

H. SCHAFER.  
Ore-Separators.

No. 151,547.

Patented June 2, 1874.

Fig. 1.

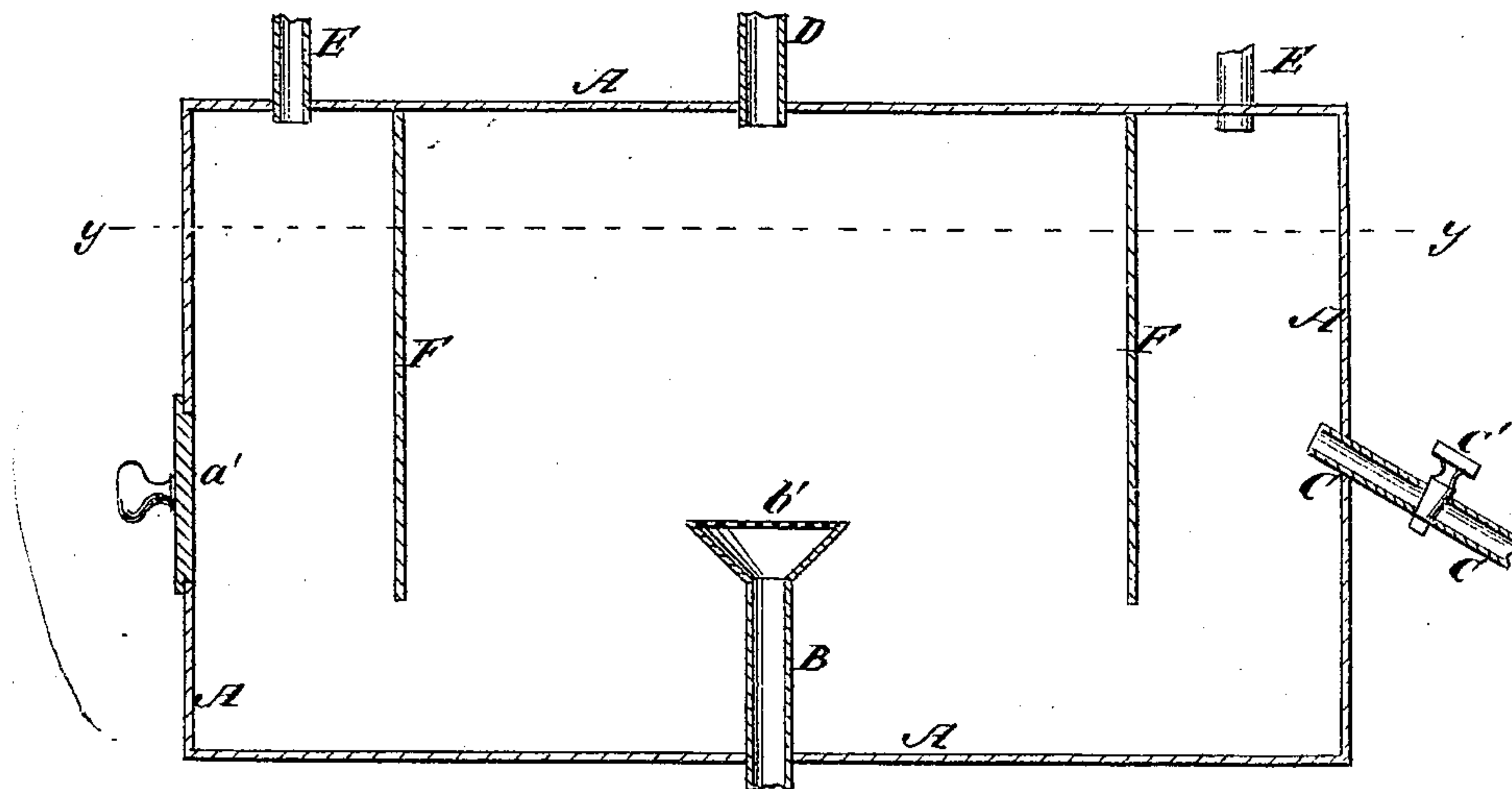
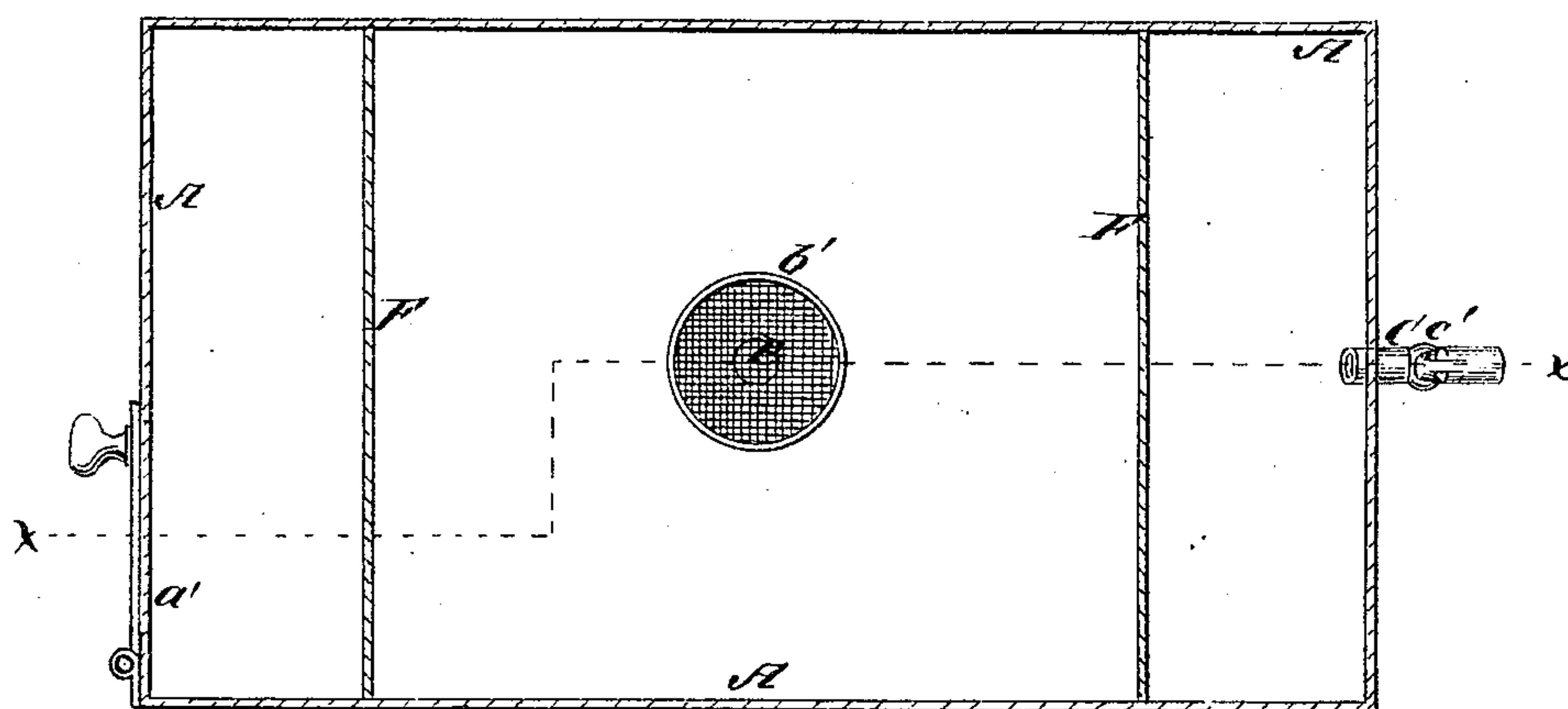


