

(No Model.)

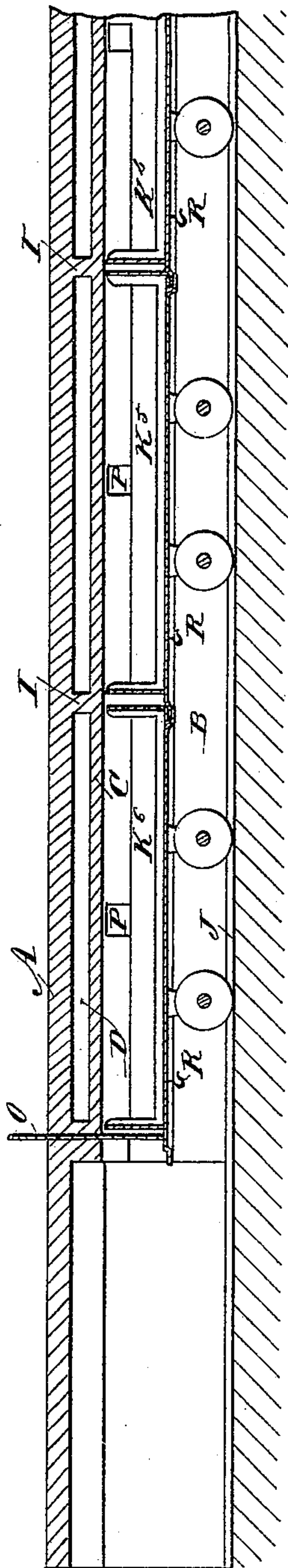
A. G. SÉBILLOT.
ORE FURNACE.

2 Sheets—Sheet 1.

No. 248,801.

Patented Oct. 25, 1881.

Fig. 1



WITNESSES:

