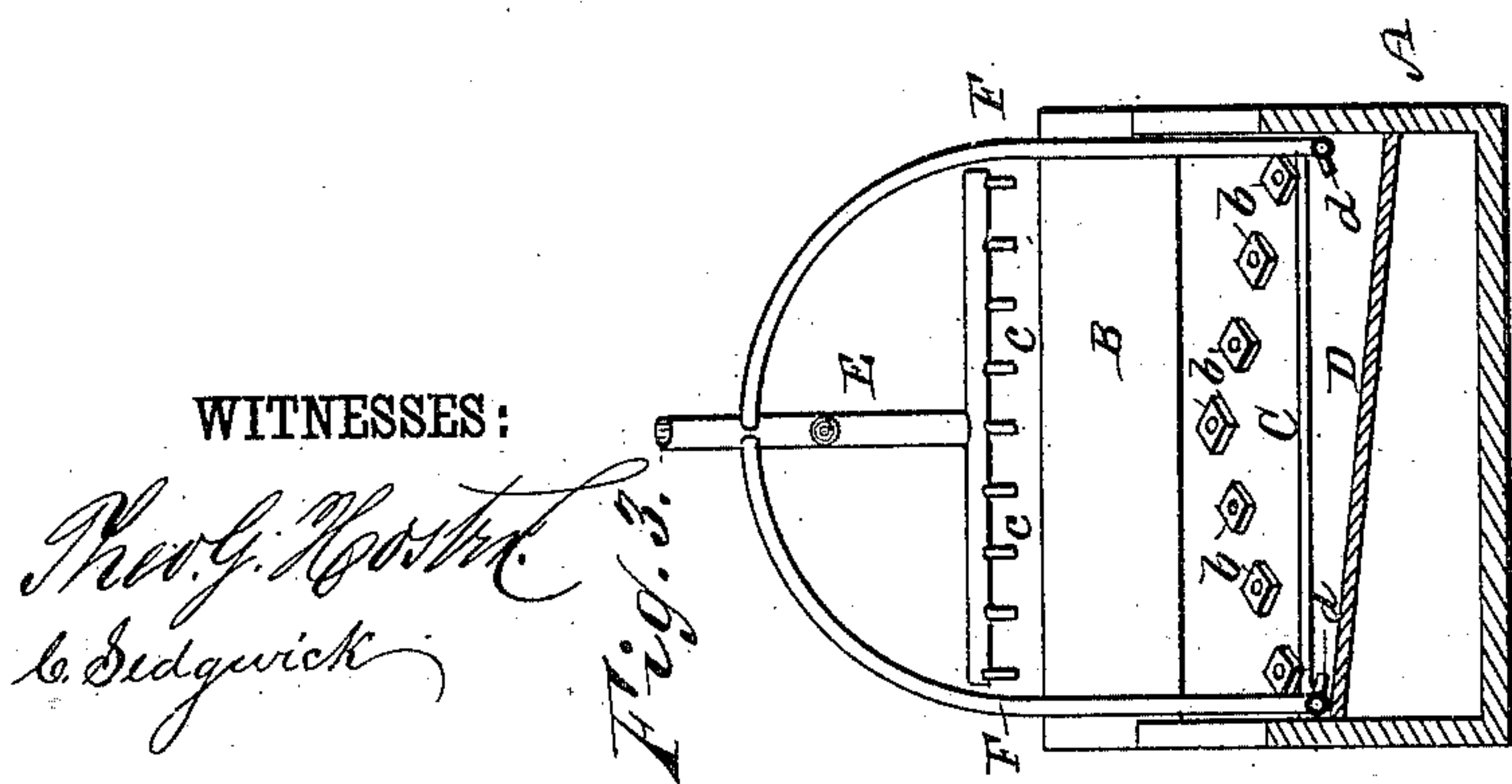
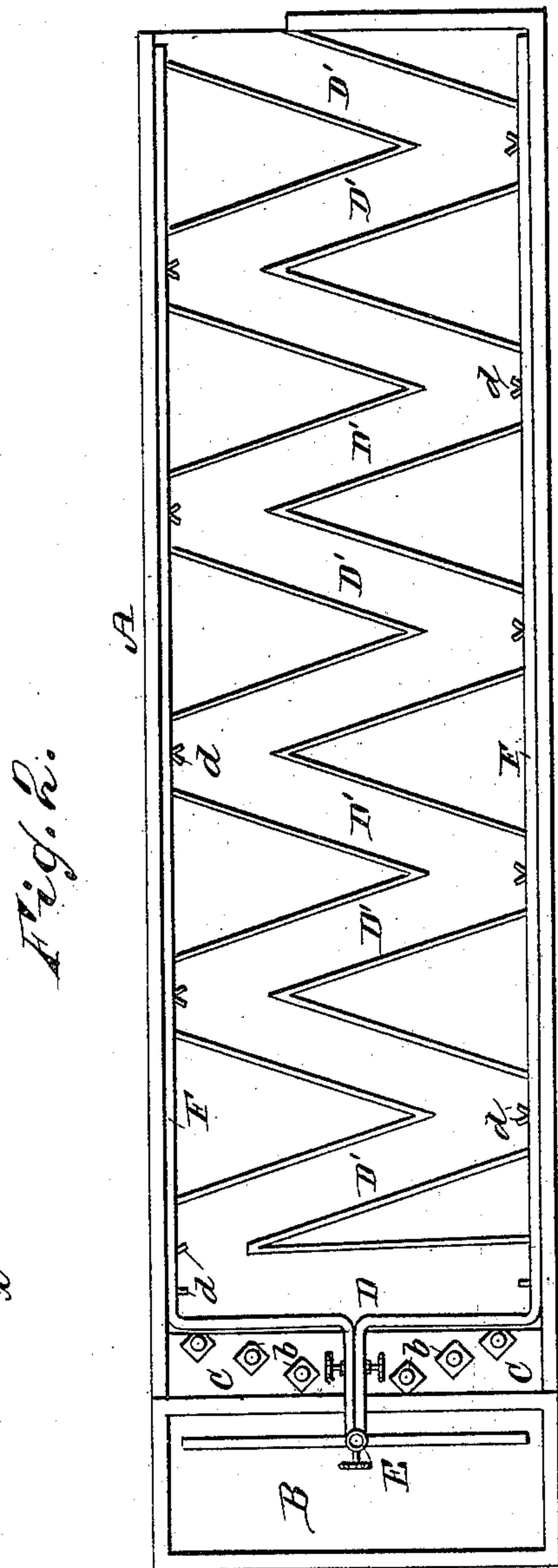
