

Grain Drier.

Patented Oct. 23, 1860.

Fig. 1.

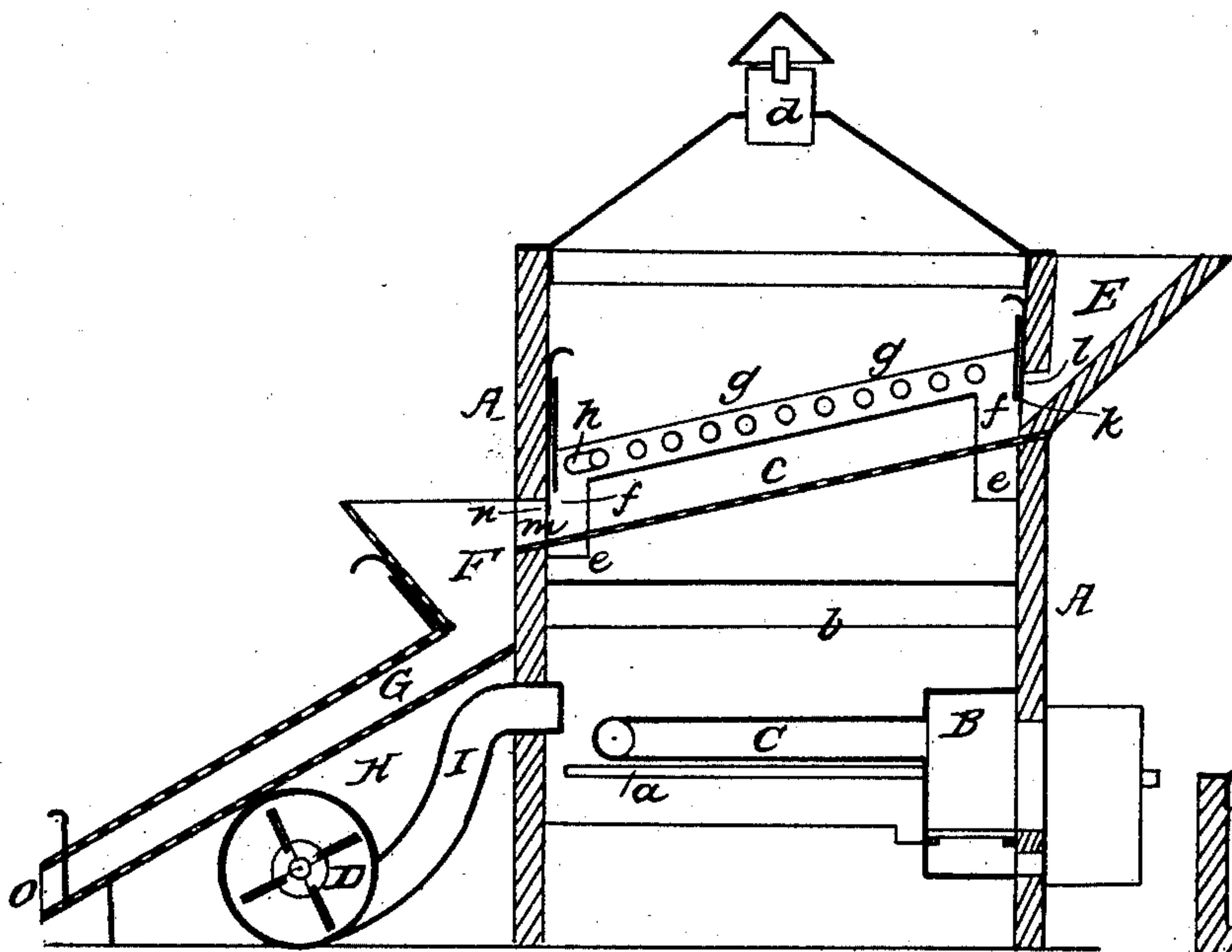


Fig 2

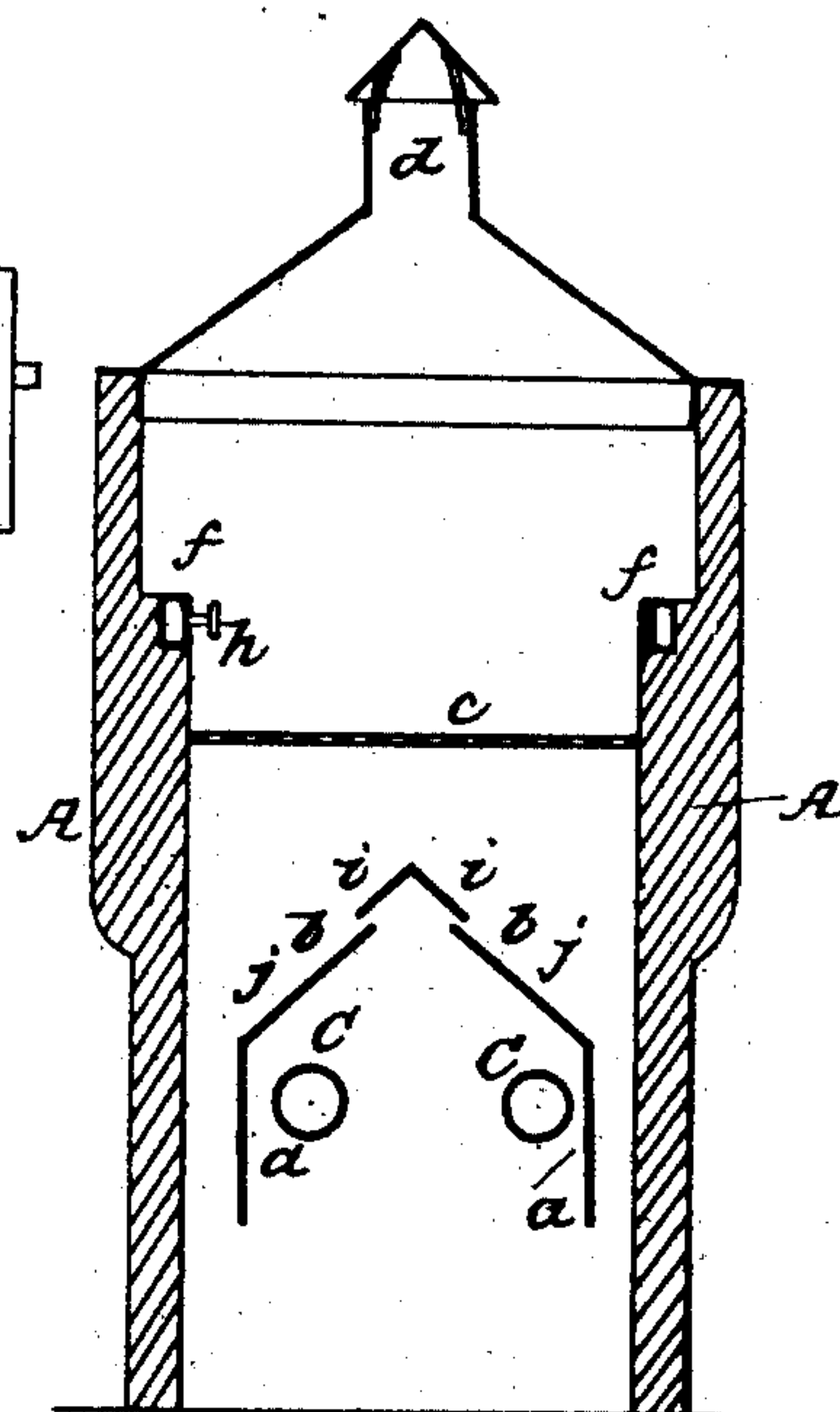