C. Neveu
C. Sedgwick

Fig. 2

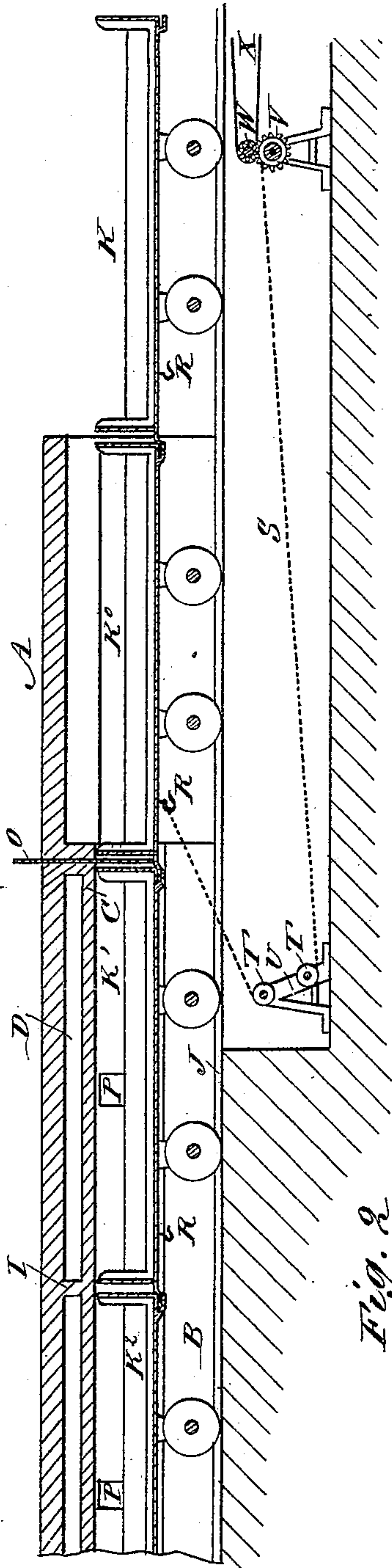
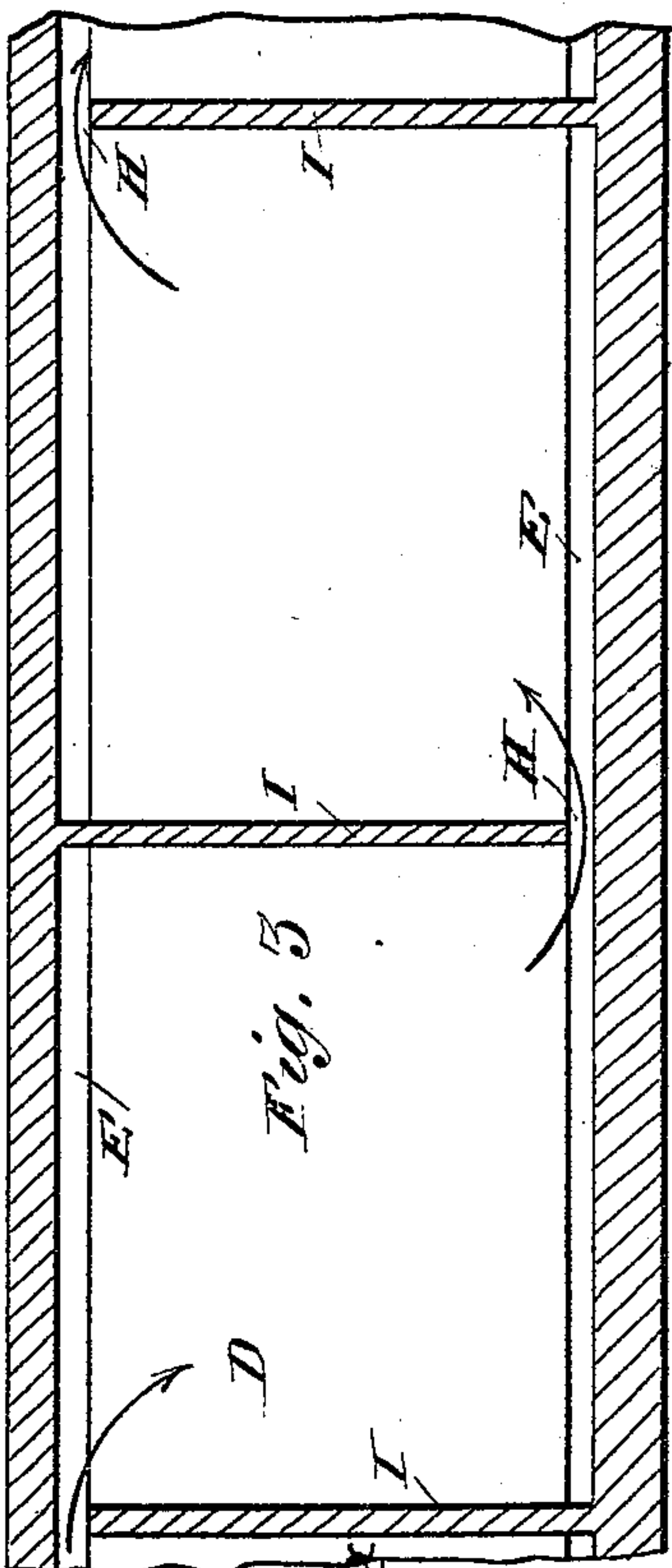


Fig. 3



INVENTOR:

