(No Model.)

A. V. HARTWELL.

SAND DRIER.

No. 313,732. Patented Mar. 10, 1885.

Fig. 1.

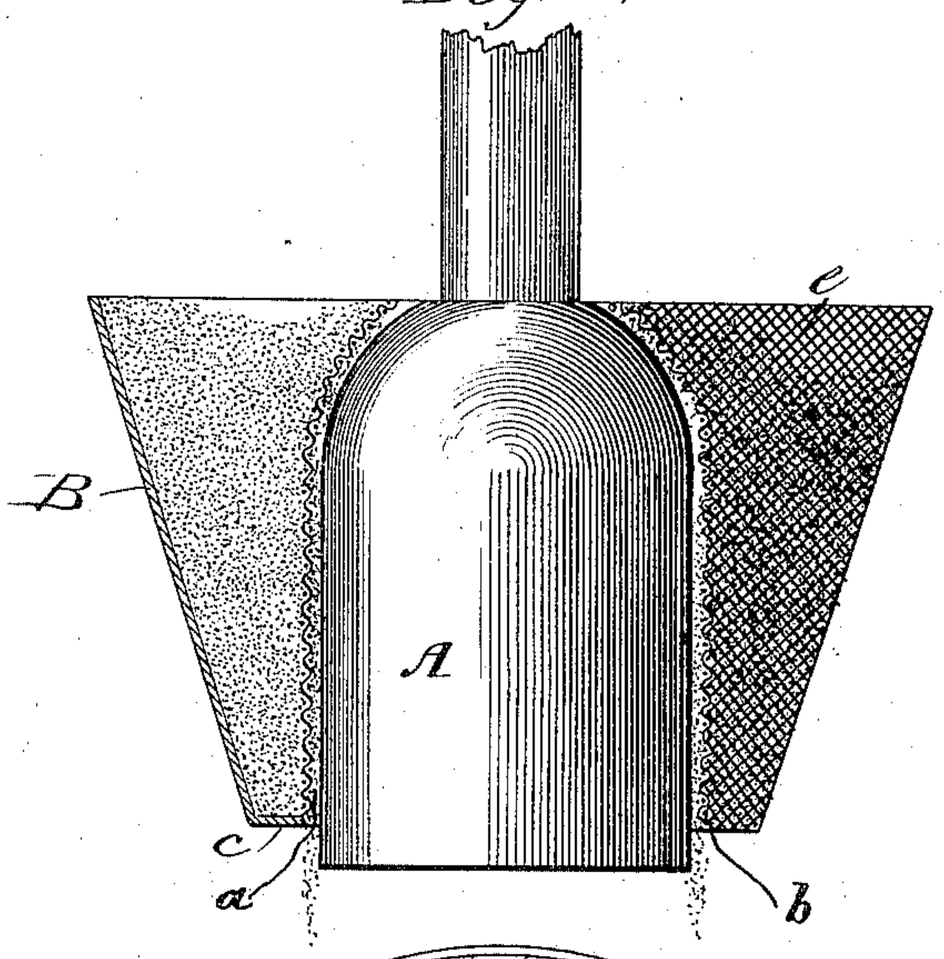
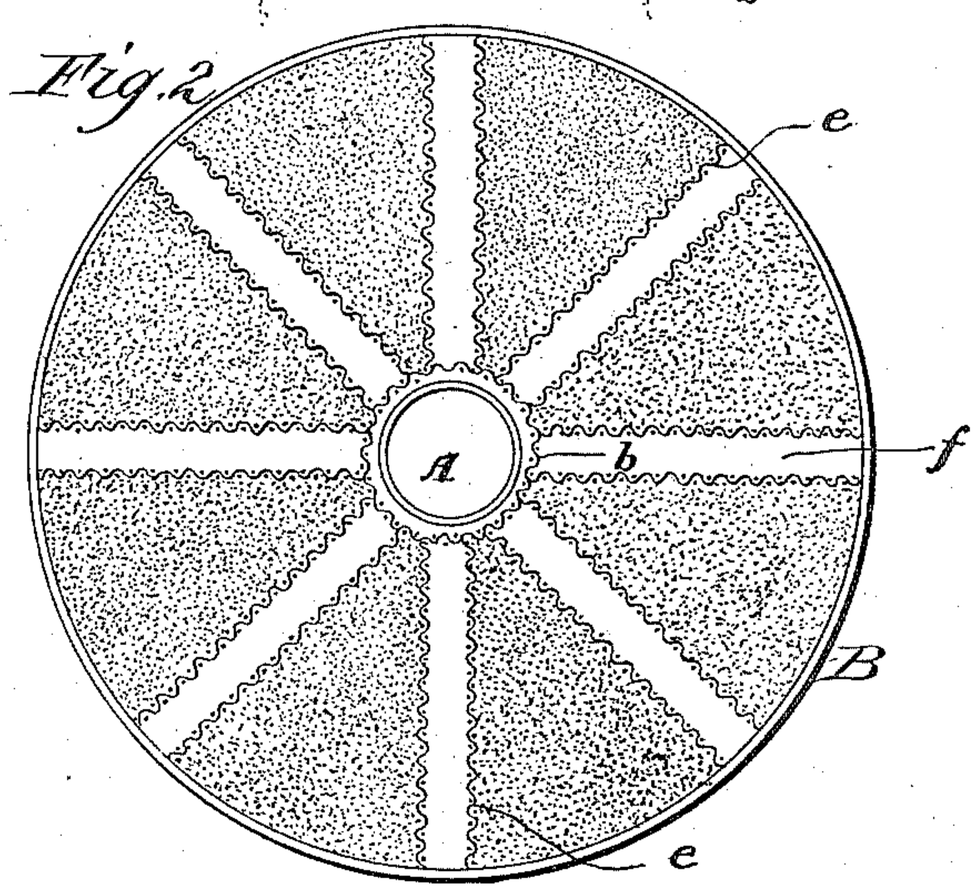


Fig. 2.



