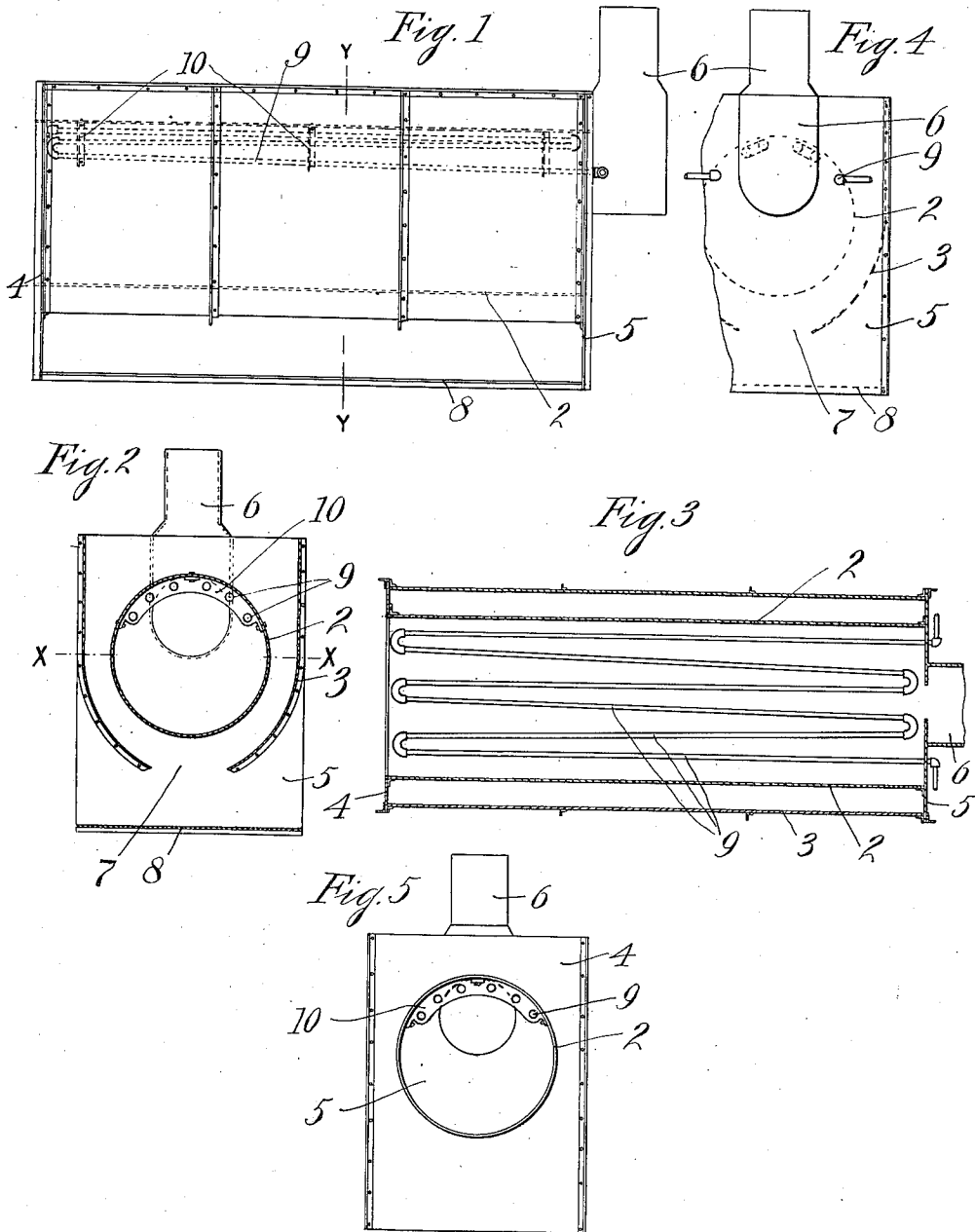


H. C. FREEMAN.
SAND DRYING APPARATUS.
APPLICATION FILED MAR. 12, 1909.

963,133.

Patented July 5, 1910.



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UNITED STATES PATENT OFFICE.

HORACE C. FREEMAN, OF WHITE BEAR, MINNESOTA.

SAND-DRYING APPARATUS.

