W. S. LAIGHTON.

Apparatus for Precipitating Gold and Silver from Solutions.

No. 108,158. Patented Oct. 11, 1870.

Fig 3.

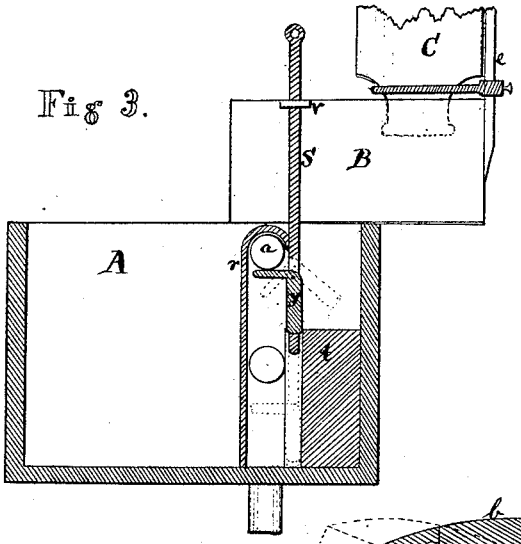


Fig 2.

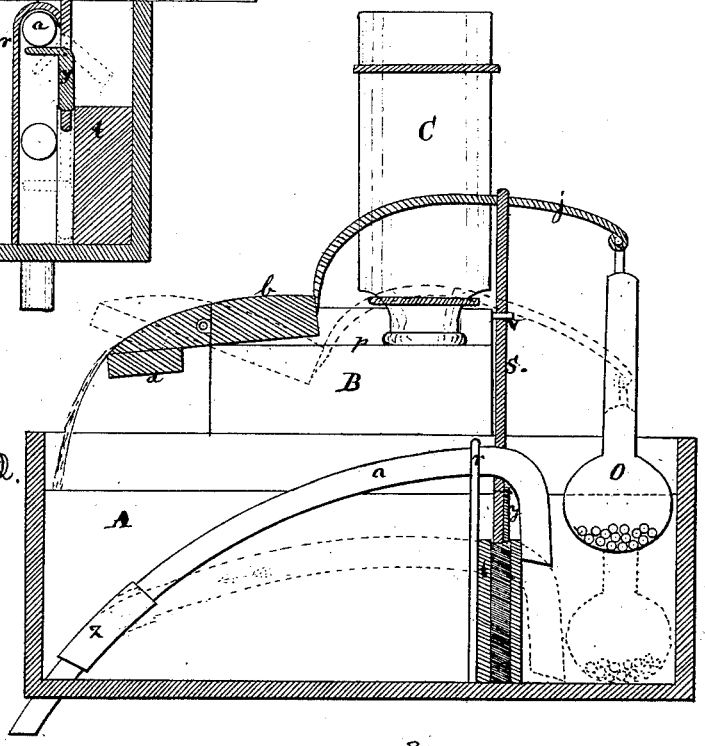
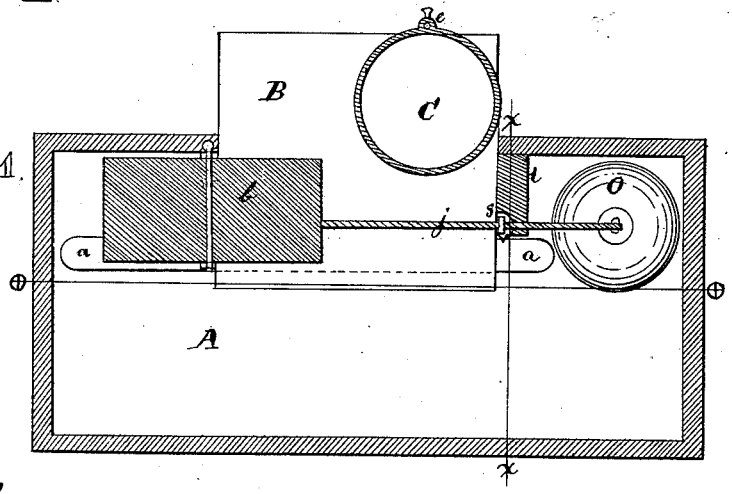


Fig 1.



Witnesses.

Joab B. Rogers

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WILLIAM S. LAIGHTON, OF NORWICH, CONNECTICUT.

Letters Patent No. 108,158, dated October 11, 1870.

IMPROVEMENT IN APPARATUS FOR PRECIPITATING GOLD AND SILVER FROM SOLUTIONS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, WILLIAM S. LAIGHTON, of Norwich, in the county of New London and State of Connecticut, have invented an Improved Apparatus for Precipitating Gold and Silver from Solutions; and do hereby declare the following to be a full and correct description thereof, reference being had to the accompanying drawing making part of this specification and to the letters and numbers of reference marked thereon, similar letters and numbers being used in all the figures to denote the same part.

