

I. A. HEDGES.
MILL.

Patented Nov. 23, 1875.

No. 170,367.

Fig 1

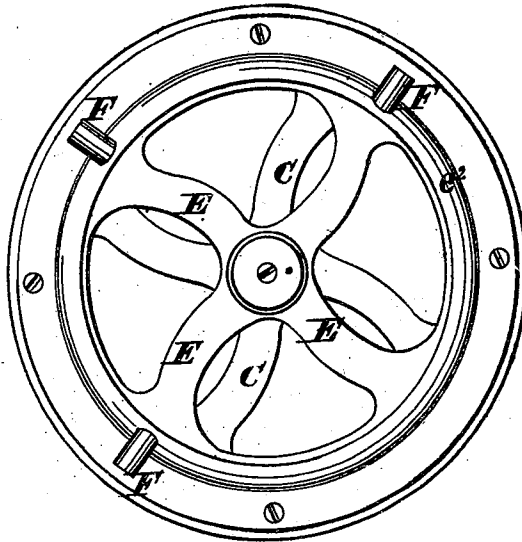


Fig 2

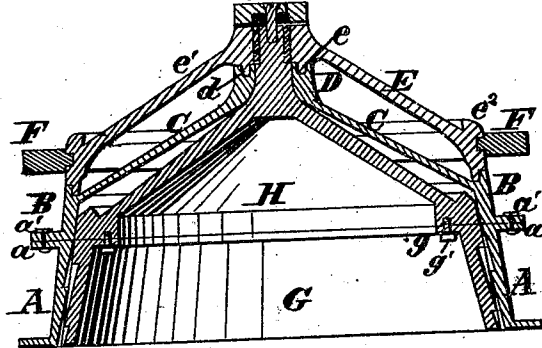
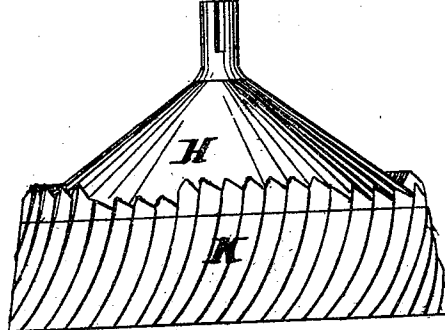


Fig 3



Inventor.

Witnesses.

G. O. Kelly
E. A. Hawley

Fig 4.



Isaac A. Hedges

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Fig. 5.

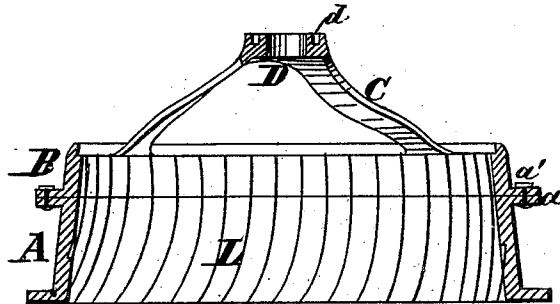
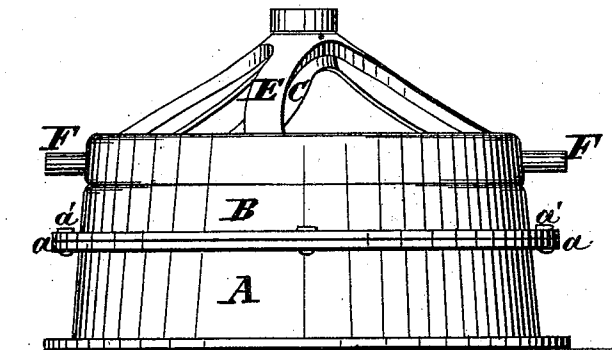


Fig. 6.



Witnesses.

E. P. Kelly
E. A. Henny

Inventor.

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UNITED STATES PATENT OFFICE.

ISAAC A. HEDGES, OF ST. LOUIS, MISSOURI.

IMPROVEMENT IN MILLS.

Specification forming part of Letters Patent No. **170,367**, dated November 23, 1875; application filed June 9, 1873.

