

J. H. ELLIS, A. SCOTT & E. S. EDMONDSON.
Chop-Conveyor for Millstones.

No. 224,410.

Patented Feb. 10, 1880.

Fig. 1.

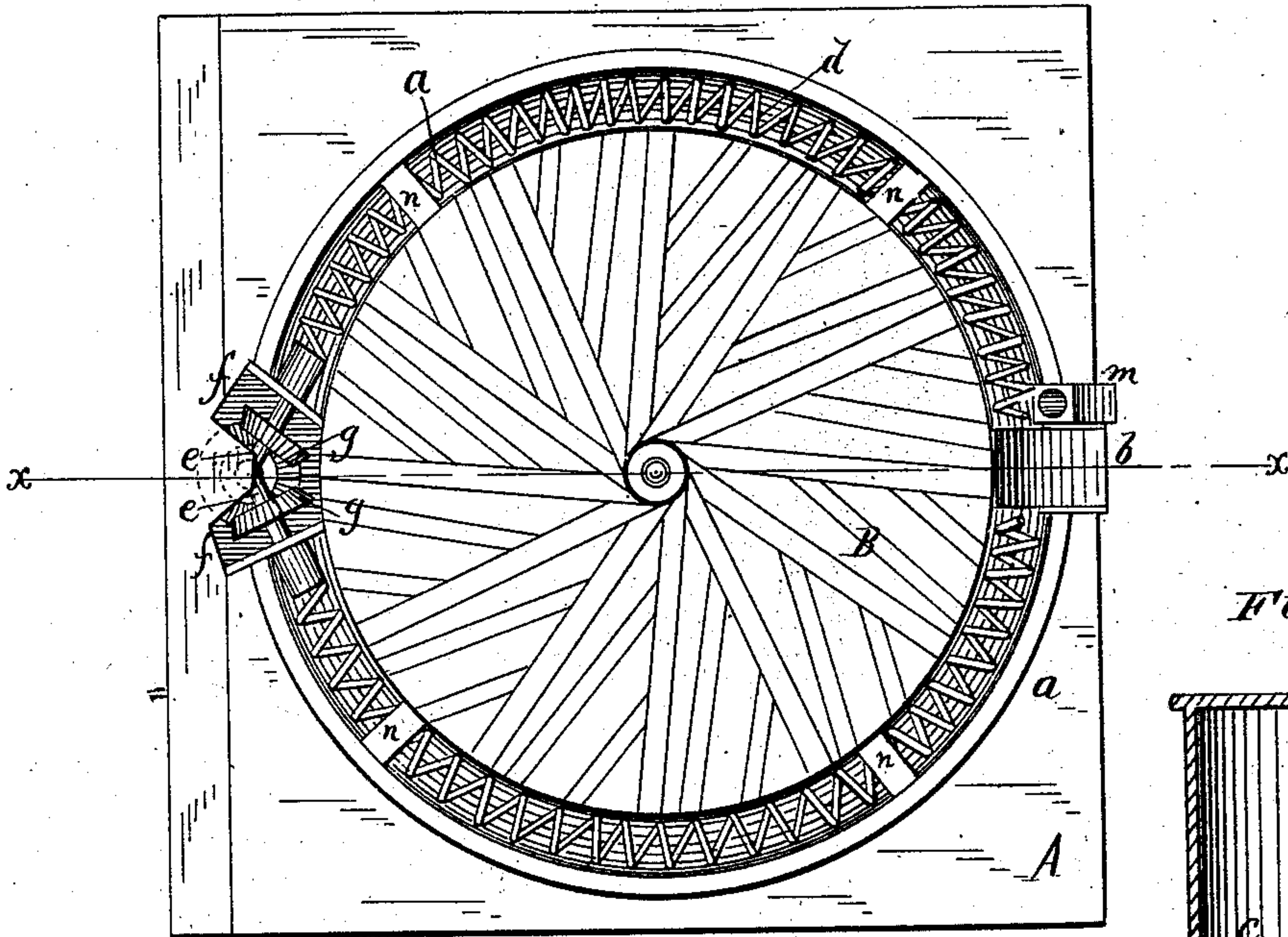


Fig. 2.

