

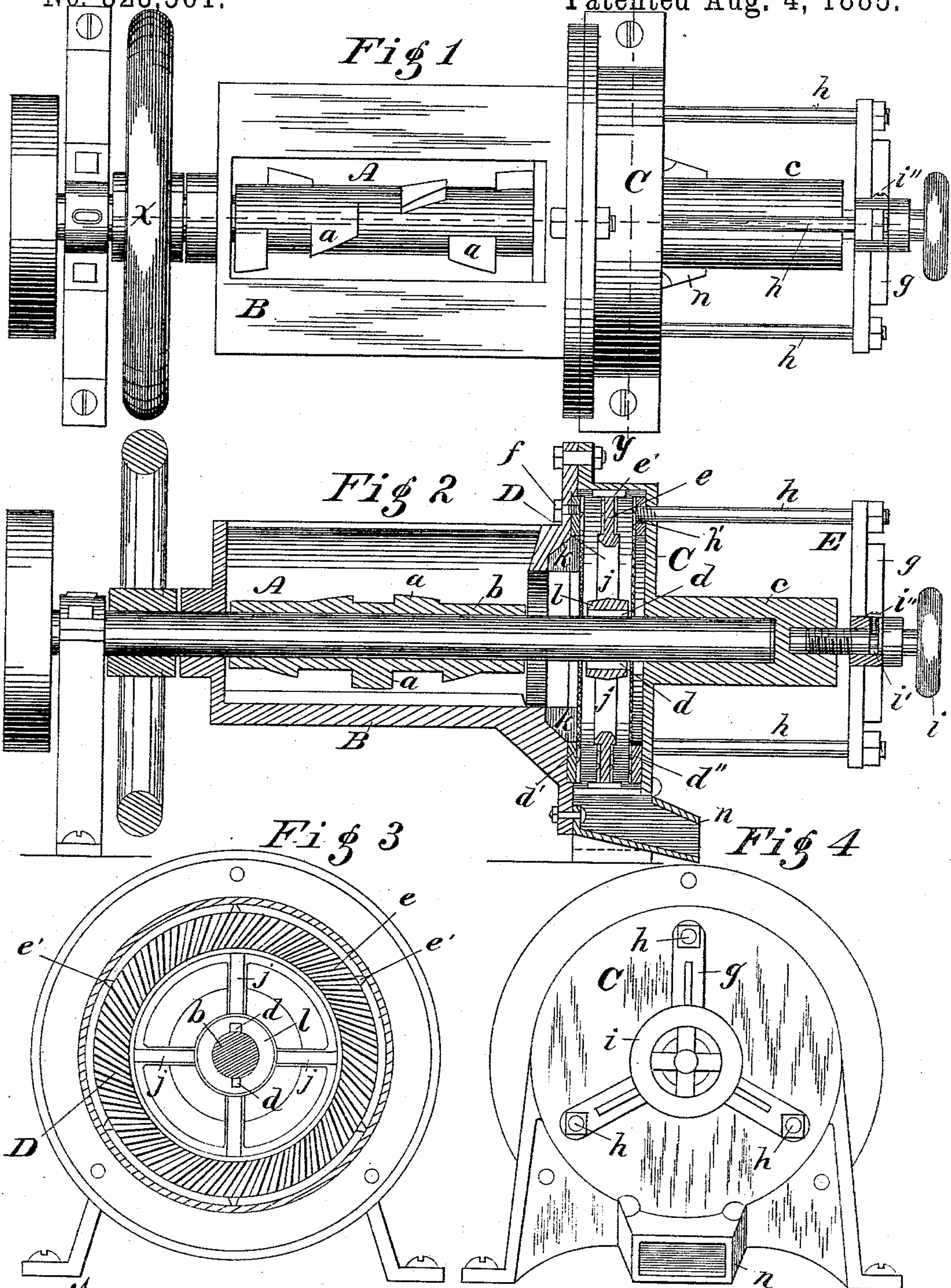
(No Model.)

T. C. CADWGAN.

FEED MILL.

No. 323,561.

Patented Aug. 4, 1885.



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UNITED STATES PATENT OFFICE.

THOMAS C. CADWGAN, OF SPRINGFIELD, OHIO, ASSIGNOR OF ONE-HALF
TO BENJAMIN F. K. JENNINGS, OF SAME PLACE.

FEED-MILL.

SPECIFICATION forming part of Letters Patent No. 323,561, dated August 4, 1885.

Application filed November 29, 1884. (No model.)

To all whom it may concern:

Be it known that I, THOMAS C. CADWGAN, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Feed-Mills; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in feed-mills.

My invention relates to that class of feed-mills used for crushing and grinding corn in the ear; and it consists in certain improvements in the grinding devices and in the adjustment of the same. The mill is a vertical one, and although designed for crushing and grinding corn in the ear, may be used for other grinding purposes.

Figure 1 is a top view of my improved feed-mill. Fig. 2 is a vertical longitudinal section of the same through line *x*. Fig. 3 is a cross-section through line *y* of Fig. 1. Fig. 4 is an end view of the mill as seen from the right, Fig. 1.

