

(No Model.)

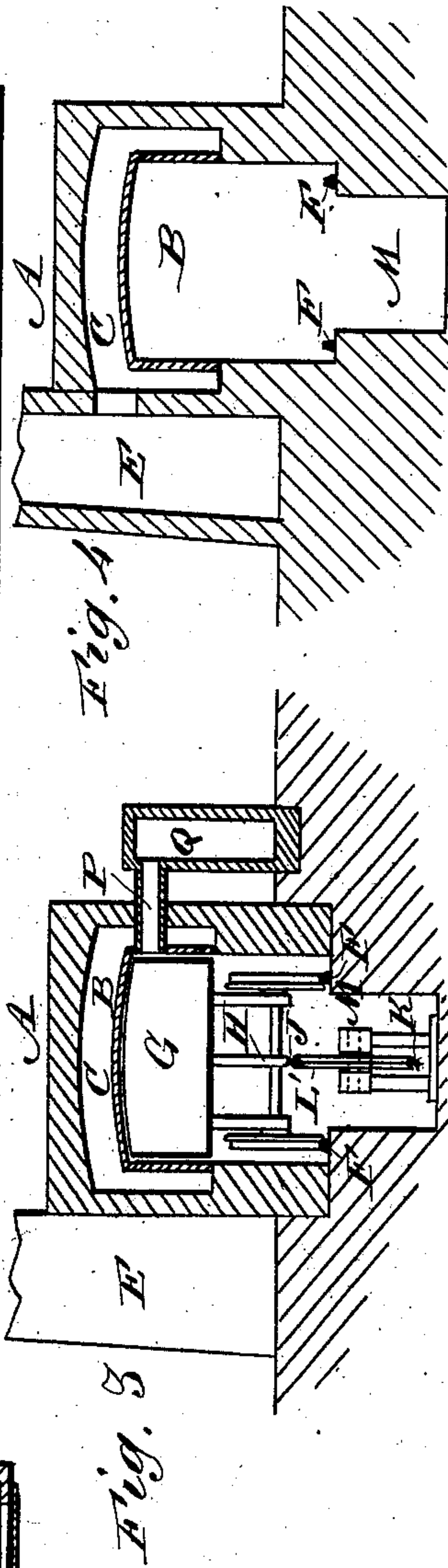
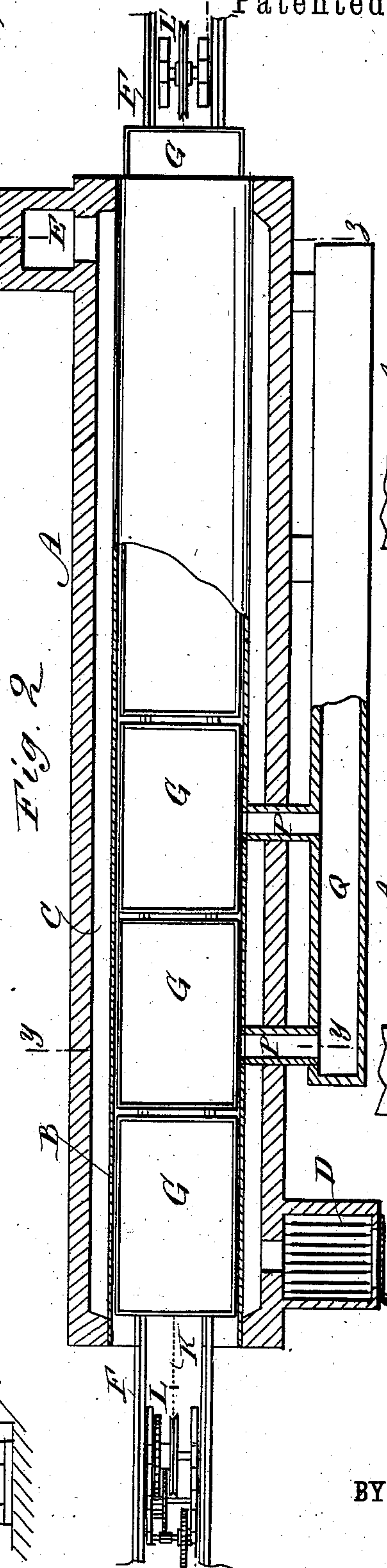
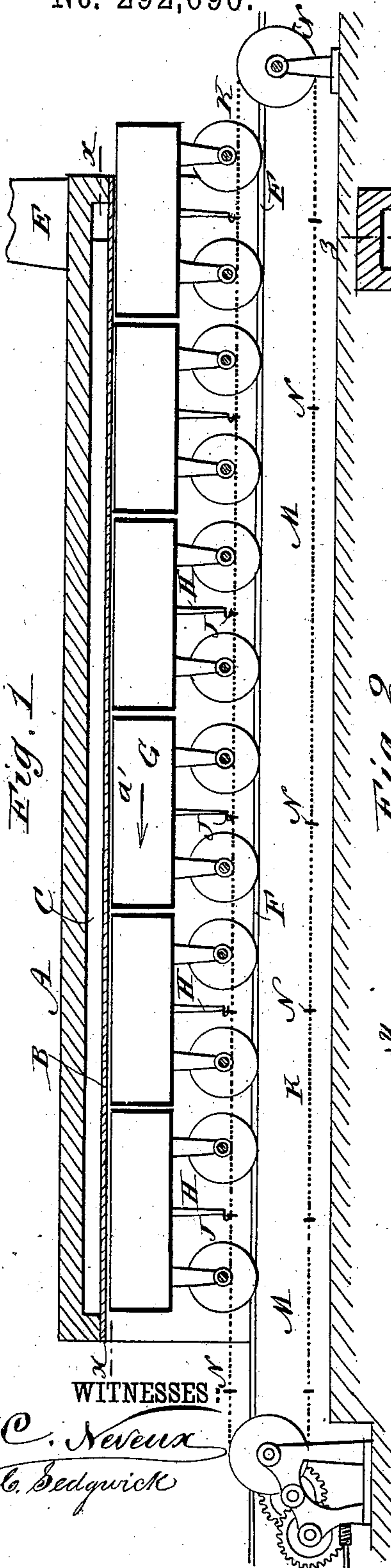
2 Sheets—Sheet 1.

