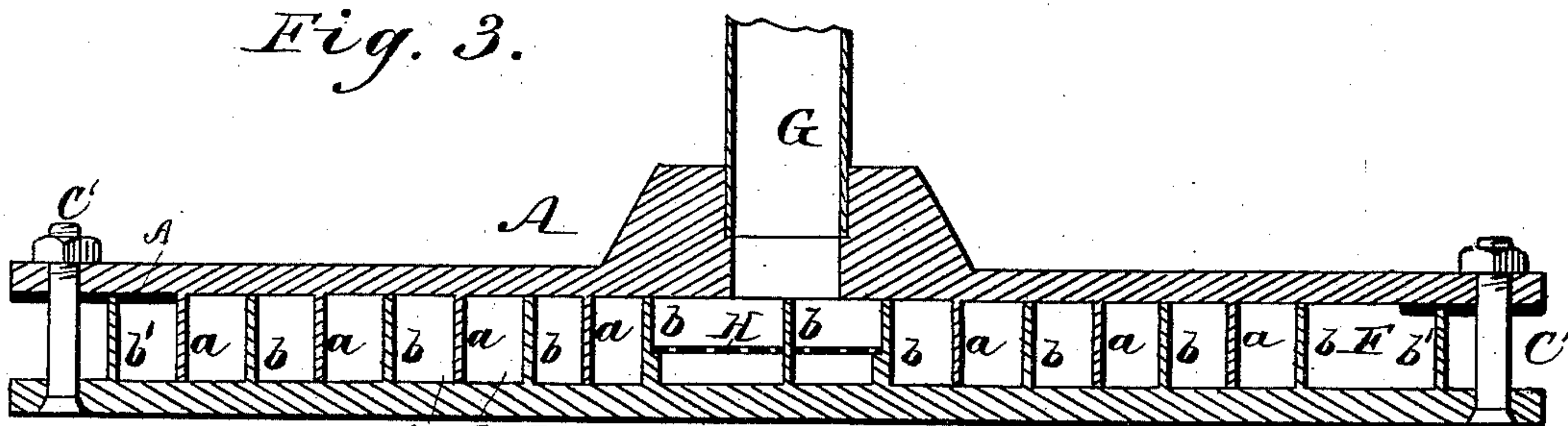
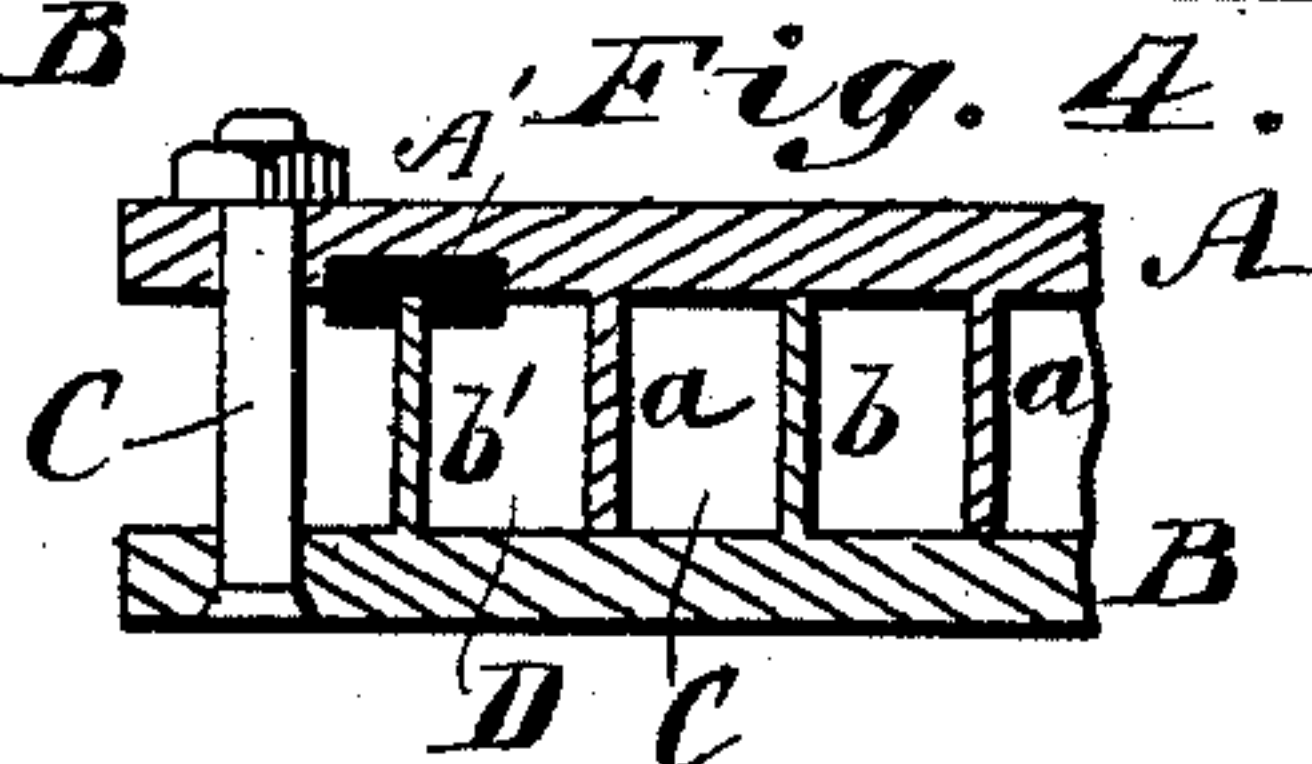


Fig. 3.



