

3. Streets. Street 1.

No. 106,707.

Patented Aug. 23. 1870.

Fig. 1.

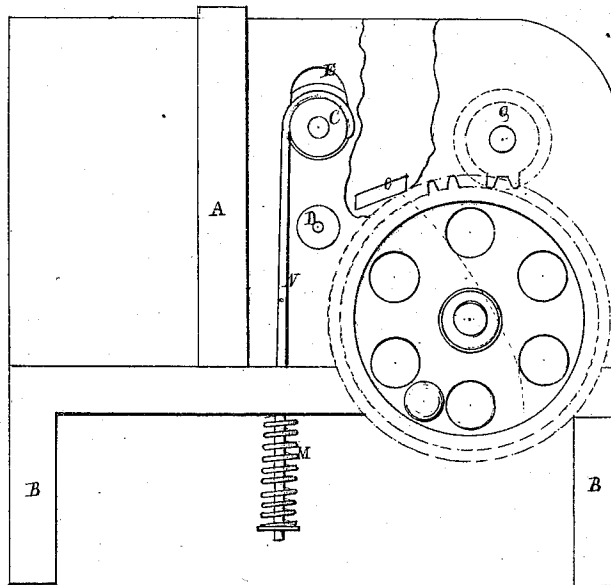
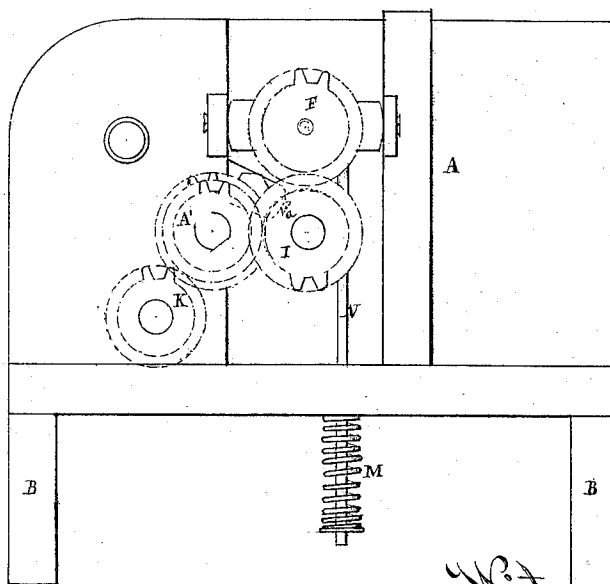


Fig. 2.



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3. Sheets, Sheet 2.

Straw Cutter.

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Fig. 3.

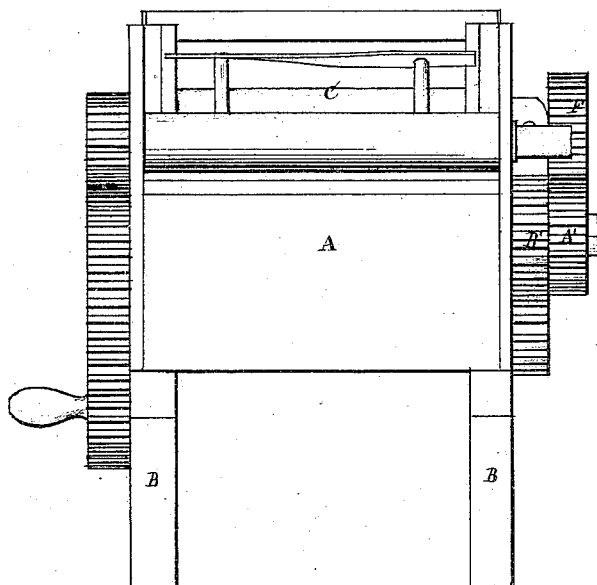
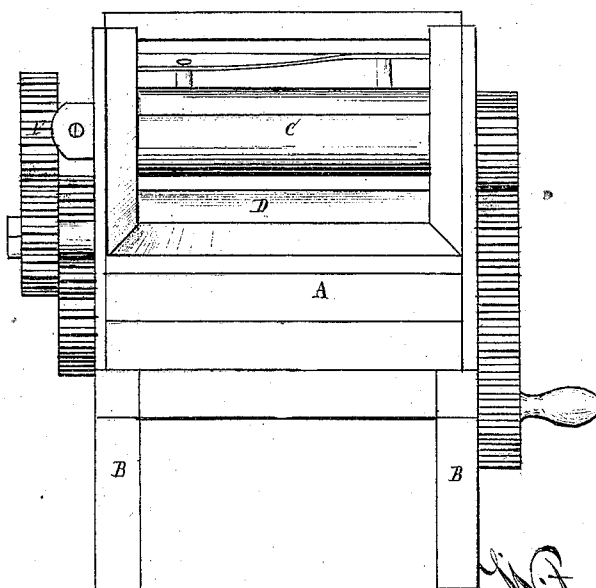


Fig. 4.



