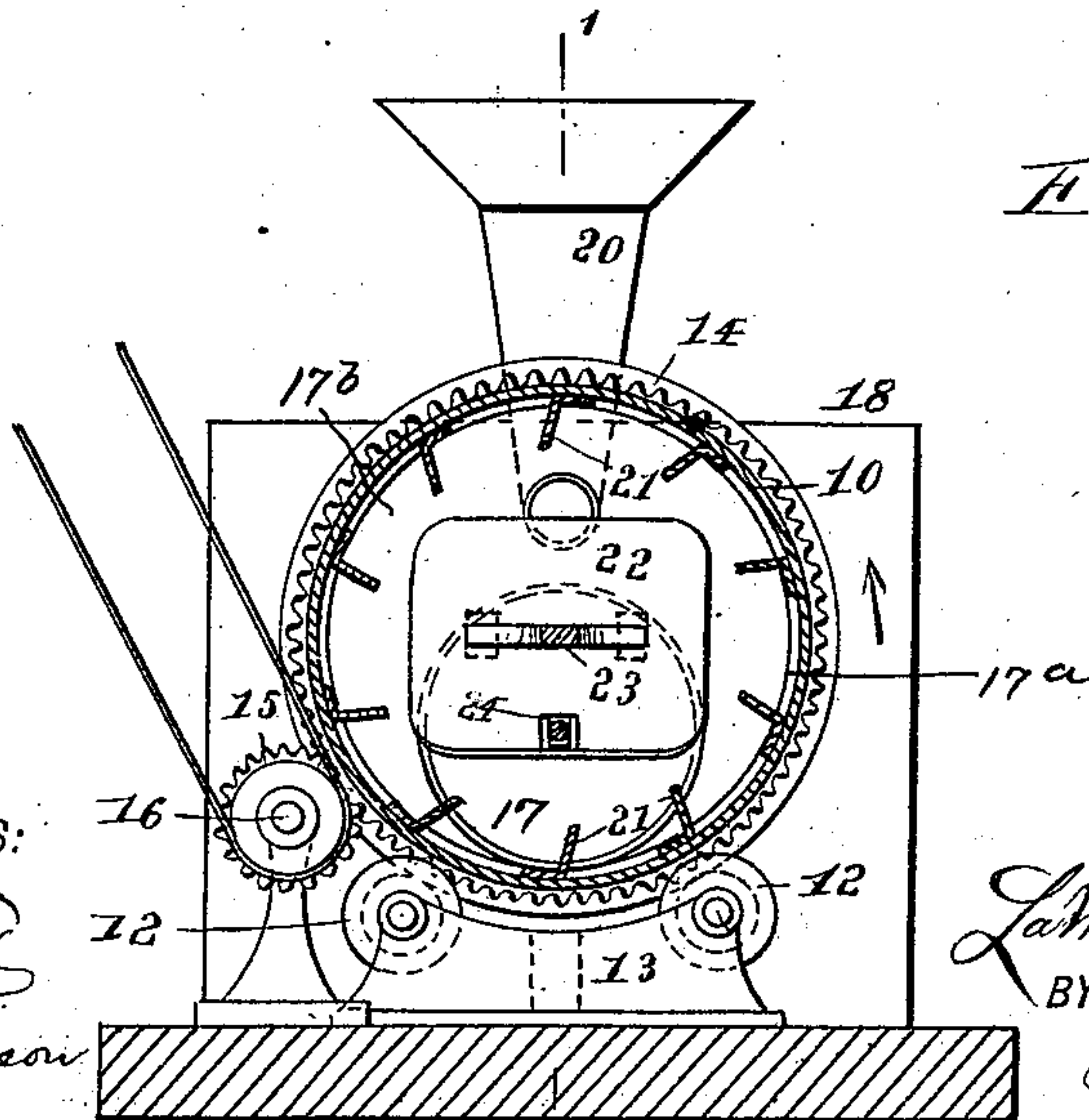
