

S. WIEBE.  
 DRYING APPARATUS.  
 APPLICATION FILED MAR. 4, 1910.

977,244.

Patented Nov. 29, 1910.

2 SHEETS—SHEET 1.

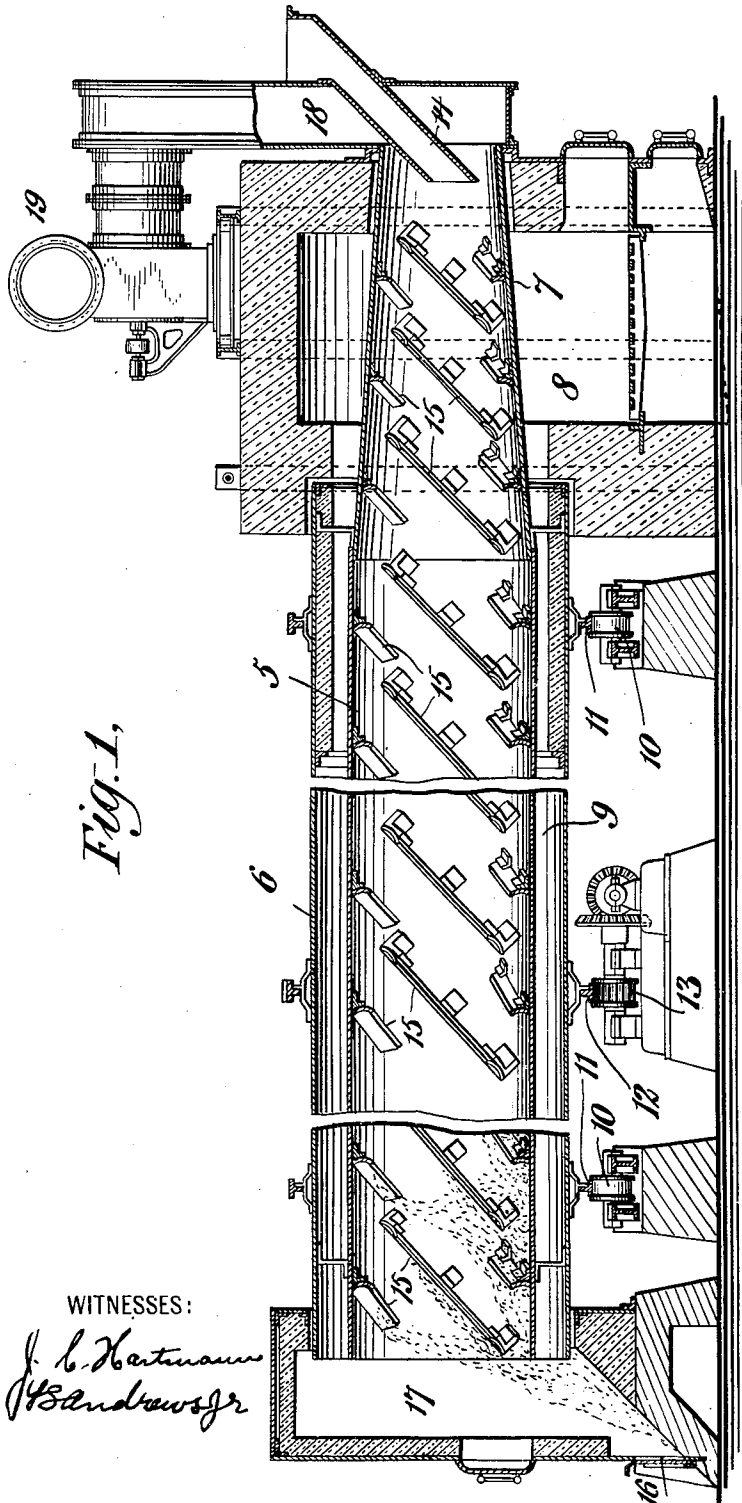


Fig. 1,

WITNESSES:

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INVENTOR

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2 SHEETS—SHEET 2.

