

E. H. LAWS.
SINTERING MACHINE.
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1,097,592.

Patented May 19, 1914.

2 SHEETS—SHEET 1.

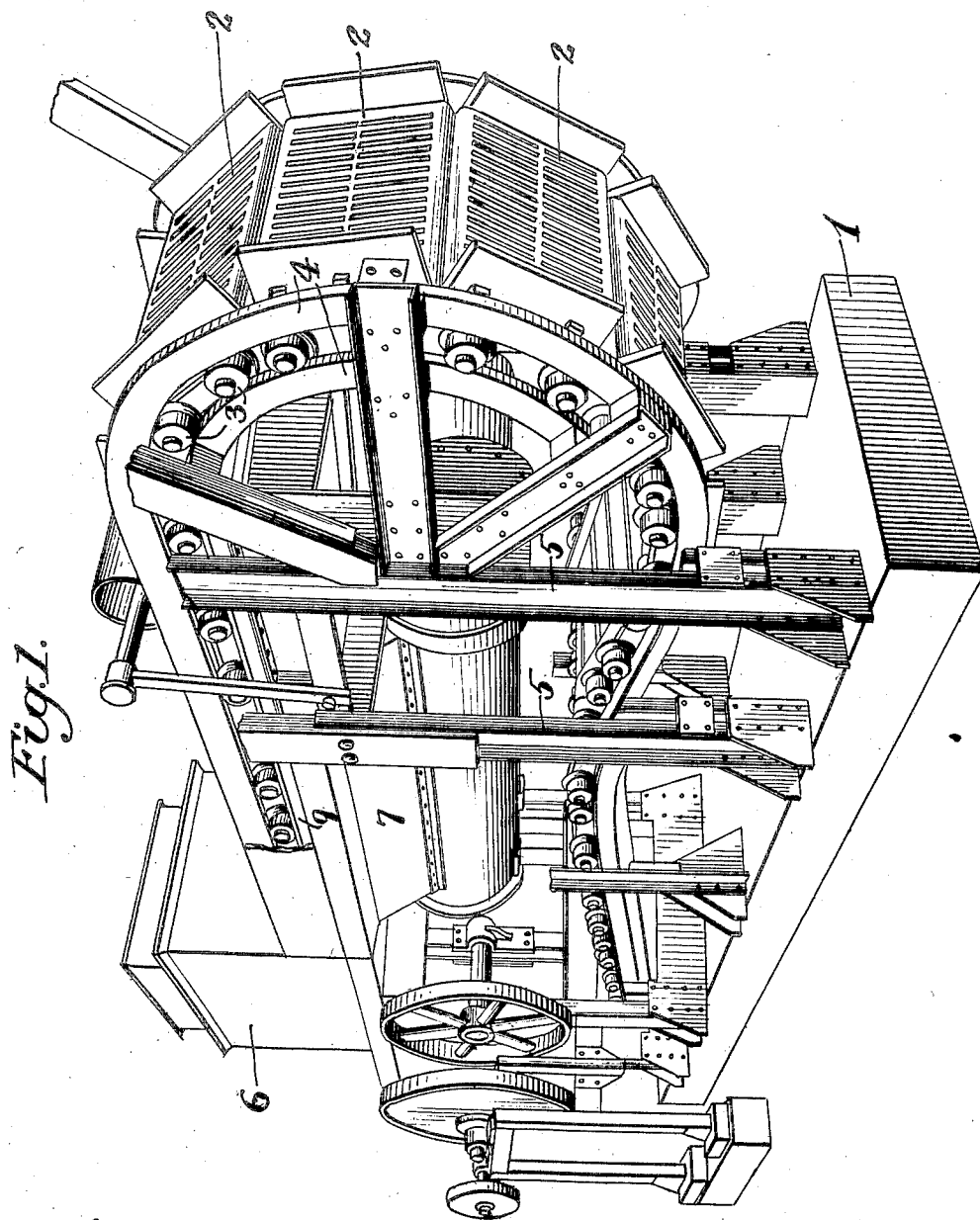


Fig. 1.

Witnesses.

b. v. Schneider
M. A. Aile

Inventor.