A. G. Sébillot
BY *Mum & Co*
ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

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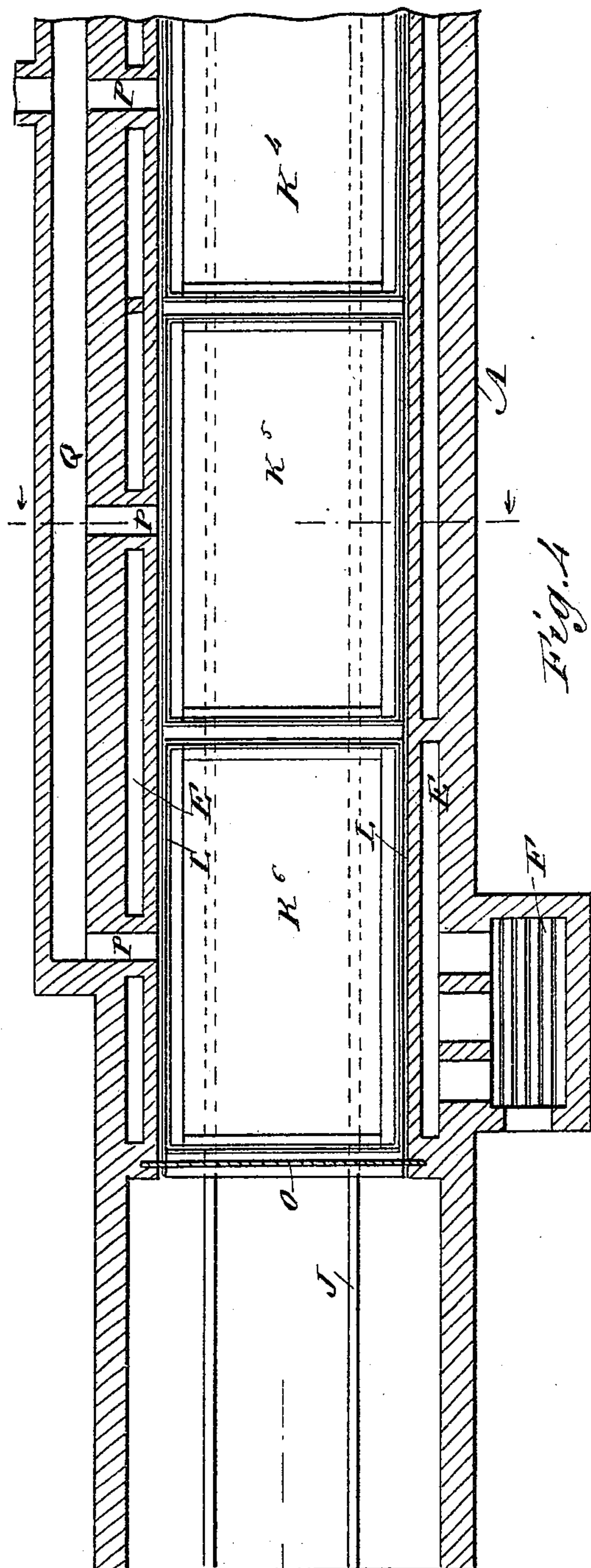
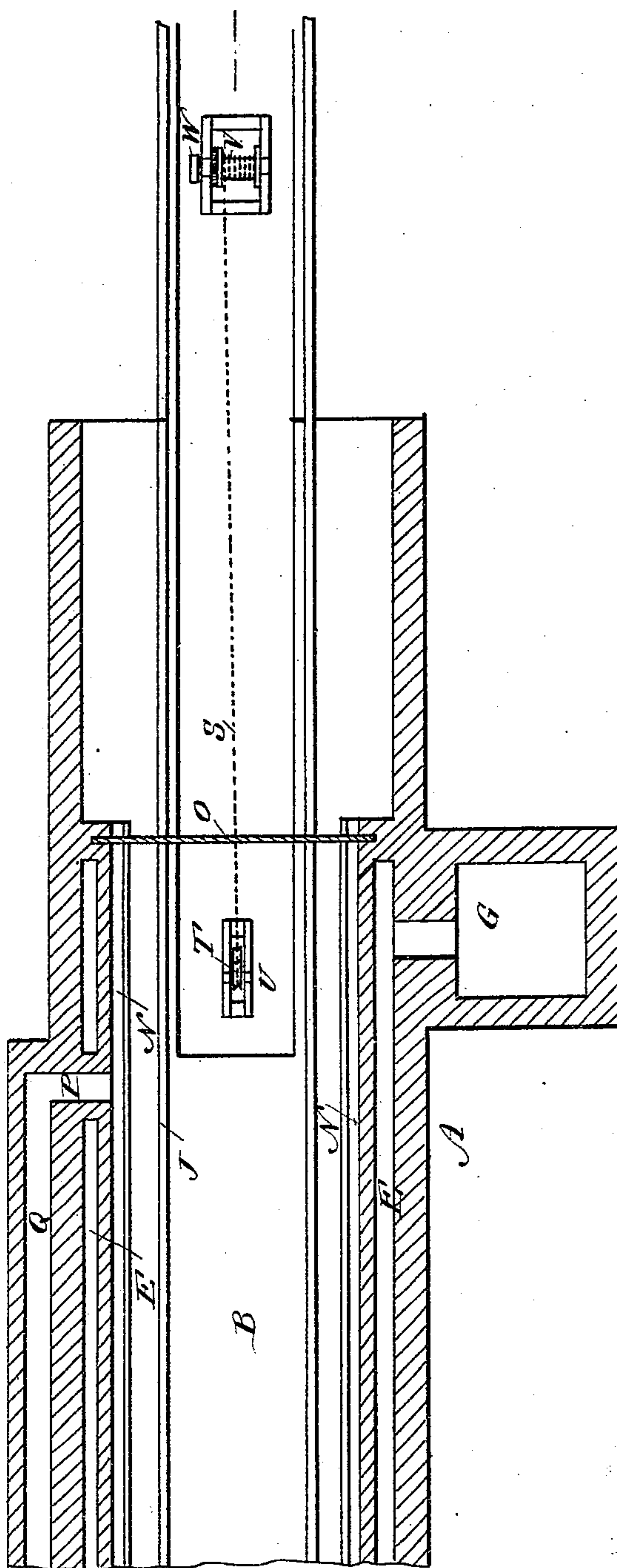


