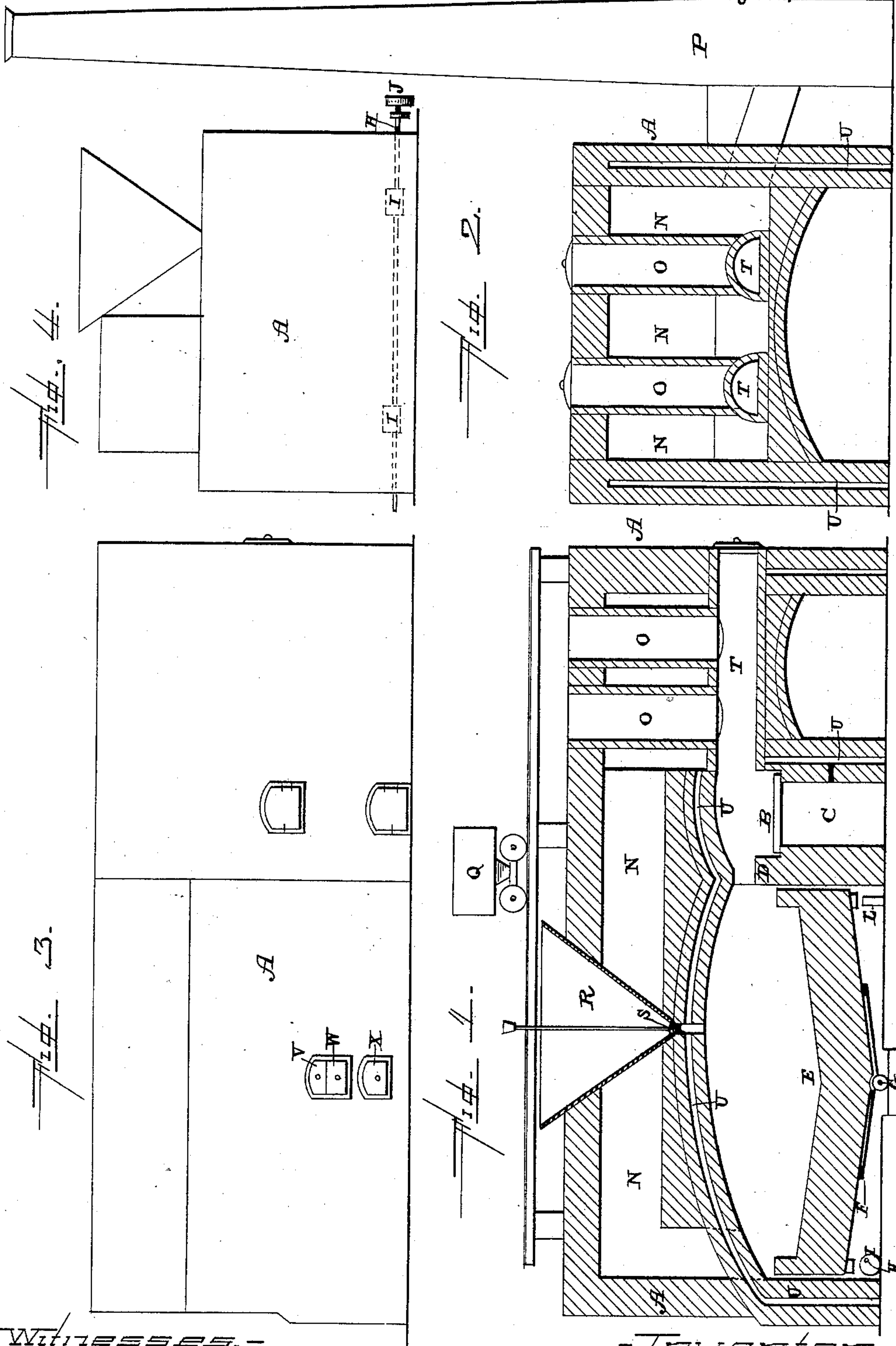


(No Model.)

H. B. MEECH.
FURNACE.

No. 341,033.

Patented May 4, 1886.



WITNESSES.
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UNITED STATES PATENT OFFICE.

HARRISON B. MEECH, OF CHATHAM VILLAGE, NEW YORK.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 341,033, dated May 4, 1886.

Application filed January 4, 1886. Serial No. 187,554. (No model.)

