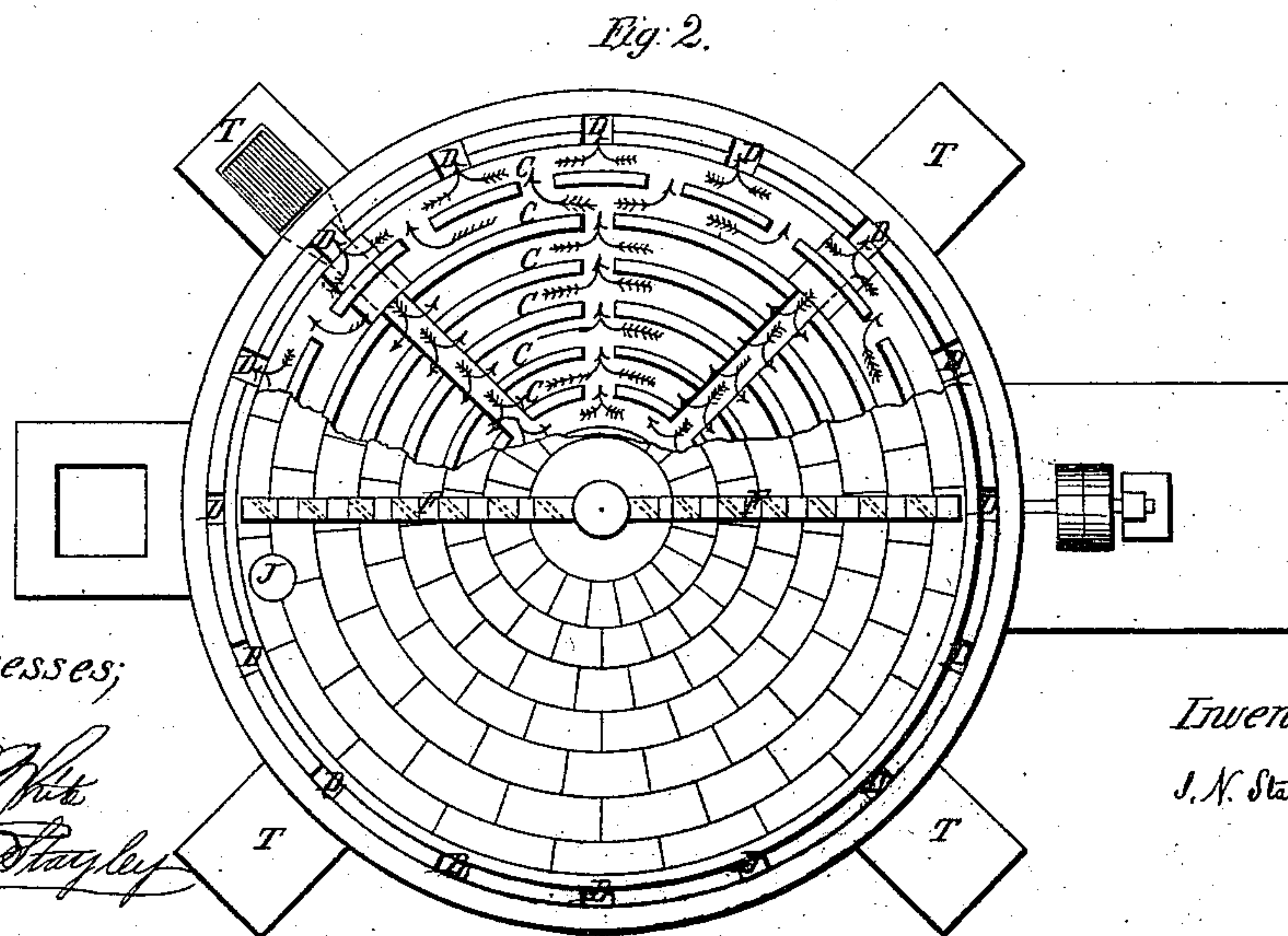
