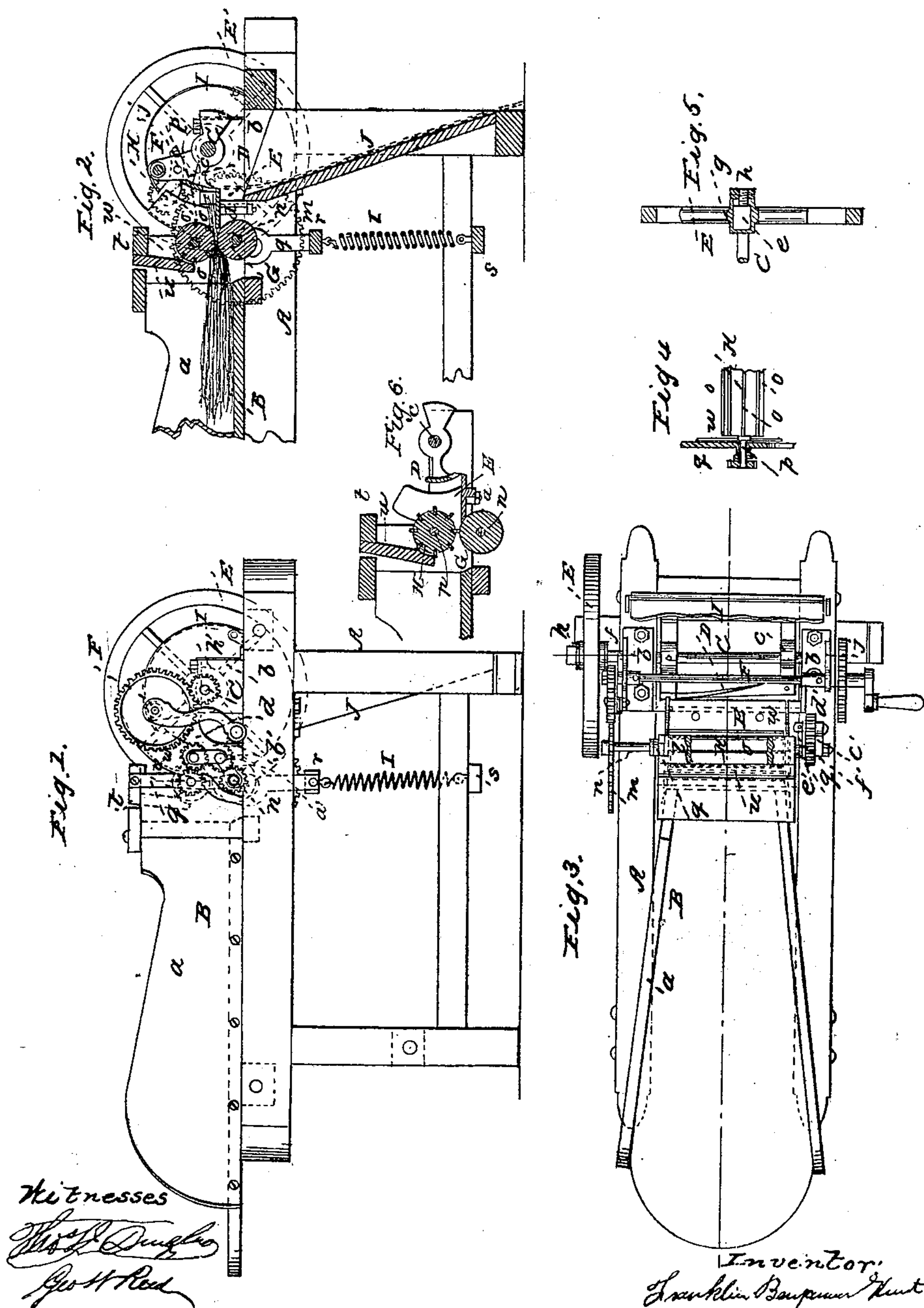


F. B. HUNT.
Fodder Cutter.

No. 41,070.

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UNITED STATES PATENT OFFICE.

FRANKLIN BENJAMIN HUNT, OF RICHMOND, INDIANA.

IMPROVEMENT IN STRAW-CUTTERS.

Specification forming part of Letters Patent No. 41,070, dated January 5, 1864.

To all whom it may concern:

Be it known that I, FRANKLIN BENJAMIN HUNT, of Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Machines for Cutting Fodder; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side view of my invention; Fig. 2, a side sectional view of the same, taken in the line *x x*, Fig. 3; Fig. 3, a plan or top view of the same, partly in section; Fig. 4, a detached front view of a portion of the upper feed-roller with one of its bearings in section; Fig. 5, a detached central section of the fly-wheel fitted on its shaft. Fig. 6 is a detached sectional view in the same plane as Fig. 2, illustrating the manner of setting the axis of the knife above the plane of the cutting-bar in order to cut the fodder obliquely.