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Fig. 5.

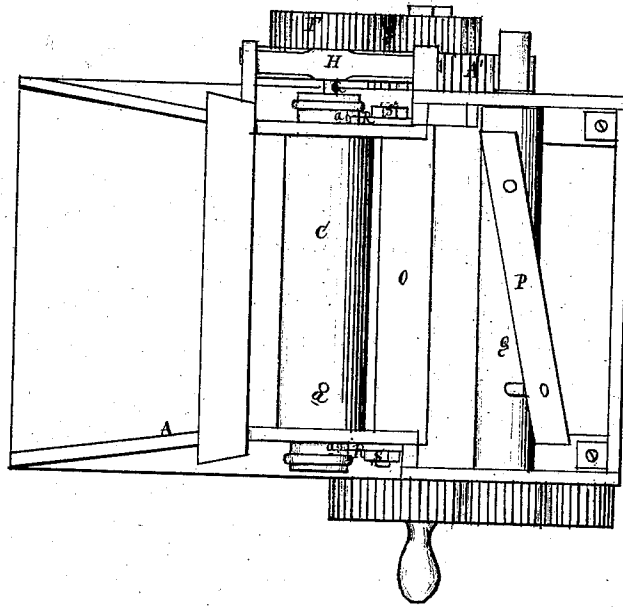


Fig. 6.

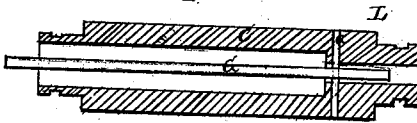
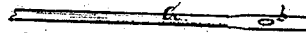


Fig. 7.



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Letters Patent No. 106,707, dated August 23, 1870.

IMPROVEMENT IN STRAW-CUTTERS.

The Schedule referred to in these Letters Patent and making part of the same

Be it known that I, ALBERT P. MASSEY, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Straw-Cutters, of which the following is a description.

Plate 1.

Figure 1 is a side view of the straw-cutter.

Figure 2 is a view of the opposite side of fig. 1.

Plate 2.

Figure 3 is a front end view.

Figure 4 is a rear end view.

Plate 3.

Figure 5 is a top view.

Figures 6 and 7 are detached sections.

Like letters of reference refer to like parts in the different views.

The nature of this invention relates to a straw-cutter, one object of which is to so arrange the stationary knife therein that it shall have a shearing cutting action instead of a square or an abrupt one, as is usual in this class of implements, and to the manner of securing it in place.

It also relates to the construction and arrangement of the feed-roller, the object of which is to obtain to it a movement so that it may adjust itself to a variable amount of straw, &c., fed to the machine.

It furthermore relates to a reversible double gear, the object of which is to increase or lessen the speed of the feed-roller, as the nature of the straw, &c., may require, all of which is hereinafter more fully set forth.

In fig. 1, A represents the body or box of the straw-cutter, mounted upon the legs B, and in which are arranged the feed-rollers, of which D, fig. 4, revolves in fixed boxes or journal-seats, whereas the companion roller C revolves in vertical slots E, fig. 1, one in each side of the body or box, so that it may have a vertical adjustment.

The adjustable roller referred to is made to rotate by the gear, F, fig. 4, secured to the outer end of shaft G, fig. 5, one end of which is journaled in the oscillating bearing H, whereas the opposite end is secured to the roller by means of a pin *a* projected through said roller, and through the end of the shaft, a slot *b*, fig. 7, being cut therein for the free admission and movement of the shaft, or rather the roller inclosing the shaft, as shown in fig. 6, in which it will be seen that the roller is hollow, and that the shaft passes through it longitudinally, having one end thereof secured to it in the manner as above described, and whereby it is made to revolve as above said.

It will be obvious that a roller thus journaled will be made to revolve by its gear F, referred to, engag-

ing with the series of gears I, A', and K, fig. 2, and at the same time it is susceptible of a variable movement wholly, or either of the ends, as the case may be, in order to adjust itself to the straw, &c., fed to the machine. Thus the end L, fig. 6, of the shaft and roller move together, whereas only the opposite end of the roller moves, the shaft being restrained from such movement by its confinement in the oscillating bearing H.