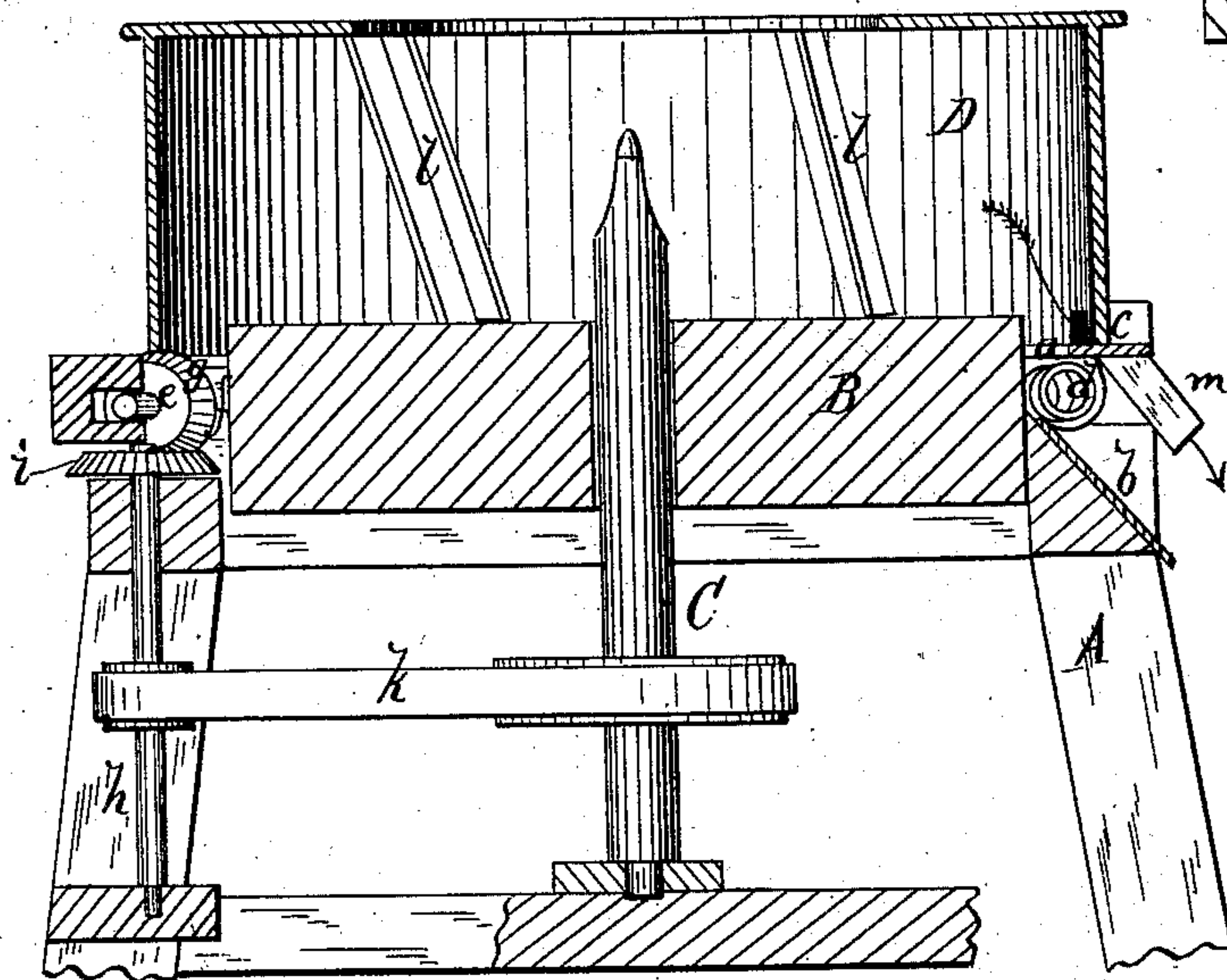