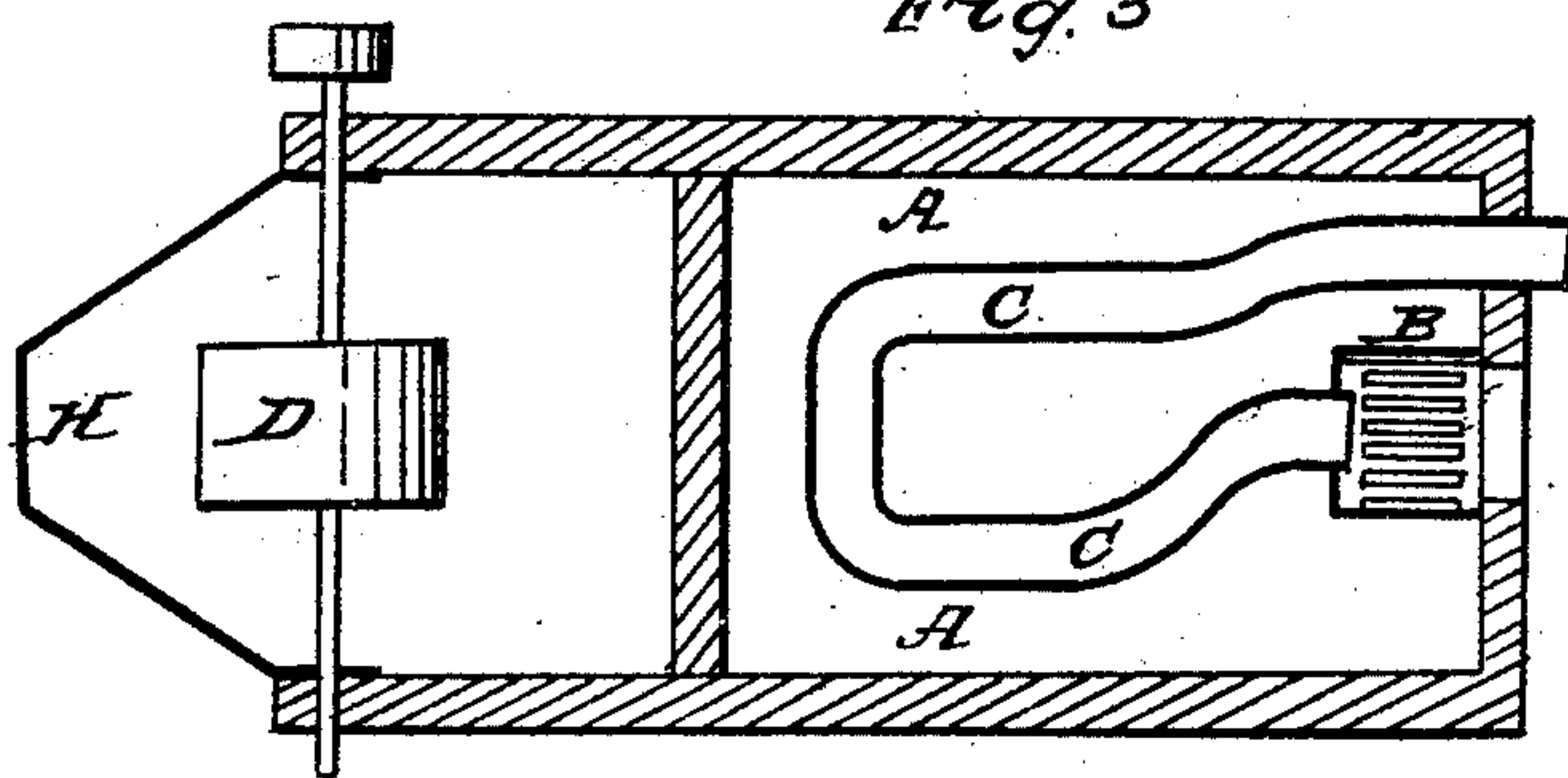