Fig. 4



WITNESSES:

C. Severn
C. Sedgwick

INVENTOR:

A. G. Sébillot
BY *Mum Ho*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

AMÉDÉE G. SÉBILLOT, OF DENVER, COLORADO, ASSIGNOR TO THE UNITED STATES ORE SEPARATING COMPANY, OF NEW YORK, N. Y.

ORE-FURNACE.

SPECIFICATION forming part of Letters Patent No. 248,801, dated October 25, 1881.

Application filed June 24, 1881. (No model.)

To all whom it may concern:

Be it known that I, AMÉDÉE G. SÉBILLOT, of Denver, in the county of Arapahoe and State of Colorado, have invented a new and Improved Ore-Furnace, of which the following is a specification.

The object of my invention is to provide a new and improved furnace for treating ore, operating as a continuous furnace.

The invention consists in a tunnel-shaped furnace with heat-flues on the top and sides, and with rails on the bottom, on which rails cars rest, fitting closely in the furnace and containing the ore or the ore and acid, the fumes and vapors produced passing through a side aperture into a flue which conducts them into a suitable condenser. The car containing the fresh ore is subjected to the least heat, and when a car with fresh ore is introduced all the cars are pushed forward, so that the cars are gradually subjected to a greater temperature as the ores approach a complete transformation into oxides, sulphates, &c.

The invention further consists in a chain or rope and windlass for propelling the cars by hooking the end of the rope or chain on a hook on the under side of the car and winding the rope or chain on the windlass.

In the accompanying drawings, Figure 1 is a longitudinal sectional elevation of my improved ore-furnace. Fig. 2 is a cross-sectional elevation of the same. Fig. 3 is a horizontal sectional view of the same, showing the arrangement of the flues. Fig. 4 is a horizontal sectional view of the same on the line *xx* of Fig. 2.

Similar letters of reference indicate corresponding parts.