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# UNITED STATES PATENT OFFICE.

SAMUEL L. TOWNSEND, OF OHIO, COLORADO.

## AMALGAMATOR.

SPECIFICATION forming part of Letters Patent No. 431,294, dated July 1, 1890.

Application filed September 6, 1889. Serial No. 323,126. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL L. TOWNSEND, of Ohio, in the county of Gunnison and State of Colorado, have invented a new and Improved Amalgamator, of which the following is a full, clear, and exact description.

My invention relates to the so-called "pan" type of amalgamators; and the invention consists principally of an amalgamator constructed to form closed helical channels in which mercury is held, and through which channels the pulp flows, the same being admitted at the center and discharged at the periphery of the apparatus.

The invention also consists of the special construction of the amalgamator, all as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of my new amalgamator, the top plate being elevated to show the interior construction. Fig. 2 is a sectional plan view of the amalgamator. Fig. 3 is a sectional elevation; and Fig. 4 is a detailed sectional view showing the packing between the upper and lower plates.

A represents the top plate of the amalgamator, and B the bottom plate. These are preferably made of copper and substantially circular in form. The top plate A is formed upon its lower surface with a spiral flange *a*, and the bottom plate B is formed on its upper surface with a spiral flange *b b'*. The top and bottom plates are of substantially the same size and are secured together by bolts *C' C'*. The arrangement of the flange *a* of the top plate is such that its coils are intermediate to the flange *b*, thus forming, when the two plates are together, two closed helical channels *C D*, extending from the center throughout the main body of the amalgamator. The outer coil *b'* of flange *b* extends to the discharge *E*, while the outer end of the coil *a* terminates short of the said discharge, thus forming an outer channel *F* equal in width to the combined width of the channels *C D*. In this channel *F* are placed the copper rifle-plates *f*, hinged at *f'*, and under which the pulp flows, and which serve to catch float-

gold in case any should be carried in contact therewith by the flow of the pulp. The discharge *E* is slightly upturned, and is provided with a pipe *E'*, which may be adjusted vertically at its outer end, so that the mercury placed in the amalgamator may be retained to any desired depth, and so that the flow of pulp through the channels may be controlled.

The top plate A is provided at or near its edge on the under surface with a packing *A'*, of soft rubber or other material, or it may be constructed in any suitable manner to form an air and liquid tight joint with the bottom plate or outer flange *b'* thereof, so that all escape of pulp is obviated and all entrance of air except at the discharge *E* and supply-pipe *G* prevented.

The supply-pipe is fitted in an opening at the center of the top plate A, and beneath it is fitted the perforated plate *H*, which serves to divide any agglomerate pulp that may enter the amalgamator through the supply-pipe.

In operation the channels are to be supplied with mercury, and all of the copper surfaces—the flanges, the under surface of the top plate, and the rifles *f*—are to be coated with mercury. The pulp is admitted at the center through the pipe *G*. The pulp enters the channels *C D* and flows around through them over the surface of the mercury and in contact with the amalgamating surfaces. The heavy gold sinks into the mercury in the channels, and the float-gold is taken up from contact with the flanges *a b* and the under surfaces of the top plate A. The flow of pulp is regulated somewhat by the inclination or length of the discharge spout or pipe *E'*, which is fitted in the gate or block *E*. (Shown clearly in Fig. 1.)

The cleaning of the amalgamator is effected by removing the top plate A, which exposes all the copper surface, from which the gold may be collected.

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

1. An amalgamator comprising top and bottom parallel plates, intermediate helical flanges touching the adjacent inner surfaces of each plate, a central supply and a peripheral discharge, substantially as described, the

intermediate flanges forming closed channels extending from the point of supply to the discharge-outlet.

2. An amalgamator comprising the top plate A, having a helical flange *a*, and bottom plate B, having a helical flange *b b'*, arranged so that its coils stand intermediate to the coils of the flange *a* when the plates are placed together, substantially as described.

3. The top plate A, having the coiled flange *a*, and the bottom plate B, having the coiled flange *b b'*, in combination with a packing applied to the plates and outer coil to form a tight joint, substantially as described.

4. The top and bottom plates having flanges *a b b'*, the top plate having a supply-pipe G,

in combination with the discharge at the periphery of the plates, substantially as described.

5. The top and bottom plates having coiled flanges *a b b'*, the top plate having a central supply-pipe, and a perforated plate H fitted between the top and bottom plates, substantially as described.

6. The top and bottom plates A B, having coiled flanges *a b b'*, in combination with the rifle-plates *f*, substantially as described.

SAMUEL L. TOWNSEND.

Witnesses:

R. R. WILLIAMS,

R. E. L. TOWNSEND.