

G. A. SCHERPF.

PROCESS OF PARTING GOLD, SILVER, AND COPPER.

No. 52,325.

Patented Jan. 30, 1866.

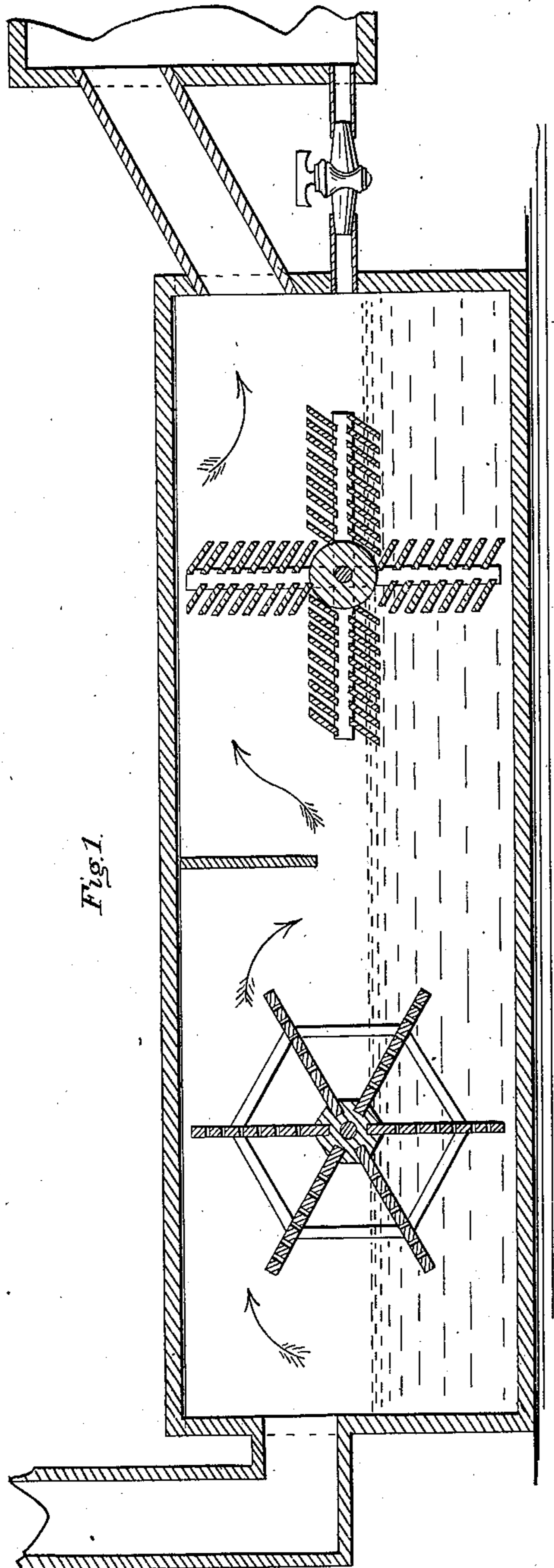


Fig. 1.

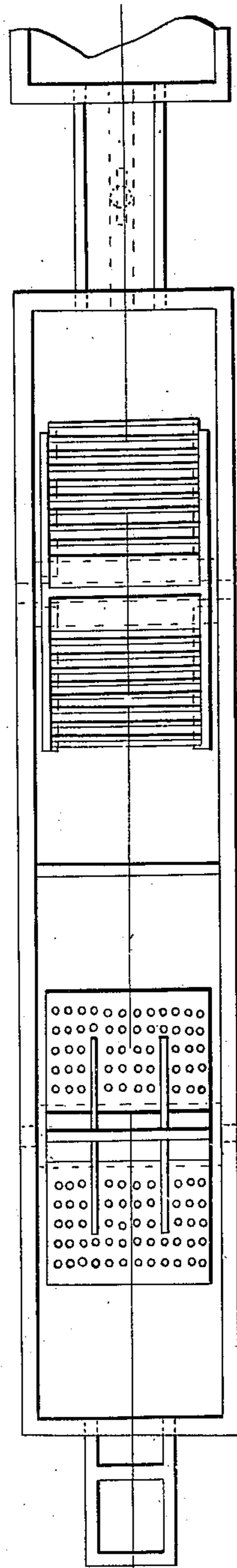


Fig. 2.

Witnesses.

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# UNITED STATES PATENT OFFICE.

GEORGE A. SCHERPF, OF HOBOKEN, NEW JERSEY.

## IMPROVED PROCESS FOR PARTING GOLD, SILVER, AND COPPER.

Specification forming part of Letters Patent No. 52,325, dated January 30, 1866.

