W. O. HICKOK.

Stalk Cutter and Crusher.

No. 19,425. Patented Feb. 23, 1858.

Fig: 1.

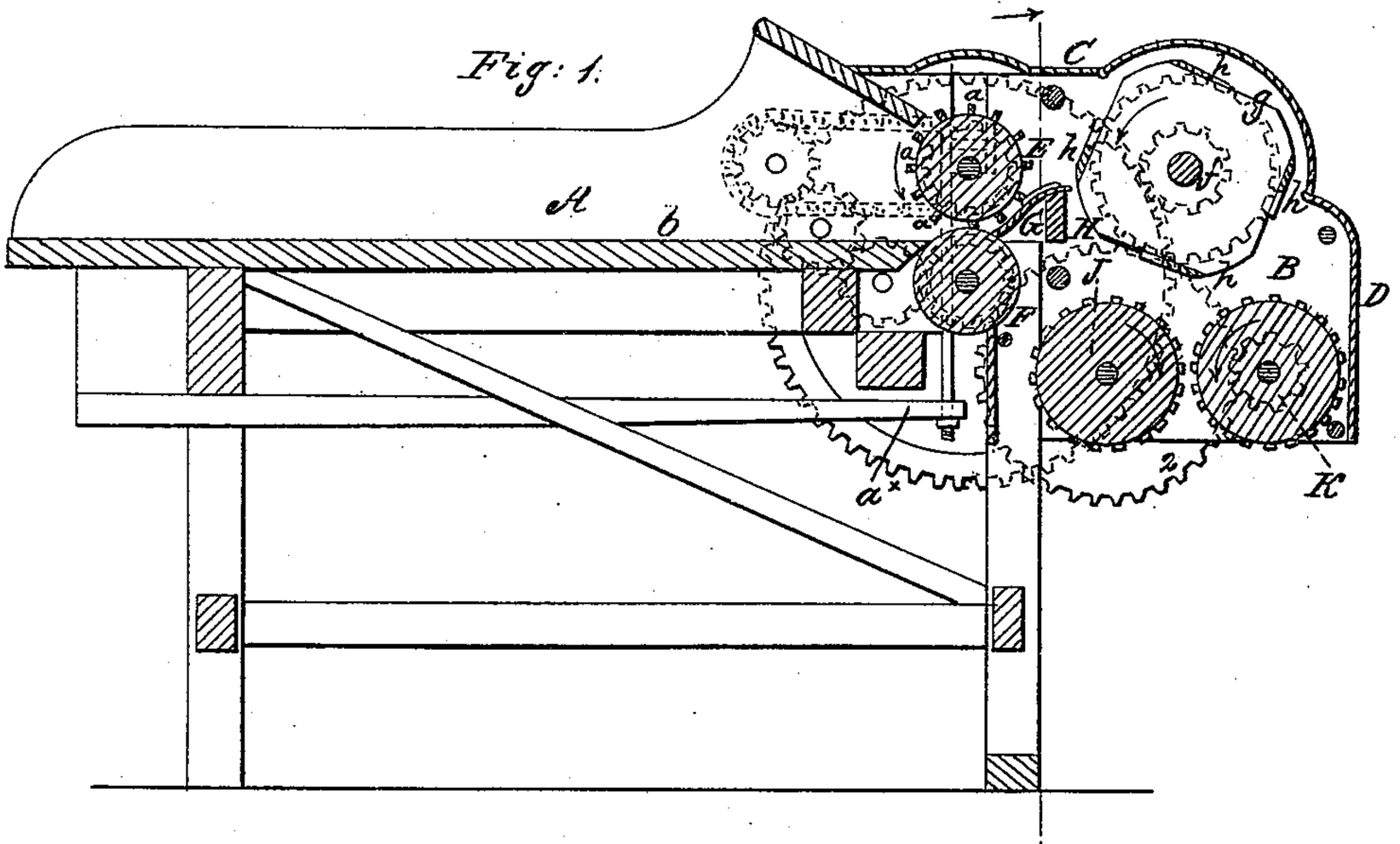


Fig: 3.