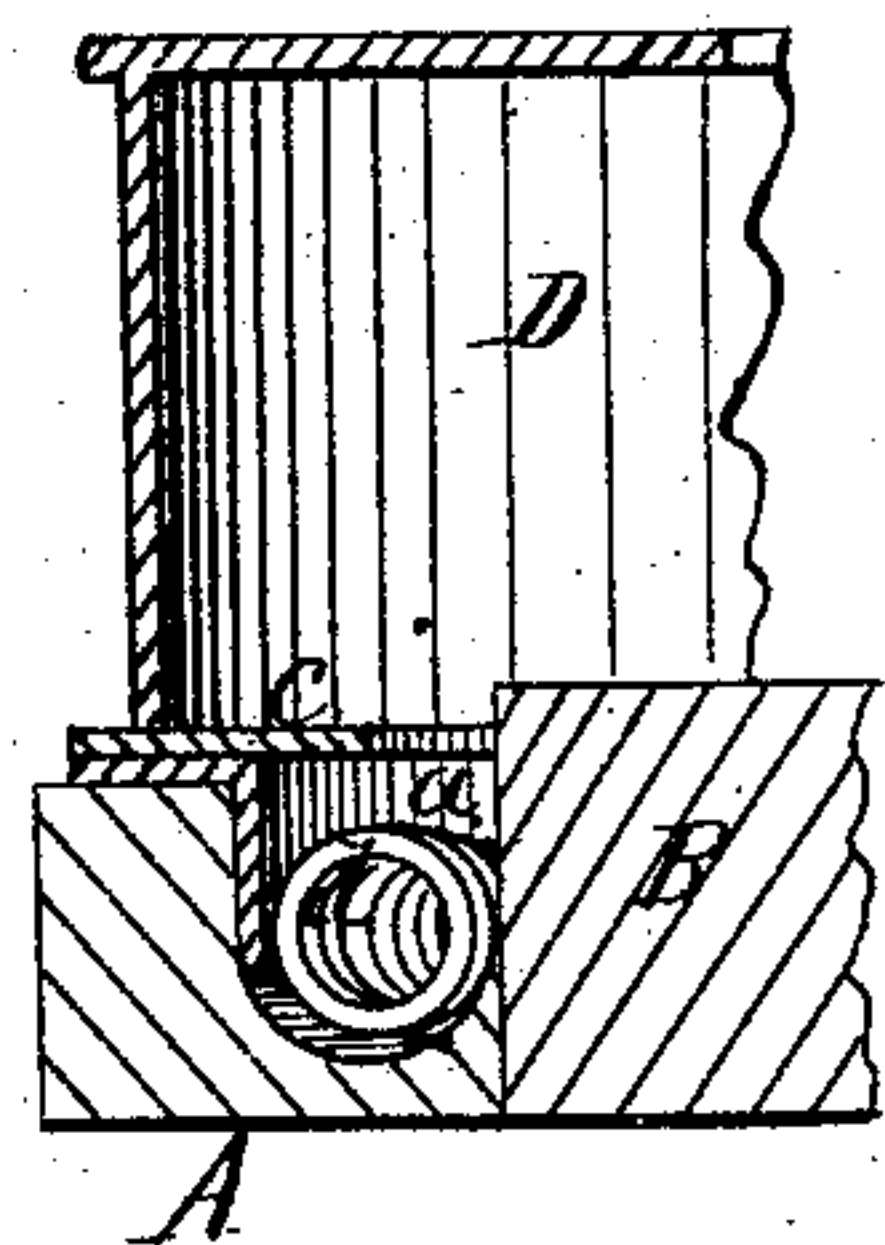


