

O. B. KNAPP.  
Feed-Mill.

No. 163,664.

Patented May 25, 1875.

Fig 1

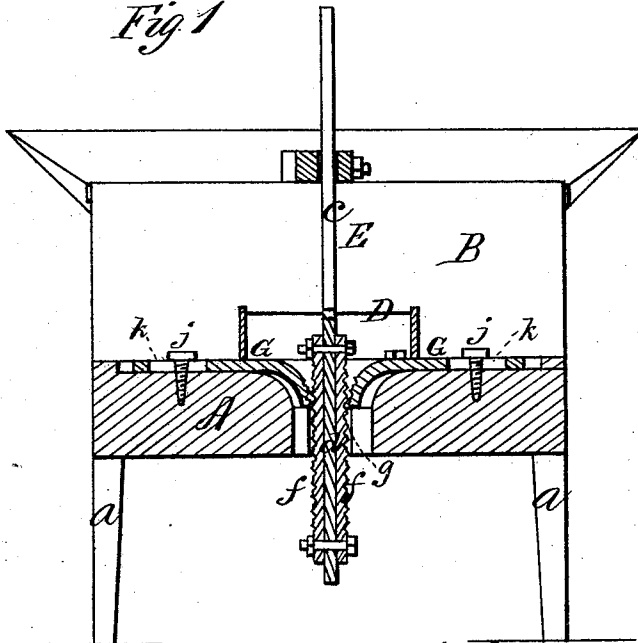


Fig 2

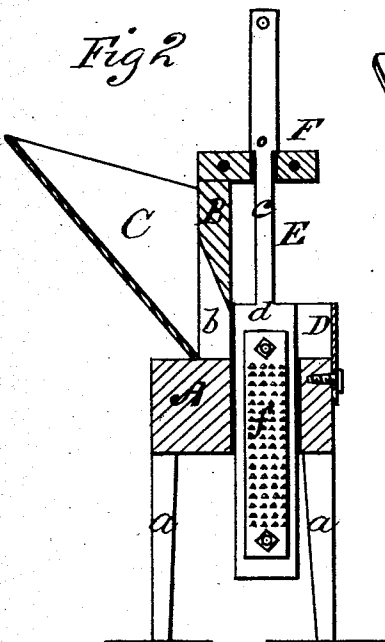
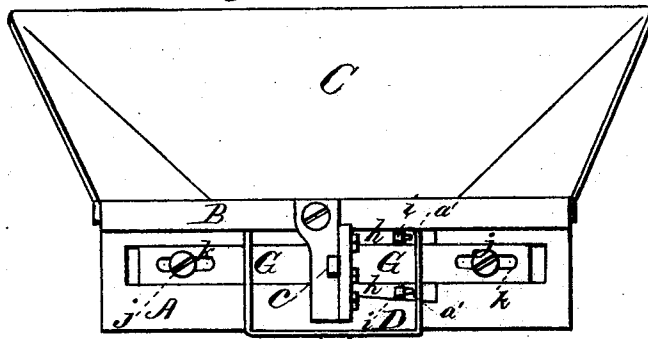


Fig 3



WITNESSES

Robert Everett,  
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# UNITED STATES PATENT OFFICE.

OVETT B. KNAPP, OF BRANDON, WISCONSIN, ASSIGNOR TO HIMSELF AND  
R. C. KELLY, OF SAME PLACE.

## IMPROVEMENT IN FEED-MILLS.

Specification forming part of Letters Patent No. **163,661**, dated May 25, 1875; application filed  
March 27, 1875.

*To all whom it may concern:*

Be it known that I, OVETT B. KNAPP, of Brandon, in the county of Fond du Lac and State of Wisconsin, have invented a new and valuable Improvement in Feed-Mills; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a longitudinal vertical section of my feed-mill, and Fig. 2 is a detail sectional view of the same. Fig. 3 is a detail view.

This invention has relation to improvements in feed-mills; and the nature of the invention consists in combining, with a vertically-reciprocating grinding-shaft arranged in guides upon a suitable frame, detachable and adjustable steel plates arranged at each side of the said shaft, the contiguous edges of the said shaft and plates being suitably roughened, whereby grain fed between the grinding-shaft and plate will be suitably comminuted for feeding stock, and a means is provided whereby the size of the broken grain may be increased or lessened, as will be hereinafter more fully explained and claimed.

In the annexed drawings, A designates a suitable platform, supported upon legs *a*, and provided with an upright partition, B, to which is rigidly secured a hopper, C, of suitable dimensions and form, for feeding the grain to the grinding device, hereinafter explained. Hopper C communicates, by means of an opening, *b*, with a supplementary hopper or box, D, rigidly or detachably secured to platform A on the opposite side of partition, as shown in Fig. 2, this box being for the purpose of preventing the grain, which is automatically fed to the grinders from hopper C, from being spilt or too rapidly fed thereto. E designates a vertically-reciprocating shaft having a narrow shank, *e*, and a broad rectangular blade, *d*, which shaft is guided in grooves in platform A, and in an arm, F, rigidly secured to partition B. The

shank *e* of shaft E is preferably rectangular, for the purpose of holding the shaft against axial rotation. *f* designates steel plates, the outer edges of which are suitably roughened or corrugated, and which are rigidly, but detachably, secured to the blade *d* of shaft E—one on each side thereof. Shaft E and its plates *f* work through a vertical slot or aperture, *g*, in platform A, inside of box D, and is tightened by means of plates *h*, which are adjustable toward the said blade by means of a slot, *a'*, cut in the said plates, and a set-screw, *i*, passing through the said slot into platform A. G represents detachable steel plates, arranged at each side of blade *d*. These plates are curved, one of their arms being inserted in aperture *g*, and the other recessed into platform A, to which they are secured by means of a set-screw, *j*, passing through a slot, *k*, in the said plates. They are thus rendered adjustable to or from steel plates *f*, and, their lower ends being corrugated or roughened, grain will be effectually comminuted when a vertically-reciprocating movement is imparted to shaft E, the ground material being received into a suitable vessel placed under the platform, and the size of the broken grains may be increased or lessened by adjusting plates G to or from the vertical grinding-shaft.

The stationary grinding-plates G are made with a shorter grinding-surface than the movable plates *f*; hence the ground grain will be allowed to fall into a vessel, and will not be carried back when an upward motion is given to the grinding-shaft. They are also bent in such a manner that they will be farther from the movable grinder at the top than at the bottom, thus giving room for the grain to get between the grinders.

Plates *f* and grinders G are made detachable, for allowing them to be re-roughened when necessary, or renewed when worn out; but, if I so elect, they may be permanently fixed in position.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a reciprocating shaft,

E, having detachable corrugated plates *f*, with the curved detachable and adjustable corrugated plates G, substantially as specified.

2. The combination, with a hopper, C, reciprocating grinding-shaft E, and plates G, of a supplementary feeding-box, D, constructed and arranged substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

OVETT B. KNAPP.

Witnesses:

R. C. KELLY,  
IDA JENKINSON.