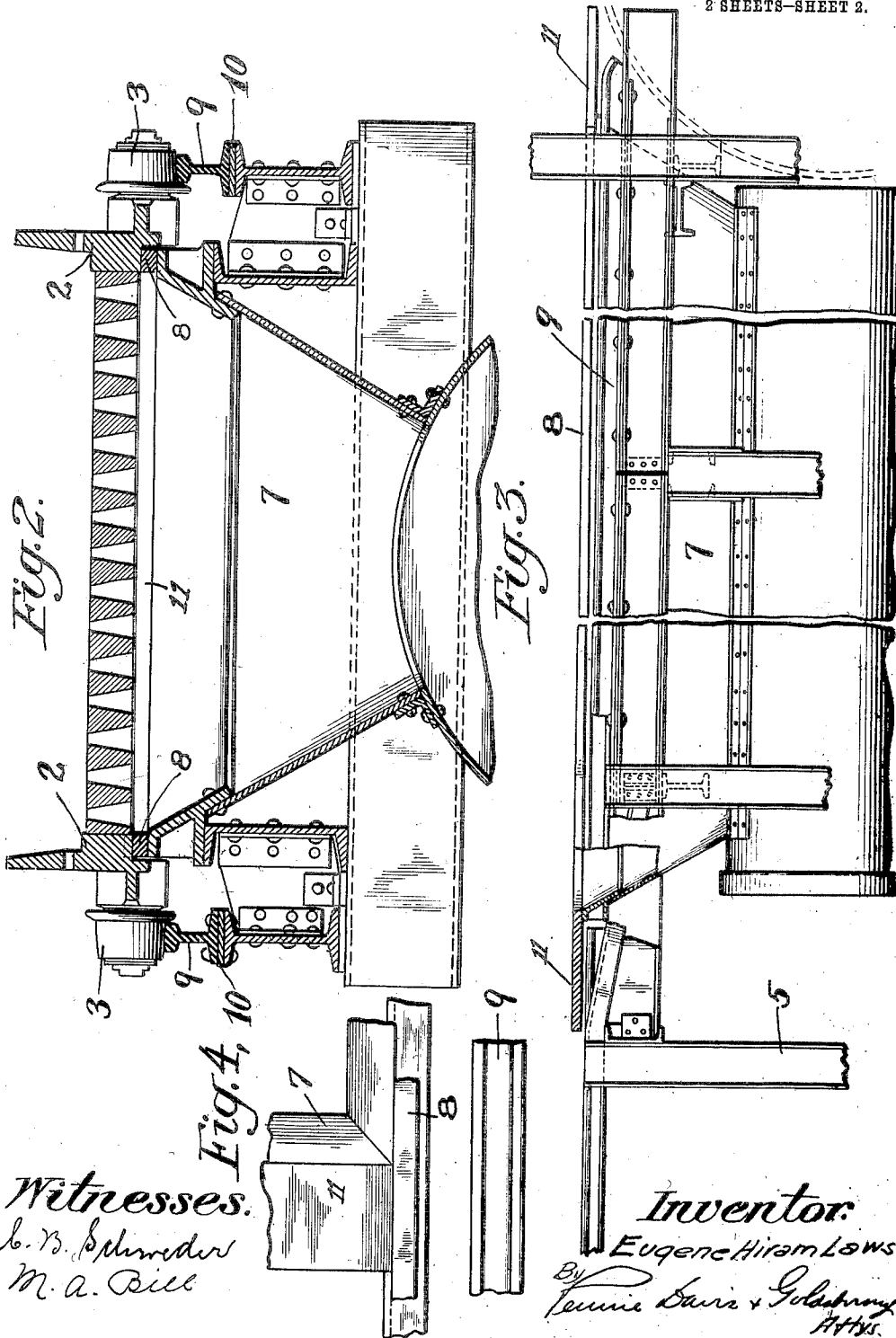
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

EUGENE HIRAM LAWS, OF SALIDA, COLORADO, ASSIGNOR TO THE OHIO AND COLORADO SMELTING & REFINING COMPANY, OF DENVER, COLORADO, A CORPORATION OF COLORADO.

SINTERING-MACHINE.

1,097,592.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EUGENE HIRAM LAWS, a citizen of the United States, and residing at Salida, county of Chaffee, State of Colorado, have invented certain new and useful Improvements in Sintering-Machines; 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.

In Dwight and Lloyd sintering machines having continuous traveling grates made up of articulated elements or pallets, such as are shown, for example, in United States Patent Number 916,391, of March 23, 1909, the track on which the pallet supporting rollers are guided is interrupted at the region of the suction box for the purpose of causing the edges of the pallets to rest directly upon the edges of the suction box and thereby prevent the inlet of air. It is customary, however, to provide transverse dead plates or lips at each end of the mouth of the suction box to definitely limit the suction to the pallets immediately above the suction box, and these dead plates, to effect their function, must be within the region of interruption of the pallet supporting roller track. That is to say, the inlet of air at the sides and ends of the suction box is prevented by causing the end pieces of the pallets to drag along the upper edge surfaces of the side walls of the suction box and by causing the transverse portions of the pallets to drag over the terminal dead plates at the two ends of the suction boxes. Inasmuch, however, as the length of the side edges of the suction box is very much greater than the width of the two dead plates (commonly in the proportion of about ten to one), and since the ends of the pallets drag over a distance at least equal to the length of the suction box plus the width of the two dead plates, while the transverse portion of the pallets drag over the width of the two dead plates only; the wear upon the ends of the pallets when they rest on the side edges of the suction box is very much greater than the wear upon the transverse portions thereof. The result is that eventually the transverse portions of the pallets depend below the ends to such an extent as

to engage and tear up the dead plates or strain and perhaps wreck the driving mechanism.