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UNITED STATES PATENT OFFICE.

ABRAHAM V. HARTWELL, OF CHICAGO, ILLINOIS.

SAND-DRIER.

SPECIFICATION forming part of Letters Patent No. 313,732, dated March 10, 1885.

Application filed February 27, 1884. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM V. HARTWELL, a citizen of the United States, residing in the city of Chicago, county of Cook, in the State of Illinois, have invented new and useful Improvements in Sand-Driers, of which the following is a specification.

This invention relates to improvements in sand-driers, in which the walls of a stove or other heating-surface form the inner walls of a surrounding hopper or sand-receptacle, said sand-driers being principally employed for driving out moisture from sand designed to be used upon locomotives for increasing traction.

Prior to my invention sand-driers have been constructed in such a manner that the sand is in direct contact with the heating-surface, and frequently becomes packed in the hopper in such a manner as to prevent anything like a free escape of the moisture, and the result is, that the sand must be heated to a very high degree of temperature, so that the moisture will be thrown off after the sand is removed from the hopper. Furthermore, wet sand in contact with a highly-heated surface is liable to cake and prevent the sand from escaping from the hopper through the outlets usually employed in the bottom thereof as fast as the sand becomes dry.

The object of my invention is to avoid this objection by providing, as nearly as possible, for a free circulation of hot air at different points through the sand in the hopper; to provide a hot-air chamber between the heating-surface and the sand, and at the same time secure a circulation through or contact with the sand of the hot air in said chamber, while at the same time providing means for the sand to escape through the hot-air chamber as fast as the sand becomes sufficiently dry; to provide for a circulation of hot air at different points through the sand in the hopper, and at the same time for the escape of the sand as fast as it becomes sufficiently dry. I attain these objects by devices illustrated in the accompanying drawings, in which—

Figure 1 represents two vertical sections through a sand-drier, the section on the left in said drawings being without the radial air-chambers hereinafter described, and the section on the right in said drawings showing a perforated partition of one of said chambers. Either or both of said constructions so shown would be within the inventions herein described and claimed. Fig. 2 is a plan view showing the radial air-chambers.

Similar letters of reference indicate the same parts in both figures of the drawings.

A represents a heating-surface, which may consist of a stove or boiler, as shown in Fig. 1, and B is a hopper surrounding the same, which hopper may be of any desirable or convenient form, as in the form of a truncated cone inverted, as indicated, or rectangular or cylindrical. Surrounding the heating-surface to form a hot-air chamber, *a*, is a wire fabric, *b*, which may be said to form the inner wall of the hopper, said air-chamber being opened at its lower end for the escape of sand as fast as it becomes sufficiently dried. As will be seen, this hot-air chamber provides for a free circulation of air between the heating-surface and the hopper, while as fast as the sand becomes dried it is free to pass through the netting and escape to a suitable receptacle below the hopper, and, besides this, the wire fabric provides numerous inlets through which the air may escape through the netting and circulate through the sand contained by the hopper, and by this means the drying of the sand be facilitated and at the same time accomplished by a less degree of heat than is usually required in the sand-driers now employed.

The hopper may be provided with a bottom, *c*, having suitable apertures providing for the escape of the sand, though instead thereof the wire fabric may terminate at the lower edge of the outer wall of the hopper, for in itself it constitutes outlets for the sand, and the hopper may be held in its operative position upon any suitable base, or by means of bars extending from its outer wall to and connected with the heating-surface.

As a means for securing a further and possibly a more effectual circulation of air through, and an escape of the sand from, the hopper, radial or diametrical partitions *e e*, forming air-chambers *f*, may be employed, forming extensions of the annular chamber *a*. In this connection it may be stated that the perforated metal may be substituted in part or in whole for the wire fabric heretofore described without a substantial departure from the in-

vention herein involved, for the material of which these chambers are formed includes any medium which will offer a support for the sand, and at the same time provide for a circulation of air through it to the sand, whether or not it admits of the escape through it of the sand in its dried state.

In conclusion, it may also be stated that in connection with the air-chambers artificial means may be used for forcing the hot or dry air through the body of the sand for the purpose of more quickly driving out moisture.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a drier, a heater combined with a surrounding hopper having an inner wall constructed of perforate material, an open-bottomed hot-air chamber and discharge being formed between the wall of the heater and said inner wall of the hopper, substantially as set forth.

2. In a drier, a heater combined with a surrounding hopper having an inner wall constructed of perforate material, and with hot-air chambers of like material extending radially from the inner wall of the hopper, an open-bottomed hot-air chamber and discharge being formed between the heater and the said inner wall of the hopper, and having communication with the radial hot-air chambers, substantially as set forth.

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