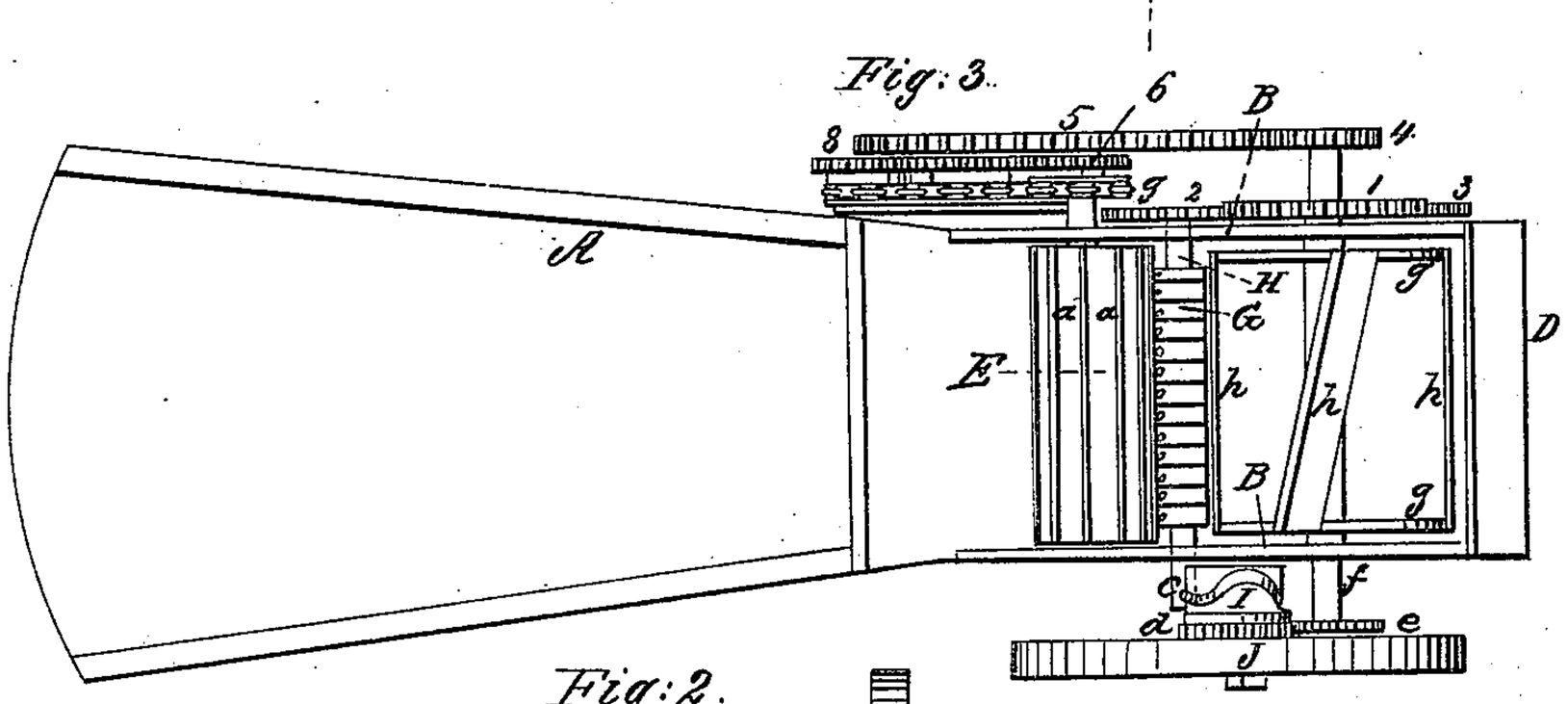
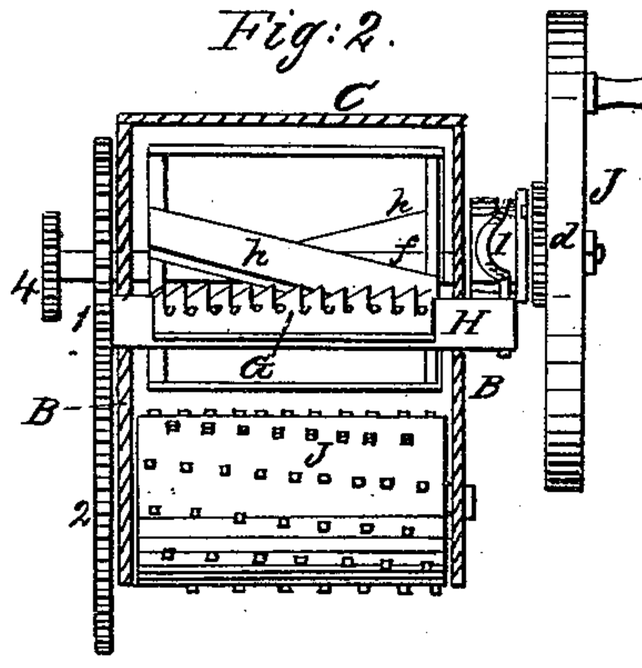


Fig: 2.



UNITED STATES PATENT OFFICE.

W. O. HICKOK, OF HARRISBURG, PENNSYLVANIA.

IMPROVEMENT IN STRAW-CUTTERS.

Specification forming part of Letters Patent No. **19,425,** dated February 23, 1858.