The furnace A is constructed with a longitudinal passage, B, provided with an arched roof, C, and above this roof there is a longitudinal flue, D, extending over the whole width of the passage, this flue being in communication with the longitudinal flues E in the sides of the furnace, one of which flues E has one end in communication with the fire-place F, whereas the other end is in communication with the smoke-stack G. The flues D and E are crossed by transverse partitions I, having openings H at alternating ends, which flues

are arranged in a manner that will be more fully described hereinafter.

Rails J are placed on the bottom of the passages A, and on these rails the wheels of the cars K' K², &c., rest, the body of each car fitting quite closely to the sides and top of the passage. The side walls, L, of the cars K project downward below the bottom M of the car into a longitudinal groove, N, in an offset in the side walls of the passage, which grooves are filled with sand, which forms a close joint with the projecting part of the side walls of the cars. The ends of the passage are closed by sliding gates O. The passage A is of such length that a certain number of cars, K' K², &c., will fit in the space between the gates O O. The transverse partitions I of the flues D and E are so arranged that one partition will be above each space between two cars. The passage is provided with side openings, P, one for each car, leading into a flue, Q, which leads to an apparatus for collecting and condensing the gases and vapors.

Each car is provided on its under side with a hook, R, into which a ring on the end of a chain or rope, S, is hooked, this chain or rope passing over pulleys T on a standard, U, and is attached to a drum, V, of a windlass, which drum V is rotated by means of intermediate cog-wheels and a pulley-wheel, W, and belt X, or other suitable devices.

The bodies of the cars are preferably made of metal, and can be lined with brick and a coating of plaster-of-paris.

The operation is as follows: The ore or the ore and a suitable quantity of sulphuric acid are placed into the cars. Assuming that the car K has just been passed into the passage A and the gates O are closed, the heat from the fire-place F passes through the flues D and E in the manner indicated by the arrows, and passes off through the chimney or smoke-stack G. It is evident that that part of the flues D and E above and at the sides of the car K⁶ will be the hottest, and the heat will decrease toward the other end of the passage. The contents of the car K⁶ will be subjected to the greatest heat, that of the car K⁵ to less heat, that of the car K⁴ to still less heat, and so

on, the contents of the car K' (or the fresh ore) being subjected to the least heat. When the contents of the car K^6 is completely converted the gates $O O$ are opened, the end of the chain S is hooked on the hook R of the car K , and the drum V is rotated. The chain is wound thereon and the car K^0 is drawn into the passage A , the other cars are pushed forward, and the car K^6 is pushed out of the passage. Then the gates $O O$ are closed again, and now the contents of the car K^5 will be subjected to the greatest heat and the contents of the car K^0 to the least heat, and so on. The contents of the cars are thus gradually converted as they pass through the furnace, the waste heat that has acted on the contents of the first car acting on the contents of the other cars, the conversion of the ore taking place gradually as the cars pass through the furnace. This furnace is thus a continuous furnace, and none or but very little of the heat is lost and the process can be conducted very economically.

The number of cars can be increased or decreased, and the size of the cars and the furnace can be varied according to circumstances.

The sand in the groove N and the projecting part of the sides of the cars form a close joint and prevent the escape of gases.

This furnace is to be used for treating ores, pyrites, and other minerals, and is to be used for roasting ores and minerals and converting them into sulphates, oxides, &c.

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

1. The combination, in an ore-furnace having passage A and fire-place F , of the top flue, D , and side flues, E , having transverse partitions with openings H at alternate ends, and the smoke-stack G , all arranged as shown and described.

2. In an ore-furnace, the flues D and E , constructed, substantially as herein shown and described, with transverse partitions I , dividing them into compartments as large as the cars contained in the furnace, as set forth.

3. In an ore-furnace, the combination, with the cars $K' K^2 K^3$, &c., provided with hooks R , of the chain or rope S , pulleys $T T$, and the drum V of a windlass, substantially as herein shown and described, and for the purpose set forth.

AMÉDÉE G. SÉBILLOT.

Witnesses:

OSCAR F. GUNZ,
C. SEDGWICK.