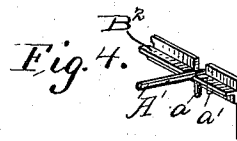
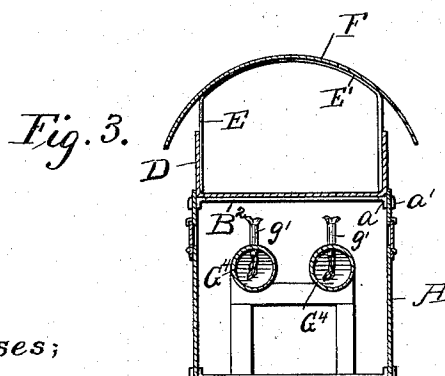
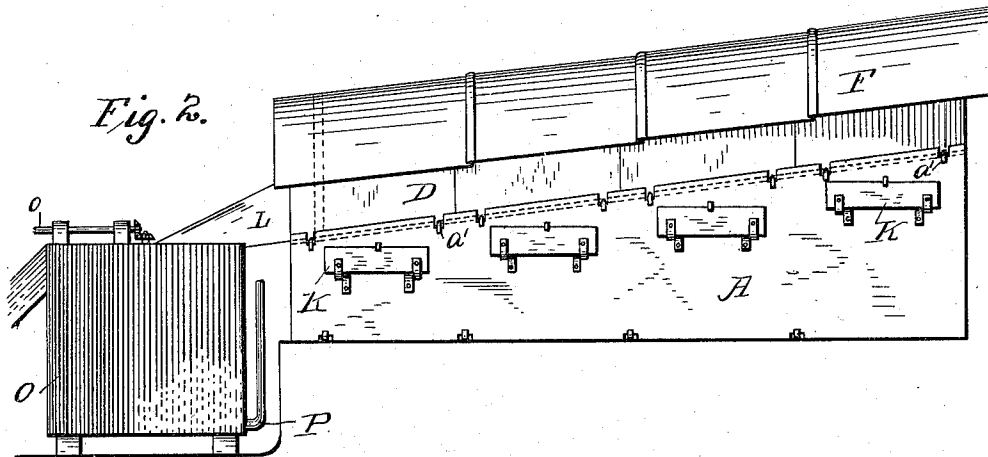
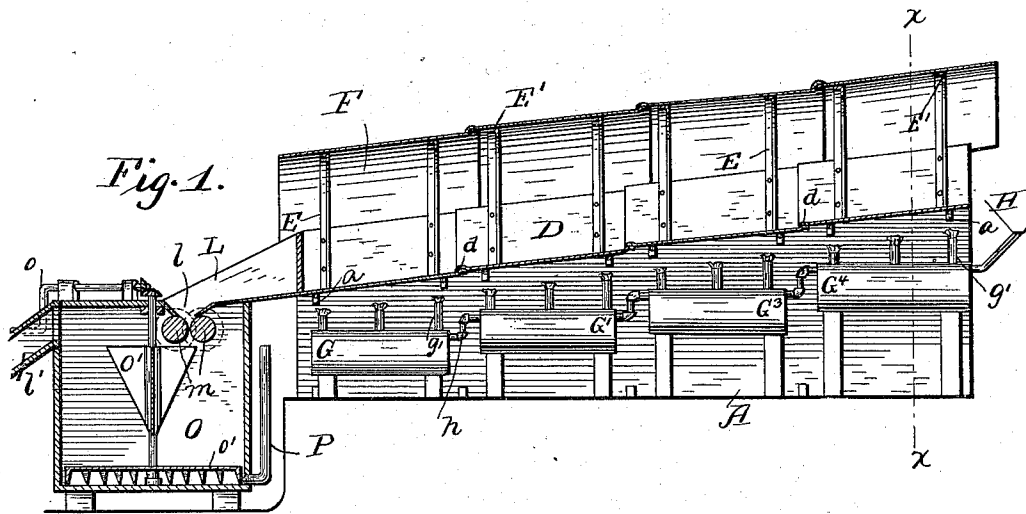


(No Model.)

N. A. STRATTON.
ORE ROASTER.

No. 565,813.

Patented Aug. 11, 1896.



Witnesses;
John H. Milau.
Heckie G. Allen

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UNITED STATES PATENT OFFICE.

NATHANIEL A. STRATTON, OF NEW YORK, N. Y.

ORE-ROASTER.

SPECIFICATION forming part of Letters Patent No. 565,813, dated August 11, 1896.

Application filed April 2, 1896. Serial No. 585,986. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL A. STRATTON, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Ore-Roasters; 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 appertains to make and use the same.

This invention relates to an improvement in ore-roasters; and it is embodied in the construction and arrangement of parts herein-after described, and definitely pointed out in the claims.

The aim and purpose of the invention is the provision of an ore-roaster which will embody structural simplicity, strength, and durability, and which can be cheaply and readily manufactured.

Heretofore in apparatus of this nature much expense is required in building, and where the same is designed for local use it is practically impossible to erect or economically produce the apparatus, owing in a measure to the lack of skilled labor and the remoteness of necessary material. By my construction and design of apparatus these objections are practically overcome.

A further object of the invention is the production of an apparatus whereby the tailings from mines can be successfully treated and roasted without a preliminary pulverization; that is, sand of "fourteen-mesh" grade may be successfully roasted without preliminary crushing, whereas the former practice has generally been to use the same of about sixty to seventy grade. By this means the process of roasting is greatly reduced as to expense.