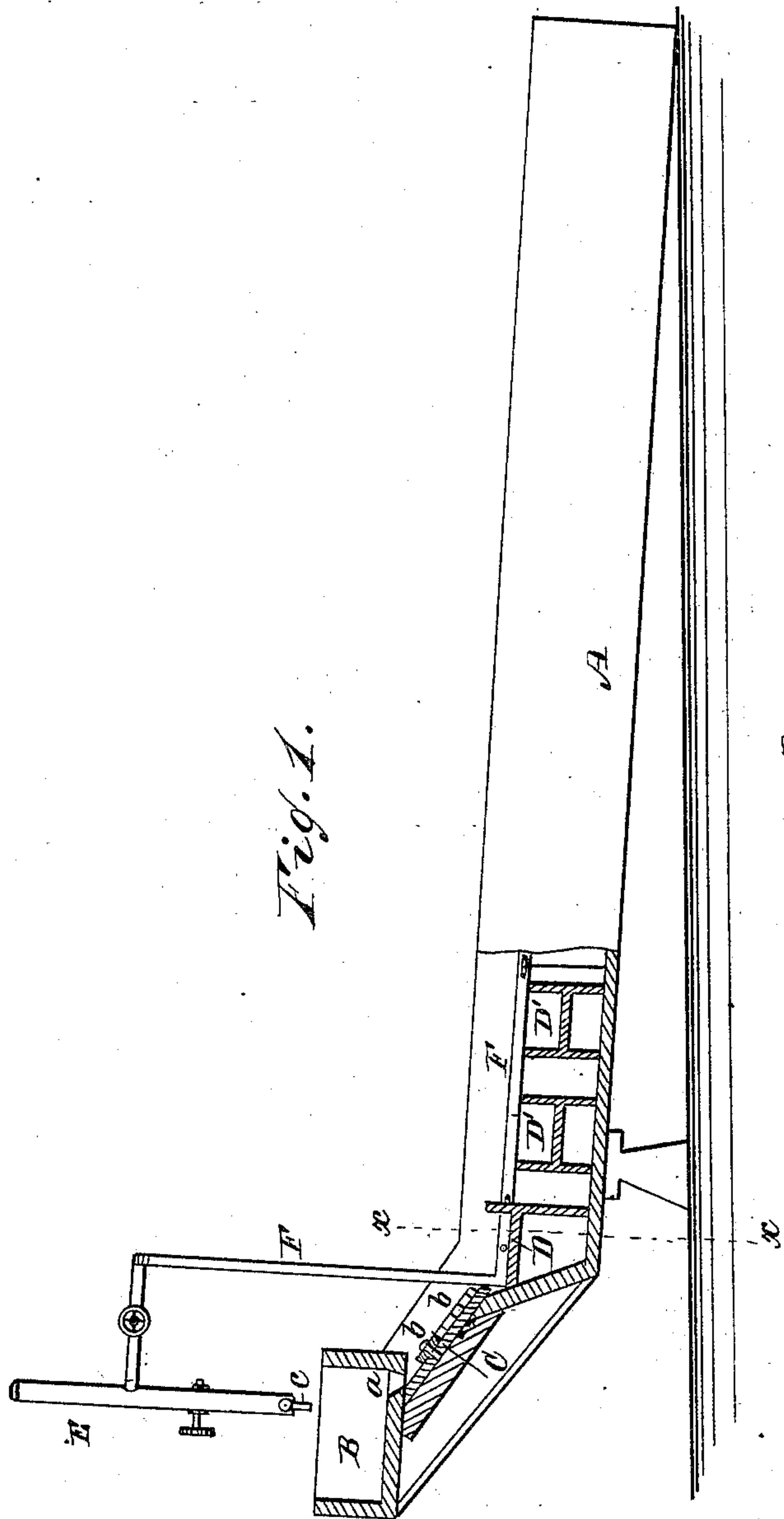


