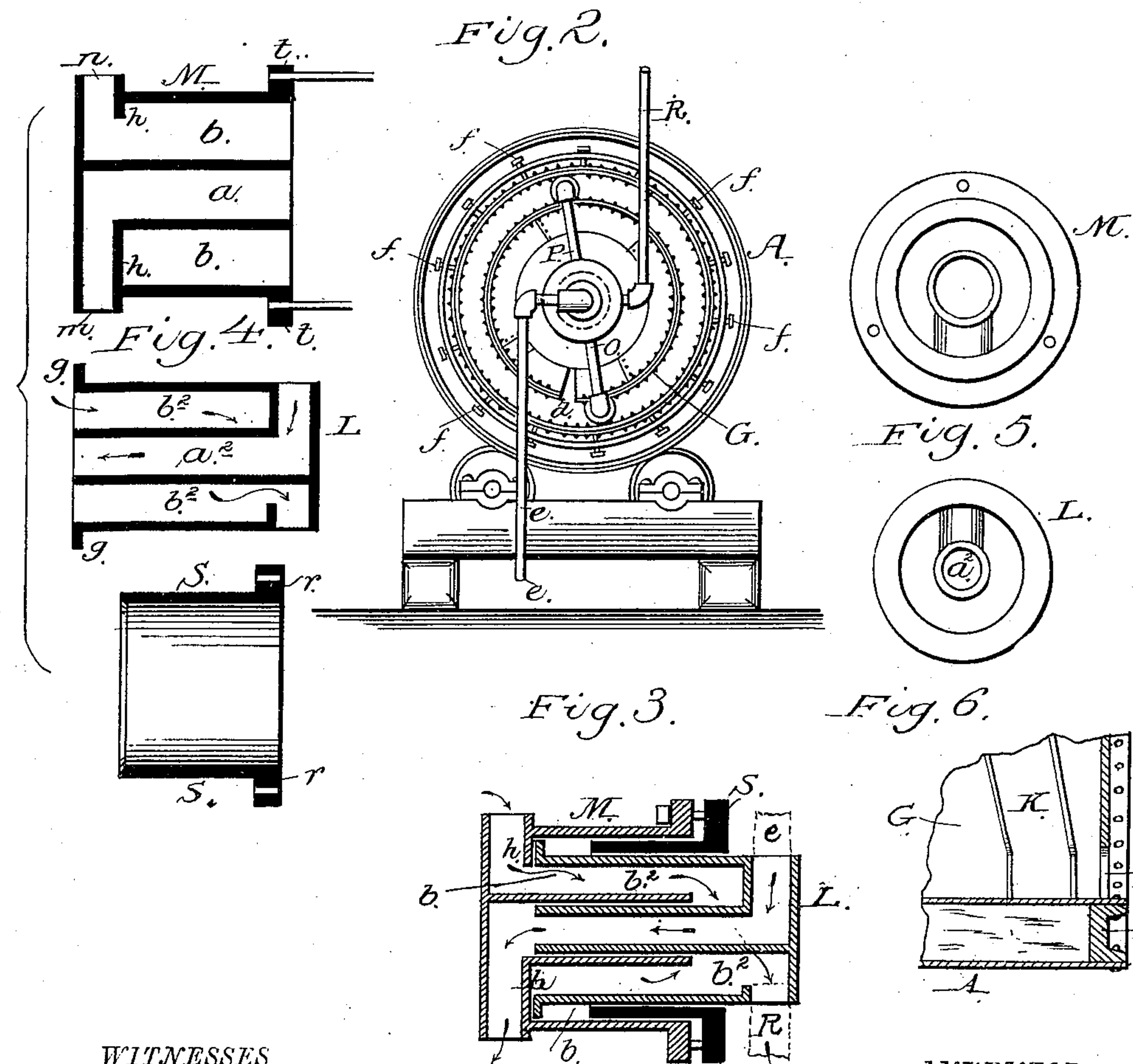


C. H. B. CARTER & W. S. JOHNSON.

No. 323,785.

Patented Aug. 4, 1885.



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UNITED STATES PATENT OFFICE.

CALEB H. B. CARTER AND WILLIAM S. JOHNSON, OF OMAHA, NEBRASKA.