A. M. G. SÉBILLOT.

FURNACE FOR TREATING ORES CONTINUOUSLY.

No. 292,690.

Patented Jan. 29, 1884.



WITNESSES:

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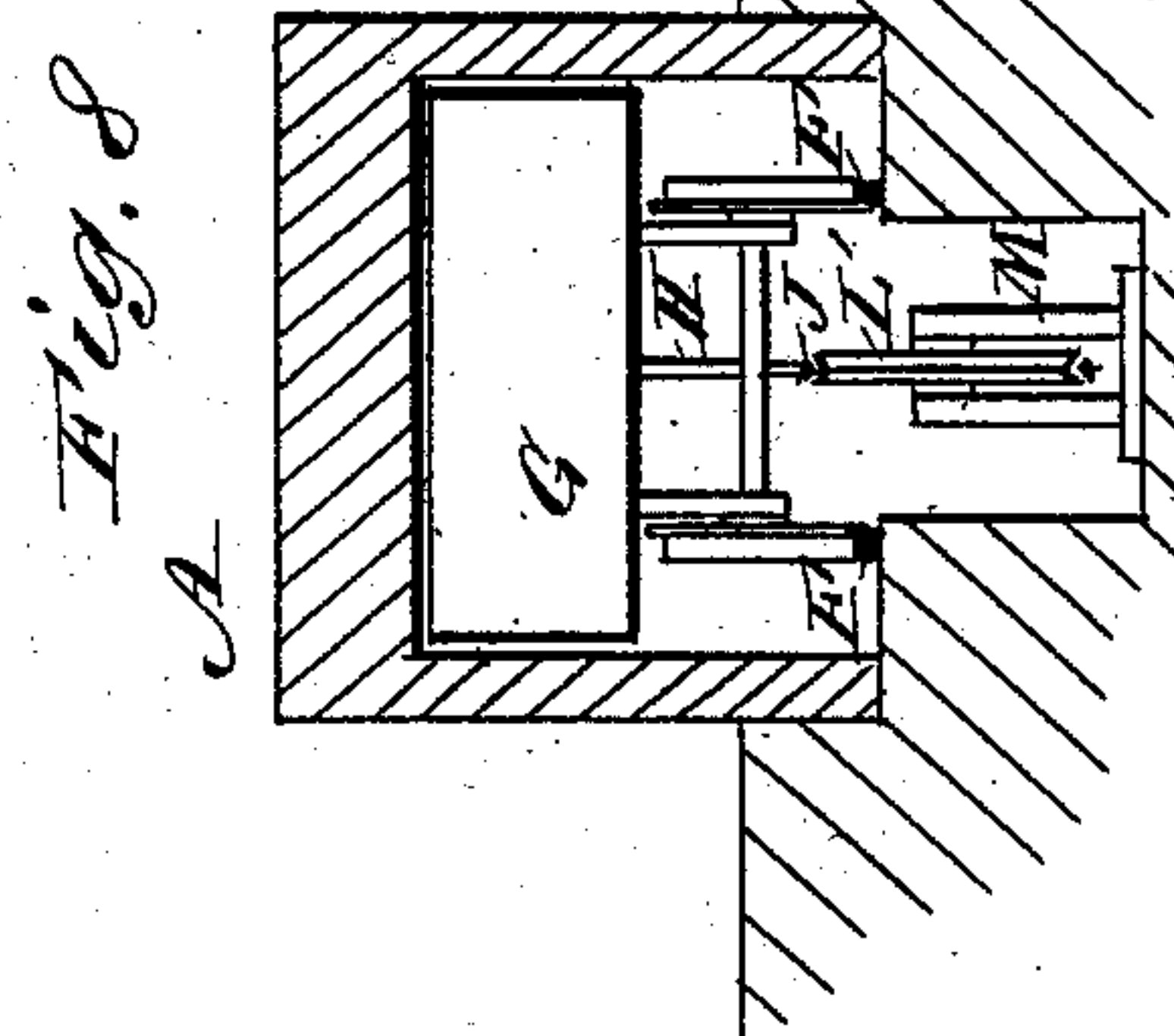