Fig. 3.



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UNITED STATES PATENT OFFICE.

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CHOP-CONVEYER FOR MILLSTONES.

SPECIFICATION forming part of Letters Patent No. 224,410, dated February 10, 1880.

Application filed May 28, 1879.

To all whom it may concern:

Be it known that we, JAMES H. ELLIS, ALEXANDER SCOTT, and ELI S. EDMONDSON, of Goderich, in the Province of Ontario and Dominion of Canada, have invented a new and Improved Chop-Conveyer for Millstones, of which the following is a specification.

The object of our invention is to grind grain without heating, to effect the removal of the chop without detention, and to remove the heated air from within the curb by a passage separate from the chop-delivery.

Our invention consists in a spiral conveyer fitted to revolve in a channel around the bed-stone and below the level of the grinding-surfaces, which conveyer carries the chop to a discharge-spout; also, in the construction and manner of operating the conveyer.

The construction and operation will be more particularly described in connection with the accompanying drawings, wherein—

Figure 1 is a top view of a grinding-mill fitted in accordance with our invention, the upper or running stone and curb being removed. Fig. 2 is a vertical section on line *x x* of Fig. 1. Fig. 3 is a detail view.

Similar letters of reference indicate corresponding parts.

A is the husk-frame; B, the bed-stone; C, the spindle, and D the curb surrounding the upper and running stone, which latter is not shown. These parts are of usual character, except as hereinafter mentioned.

In the frame A, around the stone B, is a continuous channel or passage, *a*, which communicates at one side with a delivery-spout, *b*. This channel *a* is below the upper surface of the stone B, and is covered around its outer edge by an annular plate or ring, *c*, on which the curb D rests, leaving the upper part of the channel *a* open between the curb and stone, so that the ground material from between the stones drops freely into the channel. Within the channel *a* is fitted the spiral conveyer *d*, which is shown as made in two separate semicircular portions, terminating at one end adjacent to the delivery-spout *b*, and with the ends at the opposite side of the stone connected to separate spindles *e e*, that are fitted in boxes *f f* and carry bevel-gears *g g*. Upon that side of frame A is fitted a vertical

shaft, *h*, upon the upper end of which is a bevel-gear, *i*, that meshes with gears *g*.

The shaft *h* is driven by a belt, *k*, from spindle C, and thereby imparts simultaneous revolution to the conveyers *d*. The conveyers *d* consist of flat or round spring-wire coiled spirally and bent into semicircular form, which construction renders the conveyers flexible and capable of operating in the circular channel.

Upon the inner side of the curb D inclined flanges *l* are attached, which project contiguous to the side of the running stone, and while there is space for air between the curb and upper stone these flanges act as stops to the current of warm air caused by the running stone, and compel the discharge of the same by the spout *m* through an opening in the ring *c*. By this separate discharge of the air-current the danger of fire and explosions by sparks communicating with the fine dust is avoided, as such dust is carried away by the current as fast as formed, and fresh cool air continually supplied.

The stops *l* are to be made of leather or other suitable material, and are inclined in a direction contrary to that in which the stone runs.

The stop-flanges *l* extend to within a short distance from the lower edge of the curb, with the exception of that one next the spout *m*, which extends nearly or quite to the bottom, and compels the discharge of the current by the spout *m*.

n n are braces for steadying the bed-stone and retaining the conveyers in place.

By the above-described construction the mill will grind cold without waste and without sweating. No artificial exhaust is required, and the stones are run with open back. The chop is delivered freely from between the grinding-surfaces and discharged rapidly without accumulation in the curb. The bed-stone may be applied and fitted in the same manner to a floor when a husk-frame is not used.

We are aware that a spiral conveyer has been used for conveying the unthrashed heads of grain from the fan back to the thrasher of a grain-separator; but

What we claim, and desire to secure by Letters Patent, is—

1. An improved grinding-mill in which a spiral conveyer is fitted in an annular channel around the bed-stone below the top surface of the same, and rotated by bevel-gearing driven
5 from the mill-spindle, substantially as and for the purpose set forth.

2. The spiral conveyer *d*, made in two semi-circular portions and provided with bevel-wheels *e*, in combination with the channel *a*,

provided with the delivery-spout *b*, the bevel- 10 wheel *i*, shaft *h*, belt *k*, and spindle *C*, substantially as and for the purpose set forth.

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Witnesses:

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