DRIER.

SPECIFICATION forming part of Letters Patent No. 323,785, dated August 4, 1885.

Application filed April 14, 1885. (No model.)

To all whom it may concern:

Be it known that we, CALEB H. B. CARTER and WILLIAM S. JOHNSON, citizens of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Steam-Driers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 represents a side elevation of our improved drier, with a portion of the same broken away to show the interior construction. Fig. 2 represents an elevation taken at one end of the machine. Figs. 3, 4, and 5 are sectional views illustrating certain details of construction. Fig. 6 represents a detail showing the discharge-opening *d*.

Our invention relates to devices for drying shot, sand, grain, or other similar material by the use of either live or exhaust steam; and our invention consists in the construction, arrangement, and combination of devices, all of which will be hereinafter fully described and claimed.

To enable others skilled in the art to make and use our invention, we will now proceed to describe the manner in which we have carried it out.

In the said drawings, A represents an outer cylinder, composed preferably of boiler-iron, and riveted in the usual manner. This cylinder A is provided with annular tracks B, which may be faced with a steel tire, *b*, while the track is secured to the cylinder by bolts *f*, as shown in Figs. 1 and 2.

Within suitable cross-timbers, C, are journaled the ends of longitudinal shafts D, upon which are keyed the flanged wheels *a*, which receive motion through certain pulleys, E, on the shaft D, and impart a rotary movement to the cylinder.

A second cylinder, G, of smaller diameter, is placed within the outer cylinder, and is bolted to the cylinder A and to an annular cast-iron head, F, which separates the cylinders from each other, and forms an annular steam-space, H, as shown.

The inner cylinder, G, is the cylinder in which the material to be dried is inserted through a door, G', or equivalent device, and

on its inside surface is arranged a spiral conveyer, K, which evenly distributes the material and discharges the same through the opening *d* in the end of the machine opposite to where it was entered. (See Fig. 2.)

The steam, which serves as the means for drying the material, is received from any suitable source of supply, and, passing through the pipe *e*, enters the cylinder L, which is provided with longitudinal passages *a*² and *b*². The cylinder L is adapted to enter a cylinder, M, of like construction, and is also provided with a flange, *g*, which abuts against suitable flanges, *h*, on the inside of the cylinder M, and permits the cylinders A and G to have a rotary movement without interfering with or disarranging the steam-pipes. The cylinder M is provided with ports *m* and *n*, the former connecting with the cylinder A through a pipe, O, and permits the steam to enter and circulate through the annular space H. The steam, after filling this annular space, finds an exit through the pipe P, and thence passes into passage *b* in the cylinder M and passage *b*² in cylinder L, and escapes through pipe R, the introduction and escape of the steam being shown by the arrows in Fig. 3.

S represents a packing which is interposed between the cylinders L and M, and it is provided with a flange, *r*, which enables the packing to be bolted to a flange, *t*, on the cylinder M and securely hold these parts together.

By constructing a machine as above described we are enabled to dry shot, sand, grain, or any similar material by the use of live or exhaust steam and in a more satisfactory manner than by many of the devices now in use.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the horizontal cylinder A, having the annular track B, and the interior cylinder, G, having closed ends, with an inlet, G', and a discharge, *d*, of the spiral conveyer K, the flanged head F, to which the ends of both cylinders are bolted, the steam-space H, and the oppositely-placed inlet and exhaust pipes entering and discharging at the same end of the cylinder, substantially as herein described.

2. The combination, with the cylinders A

and G, and the flanged head by which they are bolted together, of the steam-pipes entering and exhausting at the same end of the cylinder, the cylinders L and M, one located within
5 the other, and each provided with communicating inlet and outlet passages, substantially as herein described.

3. In a machine for drying shot, grain, &c., the combination, with the horizontal cylinders A and G, and means for rotating the
10 same, of the telescopic cylinders L and M,

suitable communicating inlet and outlet passages formed in said cylinders, an annular flanged packing, S, bolted to one of the cylinders, and suitable steam and exhaust pipes, 15 substantially as and for the purpose herein described.

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WILLIAM S. JOHNSON.

Witnesses:

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