

E. I. BODRIO.

Grain Drier.

No. 30,196.

Patented Oct. 2, 1860.

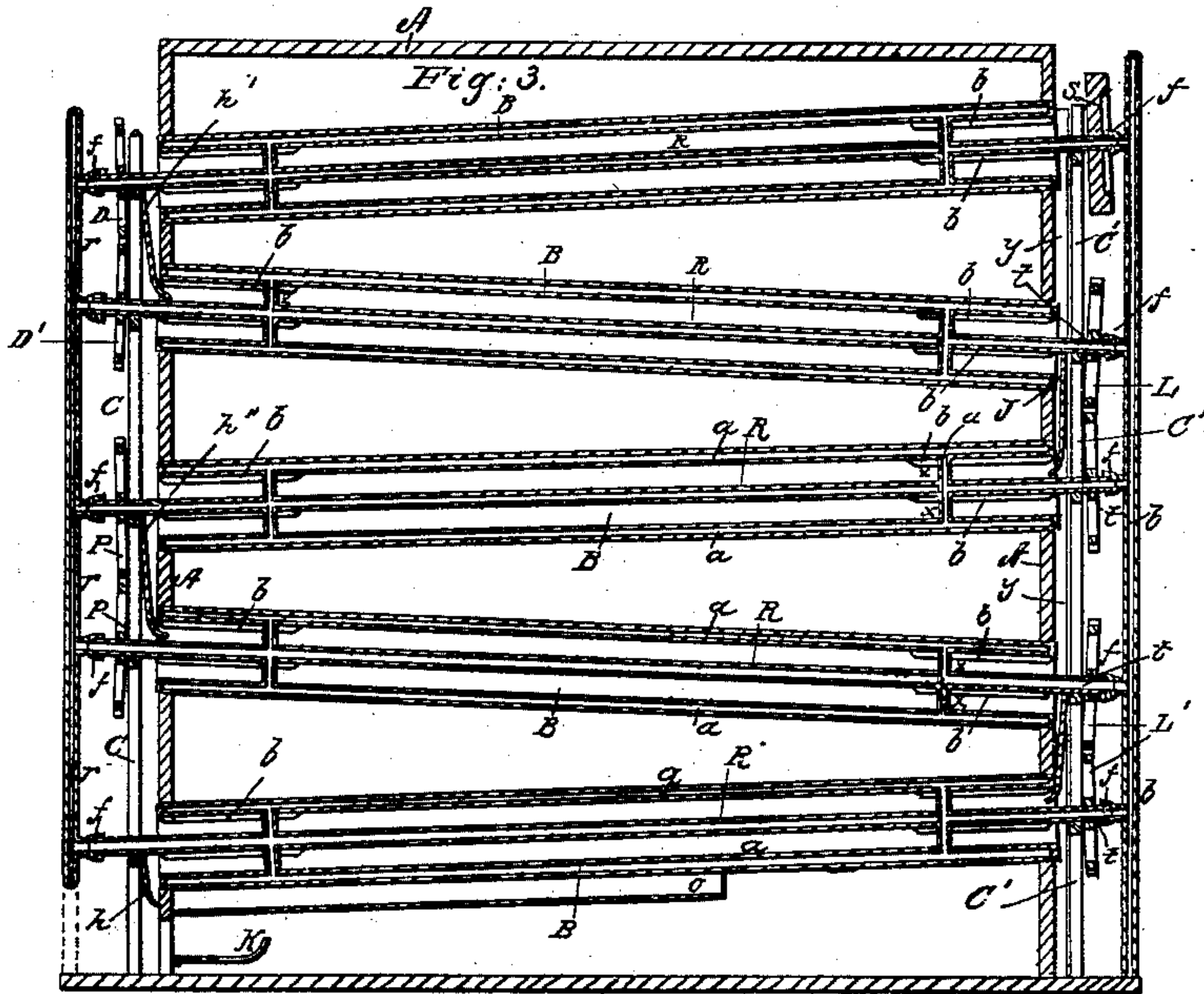


Fig. 2.