To all whom it may concern:

Be it known that I, HARRISON B. MEECH, of Chatham Village, in the county of Columbia and State of New York, have invented certain
5 new and useful Improvements in Reverberating Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make
10 and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in reverberatory furnaces.

15 The object of my invention is to produce a smelting-furnace in which gold, silver, copper, lead, and iron ores can be reduced continuously, and in which the ore-bed is given a rocking motion, so as to concentrate the reduced
20 ore and separate it thoroughly from the slag.

Figure 1 is a vertical longitudinal section of a furnace embodying my invention. Fig. 2 is a vertical cross-section of the furnace taken at right angles to Fig. 1, and through the vertical retorts. Figs. 3 and 4 show side and end
25 elevations of the frame of the furnace, respectively.

A represents the frame of the furnace; B, the grate; C, the ash-pit; D, the bridge-wall,
30 and E the ore-bed.

The ore-bed E is composed of fire-clay and cement, and is supported upon a metallic frame, F, which is pivoted at G. A space is left between the ore-bed and the metallic
35 frame for the purpose of affording free circulation of air, whereby melting of the frame is prevented. At the center of this frame F, which is inclined upward in both directions from its center, is formed a suitable pivot, G,
40 upon which the bed E is caused to rock like a cradle for the purpose of concentrating the reduced metal, and to separate it from the slag. Under one end of this bed E is journaled the shaft H, which is provided with the cams
45 I and the pulley J. When this shaft H is caused to rapidly revolve, the cams cause the bed E to rapidly rock or vibrate. Under the opposite edge of the bed E is placed a bumper, L, against the top of which this edge of the
50 bed strikes, both for the purpose of preventing the bed from moving beyond a certain point and to give the bed an additional jar or shake,

so as to more thoroughly separate the reduced metal from the slag. The products of combustion pass through the flue M forward
55 around the vertical retorts O, and then escape up the stack P.

The ore which is to be reduced is emptied from the car Q into the funnel-shaped hopper R, which is provided with a suitable plug, S,
60 for controlling the discharge of the ore upon the ore-bed E below. A suitable quantity of this ore is discharged upon the bed E, and then the opening through the bottom of the hopper is closed by means of the plug S.
65 The vertical retorts O are connected at their lower ends with horizontal retorts T, and these retorts T are connected at their rear ends with the grate B. Through the walls of the furnace, at those points where it is sub-
70 jected to a great heat, are made suitable air-passages, U, through which air is forced by means of a blower or other suitable device, and which air in passing through these flues U becomes thoroughly heated before it is discharged into
75 the ash-pit C under the grate.

The ores are mixed with suitable fluxes, and then a suitable quantity is discharged from the hopper R upon the ore-bed E. A
80 coke fire is first built in the retorts T and upon the grate B, and this fire is continued until the heat passes freely through the flue N and around the vertical retorts O. After the retorts have become heated they are filled with
85 coal, and when this coal has become coked it is discharged into the retorts T below. While the coal is being coked the gas passes downward over the grate B, where it ignites and causes an intense heat. The coke is discharged
90 from the retorts T upon the grate D, where it is burned in connection with the gases, and the heat thus produced acts upon and reduces the ore upon the ore-bed E. As the ore becomes
95 melted, it is caused to settle by the vibratory motion of the bed. The slag is drawn off through the door V, and then more ore is discharged from the hopper R into the ore-bed E. This operation is continued until a sufficient quantity of ore has been reduced, when
100 the matte is drawn off through the doors W and the lead through the door X.

Having thus described my invention I claim—

1. In a furnace, the combination of the ore-

bed, the metallic frame upon which the bed is placed, the pivot upon which the bed rocks, the cam-shaft for causing the bed to vibrate, and the bumper, which is placed under the bed upon one side, substantially as set forth.

2. In a furnace, the combination of the vertical retorts, the horizontal retorts, the grate, the ore-bed, and the flue N, the vertical retorts being made to pass through the flue, substantially as specified.

3. In a furnace, the combination of a vibratory ore-bed with a hopper provided with a suitable plug, and which is placed just above it, and from which hopper the ore can be sup-

plied to the bed whenever so desired, and thus enable a continuous smelting operation to be carried on, the frame-work of the furnace being provided with separate doors through which the slag, matte, and lead can be separately drawn from the ore-bed, substantially as shown.

In testimony whereof I affix my signature in presence of two witnesses.

HARRISON B. MEECH.

Witnesses:

GEO. A. GROOT,
O. W. BROADWELL.