The object of the invention is attained by the apparatus presently to be described, which comprises means for uniformly heating and maintaining a steady heat to the roasting-pan.

In the accompanying drawings like letters of reference designate corresponding parts in the several views, and in which—

Figure 1 is a longitudinal section. Fig. 2 is a side elevation. Fig. 3 is a section on the line *x x* of Fig. 1. Fig. 4 is a detail section.

In the drawings, A designates the base or

furnace section of the pan, formed by side plates of any suitable material, conveniently iron. The upper edges of the plates are inclined, as shown, and are tied together by removable bars A', having the flanges *a a'* at their outer ends resting against the opposite sides of the plates, the ends of the bars proper being seated in grooves or recesses. By this means the employment of bolts or rivets are avoided and at the same time the plates are firmly united. By placing the ends of the bars in the grooves, the upper faces of the rods are flush with the supporting-ledges B², fixed to the plates, and the ledges therefor evenly support the pans. The lower edges of the plates are connected in a manner similar to the upper edges.

To erect the furnace, all that is necessary is to place the plate in proper position and then apply the connecting-rods. The opposite ends of the furnace are conveniently open.

On the top of the furnace-section is the pan D, composed of substantially U-shaped metal, conveniently iron, the edges resting on the ledges B². The pan is by preference made in section for convenience in handling, the adjacent sections being curved to overlap, as at *d*.

From the sides of the pan extend the up-rights E, which are connected by the arched bars E' above the edges of the pan. On these bars E' rest the cover F, which is fashioned to overhang or project beyond the sides of the pan, and thereby form a protector, preventing the rain from entering the pan at the sides as well as top. This cover is by preference formed in sections for convenience in removal.

The pan, as will be seen, is inclined from its outer to its lower end, and its ends and sides below the top are open.

I have designed the apparatus for use with hydrocarbon for the fuel, and to successfully utilize the oil and to maintain a steady combustion I arrange within the furnace in preferably two rows the burners G, G', G², and G³, each consisting of a cylindrical reservoir mounted on suitable frames and from which a series of wick-tubes *g'* extend, the tubes of each reservoir being graduated in length, so that the flames will be in the same relation to the base of the pans throughout.

The various reservoirs of the two rows are arranged on a descending plane to correspond with the inclination of the pan, and each reservoir is connected with the next succeeding one by a suitable overflow-pipe *h*. To supply the oil to the various reservoirs, a funnel *H* is employed, from which branch pipes lead to the uppermost reservoir.

To gain access to the burners, suitable doors *K* may be formed in the sides of the plates *A*.

From the lower end of the pan extends a chute *L*, which terminates in a small hopper *l*, located directly over two crushing-rolls *m*. These rolls are designed to crush all large masses or lumps which may pass from the pan, and are driven by any suitable means.

From the rolls the ore is discharged into an amalgamating-vat *O*, which has a V-shaped agitator *O'* in its center, which is driven by any suitable means, preferably a crank *o* and intermeshing gear. The forward side of the vat is cut away and a spout *l'* is arranged at that point to direct the overflow into other vats or any suitable place of deposit. On the agitator-shaft is a stirrer *o'*. As the agitator is driven the movement will create a whirl and vortex at the center of the vat into which the ore is deposited and which tends to quickly and positively embed the precious metal in the body and below the surface of mercury and prevent its floating or being suspended near the surface, and it also allows the slags to collect at the center and top to be carried over the discharge, thereby maintaining the mercury in a practically clean and bright condition.

P designates the drawing-off pipe, leading from the base of the vat.

By the above-described construction, sand being placed in the pan and the burners lighted an internal heat will be generated, which will be uniform throughout. The sand is thereby thoroughly roasted and requires but little raking. After the sand has been sufficiently baked the burners are extinguished, and owing to the inclination of the pan a stream of water may be directed into its lower end and the roasted ore washed into the vat in a substantially regular stream.

An additional advantage in inclining the pan is that the heated gases from the burners are made to travel from the lowermost burner up out of the upper end of the furnace, thereby more completely utilizing all of the heat.

I am aware that changes in the special construction can be made and substituted for those shown and described without departing from the nature and principle of the invention.

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

1. In an ore-roaster, the combination with an inclined pan, of a series of connected oil-reservoirs, arranged on different planes, burners on the reservoirs, and means at the upper reservoir for filling all of the reservoirs.

2. In a roasting-pan, the combination with a furnace-section having inclined upper edges, a roasting-pan carried by the edges and formed in independent and removable sections, a removable top for the pan, elevated above and out of contact with the edges of the same, and a series of burners arranged on an inclined plane below the base of the pan, substantially as described.

3. In an ore-roaster, the combination with an open-ended furnace-section, and an inclined pan thereon, of a descending series of reservoirs in the furnace-section, each having a graduated series of burner-tubes thereon, and pipe connections between the reservoirs, substantially as described.

4. In a roasting-pan, the combination of the furnace-section formed of side plates grooved at their upper edge, cross-bars resting in the grooves and having flanges fitting on opposite sides of the plates, an inclined pan on the furnace-section, burners below the pan and a cover for the pan extending beyond the sides thereof, substantially as described.

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

NATHANIEL A. STRATTON.

Witnesses:

JOS. H. MILANS,
L. S. BACON.