To all whom it may concern:

Be it known that I, W. O. HICKOK, of Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented a new and Improved Machine for Cutting Straw and also for Cutting and Crushing Cornstalks; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a side sectional elevation of my improvement. Fig. 2 is a transverse vertical section of the same, looking in the direction of the arrow, Fig. 1. Fig. 3 is a plan or top view of the same.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in the employment or use of a reciprocating serrated plate in connection with oblique or diagonal cutters arranged to operate substantially as hereinafter shown, whereby straw and cornstalks and other substances usually cut by such machines for fodder are cut with far greater facility and more expeditiously than usual.

The invention also consists in the employment or use of crushing-rollers in combination with the above-named parts, the whole operating, as hereinafter shown, for the purpose of cutting and crushing cornstalks.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a feed-box of the usual form and construction and supported at a suitable height by any proper means. Metallic plates B are attached to the front end of the feed-box, one to each side, said plates having a cover C and front plate D, the whole forming a box or guard to cover the working parts.

E F are two feed-rollers, one being placed over the other and in the same plane, the shafts of the feed-rollers having their bearings in the plates B B. The upper roller E has springs a^2 connected with it, and it is provided with longitudinal plates *a*, which are attached radially to its periphery; but the lower roller has a smooth periphery, and its upper surface is about level with the upper surface of the bottom *b* of the feed-box, as shown clearly in Fig. 1.

Directly in front of the rollers E F an inclined plate G is placed. This plate is attached to a bar H, the ends of which are fitted in and work through the plates B. The plate G is inclined upward from the lower feed-roller F, and its upper surface is serrated, as shown in Figs. 2 and 3. The plate G is not quite equal in length to the space between the plates B B. It is sufficiently shorter to allow a requisite degree of vibration or longitudinal play. The plate G is operated by a cam I, which is placed on the axis of the driving-wheel J, the cam being formed of a zigzag groove in which a pin *c*, attached to one end of the bar H, fits. (See Fig. 2.)

On the axis of the wheel J and adjoining the cam I, between it and the wheel, a pinion *d* is placed. This pinion gears into a corresponding pinion *e* on a shaft *f*, the bearings of which are in the plates B. The shaft *f* is parallel with the bar H, and two heads *g g* are placed on the shaft *f*, one near each end, said heads having four knives *h* attached to them, the knives being curved, so as to be in oblique or diagonal positions, each forming a portion of a cylinder of which the shaft *f* is the center.

Below the knives *h* two toothed cylinders J K are placed. These cylinders are parallel with each other and with the plate G. They rotate in reverse directions, as indicated by the arrows, and one K with considerably greater velocity than the other. The cylinders are rotated from the shaft *f* by means of the gear-wheels 1 2 3, and the feed-rollers are rotated from the shaft *f* by means of the gear-wheels 4 5 6 7 8 and endless chain 9, the latter permitting the upper roller E to have a certain vertical play or movement to compensate for the varying thicknesses of the layers of the substance or article which is being fed to the knives.

The operation is as follows: The substance to be cut is placed in the feed-box A, as usual, and motion being given the wheel J the feed-rollers E F feed the stuff or substance over the plate G to the knives *h*, the cutting-edges of which as the shaft *f* rotates pass successively over the outer edge of the plate G and cut the substance or article in the box A, the plate G, as previously described, vibrating or moving longitudinally and, in consequence of its upper serrated surface, forcing the article or substance against the edges of the knives as they pass over the edge of the plate,

the plate G moving in the direction of arrow 1 as the cutting-edges pass over the edge of the plate, the return motion being given the plate as the cutting-edge of each knife leaves it and before the succeeding knife reaches it. The plate G by its operation greatly facilitates the cutting of all substances that are cut for fodder, such as straw, hay, cornstalks, &c.; but its utility is more apparent in the cutting of cornstalks, which, on account of their comparatively tough exterior, are not as readily cut as the other-named substances, and cannot be cut at all by some machines. By my improvement cornstalks may be cut expeditiously and in a perfect manner, and the cut stalks fall as they are cut between the toothed cylinders J K, which, on account of their diversity of speed, separate the fibers of the cut stalks, rendering them much more available as an article of fodder.

I do not claim the feed-rollers E F; nor do I claim, broadly, the crushing-cylinders J K, nor the rotating cutters *h;* but,

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The reciprocating serrated plate G, in combination with knives *h*, arranged to operate substantially as and for the purpose herein set forth.

2. The toothed crushing-cylinders J K, rotating with different speed, in combination with the plate G and knives *h*, the whole being arranged substantially as and for the purpose set forth.

W. O. HICKOK.

Witnesses:
S. SCHRIVER,
C. A. SNYDER.