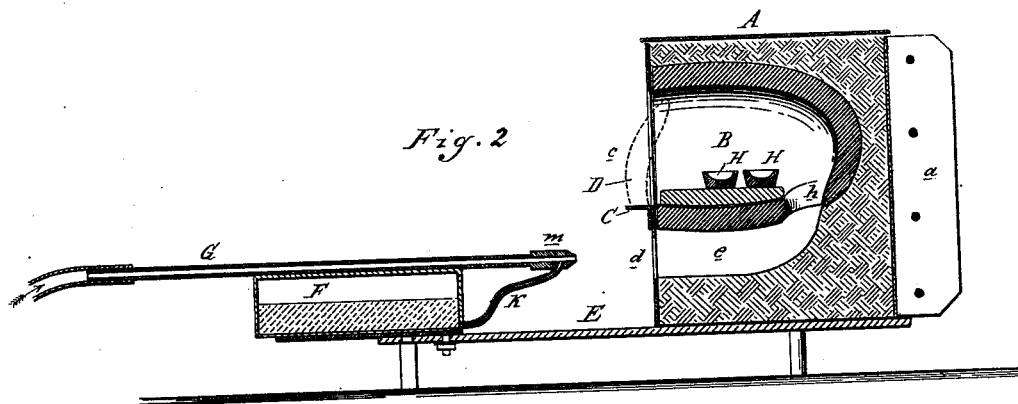
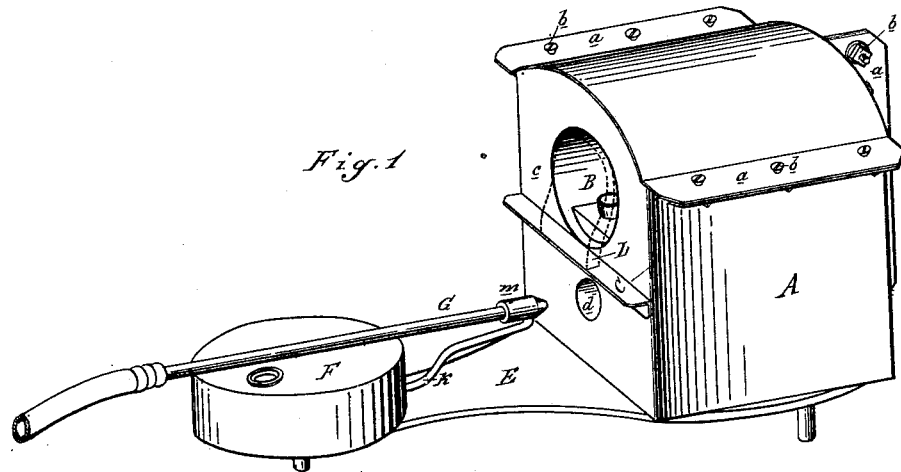


S. G. WIGHT.  
Cupel-Furnace.

No. 220,895.

Patented Oct. 21, 1879.



Attest:

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# UNITED STATES PATENT OFFICE.

STANLEY G. WIGHT, OF DETROIT, MICHIGAN.

## IMPROVEMENT IN CUPEL-FURNACES.

Specification forming part of Letters Patent No. **220,895**, dated October 21, 1879; application filed June 16, 1879.

*To all whom it may concern:*

Be it known that I, STANLEY G. WIGHT, of Detroit, in the county of Wayne and State of Michigan, have invented an Improvement in Cupel-Furnaces, of which the following is a specification.

The nature of my invention relates to certain new and useful improvements in the construction of that class of furnaces usually employed in making assays of ores containing precious metals, whereby such a furnace, perfect in its operation and results as any that are in use, can be so reduced in size as to weigh but a very few pounds, adapted to be carried by the exploring assayer into his field of operations, that the character and value of the ores can readily be determined at the point where discovered, and thereby avoiding the necessity heretofore existing of carrying the ores to some point frequently at a long distance from their source; and the invention consists in the cupel-furnace heated by hydrocarbons, composed of the shell secured together in sections, a crucible supported in a luting of fire-clay and asbestos, a flue beneath the crucible, an opening connecting the rear ends of the flue and crucible, and a ledge at the mouth of the crucible, all mounted upon a suitable base, as fully hereinafter explained.

Figure 1 is a perspective view of my improved furnace, partially broken away to show the interior, and in section. Fig. 2 is a vertical longitudinal section.

In the drawings, which form a part of this specification and accompany it, A represents a shell, made of thin sheet-metal sections, each section being provided with flanges *a*, by means of which and suitable bolts or rivets, *b*, the sections are secured together. This shell forms the outer covering at the top and four sides, and is imperforated, except as shown at *c*, in the front, for the purpose of obtaining access to the interior, and at *d*, also in the front, for the admission of the necessary blast.

A small crucible, B, is inserted within this shell, laid upon its side, so that the top or mouth of this crucible is presented at the opening *c*. The interior of the shell is then filled with a mixture of fire-clay and asbestos, which,

surrounding the crucible, holds the same in place. This mixture is inserted from the top of the shell, which is left open for that purpose, and afterward the top section of the shell is secured in place, and a flue, *e*, is formed in this mixture or luting, coincident with and extending from the opening *d* (and immediately under the crucible) to a hole or aperture, *h*, in the side of the crucible, by means of which communication is had between the flue and the interior of the crucible.

A flange-ledge, C, projecting from the front, as shown, is secured below the opening *c*, for the purpose of sustaining a removable stopper, D, (which is preferably made of plumbago,) to be used whenever the fire is first started, and again, for a moment or two, to intensify the heat, at the close of the operation.

This furnace is supported, but not secured thereto, upon a base, E, which is, preferably, an iron plate, prolonged to sustain a closed pan or reservoir, F, which has secured to its top a blow-pipe, G, one end of which is attached to any suitable implement to produce a blast, while the opposite end is inserted, when in use, into the opening *d* in the front of the furnace. A pipe, *k*, leading from the bottom and interior of this pan, enters the blow-pipe near its nozzle *m*.

In practice, the base button to be assayed is placed in proper cupels, H, the pan or reservoir filled with hydrocarbon, the stopper D placed to close, or nearly close, the opening *c* after the cupels have been placed in the crucibles, and the blast applied, when the escaping hydrocarbon is ignited as the gas escapes from the end of the blow-pipe. After the fire is well kindled, and the heat in the crucible has become intense, the stopper D is removed, to be replaced again only a moment or two before the reduction process is complete.

The cost of my furnace is quite small, and its weight not exceeding six or seven pounds, and its size renders it so easily portable that it may be added to the outfit of every expert explorer, to a great saving of time, labor, and expense in sending specimen ores a long distance to be assayed.

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

The cupel-furnace described, wherein hydrocarbons are employed to produce the necessary heat, consisting of the shell A, secured together in sections, as shown, a crucible, B, supported in a luting of fire-clay and asbes-

tus, a flue, *e*, connecting-hole *h*, and ledge C, all mounted upon a base, E, substantially as set forth.

STANLEY G. WIGHT.

Witnesses:

H. S. SPRAGUE,  
A. BARTHEL.