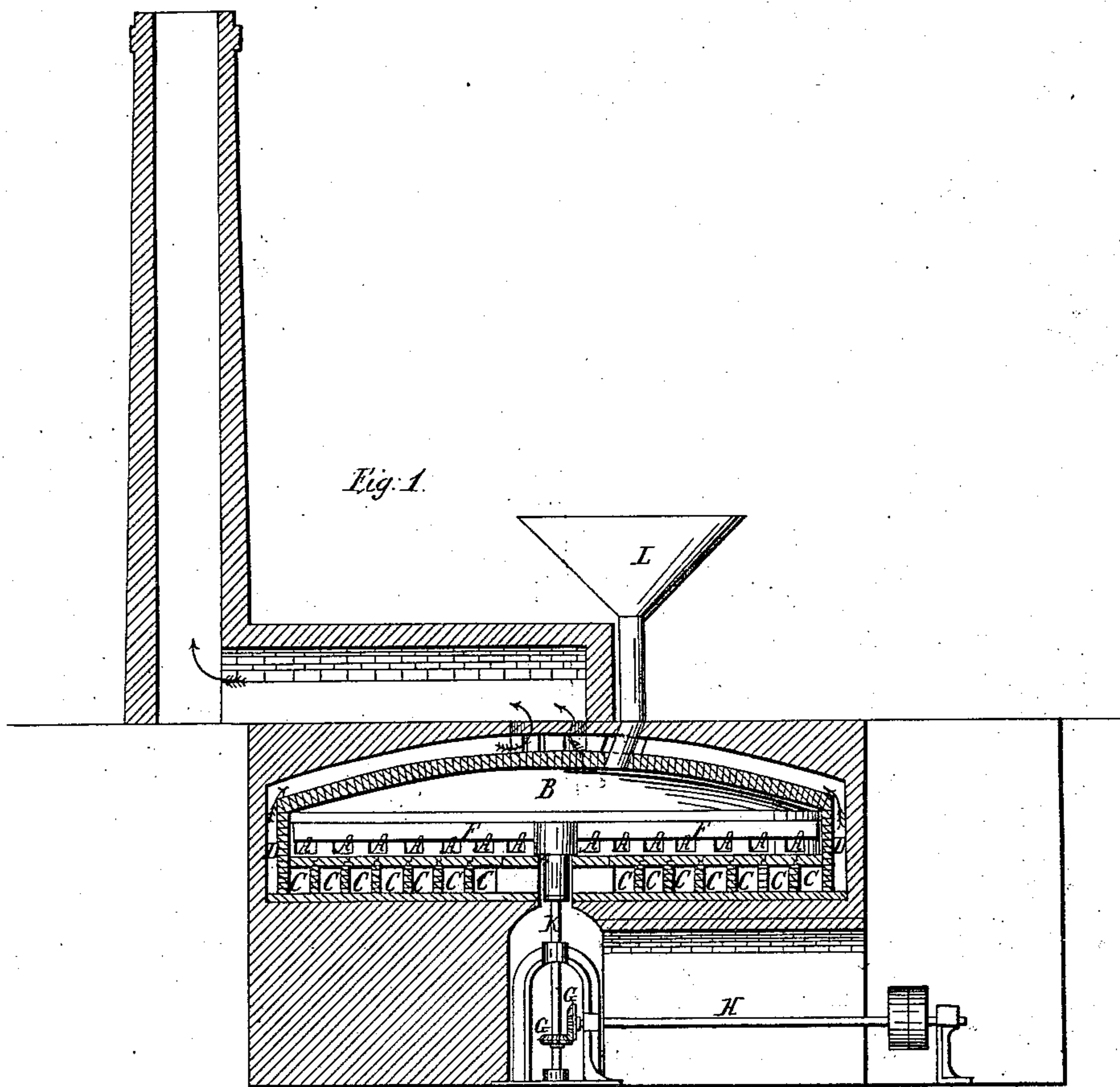