Fig. 3

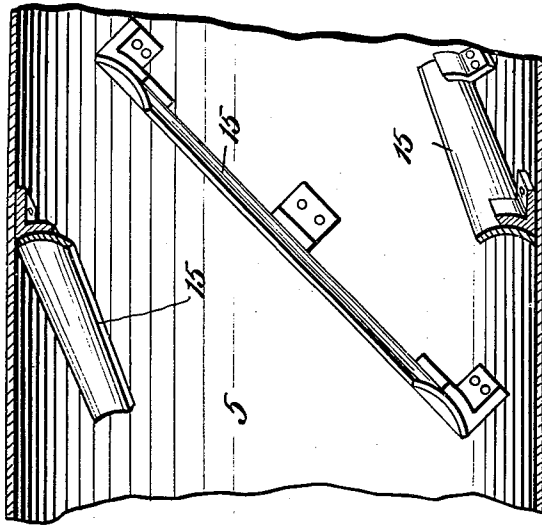
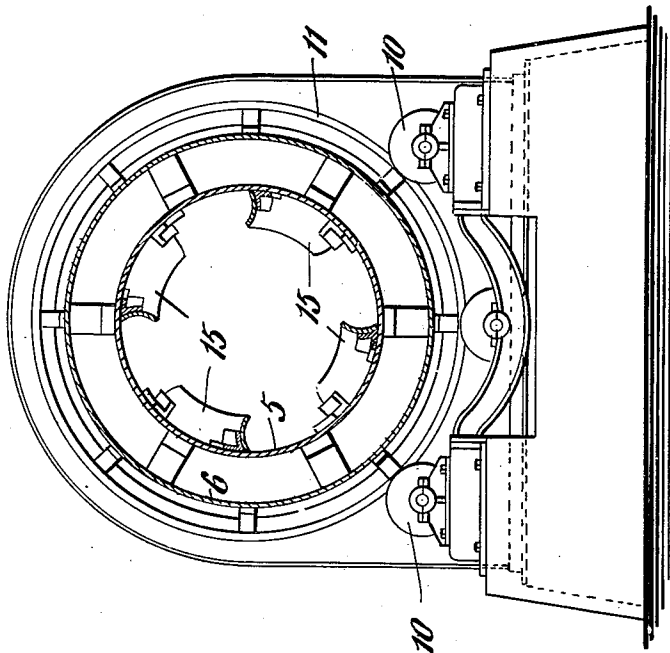


Fig. 2



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# UNITED STATES PATENT OFFICE.

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## DRYING APPARATUS.

977,244.

Specification of Letters Patent.

Patented Nov. 29, 1910.

Application filed March 4, 1910. Serial No. 547,183.

*To all whom it may concern:*

Be it known that I, SIGURD WIEBE, a subject of the Crown of Sweden, and a resident of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Drying Apparatus, of which the following is a specification, reference being had to the accompanying drawing, forming a part thereof.

My invention relates to improvements in drying apparatus, and particularly to apparatus for drying sand.

My invention consists first, in a peculiar construction and arrangement of parts constituting the drying shell and means for directing hot gases thereover and there-through; and second, in a peculiar form, arrangement, and disposition of rotatable shovels carried by the drying shell.

In order that my invention may be fully understood, I will describe an embodiment thereof such as is illustrated in the accompanying drawings, and will then point out the novel features in claims.

In the drawings: Figure 1 is a view in central vertical longitudinal section through an apparatus constructed in accordance with my invention, portions of the apparatus being broken away and the remaining portions moved together in order to permit of the illustration being made upon a larger scale. Fig. 2 is a view in transverse section through the apparatus. Fig. 3 is a detail view in longitudinal section of a portion of the drying shell, showing the same upon an enlarged scale.