(No Model.)

J. L. LOOMIS.  
ORE CONCENTRATOR.

No. 299,235.

Patented May 27, 1884.



WITNESSES:

*Thos. G. Hooper*  
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INVENTOR:

*J. L. Loomis*  
BY *Mum & Co*  
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# UNITED STATES PATENT OFFICE.

JOHN LEWIS LOOMIS, OF LEADVILLE, COLORADO.

## ORE-CONCENTRATOR.

SPECIFICATION forming part of Letters Patent No. 299,235, dated May 27, 1884.

Application filed September 14, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN L. LOOMIS, of Leadville, in the county of Lake and State of Colorado, have invented certain new and useful Improvements in Ore-Concentrators, of which the following is a full, clear, and exact description.

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

Figure 1 represents a partially-sectional side elevation of an ore-concentrator embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is a transverse vertical section thereof on the line *xx* in Fig. 1.

A indicates the supporting box or frame, set more or less inclining in a downward direction toward the delivery end of the device, and which may be of any suitable construction and material.

B is the feed-box, of any desired form, and which, as shown in Fig. 1, has a slight downward inclination toward the spreaders, and has one or more perforations, *a*, in its bottom near its lower side.

C is the distributing-apron, arranged to receive the pulp as it is carried from the feed-box through the opening or openings *a*, and set inclining downward in direction of the length of the apparatus, also armed or fitted with movable buttons *b*, to assist in producing an even flow into a head-slucice, D, which has a greater inclination laterally than the remaining or after sluices D', that are arranged in a tortuous or zigzag course throughout the length of the box or frame, and in communication with each other consecutively on opposite sides of the frame.

The ore pulp, having been suitably prepared for concentration by crushing and sizing, is conveyed into the feed-box B, and from thence is passed on to the distributing-apron C, a supply of pure water having been added in the feed-box through jet orifices or tubes *c* from a supply-pipe, E. This additional flow of water assists in cleaning the pulp and in propelling forward more rapidly the lighter particles. Passing into and along or down the

head-slucice D, the pulp-current encounters in said sluice one or more jets of water issuing from jet apertures or tubes *d* on one of a pair of water-feed pipes, F, arranged to run down and within the sides of the supporting box or frame. This further increases the volume of water and assists in keeping the lighter particles in suspension, to be carried rapidly forward by the current, not only in the head-slucice D, but in the remaining sluices D', through which the current passes. Having reached the lower end of the head-slucice, the current is suddenly turned into the head of the first or upper diagonally-arranged sluice, D', down which it passes to its lower end, there to be turned again in a reverse direction into the head of the succeeding diagonal sluice of the tortuous course of sluices, and so on throughout all the sluices D' until it passes out at the lower end of the concentrator, carrying the tailings with it. The terminal extremities of the sluices may either be of a sharp curve or angular form, and the water-feed pipes F, which may be arranged in any suitable way, have any number of additional jet-tubes *d*, some being suitably arranged to oppose the current flowing down through the sluices D'. It should here be observed that from the first the current carries forward the lighter particles more rapidly than the heavier ones. The water-jets, which partially prevent the packing of the pulp, can be directed into the sluices with such force and in such directions as may be most desirable for the purpose. The operation having been continued until the concentrates so accumulate in the upper sluices as to require their removal, the same are then removed with a small scoop-shovel, while what accumulates in the middle sluices is removed and deposited near the feed-box B, to be again run through the concentrator. For this purpose they are shoveled into the upper portion of the feed-box B, where the spatter from the falling jets of water issuing from the jet-tubes *c* causes them to run steadily down the inclined bottom of the feed-box, and from thence they are carried again by the current to the sluices. The most of the tailings will be carried out by the current; but should the tail-

ings in the lower sluices accumulate so as to block up the sluices, they can be shoveled out and removed to the tailings-dump.

5 The supporting frame or box may be arranged at any desired angle, so to secure a continuous fall through the sluices from the head-sluice to the outlet, and the sluices, which may be of any suitable material and have either flat, convex, or concave bottoms, may be of  
10 such width and depth as experience shows to be best adapted to the nature of the ore treated or as the coarseness or fineness of the pulp requires.

Having thus described my invention, what I

claim as new, and desire to secure by Letters 15 Patent, is—

In an ore-concentrator, the combination, with the inclined sluices constructed to abruptly change the course of the current at numerous intervals down them, of water-pipes provided 20 with jet orifices or tubes to increase the volume of water in the sluices, and to disturb the pulp in the current, essentially as and for the purposes specified.

JOHN LEWIS LOOMIS.

Witnesses:

CON FINN,

JOHN NOWLAND.