Fig. 3



witnesses
 & taken
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UNITED STATES PATENT OFFICE.

JESSE B. WHEELER, OF CHICAGO, ILLINOIS.

IMPROVED MACHINE FOR DRYING AND COOLING GRAIN.

Specification forming part of Letters Patent No. 30,512, dated October 23, 1860.

To all whom it may concern:

Be it known that I, JESSE B. WHEELER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Grain Drying and Cooling Machines; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a longitudinal vertical section through the apparatus. Fig. 2 represents a vertical transverse section through the apparatus, and Fig. 3 represents a horizontal section through the same.

Similar letters of reference, where they occur in the separate figures, denote like parts in all the drawings.

A A represent the walls that inclose the drying apparatus, a stove or furnace B being arranged therein for heating the air, which is driven through the grain as it passes through the machine.

C is the smoke and gas pipe or flue leading from the furnace to the exterior of the drying apparatus. The air that is heated in the furnace-chamber is forced in by a fan-blower D, which has a peculiar location for a purpose that will be hereinafter described, and when heated it rises up through the passages or openings *a b* and through the perforated bottom board or plate *c* and through the grain that is passing over said perforated plate, the exit being at *d*. There may also be openings *e*, which communicate through trunks or passages *f* with the chamber above the perforated bottom *c*, so as to take heated air directly from the heating-chamber above the grain, there being openings *g* for its free passage thereto without its passing through the grain to get there. These openings have a register *h* so connected with them that they may be partially or entirely opened or closed, as circumstances may require. The inclined partitions *ij* are for the purpose of conducting any impurities that may drop from the grain through the perforated bottom away from the furnace or heating-pipes, and yet allow the hot air to pass up.

The grain to be dried is fed into the hopper E, whence it passes through an opening *k*, pro-

vided with a sliding door *l* to regulate the quantity of grain that is to enter. It falls upon and passes over the inclined perforated bottom *c*, where it is subjected to the heated or dried air that rises up from the heating-chamber below, as well as that from the side trunks *f*, the latter aiding in the escape of that which becomes heavy and sluggish from the amount of moisture it takes up in passing through the grain. The grain, having passed along to the end of the perforated bottom *c*, escapes through a passage *m*, also provided with a sliding door *n* to regulate the area of the exit-passage, and falls into a second hopper F outside of the drying-chamber proper, and from thence through another regulated passage into a trunk G, that is made of perforated plates or sheets of metal or any other suitable material, and to its final discharge at *o*. Underneath the perforated trunk G there is a chamber H, in which the fan-blower D is placed, that furnishes air to the air heating and drying chambers. The air that is drawn into the chamber H and that is forced thence into the heating-chamber can only or mainly come from or through the perforated trunk G, and in being thus drawn through said trunk and through the grain that is *in transitu* in it the moist or heated air is removed and cool air takes its place, so that the grain is not only divested of all heavy or moist air that may surround it, but is also brought in contact with cool air, which regulates the temperature of the grain after it has thus been subjected to heated air. The air drawn by the fan through the perforated trunk is again returned to the heating-chamber through the tube I, where it is redried, reheated, and again passed up through the perforated bottom *c*. There may be a constant escape at *d*, as it is found to be actually necessary to change the drying-air, for otherwise it would become so surcharged with moisture as to be sluggish and of no avail in drying the grain. I therefore use both natural and artificial circulation through the apparatus. The partitions *ij* also serve to keep the cold or fresh air over and in close proximity to the stove or furnace, as well as to shield the stove and prevent the dust from falling and being burned upon it, while they afford a free passage for the heated air up through and

into the chamber above the grain by the side passages *f g*.

Having thus fully described the nature and object of my invention, what I claim is—

1. The arrangement of the inclined perforated bottom *c* and the hot-air passages connecting the chamber above it with the air-heating chamber, substantially as described.

2. In combination with the drying-chamber, the external perforated trunk *G* and fan-

blower *D* for drawing the moistened and heated air from the grain and returning it to the heating-chamber while cooler air takes its place among the grains, substantially as described.

JESSE B. WHEELER.

Witnesses:

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