*To all whom it may concern:*

Be it known that I, GEO. A. SCHERPF, of Hoboken, State of New Jersey, have invented a new and useful Improvement in the Process of Parting Alloys of Gold, Silver, and Copper; and that the following is an exact description thereof.

In the process of refining or parting the above-named metals by sulphuric acid, a part of the acid has to part with one atom of oxygen to the silver and copper, and is transformed into sulphurous gas. Another part of it also escapes from the dissolving-vessels as sulphuric-acid vapor. Both these gases are commonly lost and carried into the atmosphere, where they are cooled and condensed, and descend into the lower strata of air, to the great annoyance of persons, and the detriment of the vegetation in the vicinity.

My invention aims at obviating this nuisance and recovering the sulphuric acid and sulphurous gas with marked advantage.

I lead, by means of covers and pipes of lead, iron, or stone ware applied to the dissolving-kettles, these gases (or vapor) either upward or in straight line, or downward, according to the locality into an apparatus of such form or construction as the locality will allow, as *fi*, a square box of convenient length, laid out with lead or made water-tight by any acid-resisting means and filled with a suitable material, offering enough passage-way to the gases, as *fi*, broken pieces of crockery, earthen pots, coke, lumps of pumice-stone, perforated plates of slate, or small earthen tubes, or any material resisting the acids; or a tower or high and narrow cask, commonly called a "shrubber," similarly filled or full of perforated plates between which the gases can circulate downward.

Such a box or tower is overlaid, under its cover, with a perforated lead plate, upon which a pump of sufficient force throws a constant stream of water, drawn from the bottom of the box or tower, or from a separate reservoir communicating with the box, which runs in all directions through the filling in its descent to the bottom. The gases are thereby brought into a greatly-multiplied contact with the water, which absorbs them, but retains only the sulphuric-acid vapor, forming, according to the time it is kept in use, a more or less diluted sulphuric acid, which can be made use of for any purpose.

The sulphurous gas escapes again from this box or shrubber through a pipe connected with another apparatus of the following description. (See drawing annexed.) In an oblong box, proportionate in size to the quantity of gas produced, in the proportion of about twenty inches wide, three feet high, ten feet long, two wooden paddle-wheels revolve, each with four, five, or six paddles, either plain and full, or perforated, as per drawing annexed, A *a*, or made of two arms between which small seats are inserted in a slanting position or at right angles, A *b*. The revolving of these wheels or paddles by steam or other power in the direction from the end where the gas enters to that where it would go out (if it was not absorbed) creates a current or draft which draws the gas through the whole apparatus, (which is everywhere to be closed air-tight,) while the wheels also agitate the liquid contained in the lower half of the box, and are themselves constantly covered with this liquid, and consequently bring it in constant contact with the sulphurous gas, both forming a new compound.

I name here the liquids which are the most convenient and the compounds produced:

LIQUID USED.	PRODUCT.
1. Solution of caustic or carbonate of soda, or any other alkali.	- Sulphite of the alkali used, which can be used as such or converted into a hyposulphite by a subsequent process.
2. Solution of sulphuret of soda, or any other alkali.	Hyposulphite and free sulphur as a precipitate, or, when a solution of the same alkali, (not sulphuret,) had been added, a larger amount of the same hyposulphite.
3. A solution of sulphuret of lime.	Hyposulphite of lime, from which can be made by decomposition with sulphates, any other hyposulphite.
4. Water and slaked lime in certain proportions.	Bisulphide of lime, a powerful bleaching liquid.
5. Simple water, in which case a box or shrubber like that described above (without paddles) can also be used.	Sulphurous acid, for bleaching animal matter or used in refining sugar.

Or, instead of all this, a chamber with many shelves can be made, between which the gas can circulate over layers of caustic lime when the product will be monosulphite of lime, also very convenient for bleaching or other purposes.

This apparatus, box, shrubber, or chamber is connected by a pipe for the gases, and another for the liquid, if such are used; with a second one, exactly similar, on a higher level or position. In this any sulphurous gas not absorbed in the first is absorbed, and when

the liquid in the first box is saturated and withdrawn, the filling of the second box is run into the first, and the second receives a fresh charge. From this second box, other gases, which are produced by the absorption of the sulphurous gas, such as hydrosulphuret, carbonic acid, in certain cases, are led into a chimney, or the atmosphere.

I do not claim as my invention the making of the above-named compounds, or any others; but

I do claim—

The combination of this production of such or any other compounds whereof sulphuric acid or sulphurous acid is one of the first bases, with the parting of the above-named metals by sulphuric acid, as described herein.

Hoboken, August 1, 1865.

GEO. A. SCHERPF.

Witnesses:

MORITZ MARCUS,  
GEORGE STRUSS.