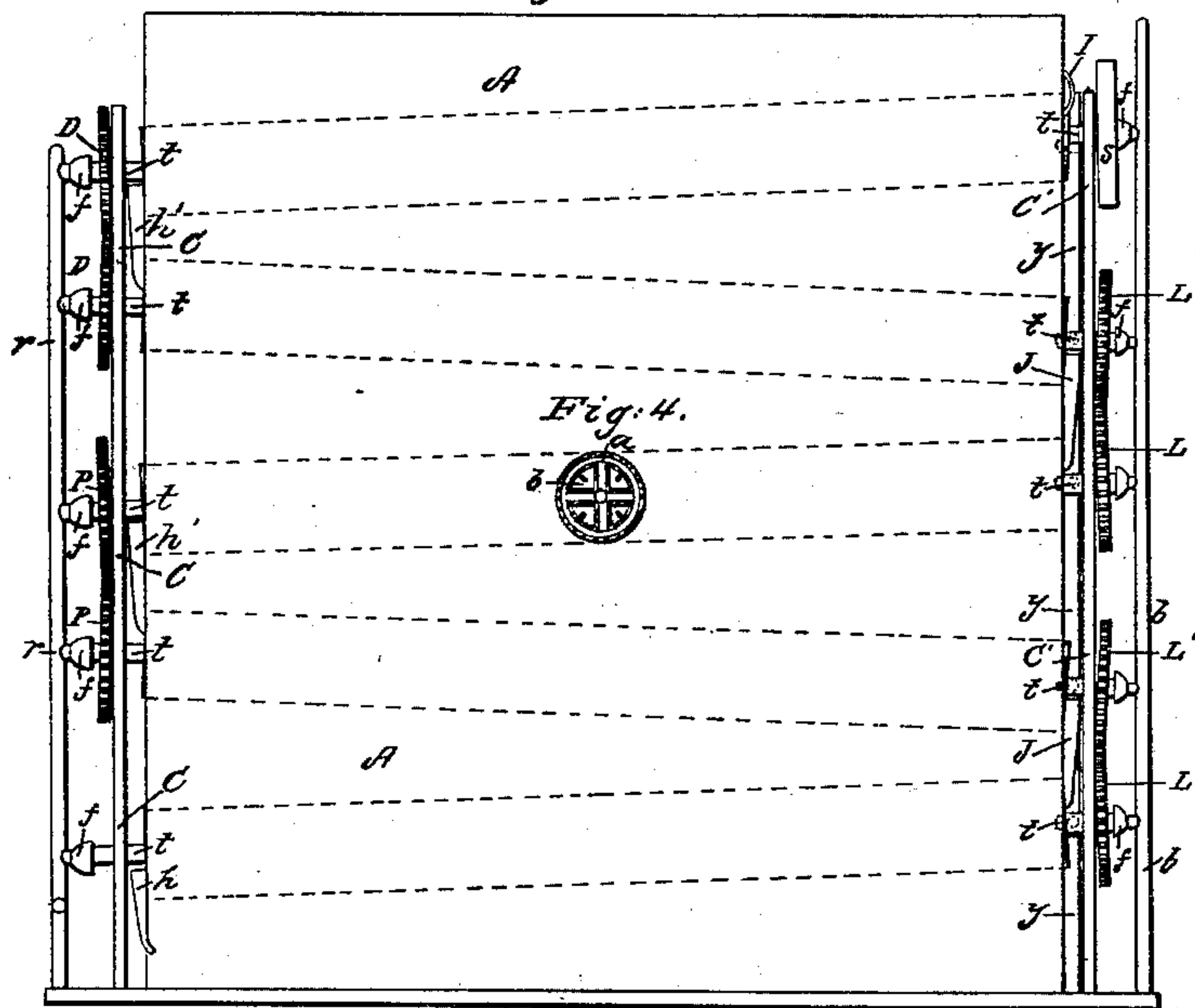
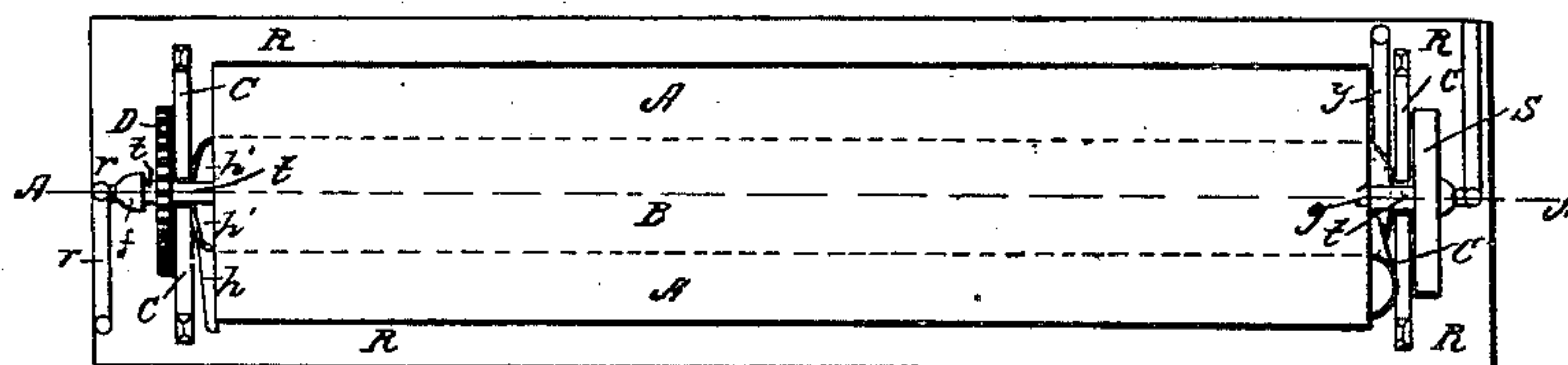


Fig. 1.