963,133.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HORACE C. FREEMAN, a citizen of the United States, residing at White Bear, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Sand-Drying Apparatus, of which the following is a specification.

My invention relates to improvements in sand drying apparatus, its object being to provide improved apparatus into which sand, gravel, and the like can be easily and quickly fed, in which all particles of the sand shall be brought into close proximity to the heating apparatus and effectually dried, and which is provided with means for retaining the heat after the fire gets low.

To this end the invention consists in the construction, combination and arrangement of parts hereinafter described and claimed.

In the accompanying drawings forming part of this specification, Figure 1 is a side view of the apparatus; Fig. 2 is a vertical section on line *y-y* of Fig. 1; Fig. 3 is a horizontal section on line *x-x* of Fig. 3; Fig. 4 is an elevation partly broken away of the smoke stack end, and Fig. 5 is an elevation of the other end.

The apparatus consists, generally speaking, of an elongated inner shell 2, which constitutes the fire box, arranged within an outer shell 3, into which the sand is fed and from which the sand, after passing around under the fire box, is discharged through an opening in the bottom. The fire box is supported at its opposite ends in the end walls 4 and 5. At the front end it is open to receive fuel, while at its rear end it leads through the end wall 5 into a smoke pipe 6 arranged upon the outside of the wall. The inner shell is preferably cylindrical in shape and long enough to give the apparatus sufficient capacity for drying a large amount of sand.

The outer shell 3, which forms the side walls of the apparatus and extends up above the fire box, is secured between the end walls 4 and 5, and is open at the top the entire width of the end walls, as best shown in Fig. 2. At a point about opposite the middle of the inner shell, the outer shell curves inwardly on either side, following the shape of the inner shell, from which it is spaced apart a sufficient distance to leave between the shells a comparatively narrow channel of approximately uniform width through-

out, which forms a passageway for the sand. The shell is formed at the bottom with a longitudinal discharge opening 7 through which the sand falls upon the pan 8, which is arranged below the bottom of the shell and spaced apart therefrom to allow the sand to drop freely through the bottom opening therein. From this pan the dried sand can be shoveled out for use.

To retain the heat when the fire gets low, a series of water pipes 9 are arranged in the top of the fire box from one end to the other thereof. These pipes may be supported in brackets 10 bolted upon the inside of the fire box. The inlet and outlet ends of the pipes are led through the rear wall 5.

In use the sand is fed into the open top of the outer shell upon and around the top of the fire box. Thence it passes down on either side through the curved space between the two shells around and under the fire box to the opening at the bottom, through which it drops onto the bottom plate or pan 8. As the space between the two shells is of substantially uniform width and comparatively narrow, and as this channel extends around under the bottom of the fire box, the sand, in passing down, will become thoroughly heated, and all particles thereof will come under the influence of the heat. The end walls of course close the ends of the passage between the shells. The water in the pipes will retain the heat after the fire gets low or goes out, and being placed directly under the top of the fire box will help heat the sand above it. Furthermore the pipes will afford a convenient and economical means of heating the water which is to be mixed with the sand in cold weather.

I claim as my invention:

1. A sand drier comprising a pair of end walls, an approximately cylindrical fire box supported lengthwise between the end walls, and an open topped outer shell extending around the sides and bottom of the fire box and having an opening at the bottom for the discharge of material, the outer shell being spaced apart from the fire box on each side a passage for material to be dried, said passages being of substantially uniform width and extending from about the middle of the fire box around under the same to the opening at the bottom, and a pan arranged below the bottom of the shell and spaced apart therefrom to

allow the dried material to drop freely through the opening therein.

2. An apparatus of the class described comprising end walls, an elongated fire box supported therein, an open topped outer shell on the outside of the fire box and spaced apart therefrom to form a passage for material, and water piping supported in the top of the fire box, for the purpose
10 set forth.

3. A sand drier comprising an elongated inner shell constituting a fire box, an outer shell extending around the fire box but

spaced apart therefrom, said shell being open at the top for the reception of material, 15 brackets bolted upon the inner side of the top of the fire box and water pipes extending through the length of the fire box and supported in said brackets.

In testimony whereof I affix my signature 20 in presence of two witnesses.

HORACE C. FREEMAN.

Witnesses:

ARTHUR P. LOTHROP,
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