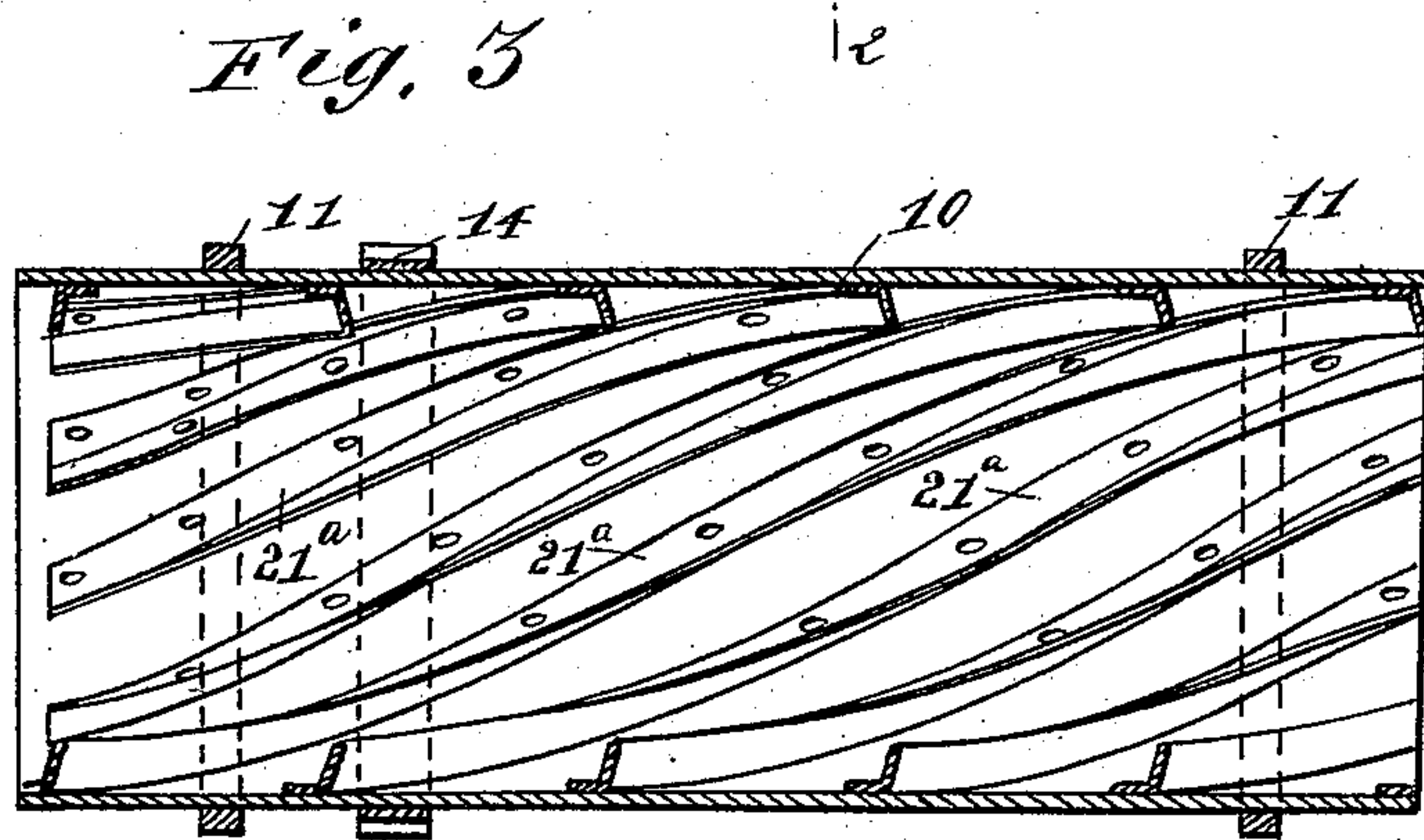
