(No Model.) 2 Sheets—Sheet 1.

H. F. BROWN & L. DE CAMP.

CONDENSING CHAMBER FOR LEAD FUMES.

No. 489,144. Patented Jan. 3, 1893.

Fig. 1.

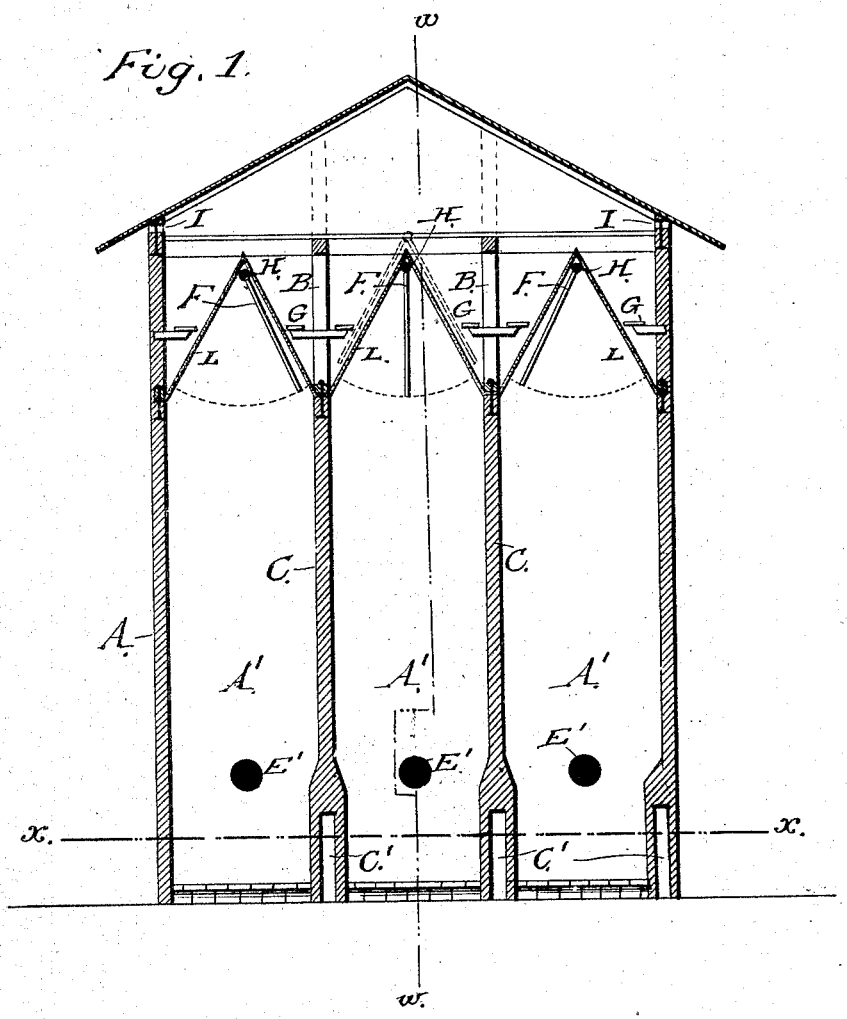

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Fig. 3.