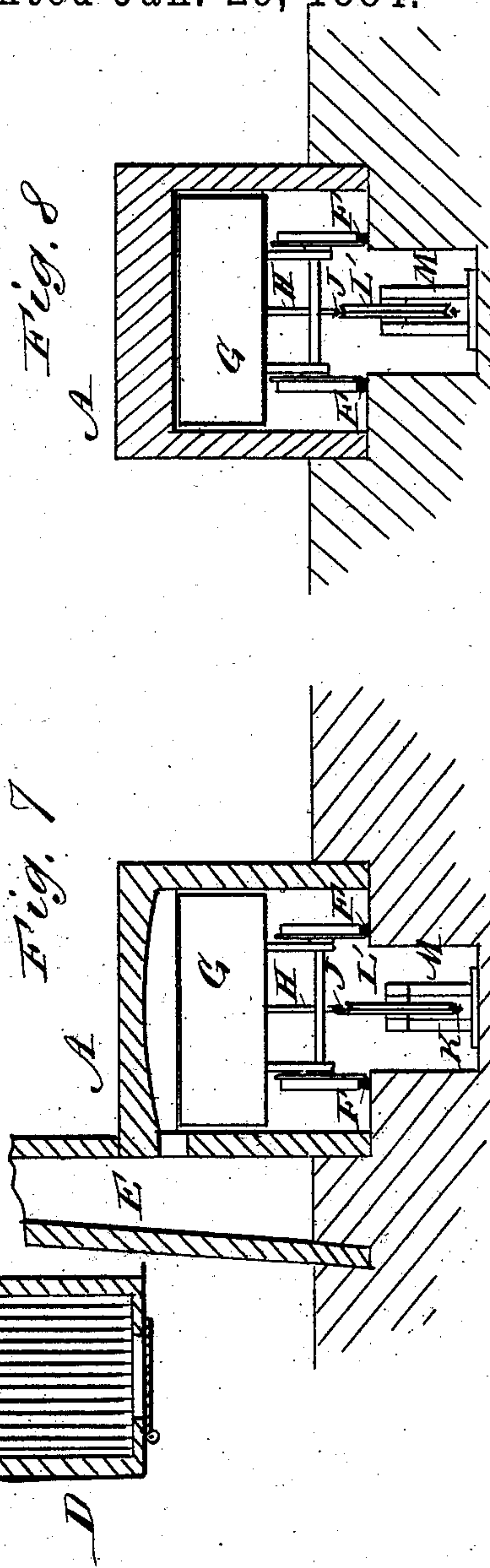
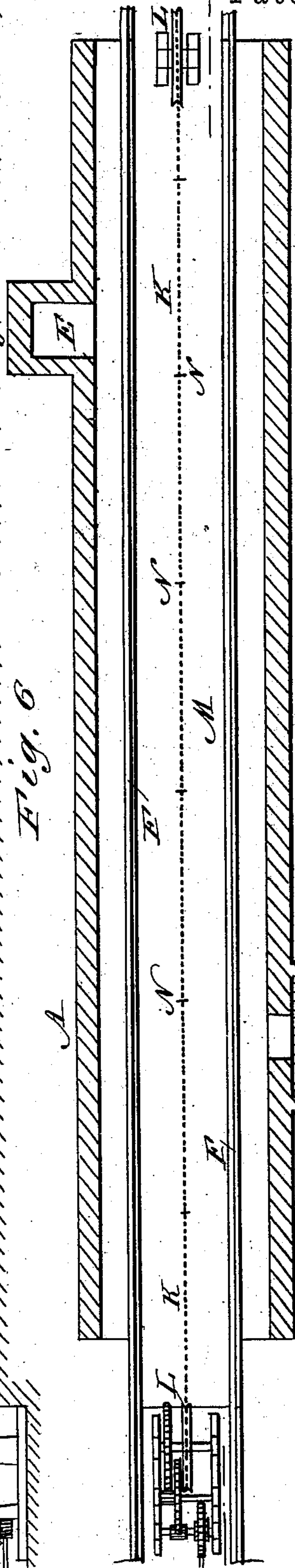
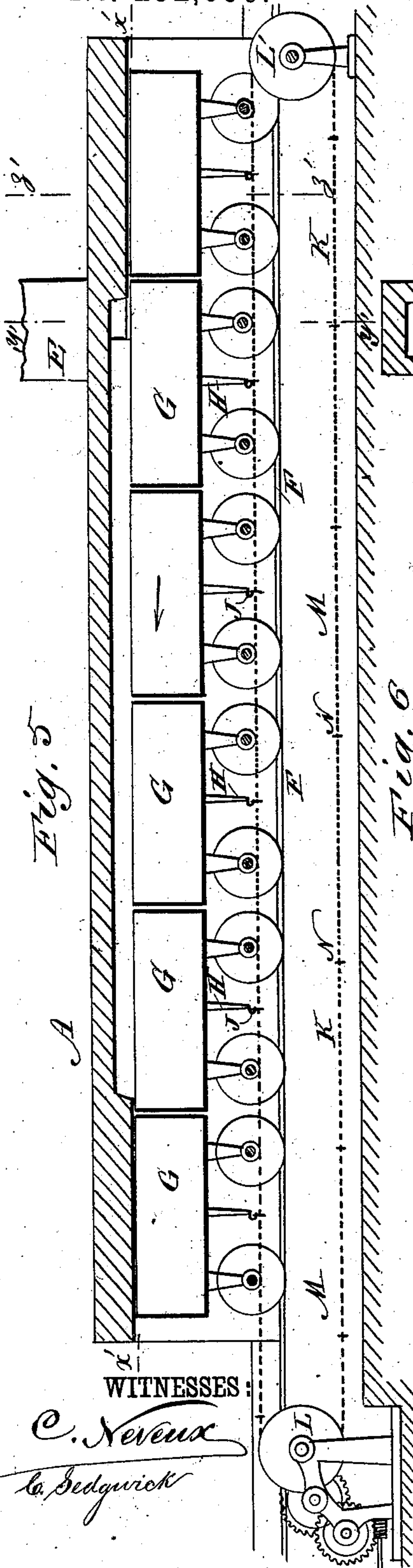
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UNITED STATES PATENT OFFICE.