Fig. 2.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

HERMAN SCHAFER, OF CHICAGO, ILLINOIS.

## IMPROVEMENT IN ORE-SEPARATORS.

Specification forming part of Letters Patent No. 151,547, dated June 2, 1874; application filed March 28, 1874.

*To all whom it may concern:*

Be it known that I, HERMAN SCHAFER, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Condensers, of which the following is a specification:

Figure 1 is a vertical section of my improved condenser, taken through the line *x x*, Fig. 2. Fig. 2 is a horizontal section of the same, taken through the line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts.

My invention relates to an improved apparatus for use with blast and other furnaces in condensing, from the fumes of certain metals, as gold, silver, and lead, the fine particles which they otherwise carry off. The improvement consists in the construction and arrangement of parts hereinafter described and specifically claimed, whereby a simple and inexpensive, yet thoroughly efficient, apparatus is produced.

A is an air and water tight tank, made of sheet-iron or other suitable material, and which may be made of any required size, according to the number of furnaces to be connected with it. For two furnaces it may be about twenty feet long, eight feet high, and six feet wide. These dimensions may, however, be varied as desired, or as circumstances may render convenient. B is a water-pipe leading in through the bottom or lower part of the tank A, and the upper end of which should be two or three feet below the mouth of the escape-pipe or chimney, and is provided with a perforated cap, strainer, or sprinkler, so as to introduce the water in the form of spray. The water is maintained at the proper depth by a discharge-pipe, C, leading out through the end or side of the tank A. The pipe C should be made in the form of a siphon, so that its inner end may always be beneath the surface of the water, and its outer end should be provided with a stop-cock, *c'*, to enable the outflow of the water to be regulated as desired. D is the escape-pipe or chimney, which should be connected with the middle part of the top of the

tank, or, rather, with the middle part of the top of the escape-compartment of said tank. E represents pipes leading from the furnace or furnaces, and which also pass in through the top of the tank A. The part of the tank A into which each pipe E enters is separated from the part into which the escape-pipe or chimney D enters by a partition, F, which extends from the top of the tank A to within two feet, more or less, of the surface of the water in the lower part of said tank A.

With this construction the fumes, &c., entering through the pipes E vaporize the water, so that the tank is filled with steam or vapor, which condenses the fine particles of metal, and causes them to drop into the lower part of the tank A. The fumes, &c., that enter through the pipes E must pass beneath the lower edge of the partitions F before they can enter the escape-pipe D, and as they are entering the said escape-pipe D they are exposed to the spray from the sprinkler *b'*, by which any particles that may have passed beneath the partitions F are removed and caused to drop into the lower part of the tank A. In some convenient part of the tank A is formed a door, *a'*, through which the solid particles from the bottom of the said tank A may be raked out.

The condenser may be used without water in its lower part; but I prefer to use the water, as it makes the condenser more effective.

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

The improved condensing apparatus formed of the tank or case A, having the central spray-pipe B *b'* and escape-pipe D, the inlet-pipes E E, the two vertical hanging partitions F F, and discharge C C', all constructed and arranged as shown and described, to operate as specified.

HERMAN SCHAFER.

Witnesses:

GOMER THOMAS,  
P. B. FEENEY.