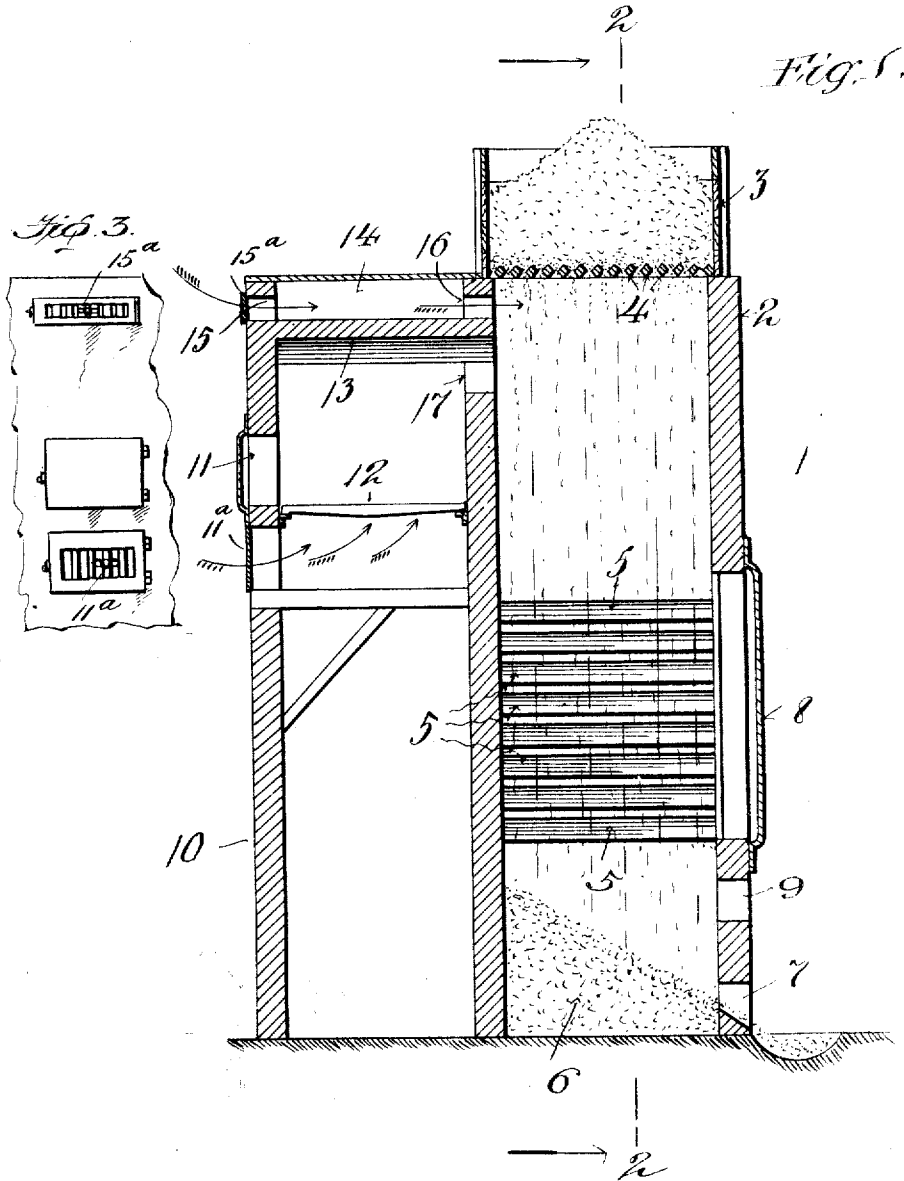


915.787.



Witnesses:  
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By his Attorney  
Joseph L. Levy

J. A. MUMFORD.

SAND DRIER.

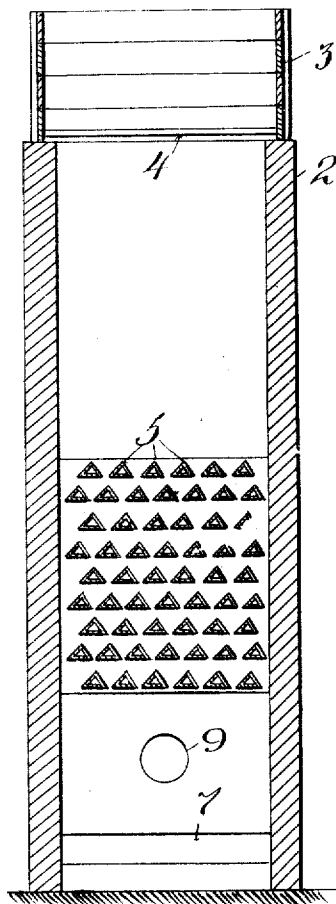
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Patented Mar. 23, 1909.