The feed-mill combines in its operative parts a crusher for crushing corn in the ear, and a toothed grinding-wheel mounted upon the same shaft with the crusher, which revolves between two serrated rings. One of the latter is fixed and the other is provided with means for adjusting it toward or from the grinding-wheel. The grinding-wheel is held on the shaft by splines, and is self-adjustable.

A is the crusher which consists of a cylinder with a number of teeth, *a a*, set in spiral lines thereon. It is mounted on a horizontal shaft, *b*, which extends through the mill and has its bearings at the respective ends of the same, as seen in Fig. 2. The case C in which the grinding devices are inclosed has on its outer end a sleeve portion, *c*, which extends to some distance outward from the latter, and in this sleeve the right end of the shaft, as viewed in Fig. 2, has its bearing.

The grinding devices consist of an open-spoked wheel, D, which slides on splines *d* on the shaft *b*, and is free to adjust itself between the rings *d'* and *d''* on either side of the same. The rim *e* of the wheel is serrated or toothed upon each side, and at intervals on its periphery are scrapers *e' e'*, which extend out from each side of the rim far enough to clean that part of the case over the edge of the rings *d'* and *d''*, there being a sufficient space outside of the rings and within the case for this purpose. The ring *d'* in that part of the circular case C next to the crusher is held in place by transverse bolts *f f*, and the ring *d''* is made adjustable toward and from the grinding-wheel D by means of a sliding frame, E, which latter is constructed of the three-armed spider *g*, through the hub of which the adjusting-screw *i* extends into the end of the sleeve *c* in the axial line of the shaft *b*. The spider *g* is connected with ring *d''* by three parallel rods, *h h*, extending from the ends of the spider arms into the ring. They are screwed into the latter to allow the ring to be taken out when worn. The rods *h h* slide freely through the end plate of the grinding-case through holes *h' h'* in the latter. The adjusting-screw *i* has a concentric groove, *i'*, in that part within the hub of the spider *g*, and a small screw, *i''*, entering the hub has its inner unthreaded end engaging this groove, which allows of the adjustment of the frame and ring outward and inward, the shaft of the screw *i* turning freely within the hub in operating. The sleeve *c* has a threaded hole in the center of its end, and the threaded end of the screw *i* engages therewith, thus retaining the parts in adjustment. Both the crusher-case B and the grinding-case C are cylindrical.

The crusher consists of the cylindrical cast piece A with spirally-arranged teeth and the hollow cylindrical case B in which it rotates. The latter has one or more longitudinal ribs therein, one of which is shown in the bottom of the same in Fig. 2. The right end of case B opens into the grinding-case C to allow the crushed corn to pass into the latter to be ground.

As the corn in the ear is fed into the crusher-case, which is open at the top, as shown in

Fig. 1, it is crushed by the operation of the teeth *a a* of the crusher A, and the crushed material passes from the crusher through the opening leading therefrom into the grinding-case C, and being thrown outward by the spokes grinding-wheel D is reduced to the required degree of fineness between the rim of this wheel and the ring on each side of the latter. The openings between the spokes *j j* of the wheel allow the material to pass readily through from the left to the right side of the wheel and during the operation of grinding the reduction is about the same on one side of wheel D as on the other, and as the latter is free to move along the shaft on the splines *d d* it readily adjusts itself to the middle of the space between the two rings *d'* and *d''* in the adjustment of the latter.

The mill is supported upon a low frame to give it firmness and immovability, sufficient space being left below the grinding-case C for the discharge-spout *n*, which is bolted to the bottom of the latter.

I claim as my invention—

1. In a feed-mill, the combination of a crusher, a fixed and an adjustable grinding-ring and a grinding-wheel rotating in a vertical plane between said grinding-rings, said grinding-wheel being free to move horizontally on its shaft and to adjust itself to the grinding-surfaces of the ring on either side of the same, as set forth.

2. In a grinding-mill, the combination of the two grinding-rings, one being fixed and the other provided with means for adjustment, and the wheel rotating in a vertical plane between said grinding-rings, with a grinding-surface on either side of the same, and having a central opening therein to allow the ma-

terial to be carried to said grinding-surfaces, said grinding-wheel being free to move in either direction in the line of its shaft, and thereby adjust itself to the grinding-surface of both said grinding-rings, substantially as set forth.

3. In a grinding-mill, the combination of the cylindrical case with an extended sleeve central thereon, a horizontal shaft provided with splines having a bearing in said sleeve, a fixed grinding-ring in one side of said case, a grinding-ring with means for adjustment attached thereto in the opposite side, and an open-spoked grinding-wheel rotating between the fixed and the adjustable grinding-rings, said grinding-wheel being free to move toward either grinding-ring on said shaft, and provided with scrapers projecting from either side of its rim into the spaces within the case outside said grinding-rings, substantially as and for the purpose hereinbefore set forth.

4. In a grinding-mill, the combination of a cylindrical case with a sleeve cast central thereon, a horizontal shaft having a bearing in the latter, an open self-adjustable grinding-wheel rotating with said shaft, a fixed grinding-ring on the inner side of the same, a grinding-ring on the outer side, and means for effecting the adjustment of the latter in either direction in the line of said shaft, consisting of a sliding frame and a screw engaging the end of said sleeve, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS C. CADWGAN.

Witnesses:

WM. GANOR,
B. C. CONVERSE.