H. R. JOHNSON.

Improvement in Apparatus for Heating and Drying Sand, Gravel, &c.

No. 115,865. Patented June 13, 1871.

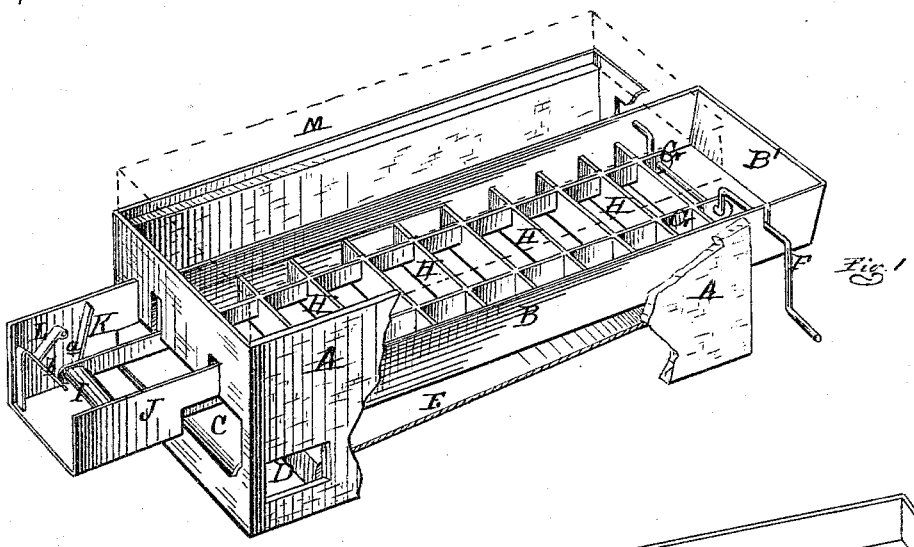

Fig. 1

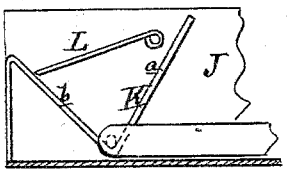

Fig. 2

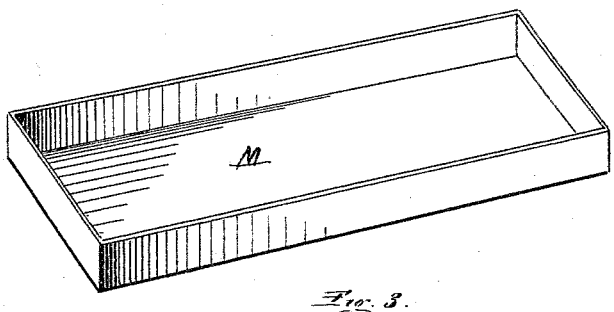

Fig. 3.

ATTEST

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HIRAM R. JOHNSON, OF DETROIT, MICHIGAN.

IMPROVEMENT IN APPARATUS FOR HEATING AND DRYING SAND, GRAVEL, &c.

Specification forming part of Letters Patent No. 115,865, dated June 13, 1871.

To whom it may concern:

Be it known that I, HIRAM R. JOHNSON, of Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Apparatus for Heating and Drying Sand, Gravel, &c.; and I do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon and being a part of this specification, in which—

Figure 1 shows my device in perspective, with a portion broken out to show the interior construction. Fig. 2 is a section. Fig 3 is a detached view of the upper pan.

Like letters refer to like parts in each figure.

The nature of this invention relates to the construction of an apparatus for drying and heating sand, gravel, &c., to be used in paving and roofing compounds. The invention consists in the peculiar construction and arrangement of the various parts, as more fully hereinafter described. In laying pavements or roof, where asphalt, pitch, or coal-tar form one of the component parts and sand and gravel another, it is necessary that the latter should be thoroughly dried and rendered entirely free from moisture. In order to accomplish this it is usual to employ pans or large metallic sheets, under which a fire is kept up and upon which the sand or gravel is placed, and constantly stirred with a rake or other suitable device, thereby rendering the process slow and somewhat expensive.

The object of the invention herein described is to enable the operation to be performed with comparative rapidity and at much less expense.

In the accompanying drawing, A represents an arch or fire-chamber, in which is set the metallic pan B, one end, B′, of which is closed, while the opposite end C is open and may terminate in a spout. Fuel is introduced through the door D, and E is the bottom of the flue, the bottom of the pan B forming the top thereof; and a suitable opening upon the opposite side and end of the arch should be provided with a suitable opening for the exit of the smoke and to provide a draught. F is a crank-shaft, suitably journaled, and to it are connected the rods G, which are provided with a series of scrapers, H. The opposite ends of these rods are held together by means of the cross-tie I. J is a frame prolongation of the arch, and to each of its inner and opposite sides are secured the V-shaped slides K. L is another slide, pivoted to the sides of the frame prolongation in such a manner that its point will engage with one of the arms of the V-shaped slide, as shown more clearly in Fig. 2.

Sand or gravel is shoveled into the closed end of the pan B′, and, a fire being made in the arch and any desired or convenient power being applied to the crank-shaft, a forward, upward, backward, and downward motion is given to the rods G and the scrapers H at each revolution of the crank-shaft, moving the sand or gravel over the heated bottom surface of the pan successively the length of the stroke of the crank, until the contents of the pan are forced out of the open end C thoroughly heated and dried. In order to compel the opposite end of the rods G to rise and fall coincident with the like motion of the end attached to the crank-shaft, the cross-tie I is made to project beyond the rods, and in the forward motion slide down the inclined face *a* of the V-shaped slides, and, in the upward motion, slide up the face B of said slides, passing under the point of the slide L, which rises for that purpose, and falls to place again as soon as the cross-tie has passed; and in the backward motion said cross-tie slides along the upper face of the slide L until it has passed the pivoting point thereof, thereby securing a uniform motion to the rods and scrapers.

In place of the latter-named devices another crank-shaft may be employed, if deemed preferable, and the two crank-shafts may be connected together by suitable connecting-rods.

In order to utilize the heat and steam thrown off from the pan B and its contents, another

open pan, M, (shown in dotted lines in Fig. 1,) may be set upon the arch, wherein more sand may be placed.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a sand and gravel drying apparatus, the combination of crank-shaft F, rods G, scrapers H, cross-tie I, V-shaped slides K, and pivoted slide L with the pan B and arch A, when constructed and operating substantially as and for the purposes set forth.

2. In combination with the foregoing-named parts, the pan M, for the purposes set forth.

HIRAM R. JOHNSON.

Witnesses:

THOS. S. SPRAGUE,

MYRON H. CHURCH.