2 SHEETS—SHEET 2.

915,787.

*Fig. 2.*



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# UNITED STATES PATENT OFFICE.

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## SAND-DRIER.

No. 915,787.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed October 7, 1908. Serial No. 456,546.

To all whom it may concern:

Be it known that I, JOSEPH A. MUMFORD, of Roslyn, in the county of Nassau, State of New York, have invented certain new and useful Improvements in Sand-Driers, of which the following is a specification.

The object of my invention is to improve and render more efficient the structure shown in my Patent No. 696,580 granted April 1st, 1902, which object is accomplished by my invention, as will appear below.

For a more particular description of my invention, reference is to be had to the accompanying drawings in which,

Figure 1 is a vertical section through the drier, extending from front to rear; and Fig. 2 is a like view on the line 2--2, Fig. 1. Fig. 3 is an elevation of a portion of the structure, showing the dampers for the furnace and air chamber.

An embodiment of my improved drier 1 consists of a vertical stack 2 surmounted by a sand holding hopper 3 with a sprinkler or distributor 4 at the bottom, from which the sand falls to suitable baffle or deflecting plates 5 suitably secured to the walls of the stack to the base of the stack where it accumulates at 6 and may be withdrawn through a suitable hole 7 at the base of the stack 2. Opposite the baffle plates 5 is a suitable man-hole 8 which may be opened so as to permit a thorough cleaning of the baffles from time to time as may be expedient. Near the bottom of the stack 2 and below the manhole 8 is a suitable opening 9 through which the products of combustion may escape into a chimney by natural or induced draft. As all these features are the same as those shown and described in my said patent, a further description is unnecessary here. In my said patent the furnace is shown adjacent to one side of the stack and extending substantially the height thereof, the products of combustion being admitted at or near the top thereof.

In my improved apparatus a support 10 is erected beside the stack 2, and on this support rests a furnace 11 with its grate 12 near the top of the stack. Above the grate 12 is the usual arch 13 and above this is a suitable air chamber 14 with openings 15 and 16, one in the exterior wall of the furnace 11 and the other in the partition wall between this furnace 11 and the stack 2. The furnace 11 and the air chamber 14 may both be provided with

suitable doors, and dampers 11<sup>a</sup> and 15<sup>a</sup> respectively to regulate the flow of gases. A suitable opening 17 is made in the partition wall between the furnace 11 and the interior of the stack 2 and immediately under the arch 13.

The operation of my improved apparatus is as follows. A suitable fire is built in the furnace 11 on the grate 12, and the products of combustion heat this furnace, including the arch 13 and then pass through the opening 17 and down the interior of the chimney or stack 2 and thence out through the opening 9 after having passed the baffles 5. Simultaneously with this, sand falls through the sprinkling apparatus 4 on to the baffles 5 and thence down to the pile 6 where it accumulates until removed from time to time, as is obvious. Meanwhile the passage of the products of combustion and the sand down the stack 2 have drawn air through the heated chamber 14 thereby cooling the arch 13 to some extent and greatly prolonging its life and through the opening 16 into the stack 2 whence it is drawn downwardly with the sand and products of combustion. This air, so drawn, is between the products of combustion and the sand sprinkling apparatus 4 and so protects it from excessive heat and greatly prolongs its life; and this air being heated has the additional function of absorbing moisture from the sand thereby greatly assists in drying the same as it falls in the stack 2.

From the foregoing it is obvious that the apparatus shown and described in this instrument is simpler than that shown in said patent, more durable and more economical, all of which advantages are secured without sacrificing any desirable feature of my previous invention; and instead of using the form of sand distributor as shown herein at 3, that shown in my above mentioned patent may be used.

Having thus described my invention, what I claim is:

1. A sand drier embodying the following instrumentalities, a stack, means for showering sand into the stack, a furnace opening into the upper part of the stack, an exhaust for the products of combustion below the furnace opening, and an additional chamber over the furnace opening into the stack for admitting air into the stack therethrough.

2. In an apparatus of the class described, a vertical stack having a sand sprinkling apparatus at its top, a furnace adjacent to said top and connected to said stack, and an air chamber over said furnace and also connected to said stack so that when the apparatus is in use, air will pass over the top of the furnace and be heated thereby and under said sand sprinkler whereby the same is protected from the products of combustion and

the sand falling in the apparatus is dried by the heated air as well as by the products of combustion.

Signed at Roslyn, county of Nassau, State of New York, this 30th day of September, 1919, nineteen hundred and eight.

JOSEPH A. MUMFORD.

Witnesses:

W. E. SMITH,

J. A. TAYLOR.