No. 730,086. PATENTED JUNE 2, 1903.

H. W. BOHRMAN.

SAND DRIER.

APPLICATION FILED FEB. 16, 1903.

NO MODEL.

Fig. 1.

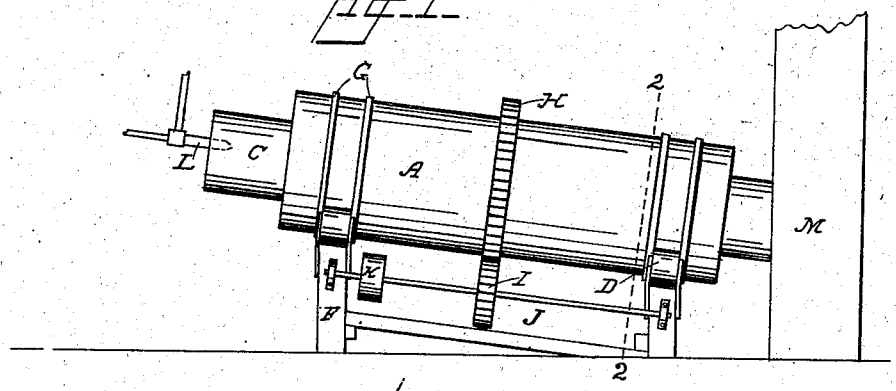
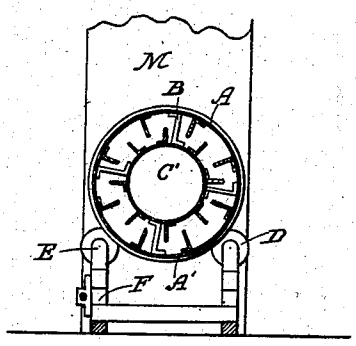


Fig. 2.



Witnesses.
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 730,086. Patented June 2, 1903.

UNITED STATES PATENT OFFICE.

HENRY W. BOHRMAN, OF LOS ANGELES, CALIFORNIA.

SAND-DRIER.

SPECIFICATION forming part of Letters Patent No. 730,086, dated June 2, 1903.

Application filed February 16, 1903. Serial No. 143,714. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. BOHRMAN, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Sand-Driers, of which the following is a specification.

My invention relates to improvements in sand-drying machines, although the machine may be used for drying other loose material; and the object thereof is to produce a simple and economically-operated machine for the purpose. I accomplish this object by the machine described herein and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved machine, and Fig. 2 is a cross-section on the line 2 2 of Fig. 1.

In the drawings, A is the outer shell of the drying-chamber, within which and secured thereto by spacing-arms B is the inner shell C of the drying-chamber, the space between the shells constituting such drying-chamber. To the inner face of the outer shell and extending the entire length thereof is secured a series of parallel flanges A′, which preferably extend a little beyond the center of the drying-chamber. To the outer face of the inner shell and extending the entire length of the outer shell is secured a series of parallel flanges C′, which preferably extend a little beyond the center of the drying-chamber and are stepped with relation to the flanges of the outer shell. These flanges may be straight or spiral. The outer shell of the drying-chamber is supported upon rollers D, mounted in bearings E, affixed to frame F. Annular rings G are secured to the outer shell to form guides with the rollers to prevent the drying-chamber from having any longitudinal motion. To the outer shell is secured a gear-ring H, which meshes with a gear I, rigidly mounted on shaft J, which shaft is mounted in bearings affixed to the frame. A driving-pulley K is also rigidly mounted on shaft J for the reception of a belt (not shown) to impart motion thereto. A hydrocarbon-burner L discharges fuel into the upper end of the inner shell, and the lower end of the inner shell extends into stack M. The shells of the drying-chamber and the flanges thereof are preferably made of sheet-steel of suitable thickness, and they are set at the proper slant to cause the travel of the sand from the inlet to the outlet at the desired rate of speed to thoroughly dry it.

In the operation of my machine the inner shell is thoroughly heated and power is applied to rotate the drying-chamber. The sand or other material is then thrown into the lower part of the upper end of the drying-chamber. The flanges of the outer shell carry the sand upward, and as it rises it is gradually deposited on the inner shell, which carries it around to the other side, where it is gradually deposited upon the outer shell, and this process is repeated until the sand finally passes out at the lower end of the drying-chamber next to the stack thoroughly dried and ready for use. As the chamber is set at an inclination, the sand on each revolution thereof is caused to travel toward the lower end thereof, and it is constantly changing the surface presented to the inner shell, thereby preventing the shell from becoming too highly heated. The flanges of the inner shell also radiate the heat, which helps to keep the shell cool and to dry the sand or other material. By this construction a very light machine may be used which has great efficiency in drying sand; that as the sand or other material is continually passing or dropping from the outer shell to the inner shell and from the inner shell to the outer shell the adhesion of said sand, caused by the dampness thereof, is overcome, and the moisture escapes in the form of steam through the ends of the drying-chamber; that the sand is not dried in a drying-chamber through which the products of combustion and draft pass, and that all of the fine sand is retained and none of it is drawn up the stack, as is the case when the draft and products of combustion pass through the drying-chamber.

When it is desired to use with my sand-drier other fuel than liquid-hydrocarbon fuel, a furnace N in which to use coal, wood, coke, or other fuel, may be used, the products of combustion being led into the interior cylinder, as shown in dotted lines in Fig. 1.

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

1. A sand-drier comprising a stack; a cyl-

inder inclining downwardly and entering said stack; a second cylinder open at both ends surrounding said first cylinder and secured thereto by spacing-arms; inner flanges secured to said outer cylinder; outer flanges secured to said inner cylinder within said outer cylinder; a frame having rollers therein adapted to support said outer cylinder; and means to rotate said cylinders.

2. A sand-drier comprising a stack; a downwardly-inclined cylinder open at both ends and having its lower end entering said stack; a second cylinder open at both ends surrounding said first cylinder except at the extreme ends thereof and secured thereto by spacing-arms; flanges contacting with and secured to the inner side of said outer cylinder, flanges contacting with the outer side of the inner cylinder within the outer cylinder throughout the entire length of said flanges and secured thereto; said flanges being stepped as to the flanges on the outer cylinder; a frame having rollers adapted to support said outer cylinder; means to rotate said cylinders; a hydrocarbon-burner projecting into the higher end of said inner cylinder.

3. A sand-drier comprising a frame; a stack; two inclined concentric cylinders, one within the other rotatably mounted in said frame, the inner of said cylinders at its lower end extending into said stack; a hydrocarbon-burner projecting into the upper end of said inner cylinder; and means to rotate said cylinders.

In witness that I claim the foregoing I have hereunto subscribed my name this 9th day of February, 1903.

H. W. BOHRMAN.

Witnesses:
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