

J. W. SHAEFFER.
Furnace for Metals.

No. 80,020.

Patented July 14, 1868.

Fig. 1.

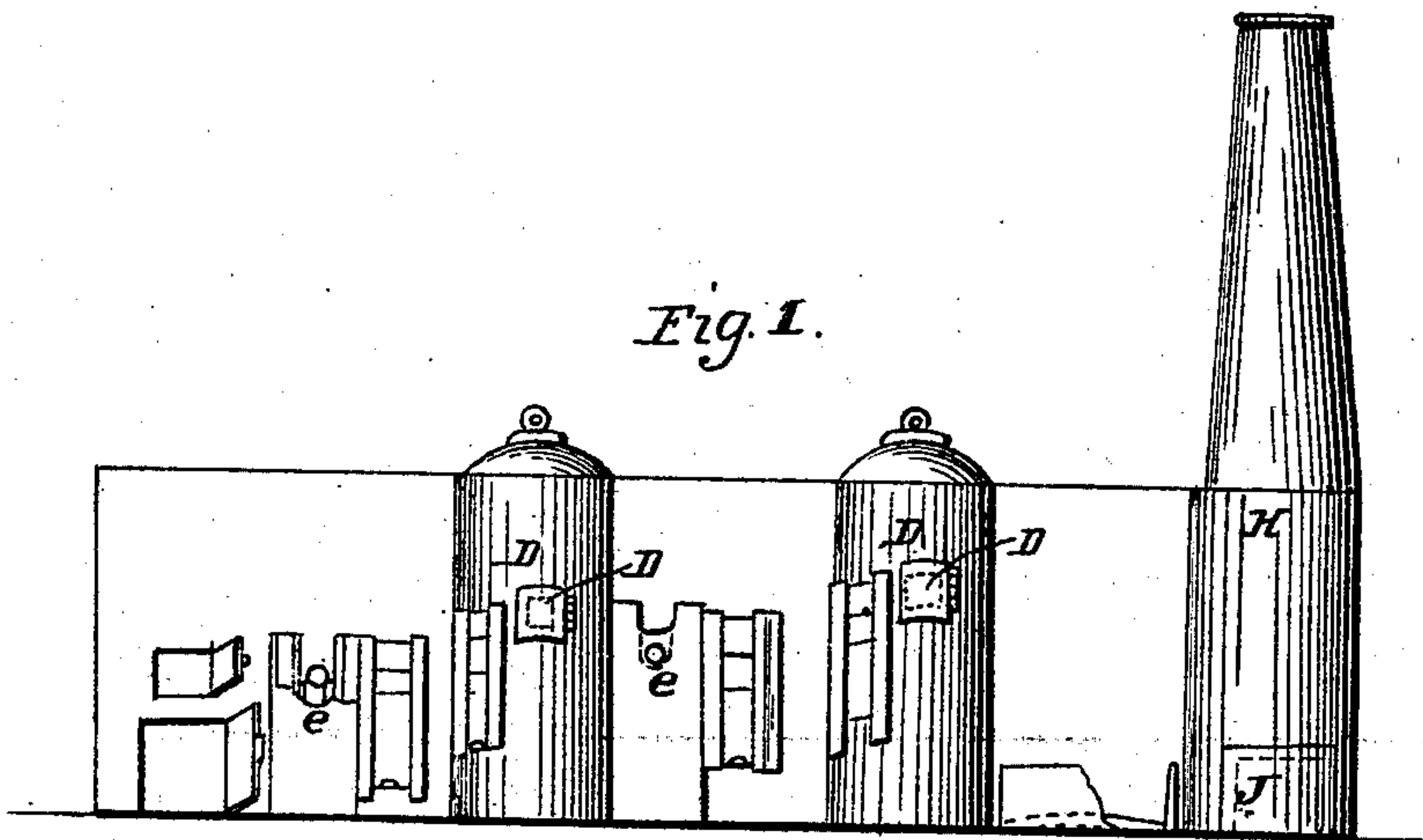
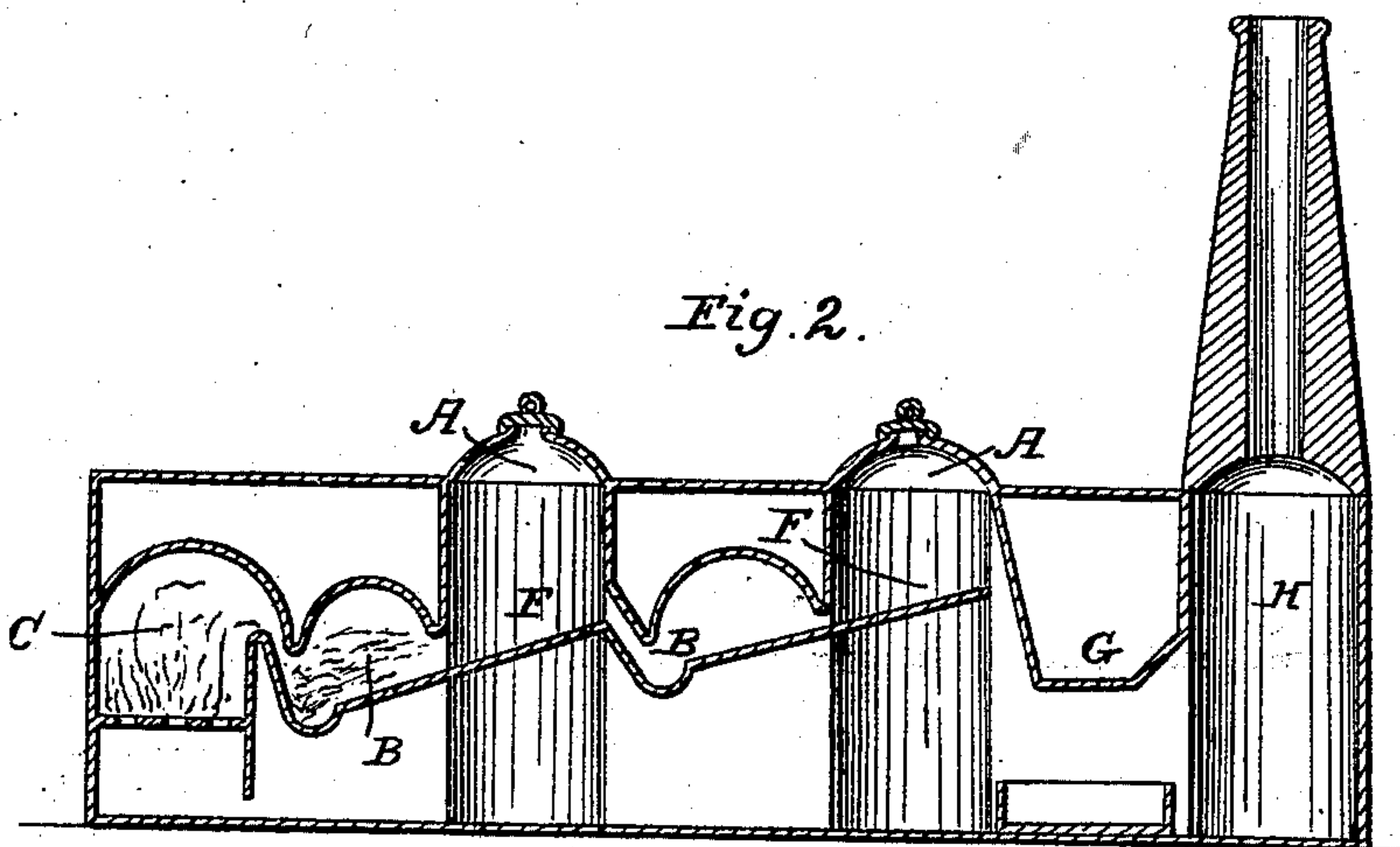