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

This invention relates to a new and improved machine for cutting fodder—such as straw, hay, stalks, &c.—for animals; and it consists, first, in an improved cutting device, the same consisting of a revolving spiral knife placed in front of the feed-box and arranged in such a relative position with the bed thereof that a comparatively long drawing-cut is obtained and the fodder cut with a less expenditure of power than usual.

The invention consists, second, in a novel arrangement of the upper feed-roller of the machine, whereby the same in adjusting itself to the thickness of the layer of straw, hay, or other substance passing underneath it will rise and fall in the arc of a circle and always be at the same distance from the shaft of the cutter or knife, so that the substance to be cut will at all times be retained in proper position on the bed and while being acted upon by the cutter or knife.

The invention consists, third, in the employment or use of a guard-board or guard-plate attached to the frame of the upper feed-roller so as to cause said guard-board or guard-plate to rise and fall with the upper feed-roller, and at all times prevent the substance being cut from passing over the top of the upper

feed-roller, a contingency which otherwise might occur.

The invention consists, fourth, in attaching the fly-wheel of the machine to its shaft in such a manner that the former may, in case of the cutter or knife being arrested in its work by acting upon any hard foreign substances, be allowed to slip on its shaft, and thereby relieve the cutter or knife from any undue strain to which it would otherwise be subjected.

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

A represents the framing of the machine, which may be constructed of either wood or metal and in any proper manner to support the working parts. B is a feed-box, which is placed on the framing A, and may be of the usual taper form, its sides *a a* being nearer together at its discharge end than at its opposite end, as shown in Fig. 3.

On the front part of the framing A there are two bearings, *b b*, in which a shaft, C, is fitted and allowed to rotate freely. This shaft C has two arms, *c c*, firmly keyed upon it, and to one end of said arms a cutter or knife, D, is secured by screws or otherwise. This cutter or knife has a spiral position, and, as the shaft C is rotated, works closely over the outer edge of a metal bed-plate, E, which is attached to the front or discharge end of the bottom of the feed-box by screws *d*, Fig. 2, so as to admit of being adjusted farther forward or backward, as desired, to compensate for wear either of the knife or bed.

The ends of the arms *c c* opposite to those where the cutter or knife D is attached are made somewhat heavy, in order to counterpoise or balance the cutter or knife on the shaft, and thereby insure an easy cutting action of the former.

On one end of the shaft C a fly-wheel, E', is fitted. This shaft may have a collar, *e*, upon it with a shoulder, *f*, at its inner end. The fly-wheel is fitted on this collar, the inner end of the hub *g* of the former being pressed against the shoulder *f* by a nut, *h*, which is on a screw cut on the shaft at the outer side of the collar *e*, and which bears against the outer end of the hub *g*. (See Fig. 5.) By screwing up this nut *h* to a greater or less ex-

tent the hub *g* may be pressed more or less firmly against the shoulder *f*, and the fly-wheel secured to the shaft *C* more or less firmly, as desired, but not in any case so firm as to prevent the slipping of the wheel on its shaft when the cutter or knife is arrested in its motion by coming in contact with any hard foreign substance—such, for instance, as a thick stick, hard woody weeds, stalks, &c. By this slipping of the fly-wheel on its shaft the cutter or knife is greatly preserved, it being prevented from breaking and becoming nicked, strained, and bent under the action of the driving-power in connection with the inertia of the fly-wheel.

The collar *e* and shoulder *f* on the shaft *C* are not absolutely essential. The shaft *C* may be turned in slightly taper form, and the hub *g* of the fly-wheel fitted upon it more or less tightly by means of a screw-nut, and the same end attained. I prefer, however, for the purpose the arrangement first described.

On the end of the shaft *C*, opposite to that where the fly-wheel *E* is secured, there is fitted a pinion, *h'*, which gears into a wheel, *i*, on a shaft, *F*, above the shaft *C*, the bearings of the shaft *F* being in upright plates *j j*, attached to the bearings *a a* of the shaft *C*. The shaft *F* has a pinion, *k*, upon it, at the end opposite to that where the wheel *i* is attached, and this pinion *k* gears into a pinion, *l*, which gears into a wheel, *m*, on one end of the shaft *n* of a feed-roller, *G*, which is the lowest of a pair, and which shaft *n* works in fixed or immovable bearings.