The apparatus comprises, in general, two cylindrical shells 5 and 6 spaced apart but secured together and rotatably mounted as a whole, the inner shell 5 being provided with a portion 7 which projects beyond the end of the shell 6, and a furnace chamber 8 for receiving the projecting end 7 of the shell 5, the furnace chamber being in open communication with the annular space 9 between the two shells. A connecting chamber 17 is also provided at the opposite end of the apparatus whereby the products of combustion from the furnace will be conducted from the space 9 between the two shells to within the shell 5 whence they may flow through a receiving passage 18 at the furnace end of the apparatus, and thence

upward through a suitable suction apparatus 19 or other device for causing the gaseous currents to flow freely through the apparatus.

The inner shell 5 is supported wholly by the outer shell 6 while the outer shell is conveniently supported by means of antifriction rollers 10 which engage circular tracks 11 carried by the said outer shell. The said outer shell is also provided with a gear wheel 12, the teeth of which are arranged in mesh with a pinion 13 through which movements of rotation may be imparted to the said shells. The interior shell 5 is arranged to receive the sand or other material to be dried through a receiving hopper 14 at the furnace end of the device. At its interior the said shell is provided with a plurality of progressively disposed angularly arranged transversely curved shovels 15. These shovels are so disposed and arranged with respect to the shell, and the shell is rotated in such a direction, that the sand or other material to be dried will be picked up by the shovels as the shell rotates, and passed along to the next shovel arranged obliquely in advance thereof. This will cause a constant agitation and turning over of the sand or like material, whereby all parts thereof will be thoroughly, constantly, and uniformly exposed to the heat of the gases passing through the apparatus, and will gradually feed the material from one end of the apparatus to the other. The transversely curved form of the shovels insures the sand being carried up the required distance before it is freed laterally from the shovel, while the oblique disposition thereof in the proper direction causes the sand to be progressively moved forward through the apparatus in the revolution of the shells. The passage of the sand through the apparatus will be from the furnace end toward the opposite end of the apparatus and in a direction opposite to the direction of the hot gases therethrough. At the end of the apparatus opposite to the furnace end the chamber 10 is provided with an outlet or discharge 16 through which the sand or other dried material may be delivered.

I have found that an apparatus constructed in accordance with my present invention is an exceedingly efficient one for drying

sand and similar building material. On the other hand, it is inexpensive to build and takes but little power to operate it.

What I claim is:

- 5 1. In a drying apparatus, the combination with two concentric shells spaced apart but secured together, the whole being rotatably supported, the inner said shell projecting at one end beyond the outer said shell,  
10 of a furnace chamber for receiving the projecting end of the inner shell whereby the products of combustion in the said chamber will impinge directly upon the walls of the inner shell and will then pass between the  
15 two shells to the opposite end thereof and thence return through the inner shell, and means for rotating the shells.
2. In a drying apparatus, the combination with two concentric shells spaced apart  
20 but secured together, the whole being rotatably supported, the inner said shell projecting at one end beyond the outer said shell, of a furnace chamber for receiving the projecting end of the inner shell whereby  
25 the products of combustion in the said chamber will impinge directly upon the walls of

the inner shell and will then pass between the two shells to the opposite end thereof and thence return through the inner shell, the inner shell being provided upon its inner  
30 wall with obliquely disposed shovels, and means for rotating the shells.

3. In a drying apparatus, the combination with two concentric shells spaced apart but secured together, the whole being rotatably supported, the inner said shell projecting at one end beyond the outer said shell, of a furnace chamber for receiving the projecting end of the inner shell whereby the products of combustion in the said  
40 chamber will impinge directly upon the walls of the inner shell and will then pass between the two shells to the opposite end thereof and thence return through the inner shell, the inner shell being provided upon  
45 its inner wall with obliquely disposed transversely curved shovels, and means for rotating the shells.

SIGURD WIEBE.

Witnesses:

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