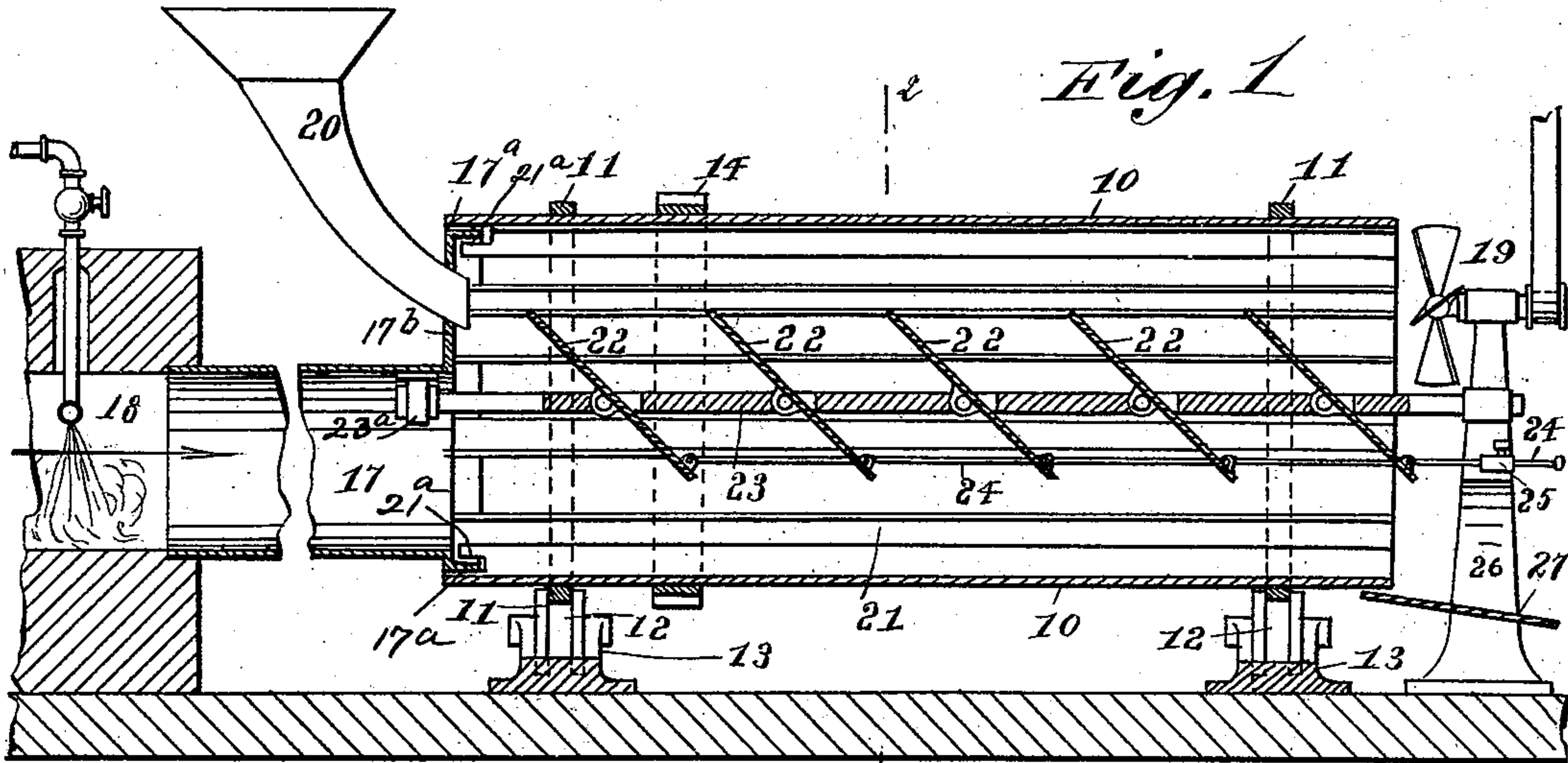