I. N. STANLEY.  
APPARATUS FOR DESULFURIZING ORES.

No. 61,577.

Patented Jan. 29, 1867.



Witnesses;

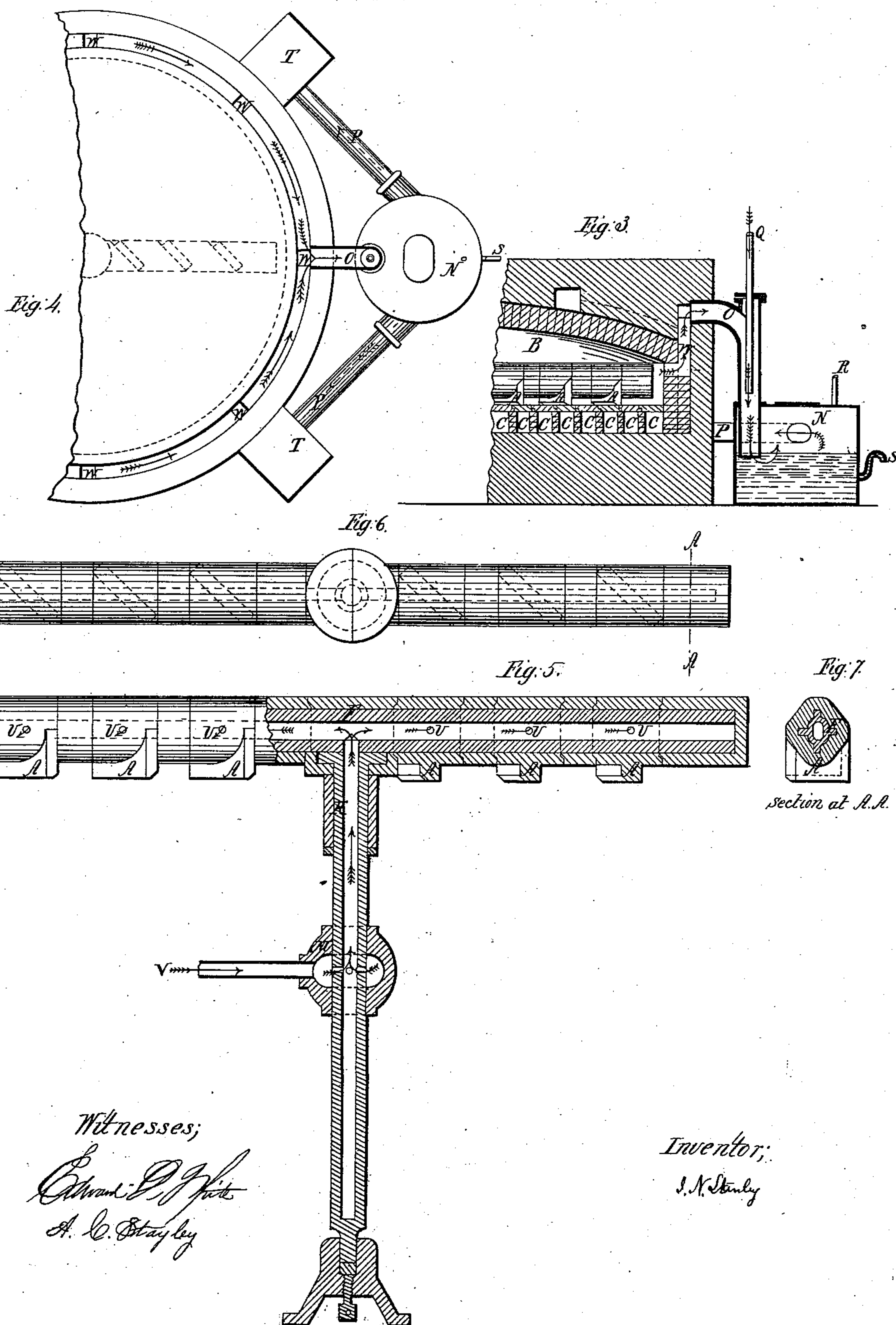
*Edward G. White*  
*Arthur G. Stanley*

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APPARATUS FOR DESULFURIZING ORES.

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Witnesses;

*Edward P. Felt*  
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# United States Patent Office.

I. N. STANLEY, OF BROOKLYN, NEW YORK.

Letters Patent No. 61,577, dated January 29, 1867.

## IMPROVED APPARATUS FOR DESULPHURIZING ORES.

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

### TO WHOM IT MAY CONCERN:

Be it known that I, I. N. STANLEY, of Brooklyn, county of Kings, and State of New York, have invented a new and improved mode of Desulphurizing Gold, Silver, and other Ores, and pyritous substances constructed of fire-clay, plumbago, enamelled iron, or any refractory material, as herein set forth; and I hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference thereon.

The nature of my invention consists of a furnace or oven of circular form of any suitable size. The floor upon which the ore is roasted is constructed of fire-clay, tile, or brick, or any other refractory material. The conveyers A A are also constructed of fire-clay, or any other refractory substance. The upright shaft K, which is exposed to the action of gases and heat, is also covered and protected by the same material of which the conveyers are made, as shown on sheet No. 2, figs. Nos. 5 and 7; and arms F F, upon which conveyers A A are placed, are entirely protected from the action of the heat and gases by the conveyers themselves. The furnace or oven is so constructed that the heat is conveyed uniformly under the floor or hearth, and extending over the top of the furnace by flues conducting it to the chimney under a drying-floor, (should it be needed.)

The method of operating my furnace is as follows: The ore pulverized is placed into a hopper near the centre of the furnace, and is conveyed through a tube of fire-clay or other material of a refractory nature, near the centre of the oven B, and is from thence conveyed in a circular manner from the centre to the circumference, where it passes through an opening, J, into a receiver for amalgamation or other treatment.