The object of the present invention is to overcome this defect, and to this end, the pallets, as they pass over the suction box are supported in such a way as to take the wear off of the transverse portions and ends and put it upon a structure which supports evenly the whole pallet and which is vertically adjustable so as to bring the bottom of each pallet into very close proximity but out of wearing engagement with the edges of the suction box and the dead plates. In the preferred form of the invention, this is accomplished by providing vertically adjustable sections on the two sides of the suction box in such position that the pallet rollers rest upon and are supported by this track section as the pallets pass over the dead plates and suction box.

In the accompanying drawings illustrating this preferred form of my invention, Figure 1 is a perspective view of a typical roasting and sintering machine embodying my improvements; Fig. 2 is a sectional elevation through the suction conduit; Fig. 3 is a side elevation of the adjustable supporting rails, the mouth of the suction box and the dead plates; and Fig. 4 is a partial plan of one corner of the suction box, a dead plate, and the adjustable track.

The machine rests upon a suitable foundation 1 and comprises a traveling continuous grate made up of a number of articulated pallets 2, each of which carries two removable wheels or rollers 3 on each side, arranged on or between suitable guides 4 supported from the foundation by the columns 5. The motion of the grate is toward the right at the top of Fig. 1, the feed hopper 6 being so arranged as to spread a substantially uniform layer of ore onto the pallets beneath, directly after the pallets have passed up to the top of the machine. The combustible matter mixed with the ore is ignited in any suitable way as the charge comes above the suction conduit 7, where air is drawn into the suction conduit through the burning ore and the perforations in the pallets by a fan or other suitable exhausting device (not shown).

The grate is moved by suitable mechanism

(not shown) at such speed that the combustible matter is burned to the desired degree during the time in which the grate passes over the suction conduit. The pallets then reach the downwardly curved portion of the guide and dump the sintered ore into a suitable receptacle. The pallets travel in an inverted position along the bottom guide, and finally come up to the hopper 6 where they are again filled with fresh ore to be roasted and sintered.

The suction conduit 7 is provided with a downwardly converging mouth suitably supported as indicated in Fig. 2, and it has marginal strips 8 of suitably machined material, such as steel, extending lengthwise of the mouth to form with the dead plates a smooth and level upper edge. The pallets are supported throughout the region of the suction conduit by the wheels 3 and the rails 9 to the elevation at which their edges almost touch the marginal strips 8 and dead plates 11. The shims 10 under the rails, or other suitable devices for this purpose, are provided for vertically adjusting the rails when the wear on the rails or rollers has progressed to such an extent that the edges of the pallets begin to rest upon the edges of the suction box and the dead plates.

I have found, after operation over an extended period, that my construction is effective in compelling a sufficient part of the induced air current to pass through the ore into the suction conduit to give an efficient machine of this kind while the uneven wear and the attendant disadvantages of the prior form of apparatus are eliminated.

Having thus described my invention, what I claim is:

1. In a machine of the class described, the combination with a traveling grate made up of articulated ore-bearing pallets having air passages therethrough and provided with rollers on both sides, and a suction box having its mouth opening up to the pallets and terminating in dead plates at both ends, of vertically adjustable means for supporting the pallets on their rollers with their bottoms in close proximity to but out of wearing engagement with the edges of the suction box and with the dead plates during their passage thereover; substantially as described.

2. In a machine of the class described, the combination with a traveling grate made of articulated ore-bearing pallets having air passages therethrough and provided with removable rollers on both sides, and a suction box having its mouth opening up to the pallets and terminating at both ends in dead plates, of a trackway for the pallet rollers, said trackway having a vertically adjustable section, at the region of the suction box and dead plates, for supporting the pallets with their bottoms in close proximity to but out of wearing engagement with the edges of the suction box and with the dead plates during their passage thereover; substantially as described.

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

EUGENE HIRAM LAWS.

Witnesses:

WILLIAM HENRY HUBBARD,
ROSCOE IRVING DENISTON.