J. MAGUIRE.
SAND DRIERS.

No. 195,717. Patented Oct. 2, 1877.

Fig. 1.

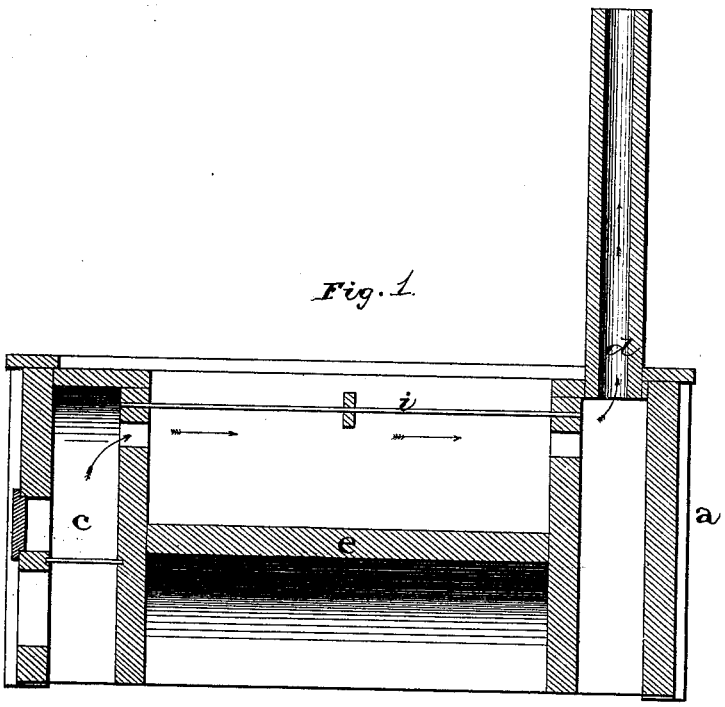
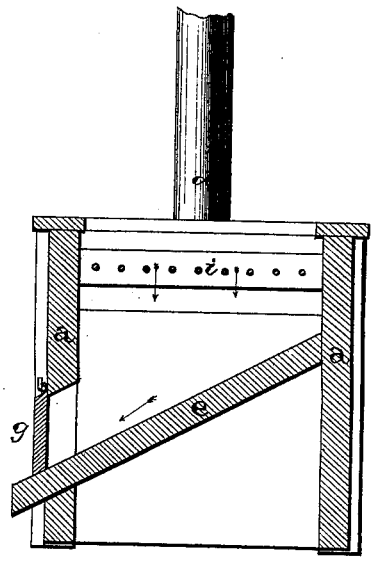


Fig. 2.



WITNESSES:
J. Wm. Garner.
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UNITED STATES PATENT OFFICE.

JAMES MAGUIRE, OF MAPLETON DEPOT, PENNSYLVANIA.

IMPROVEMENT IN SAND-DRIERS.

Specification forming part of Letters Patent No. **195,717**, dated October 2, 1877; application filed August 27, 1877.

To all whom it may concern:

Be it known that I, JAMES MAGUIRE, of Mapleton Depot, in the county of Huntingdon and State of Pennsylvania, have invented certain new and useful Improvements in Sand-Drier; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in sand-driers, used in drying flint sand for the use of glass-manufacturers; and it consists in the peculiar arrangement and combination of parts, that will be more fully described hereinafter, whereby the heat of the fire is applied directly to the sand.

Figure 1 is a longitudinal section of my invention. Fig. 2 is a vertical cross-section of the same.

a represents the frame of my drier, which may be of any form or construction desired, and which has the furnace *c* formed in one end and the smoke-stack *d* at the other. Between the furnace and the stack is the inclined floor *e*, which is made long enough to project beyond the side of the frame at its lower end. Hinged to the outside of the frame, just above this projecting end of the floor, is the door *g*, which closes the opening in the side of the frame, and prevents the sand that has fallen upon the floor from running out. Across the top of the frame, or a slight distance below its edge, are stretched a series of horizontal parallel bars, *i*, upon which the sand to be dried is placed.

The only sand fit for the manufacture of glass is flint sand, which is obtained by pulverizing flint rocks. In order to facilitate the grinding of the rock a considerable quantity of water is used, and as the sand comes from the crushing-mill it is thoroughly soaked. While thus wet the grains adhere together; but as soon as the heat drives the moisture off the grains at once separate.

The fire having been built in the furnace, the heat, smoke, and all the products of combustion pass along directly under the sand, as shown by the arrows, to the other end of the frame, and then out through the stack. By thus passing the heat under the sand and directly in contact with it, the sand is dried much more rapidly than when placed upon pipes through which the products of combustion pass, and all the steam is carried off with the smoke and heat. The grains of sand being perfect crystals, as fast as they dry the grains at once fall through upon the inclined floor *e*, ready to run out as soon as the door is opened.

By the construction above described, it is only necessary to throw the wet sand on the bars, start the fire, and close the door *g*, and the whole process will go on without the slightest attendance.

It is evident that the floor need not be inclined, as shown, as it may be placed in any other position, though it is most convenient for use when inclined.

Where the driers are large a furnace will be made in each end, and the smoke-stack placed in the middle.

I am aware that driers in which the heat is passed entirely through pipes, and the sand placed upon the pipes, to be dried, are not new, and these I disclaim. Where the heat is passed through the pipes a large proportion of it is expended in heating one-half of the pipes the surfaces of which do not come in contact with the sand, and therefore do little if any good. In order to dry the sand rapidly and effectively the heat must come in direct contact with the sand, so as to carry off the steam.

Having thus described my invention, I claim—

In a sand-drier, the combination of the frame *a*, furnace *c*, stack *d*, floor *e*, door *g*, and bars or wires *i*, whereby the products of combustion come directly in contact with the sand, so as to carry off the steam and moisture, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 20th day of August, 1877.

JAMES MAGUIRE.

Witnesses:

W. A. MAGUIRE,

A. W. SWOPE.