To enable others to make and use my invention, I describe its construction and operation.

In the construction of this oven, I provide openings through the walls or arch, at convenient points, for the purpose of inspection and other uses, as employed in ordinary furnaces; and in applying the power for the operation of shaft and conveyer arms, I do not confine myself to the arrangement of shaft below, as shown by fig. 1, as it may be more convenient in some cases to apply the power from above; nor do I confine myself to the use of gears G G, as it may be desirable to substitute a worm and gear instead. In arranging the conveyers A A, as hereinafter described, the object is twofold: first, to move the ores or other material, when being treated, by a conveyer that cannot be affected by the action of the heat and gases to which they are exposed; and second, to protect the arms F F from the action of the same destructive elements so detrimental to desulphurizers heretofore constructed. In the arrangement of the condenser N and its connecting pipes O, P, and Q, the object is also twofold: first, oven B is exhausted by a jet of steam or air as applied forcing the gases through water, thereby preventing any loss of the precious metals; second, the utilization of the gases and steam after passing through the water to the furnace, as described hereafter. The advantages of the hollow shaft K and arms F F, as a means of conveying oxygen to the desired point in the treatment of ores, &c., will be understood and appreciated by all who know what is required in the proper treatment of minerals, and also for the introduction of chlorine gas, useful in the treatment of silver ores, and as affording additional protection to said shaft and arms from heat to that which they receive from the conveyers A A, &c. But I do not confine myself wholly to this mode of supplying oxygen to the ores when being treated, as it may be important to admit it at other points.

### Sheet No. 1.

Figure 1 is a sectional elevation of oven B, with arms F F, conveyers A A, hopper L, upright shaft K, horizontal shaft H, with gears G G, flues C C and D D.

Figure 2 is a plan showing arms F F, flues C C and D D, furnaces T T, T T, and outlet J.

### Sheet No. 2.

Figure 3 is a section of oven B, showing the passage of the gases or volatile matter from said oven B through opening W and pipe O to condenser N, thence through pipe P P to the furnaces T T, also steam jet Q, water inlet R and outlet S, together with flues C C, and conveyers A A.

Figure 4 is a plan showing the position of the openings W W for gases, &c., leading from the oven B to condenser N and furnaces T T through pipes O and P P.

Figure 5 shows a section of shaft K and arms F F, which are made of iron or other metal, with the conveyers A A, openings W W, box or jacket M, and connecting or inlet pipe V for the admission of oxygen.



Figure 6 is a plan of conveyers A A, the blades of which are seen by dotted lines.

Figure 7 is a sectional or end view of arm F with conveyer A.

What I claim as my invention, and desire in Letters Patent, is—

1. An oven B, revolving arms F F, and upright shaft K, operated by means of gears G G and horizontal shaft H, or their equivalents, substantially as described.
2. I claim the conveying the ores or other material, while being operated upon, from the central part of oven B to the circumference, and there discharging them, or from the circumference to the centre, as may be desired, by means of conveyers A A connected to arms F F, as shown on fig. 5, substantially as described.
3. I claim the use of fire-clay, plumbago, or graphite, enamelled iron or other metals, or any other refractory material, for the construction of conveyers A A, and for the protection of the upright shaft K and arms F F that are exposed to the action of heat and gases, substantially as described.
4. I claim the construction of flues C C underneath the oven B so as to give a uniform heat, also, flues D D leading from underneath the floor and over the arch of oven B in its passage to the drying-floor or chimney, substantially as described.
5. I claim a stationary floor of the oven B, substantially as described.
6. I claim the supplying the necessary oxygen for the proper treatment of ores, or other material for which the oven may be adapted, through the supply pipe V, box M, shaft K, and arm F F and openings W W, through said arms F F and conveyers A A, thereby preventing the arms F F from becoming too much heated when in action, substantially as described.
7. I claim the outlet W, for conducting gases or other volatile substances, and pipe O with its connections, to condenser N, and the steam or air jet Q, for the purpose of exhausting the gases, &c., from oven B; also chambers, when used in connection with this furnace, which may be required for the treatment of such ores as cinnabar, zinc, lead, &c., or the manufacture of sulphuric or other acids, and for conducting the same through water, thence to the furnaces T T through pipes P P, where both the gases and steam or air are to be used to assist combustion, when not otherwise disposed of, thereby economizing fuel, substantially as and for the purposes described.
8. I claim the hollow shaft K and arms A A for the purposes named in the foregoing specifications or their equivalent, substantially and for the purposes described.

I. N. STANLEY.

Witnesses:

R. P. WILSON,  
JOSEPH J. DAY, Jr.