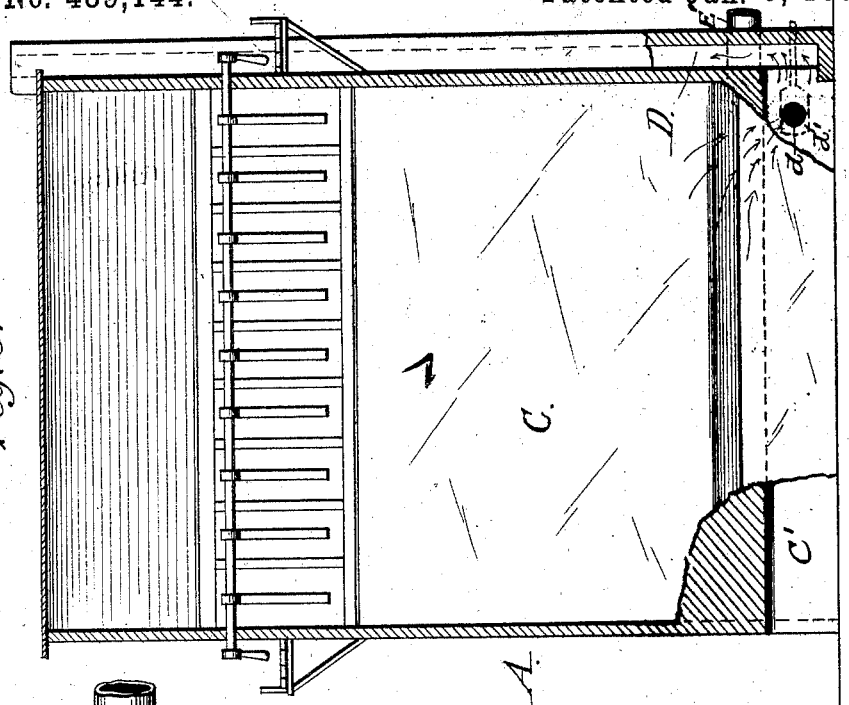
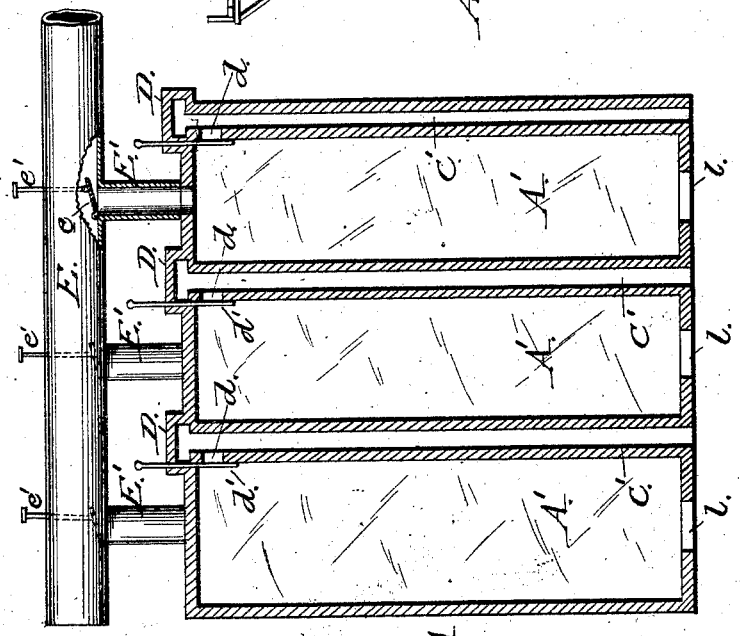


Fig. 2.



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UNITED STATES PATENT OFFICE.

HORACE F. BROWN, OF CHICAGO, ILLINOIS, AND LEE DE CAMP, OF DENVER, COLORADO.

CONDENSING-CHAMBER FOR LEAD FUMES.

SPECIFICATION forming part of Letters Patent No. 489,144, dated January 3, 1893.

Application filed June 7, 1892. Serial No. 435,820. (No model.)

To all whom it may concern:

Be it known that we, HORACE F. BROWN, residing at Chicago, in the county of Cook and State of Illinois, and LEE DE CAMP, of Denver, in the county of Arapahoe and State of Colorado, both citizens of the United States, have invented certain new and useful Improvements in Condensing-Chambers for Lead Fumes, as set forth in the accompanying drawings, forming part of this specification, in which—

Figure 1, is a vertical sectional view of a condensing chamber embodying our invention. Fig. 2, is a horizontal sectional view of the same on the line *x*—*x* of Fig. 1. Fig. 3, is a longitudinal sectional view on the line *w*—*w* of Fig. 1.

Our invention relates to means for collecting and utilizing waste lead fumes, and it consists of the constructions and combinations of devices which we shall hereinafter fully describe and claim.

To enable others skilled in the art to which our invention appertains to make and use the same we will now describe its construction and indicate the manner in which the same is carried out.

The structure or condenser A is composed preferably of brick or stone and is divided into any desired number of rooms, compartments, or stalls A′ by means of vertically disposed partitions C, each of which extends from the floor or base to or near the top of the structure and has its lower portion formed or provided with a hollow space or passage C′ communicating at one end with a vertical stack or flue D, whereby a constant circulation of air is maintained in the bases of the partitions to prevent the walls thereof becoming overheated by the accumulating dusts from the smelters.

In the partitions C openings *d* are made to connect each chamber or room with the stack, said openings being closed and controlled by any well known form of damper *d*′.

The gases from the furnaces are conducted to the condenser through a pipe or flue E, and are admitted to the condensing chambers through the connecting pipes E′ as shown in Fig. 2, said pipes E′ being closed at their outer ends by means of hinged or swinging doors *e*, operated by handles or rods *e*′ extending outwardly beyond the pipe or flue E so that the said doors may be conveniently operated from the outside.