AMÉDÉE M. G. SÉBILLOT, OF PARIS, FRANCE, ASSIGNOR TO THE UNITED STATES ORE-SEPARATING COMPANY, OF NEW YORK, N. Y.

FURNACE FOR TREATING ORES CONTINUOUSLY.

SPECIFICATION forming part of Letters Patent No. 292,690, dated January 29, 1984.

Application filed April 27, 1883. (No model.)

To all whom it may concern:

Be it known that I, AMÉDÉE M. G. SÉBILLOT, of Paris, France, have invented a new and Improved Furnace for Treating Ores Continuously, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved furnace for treating ores on the continuous principle, whereby the ores are first subjected to moderate heat and gradually to more intense heat, in the same manner as in other continuous furnaces.

This invention, which is an improvement on the ore-furnace invented by myself, and for which United States Letters Patent No. 248,801 were issued to the United States Ore Separating Company of New York on October 25, 1881, consists in a tunnel-shaped furnace containing a tunnel-shaped muffle, which is connected by means of flues with a receiver for the gas of the materials contained in cars, which fit closely within the muffle, and are slowly moved within the same by an endless chain contained in a gutter or trough in the bottom of the furnace, which chain is provided with suitable catches adapted to catch on the hooks or catches of arms projecting from the bottoms of the cars. The endless chain or rope passes over pulleys at the ends of the furnace, which pulleys are rotated very slowly.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal section of my improved furnace for treating ores and collecting the fumes. Fig. 2 is a sectional plan view of the same on line $x x$, Fig. 1. Fig. 3 is a cross-sectional elevation of the same on line $y y$, Fig. 2. Fig. 4 is a cross-sectional elevation of the same on line $z z$, Fig. 2. Fig. 5 is a longitudinal sectional elevation of my improved ore-furnace, showing the construction of the same when the fumes are not to be collected. Fig. 6 is a longitudinal sectional elevation of the same on line $x' x'$, Fig. 5, the cars being removed. Fig. 7 is a cross-sectional elevation of the same on line $y' y'$, Fig. 5. Fig. 8 is a cross-sectional elevation of the same on line $z' z'$, Fig. 5.