The shaft *F* is the driving-shaft of the machine, and the shaft *C*, on which the cutter-arms *c c* are placed, is above the level or plane of the bed-plate *E*, as shown in Fig. 2. This relative position of the shaft *C* and bed-plate *E* causes the cutter or knife *D* to act or work with a drawing cut, and consequently with greater facility than it otherwise would.

H is the upper feed-roller, the periphery of which is provided with longitudinal ribs *o* to catch and feed forward the substance in the feed-box *B* to be cut. The shaft *p* of this feed-roller *H* has its bearings in two bars, *q q*, which are placed one at each side of the feed-box *B*, and extend down below the same, and are connected at their lower ends by a cross-bar, *r*, to which a spiral spring, *I*, is attached, the lower end of said spring being connected to a cross-bar, *s*, at the lower part of the framing *A*. The upper ends of the bars *q q* are connected by a board or plate, *t*, to the back edge of which there is attached a pendent board or plate, *u*, which extends down back of the roller *H* to a level with its shaft *p*, as shown in Fig. 2.

The spring *I* has a tendency to keep the upper roller, *H*, pressed down toward the lower fixed roller, *G*, and the shaft *p* has upon it two cylindrical hubs, *w'*, and these hubs are fitted in curved slots *v v* in plates *w w*, attached one to each side of the feed box. The

slots *v v* are parts of circles, of which the shaft *C* is the center, and consequently when the roller *H* rises and falls it moves in a circle concentric with *C*, and will, at all points of its movement, be at the same distance from *C*, and also have the same relative position with the cutter or knife *D*. This is an essential feature of the invention, for if the roller *H* were allowed to move up and down in a vertical plane under the different thickness of the layer of straw or other substance beneath it to be cut its distance would vary materially in relation with the cutter or knife, and be, when elevated, so far from the latter that the straw or other substance to be cut would not be held firmly in position. The substance to be cut is fed to the cutter or knife by the action of the two rollers *G H*.

In order to admit of this curvilinear motion of the roller *H* a peculiar gearing is necessary in order that said roller may be properly rotated at all points of its movement. This gearing is arranged as follows:

The shaft *n* of the lower feed-roller, *G*, has a pinion, *a'*, at its end opposite to that where the wheel *m* is attached, and the pinion *a'* gears into a pinion, *b'*, the axis of which is attached to a bar, *c'*, the lower end of which is fitted loosely on the shaft *n*. The pinion *b'* gears into a similar pinion, *d'*, the axis of which is also attached to the bar *c'*, and the pinion *d'* is kept in gear with a pinion, *e'*, on the shaft *p* of the upper roller, *H*, by means of an arm, *f'*, which is attached to the upper end of the bar *c'*, and is fitted loosely on the shaft *p*. By this arrangement the roller *H* is allowed to move in the curved path described without at all interfering with its driving-gear.

The board or plate *u*, which extends down back of the upper roller, *H*, prevents the straw or other substance being cut from passing over the top of said roller, a contingency which would be liable to occur were said board fixed or stationary, as it would necessarily require to be placed sufficiently high to admit of the thickest layers of stuff or substance to be cut passing underneath it, and a thin layer would consequently be liable to pass over the roller *H*, the latter in that case being quite low and the lower edge of the board *u* quite high. My arrangement, it will be seen, completely obviates this difficulty, as the board *u* moves up and down with the roller *H*.

I is a curb or cap, which covers the cutter or knife *D*; and *J* is a chute which conducts the cut substance down at the front part of the machine.

The substance to be cut may be cut into pieces of greater or less length by varying the relative size of the pinions *k l*.

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

1. The combination, with cutting bar or

plate E, of the single knife D, and arms *c c*, attached to a driving-shaft, C, located in front of and above the plate E, so as to effect an oblique or drawing cut, as explained.

2. Attaching the fly-wheel E' to its shaft C in the manner shown, or in an equivalent way, to admit of said wheel slipping on its shaft in case the motion of the cutter or knife is arrested by any foreign substance, for the purpose of preserving the cutter or knife, as set forth.

3. The bar *c'*, connected directly to the shaft *n* of the lower feed-roller, G, and connected to the shaft *p* of the upper feed-roller, H, by the arm *f'*, and having the pinions *b' d'*

attached to it, said bar and its pinions being arranged in gear with the pinions *a' e'* of the feed-roller shafts *n p*, substantially as and for the purpose set forth.

4. The guide-board or guide-plate *u*, attached to the plate *t* of the frame of the upper feed-roller, H, and extending down at the back of said roller to a level with the shaft *p* of the same, substantially as and for the purpose specified.

FRANKLIN BENJAMIN HUNT.

Witnesses:

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GEO. W. REED.