The ceilings L of the chambers are composed of textile fabric secured in position by suitable sustaining frames, and they are made Λ-shaped in cross-section to give the greatest area of straining surface through which the gases conducted to the chambers are forced, whereby the mechanical particles in the fumes are collected for future treatment.

The ceilings are preferably made of wooden or other frames covered with muslin or other textile fabric, and arranged in any well known manner so that they may be readily removed when desired, said ceiling being designed to completely cover and form a roof for the chambers.

Suitably journaled and extending longitudinally through the structure, and located either above or below the apex of the ceilings, are shafts H composed preferably of hollow piping, and having their ends projecting beyond the end walls of the structure and provided with levers or cranks for imparting an oscillating motion to the shafts; and to these shafts are secured the downwardly depending arms or bars F which serve as beaters. From this arrangement it will be seen that when the shafts are oscillated, these beaters strike the inner converging walls of the ceiling and by this jarring action dislodge the dust accumulating upon the fabric, whereby the material composing the ceiling is prevented from becoming clogged up, while the necessity for entering the rooms or chambers for the purpose of shaking down the dust is entirely obviated, as the beaters are operated from the exterior of the structure.

In the space above the ceiling platforms G are made to enable the attendant or workman passing through the upper portion of the structure for the purpose of removing or repairing the ceiling or its frames. The gases which pass through the fabric ceiling and enter the space above, pass into the open air through the usual roof ventilators I, or they may be otherwise disposed of if desired.

In practice a condensing chamber would be erected some distance from the ore furnace, to which it would be connected by pipes or flues, and the gases from said furnace are drawn through these flues or pipes by means of suitable exhaust or ventilating fans, not shown, and are discharged in a partially cool condition into the rooms or chambers in the manner before described.

The sublimed lead and other particles of minerals and unconsumed carbon are deposited on the floor of the rooms or chambers A, only the lighter portions arising to the top with the gases, where they are collected by the fabric ceilings. When a sufficient amount of deposit has been accumulated in any one or more of the rooms or chambers, the damper *e* of said chamber or chambers is closed and the damper *d* is opened. The accumulated dust is then fired through the door *l* leading to the room or chamber, which door is left open to admit fresh air to assist combustion. All of the smoke caused by the burning carbon in the collected dust then passes out of the chamber or room into the stack D and thence into the air. When the accumulated dust is all charred, it is wheeled out or otherwise removed, and sent to the furnace to be reduced to a metallic state, and the door *l* closed, the damper *e* being again opened to admit the gases from the furnace.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. In a condenser, a condensing chamber or room for receiving the gases from the furnace, said chamber having a ceiling composed of fabric, in combination with shafts located contiguous to said ceiling and provided with arms or beaters adapted to strike against said ceiling and dislodge the accumulated dust thereon, substantially as herein described.

2. In a condenser for lead ores adapted to receive the gases from the ore furnace, the ceilings of the condensing chambers composed of fabric and having converging sides, in combination with shafts extending through the condenser and located under the apex of the ceiling, beaters or arms depending from the shafts, and means for oscillating the shafts to cause the arms or beaters to strike the sides of the ceiling and dislodge the accumulating dust, substantially as herein described.

3. In a condenser, the condensing chambers having division walls or partitions between them, and means for admitting the gases from the furnace to said chambers, in combination with ceilings of textile fabric in the upper portions of the chambers and made of an inverted V shape in cross-section shafts extending through said condenser just below the apex of said ceilings and having their ends extended beyond the exterior of the condenser, and arms or beaters on said shafts adapted to strike against the walls of the ceiling when the shafts are oscillated whereby the accumulated dust is dislodged and the fabric composing the ceiling cleaned, substantially as herein described.

4. In a condenser, the partitions dividing the condenser into separate rooms or chambers, and having their lower portions hollow to form flues or passages, which connect with the main flue or stack, said partitions having the damper-controlled openings *d* through which the gases caused by the burning of the carbon from the accumulated dust may escape to the main flue or stack, substantially as herein described.

5. In a condenser, the combination of the rooms or compartments with intervening partitions having air spaces or passages in their lower portions, damper-controlled openings in the sides of the partitions for connecting each room with the flue or stack, the damper-controlled inlet flues or pipes E′ from the furnace flue, the ceilings of fabric having converging sides, and the shafts in said ceiling provided with arms or beaters for operating against said sides, said shafts having their ends extended beyond the exterior of the condenser so that the arms or beaters are actuated from the outside, substantially as herein described

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