(No Model.)

LA MOTTE C. ATWOOD.
SAND DRIER.

No. 534,491.

Patented Feb. 19, 1895.



WITNESSES:
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UNITED STATES PATENT OFFICE.

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SAND-DRIER.

SPECIFICATION forming part of Letters Patent No. 534,491, dated February 19, 1895.

Application filed August 21, 1894. Serial No. 520,896. (No model.)

To all whom it may concern:

Be it known that I, LA MOTTE C. ATWOOD, of St. Louis, Missouri, have invented a new and Improved Sand-Drier, of which the following is a full, clear, and exact description.

My invention relates to improvements in sand drying machines, although the machine may be used for drying other loose material; and the object of my invention is to produce an extremely simple machine which may be economically operated, which is adapted to cause a large quantity of sand to flow rapidly through it and be subjected to the drying process, and which also has an extremely simple means of forcing a current of hot air through the machine, all to the end that the sand may be rapidly and cheaply dried.

A further object of my invention is to provide a very simple and easily operated means of regulating the flow of sand, so that its rate of travel through the machine may be proportioned to its degree of wetness and to the temperature of the air which is forced through it.

To these ends my invention consists of certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a longitudinal section on the line 1—1 of Fig. 2, of the sand drying machine embodying my invention. Fig. 2 is a cross section on the line 2—2 of Fig. 1; and Fig. 3 is a longitudinal section of a slightly modified form of drying cylinder for the machine.

The machine is provided with an elongated cylinder 10 which turns horizontally, having external bands or tracks 11 running on pulleys 12 which are journaled in suitable supports 13, and the cylinder is provided with an external gear wheel 14 which meshes with and is driven by a gear wheel 15, see Fig. 2, on a driving shaft 16, and the latter may be turned in any convenient way. The pulleys 12 are grooved in their peripheries as seen in Fig. 1 so as to hold the cylinder 10 against longitudinal movement whereby the gears 14 and 15 may be disengaged.

The above arrangement is a very simple way of driving the cylinder, but it will of course be understood that any suitable means may be used for revolving it, without affecting the principle of the machine.

The receiving end of the cylinder is connected with a hot air pipe 17 which is stationary and has a head 17^b provided with a flange 17^a which takes in the open end of the cylinder 10, and the air pipe receives its supply of hot air from a furnace 18 which may be of any usual kind, but which is preferably a petroleum furnace, as illustrated, because such a furnace can be very cheaply and easily run.

At the discharge or open end of the cylinder 10 is an exhaust fan 19, which also may be of any usual kind, and this causes the air to be drawn from the furnace 18 through the cylinder, and the current of hot air quickly dries the sand which is in the cylinder and is moved as described presently; while the fan also serves to draw out the moisture as fast as it is freed from the sand, thus greatly promoting the drying process.

The sand is delivered to the cylinder through a hopper and spout 20, which discharges into the end of the cylinder next the air pipe 17. The cylinder is provided with a series of parallel flanges 21 so that as it revolves the sand is carried to the top of the cylinder and then dropped from the flanges so as to fall vertically, or substantially so, and it is, in its downward movement, caught by the deflectors 22 which are in the shape of parallel plates pivoted to a bar 23, one end of which is mounted in the standard 26 while the other end is secured at 23^a to the air pipe 17 and serves to brace the same. By placing these deflectors at an inclination, as shown in Fig. 1, the sand, which is dropped upon them, is carried forward toward the open end of the cylinder and is in this way discharged. The ends of the flanges 21 are undercut as seen at 21^a, Fig. 1 to receive the flange 17^a on head 17^b and strengthen the joint between the head and cylinder. The rate at which the sand is carried forward depends upon the inclination of the deflectors, and this is regulated by a rod 24 which connects with them all and extends from the open end of the cylinder

through a suitable binding box 25 which is carried by a post or support 26, this, as illustrated, serving also as a support for the fan. The post 26 also supports one end of the bar 23, the other end being secured to the pipe 17, but it may be supported in any suitable and convenient manner.

It will be observed that the furnace and fan cause a constant stream of hot air to travel rapidly through the cylinder, so that the sand, by means of the flanges and deflectors, is kept constantly in the air, that the freed moisture passes out in the way of vapor, and consequently that the machine works very rapidly.

In Fig. 3 I have shown a modification of the machine which enables the central deflectors to be dispensed with, and to this end flanges 21^a are used, which are like the flanges 21, except that they are placed spirally instead of straight in the cylinder, and hence, when the cylinder is revolved the spiral flanges act like a screw and cause the sand to be carried toward the discharge end of the cylinder,

where it is delivered as in Fig. 1, on a suitable chute 27 or may be delivered to a carrier or other receptacle.

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

The combination of a revoluble cylinder having an open end and provided with internal flanges, a hot air furnace, a pipe leading therefrom to the open end of the cylinder, a head on said pipe having a flange fitting in the said open end of the cylinder, the exhaust fan and a standard at the opposite end of the cylinder, a bar extending through the cylinder and connected at one end to said standard and at its other end to the air-pipe, and deflectors adjustably hung on said bar, substantially as set forth.

LA MOTTE C. ATWOOD.

Witnesses:

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