The brick-work A of the furnace is made in the shape of a tunnel, and contains a cast-iron muffle, B, which is also made in the shape of a tunnel. Flues C are formed between the sides and top of the furnace and the muffle, in which flues the heat, smoke, and products of combustion can circulate, which pass from a fire-place, D, into the said flues, and pass out of the same at the other end of the furnace into a smoke-stack, E. Rails F are arranged on the bottom of the furnace, and on the said rails the wheels of box-cars G run, which box-cars are made of cast-iron, wrought-iron, or of any other material which is not affected by heat and acids. The cars are of such a height that their upper edges are within a short distance from the top of the muffle, and the sides fit quite closely against the inner surface of the muffle. Each car is provided on its bottom with a downwardly-projecting arm, H, which terminates in a hook, J, or some other suitable catch. An endless chain, K, runs over pulleys L and L' at the ends of a trough or gutter, M, on the bottom of the furnace, and the said chain is provided with a series of eyes, loops, or other catches, N, which are adapted to catch in the hooks J on the lower ends of the arms H, as the upper strand of the chain K is on the same level with the hooks J. The pulley L is operated by means of some suitable motor, the power of which is transmitted to the pulley L in such a manner that the pulley L rotates very slowly, whereby the cars G will be moved through the furnace in the direction of the arrow a' very slowly. A series of flues, P, conduct the fumes that collect in the muffle from the said muffle to a receiver, Q, which is connected with air-chambers, or with any other suitable device for collecting and condensing the said fumes. The cars contain a mixture of the ore and sulphuric acid, and as the cars pass into the furnace they are continually exposed to heat of increasing intensity whereby the sulphuric acid will be converted into fumes and caused to escape from the flues P into the receiver Q, and the converted ores will be contained in the cars, from which they can be removed after the cars have left the furnace. The catches N on the chain K automatically engage with the hooks J on the lower ends of

the arms H, and automatically disengage themselves from the said hooks after the cars have left the furnace.

5 The number of cars to be contained within the furnace may be increased or decreased more or less according to the quantity of ore to be treated.

10 The speed of the cars in passing through the muffle and furnace can be increased or decreased more or less according to the nature of the material and the time it is to be exposed to the action of the heat.

15 In the modification shown in Figs. 5, 6, 7, and 8 I have dispensed with the muffle and have arranged the interior of the furnace higher between the ends than at the ends, as shown in Fig. 5. The upper edges of the cars fit closely against the roof of the furnace at the ends, as shown in Fig. 8; but between the 20 ends a space will be formed between the roof of the furnace and the upper edges of the cars, as shown in Fig. 7. In this case the fumes of the ore and the material with which the ore is treated will mingle with the smoke and products of combustion from the fire-place D, and 25 will pass with the said smoke and products of combustion through the smoke-stack E.

The device for moving the cars is the same as described above.

30 The modification of the furnace is to be used for roasting ores, or for chlorodizing them by a mixture of copperas and salt, or any other agents which do not require to be heated by means of a muffle, or which can be heated by

means of a flame directly, and the gases of 35 which can pass off with the fumes and smoke.

The above-described construction of furnace can be used for any metallurgical operation not requiring the fumes of the material treated to be separated from the products of combustion, and the first construction described is to 40 be used in all cases where the fumes are valuable and must be redeemed.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is— 45

1. The combination, with the furnace A, of the muffle B, arranged within the furnace, the inverted-U-shaped flue arranged between the sides and tops of the furnace and muffle, 50 and the flue P, extending from the flue C and to the receiver Q, substantially as and for the purpose set forth.

2. The combination, with an ore-furnace, A, having a trough or gutter, M, formed in its 55 bottom, of the endless chain K, provided with catches N, the pulleys L L' at the ends of the furnace, the arms H, projecting from cars running through the furnace, and the hooks or catches J at the lower ends of the arms H, substantially as herein shown and described, and 60 for the purpose set forth.

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