Fig. 2.



Witnesses:
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J. C. Cotton.
04/3/80 out.

Inventor:
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per Munn & Co.
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JOHN W. SHAEFFER, OF RED WING, MINNESOTA.

Letters Patent No. 80,020, dated July 14, 1868.

IMPROVED FURNACE FOR ROASTING AND SMELTING GOLD AND OTHER ORES.

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, JOHN W. SHAEFFER, of Red Wing, in the county of Goodhue, and State of Minnesota, have invented a new and useful Improvement in Furnaces for Smelting Ores; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to improvements in furnaces for smelting and reducing gold, silver, copper, and other ores, whereby many of the objections to the ordinary methods of reducing those ores are overcome.

And the invention consists in the construction and arrangement of hearths, chambers, domes, and flues, as will be hereinafter more fully described.

Figure 1 represents a longitudinal elevation of the furnace, showing the apertures and doors for introducing the ores to be worked, the domes and the stack.

Figure 2 is a longitudinal vertical section, showing the hearths upon which the ores are laid to be reduced, the furnace or fire-box, and the course of the flame and the general operation of the furnace in the process of reducing refractory and other ores.

This furnace combines in its construction all the advantages and powers of the old reverberating and blast furnaces, and is especially adapted to the working of the refractory gold and silver-bearing ores of the Rocky mountains.

The sulphide is readily changed to a sulphate by oxidation, but in the old furnaces a sulphuret was formed by the mingling of the gases, and the process was necessarily incomplete and unsatisfactory.

My furnace is provided with a lofty dome, into which the gases ascend, and where they are kept from uniting again with the matrix, so that a sulphuret cannot possibly be formed in my process.

A represents the domes.

B, the receiving-chambers.

C is the furnace or fire-box.

D represents the apertures for the introduction of the ores.

e represents orifices through which the ores are discharged.

After the ores are brought to a state of fusion, they are precipitated into the chamber B where they are fluxed.

F represents the hearth, upon which ores are laid for smelting.

A blast is used to assist in the process a portion of the time, as may be deemed necessary.

G is a cistern, containing water, against which the currents of gases impinge, and are condensed before reaching the stack H.

J is a door, at the bottom of the stack, for cleaning the same when it may be necessary.

When the blast is used it is driven into the ash-pit through the aperture i in the end of the furnace, (the ash-pit or chamber being closed.)

The blast passes through the fire and is forced directly into the metal bed.

The gases generated on the first hearth rise immediately into the dome, and are carried to the next hearth and metal bed, where they are absorbed by the application of charcoal or wood.

When passed through this furnace, the gold and silver, or other metal, will be drawn from the furnace in nearly a pure state.

These furnaces may be made of any desired size and of any suitable materials.

I claim as new, and desire to secure by Letters Patent—

A furnace for smelting and reducing gold, silver, copper, and other ores, constructed substantially as herein shown and described.

JOHN W. SHAEFFER.

Witnesses:

FRANK IVES,

GEORGE SPREER.