In the drawing—

Figure 1 is a top plan.

Figure 2 is a longitudinal vertical section, taken in direction of line ⊕ ⊕, fig. 1.

Figure 3 is a vertical cross-section, taken in direction of the line *x x* in fig. 1.

The nature of my invention consists in combining two vessels, one to receive the solution to be precipitated, and the other the precipitant; and connecting them by an automatic apparatus that shall deliver a certain quantity of the precipitant into the other vessel, every time it is filled, and provide for the discharging of the same, the quantity of the solution that receives the precipitant measured out, being governed by a hydrometer or hydrometric float, which is used to operate the apparatus.

It is intended mainly for the use of photograpers, to recover the silver and gold from their waste material and washings of pictures, &c.

That others may be enabled to make and use it I will proceed to describe its construction and operation.

A is a box, made of wood, glass, or other material, suitable to hold solutions of the metals in acids.

B is another box, placed above A, and fastened to it, to hold a solution of salt and water, or other precipitant.

a is a siphon, having one leg extending through the bottom of the box A, and it is made flexible near that end, by means of a section of rubber tube, *z*, or otherwise, so that the other end of the siphon may be easily raised.

b is a small pan with three sides, and is hung on a rod, *w*, in a notch made to receive it in one side of the vessel B.

S is an upright rod, its lower end sliding in a groove in the block *t*, and its upper end in a hole in the projection *v*.

Near the lower end of this rod is a small knee-lever, *y*, hung on the rod, so that one arm is horizontal, and the other, being heavier, hangs down, (see fig. 3.)

At the upper end of this rod S is a hole, through which the lever *j* passes, which is attached to the end of the pan *b*.

This lever extends some ways beyond the rod S, and has a hydrometer or float, O, hung on its end.

C is a bottle, reversed, and held by a support, *e*, on the side side of the vessel B, its mouth being placed at the height *p*, at which it is desired to keep the solution in B.

This device has long been used to keep a fluid at a certain height in a vessel.

The operation is as follows:

The vessel B is filled with the saline solution, or other precipitant, and also the bottle C, which is then placed, as described; then the nitrate of silver, or other solution to be precipitated, is poured into the box A, all at once, or in small quantities, as it is made (in photography) in developing or washing pictures, until the box A is filled so full as to cause the hydrometer O to rise high enough to tip the pan *b*, which is weighted at *r*, to balance its contents, far enough to empty what fluid it received, when down, over into the box A. The siphon *a* is also carried up at the same time by the rod S, and the knee-lever *y*, on the horizontal arm of which it is caught, keeping the bend of the siphon above the surface of the solution in A, until the rod has risen so high that the lower arm of the knee-lever *y* is out of the groove in the block *t*, and at liberty to swing back, (see fig. 3,) and let the siphon drop, and, as soon as it is beneath the surface of the fluid in A, it begins to run out through it, and continues to until the box is empty. In the meantime the hydrometer has descended, and drawn down the lever *j* and rod S, causing the knee-lever *y* to pass down by the siphon, so that its horizontal arm shall fall below it, in position to catch it when it rises again, (see fig. 3,) and the pan *b* has been tipped back by the lever *j*, so that it will fill with the saline solution again, in readiness to repeat the operation.

If the solution in the box A is weak, the hydrometer will stand lower in it, and consequently the box will have to be filled fuller to raise the hydrometer high enough to empty the pan *b*, and cast off the siphon; but if the solution in A is strong and requires more precipitant, the hydrometer will stand higher in it, and will, consequently, empty the pan *b*, and drop the siphon before the box is so full, and the same quantity of the precipitant will be put in a lesser quantity of the solution in box A, thus proportioning the amount of precipitant to the strength of the solution to be precipitated.

From the box A the mingled solutions are received into a vessel, and the precipitate caught on a filter, or they may be allowed to stand until all the metal is precipitated. By raising or lowering the bottle C on

its support, the amount of precipitant taken in the pan each time may be increased or diminished.

Having thus described my apparatus,

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the hydrometric float O in the vessel A with the pan *b* arranged in the vessel B, for the purpose of delivering automatically a precipitant into a metallic solution, substantially as described.

2. The combination of the siphon *a* and knee-lever *y* with the hydrometric float, substantially as and for the purpose set forth.

3. The combination of the vessel A, constructed with a float, O, siphon *a*, and knee-lever *y*, with the vessel B, constructed with the pan *b* and inverted vessel C, substantially as described.

WILLIAM S. LAIGHTON.

Witnesses:

JOAB B. ROGERS,

WEBSTER PARK.