The space between the inside of the roller and the shaft allows to the roller sufficient latitude of movement to adjust itself to a variable amount of straw, hay, &c., that may pass between the rollers, and thus run freely without interfering with the engagement of the gear F with the wheel I, whereby it is operated as aforesaid; when the further end of the roller is elevated, the oscillating shaft or stay H moves, thereby adapting the journal-seat to the position of the shaft, and thus avoid cramping the journal in the box.

The roller C is made to approximate the roller D by the springs M, figs. 1 and 2, attached to said roller by the links N, the upper end of which embraces the end of the roller, as seen in fig. 1.

By constructing and arranging the roller in the manner as above described, is avoided the necessity of having driving gear with deep teeth, which, in the ordinary straw-cutters having an adjustable roller, is required in order to continue the engagement of the gearing, when the upper roller is raised more or less to admit the passing of the straw between the rollers.

In consequence of such long toothed gear there is necessarily a loss of power resulting from the great amount of friction produced by the action of the gear upon each other, and not unfrequently the teeth of the gear break in consequence of this deep contact; such breakage is also avoided by this manner of adjusting the rollers.

A further improvement consist in the arrangement of the stationary cutter O, figs. 1 and 5.

In fig. 1 it will be seen that the plane of the cutter is in a radial line of the axis of the revolving cutter P, or an approximation thereto, of which Q is the shaft to which said cutter is attached, thereby obtaining to it a more shearing-like cut than if the plane of the cutter was arranged horizontally, as it is in the ordinary machine.

The position of the cutter may be inverted; thus the rear edge may be elevated above the axial line; in this position the rotation of the cutter P is reversed.

In this inclined position of the cutter O the act of cutting is done with greater ease and facility, and, therefore, with less expenditure of power than in the manner above referred to.

The cutter O may be adjusted near to or away from the revolving cutter by means of the set-screws, indi-

cated by the dotted lines *a*, figs. 2 and 5; said screws are set in the bosses *R*, in which the ends of the cutter are held, by the nuts *S*, thereby giving an easy adjustment to the cutter; each end of the cutter is held in a recess or groove cut in the sides of the case, and which project into the bosses *R*, within reach of the adjusting screws referred to.

It will be seen, on examination of the drawing, that the ends of the stationary cutter *O* are extended in the form of bolts, *S'*, fig. 5, through the sides of the case, and secured thus by the nuts *S*. By this means the cutter is made to perform the office of a stay bolt, thereby increasing the lateral strength of the box, and thus dispensing with an extra bolt for that purpose.

The speed of the feed-roller may be graduated by the double pinion *A'*, figs. 5 and 3, by reversing the pinions, thus disengaging the small pinion *A'* from the wheel *I*, and placing the larger one *B'* in engagement therewith. By this means the speed of the roller is easily changed by the double pinion. These two pinions form different radii, and may be arranged in relation to each other, as shown, but not connected to each other in the manner described, but both may revolve independently upon the same axis, which would produce substantially the same result without changing the nature of my machine.

The adjustable feed-roller above described is equally applicable to flax-brakes and other like machines, requiring a feed-roller that will adapt itself to a variable thickness of flax as other material fed to it.

Claims.

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

1. The hollow roller *C*, as arranged in combination with the shaft *G*, substantially in the manner described, and for the purpose set forth.

2. The adjustable feed-roller, when so arranged as to be operated by means of an arm or shaft from the outside passing into the cavity of said roller, and connected to it by a coupling or joint, which will admit of the said roller being yielding as it rotates, substantially as and for the purpose described.

3. The stationary cutter *O*, when arranged in such relation to the revolving cutter *P* that the plane thereof shall be in a radial line of the axis of the revolving cutter *O*, in the manner substantially as described, and for the purpose specified.

4. The oscillating bearing *H*, in combination with the adjustable roller *C*, arranged in relation to each other, substantially as and for the purpose described.

5. The two reversible pinions *A'* *B'*, of different radii, revolving upon the same axis, in combination with the wheel *I* and feed-rolls, substantially as and for the purpose set forth.

6. So arranging the stationary knife *O* in the form that its cutting-plane shall form an angle of ninety-five degrees, or more, with a vertical plane through its cutting-edge, when said edge is not in the same horizontal plane as the axis of the revolving cutter, substantially as and for the purpose described.

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