To all whom it may concern:

Be it known that I, ISAAC A. HEDGES, of St. Louis, in the county of St. Louis and State of Missouri, have invented an Improved Mill for Grinding Corn, of which the following is a specification:

My improvement consists, first, in the curves given to the edges of the teeth upon the cone and concave. These teeth or edges are vertical at their upper end, and are curved so as to regularly incline more and more from the vertical to the horizontal, as they extend downward, the teeth-edges on the cone curving backward as they extend downward, and those on the concave curving in an opposite direction, thus acting to force the meal downward with increasing speed as it becomes finer, and would otherwise tend to clog in the grooves between the teeth.

The second part of my improvement consists in the annular concave bearing that is given to the cone, the cone being supported by its neck, as more particularly described hereinafter, so as to avoid the necessity of the ordinary bridge-tree and step bearing.

In the accompanying drawings, Figure 1 is a top view of the mill, with the sweep or draft-lever removed. Fig. 2 is an axial section. Fig. 3 is a side elevation of the cone. Fig. 4 is a horizontal section of a portion of the concave, showing the teeth in transverse section. Fig. 5 is an axial section of the concave with the cone and other parts removed. Fig. 6 is a side elevation of the mill with sweep removed.

The outer case or concave consists of a lower portion, A, and an upper portion, B, connected together by a horizontal joint secured by lugs and bolts *a a'*. C are converging cross-arms, cast upon the upper edge of the case, and supporting a bearing-head, D, having an annular concave groove, *d*, in which turns an annular convex bearing-rib, *e*, at the head of the driving-frame E, the driving-frame having arms *e'* connecting its head with its rim *e*². The rim *e*² has lugs F for the attachment of the horse lever or sweep by which the mill is driven. The cone or runner consists of a lower portion, G, and an upper portion, H, connected together by a horizontal joint secured by lugs and bolts *g g'*. From

the apex of the upper portion H extends the neck or spindle I, which has side bearing in the head D. The upper end of the neck I is firmly secured in the driver-frame E, so that the cone is supported by the annular bearing *d e*. (Before described.) The form and arrangement of the teeth K upon the cone, and L of the concave are alike. The teeth consist of cutting-edges extending from top to bottom of the grinding-surfaces. At the top of said surfaces the teeth, both upon the cone and concave, are vertical, and thus the teeth of that part of the concave are parallel with those of the concave at the upper end; but as the teeth extend downward they curve toward the horizontal, those upon the cone curving backward, (in relation to the direction of rotation,) and those upon the concave in an opposite direction, so as to tend to force the meal downward with accelerated speed as it passes between the lower portion of the grinding-surfaces, where the sheet of meal is thinner, and where, without this provision, it is apt to choke and check the passage of the meal above it.

It will be understood that the curve of the teeth is not equivalent to a spiral curve, for, in this case, the tendency to force the meal forward through the mill is equal at all points, and as the stratum of meal is thicker at the upper portion of the grinding-surfaces, a larger amount tends to pass than can pass through the lower portion, where the surfaces are set closer, the teeth are smaller and more numerous, and the meal-space consequently lessened.

The backs *k* of the teeth K and L are concave in transverse section, so as to make the cutting-edge more acute, and to make the corner of the groove between the teeth more open, to prevent the lodging of meal in the groove and consequent choking of the mill.

The annular groove *d*, being closed at bottom, prevents the escape of oil, and the bearing-ring and groove being both rounded, the wear of the bearing will not make it loose, and thus allow the cone to run untrue or shake.

The following is claimed as new:

1. The cone having teeth K, vertical at their upper ends and curving in lines so as to ap-

proach more and more nearly to the horizontal as they descend, substantially as and for the purpose set forth.

2. The concave having teeth L, vertical at their upper ends and curving in lines so as to approach more and more nearly to the horizontal as they descend, substantially as and for the purpose set forth.

3. The supporting-head D, of the runner or

cone, having annular concave-bearing *d*, in combination with driving-frame E, having convex rib *e*, substantially as and for the purpose set forth.

ISAAC A. HEDGES.

Witnesses:

G. O. KALB,

E. A. MANNY.