Witnesses:
Amos Broadway
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Inventor:
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UNITED STATES PATENT OFFICE.

E. J. BODRIO, OF ST. LOUIS, MISSOURI.

MACHINE FOR DRYING GRAIN.

Specification of Letters Patent No. 30,196, dated October 2, 1860.

To all whom it may concern:

Be it known that I, E. J. BODRIO, of the city of St. Louis and State of Missouri, have invented a new and useful Machine for Drying Grain; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, making part of this specification, in which—

Figure 1 is a top view; Fig. 2 a side elevation; Fig. 3 a vertical section through A' A' of Fig. 1, and Fig. 4 is a part of the machine to be hereinafter referred to and explained.

The following description will enable any one skilled in the arts to which my invention appertains to make and use the same.

Similar letters of reference represent corresponding parts of the different figures of the drawing annexed.

Upon the drawing A represents the frame of the machine, which consists of a closed box or casing made of metal, into which is arranged a series of hollow cylinders B, B, the one above the other and at an inclination with each other in the manner shown. Against the outside of the frame and at the end of the cylinders, the leaders h' h' and J J are fixed, so that grain put into the upper cylinder will run through it into the one below it, and so on through the whole series, and discharge through the leader h into any vessel placed there to receive it. The ends of these cylinders fit in the casing snugly, but so that they can turn freely upon their own axis. The axles t about which these cylinders are made to revolve, are made hollow, and they are supported in a frame C, erected alongside of the end of the casing or frame for that purpose. Each end of each axle of each cylinder leads into a stuffing box f, made on the pipes r and v, so that steam introduced in the pipe v, will fill all the cylinders and escape through the pipe r.

It will be seen that the cylinders B are not only hollow, but that they are also double, one cylindrical tube being placed over another, so as to leave an open space between the inside surface of the outside cylinder and the outside surface of the inside cylinder, as shown at a, and the center piece x through which the axle passes is also made hollow and in the form shown in Fig. 4, and it is so arranged as to bring the holes in the branches opposite to correspond-

ing holes in the inside shell of the cylinder, so that the steam can pass through in the manner shown by the arrows, the hole in the axle being stopped at u, so as to cause the steam to take the direction indicated.

In the inside of the cylinders and at each end of them, the ribs b b are made for the better scattering and spreading of the grain, so as to bring it more completely in contact with the superheated steam, or heated air, to be introduced in the cylinder in the manner hereinafter described; that is to say, by means of the pipe Y, erected alongside of the end of the casing, or frame, and which leads to a hot air furnace, or to a reservoir wherein steam is superheated. The said pipe having small jet pipes leading into the end of each cylinder, as shown at Y Fig. 1. In the inside of the casing at K a furnace is made, and over this furnace a diaphragm plate O, is placed so that when a fire is made in the furnace, (which is the intention), the heat will be distributed, through the box and around the cylinders, and the lower cylinder will not be injured by the fire.

Thus much for the construction of my apparatus, the object of which is to dry damaged grain, to reclaim musty grain, and to dry grain that is a little green that it may be ground and packed, so that there is no danger of the flour spoiling afterward. The machine being first put into operation by the application of power to the pulley S, which causes all of the cylinders to rotate, through the agency of the cog wheels D D and P P and L' L' and L L.

The mode of operation is as follows: The grain is first introduced in the upper cylinder, through a receiver or hopper, part of which is shown at I, Fig. 1. From this cylinder, by reason of the inclination aforesaid, it passes through the leader h' into the second cylinder, out of which it passes through the leader J into the third cylinder, and so on through the entire series until it is finally delivered at h perfectly dry with the musty smell entirely removed, if there was any when the grain was introduced in the machine.

It will be seen that the cylinders are heated with steam, and that the steam is kept from condensing by the fire in the furnace K on the outside of the cylinders and by the introduction of the superheated steam or

heated air in the inside of the cylinder, which also blows the musty smell out of the cylinder as it rises, or dries out of the grain.

Having thus described the construction and operation of my grain drying apparatus, what I claim as my invention, and desire to secure by Letters Patent, is—

The combination of the cylinders B, the pipes *r* and *v* and Y, the diaphragm plate *o*

and the furnace K, the whole being arranged and operated substantially as described, 10 herein.

All of which I respectfully submit this 29th day of March 1860.

E. J. BODRIO.

In presence of—

AMOS BROADNAX,

MORITZ RIFSMANN.