(No Model.) 3 Sheets—Sheet 1.

H. E. COLLINS.

STRAW CUTTER.

No. 345,484. Patented July 13, 1886.

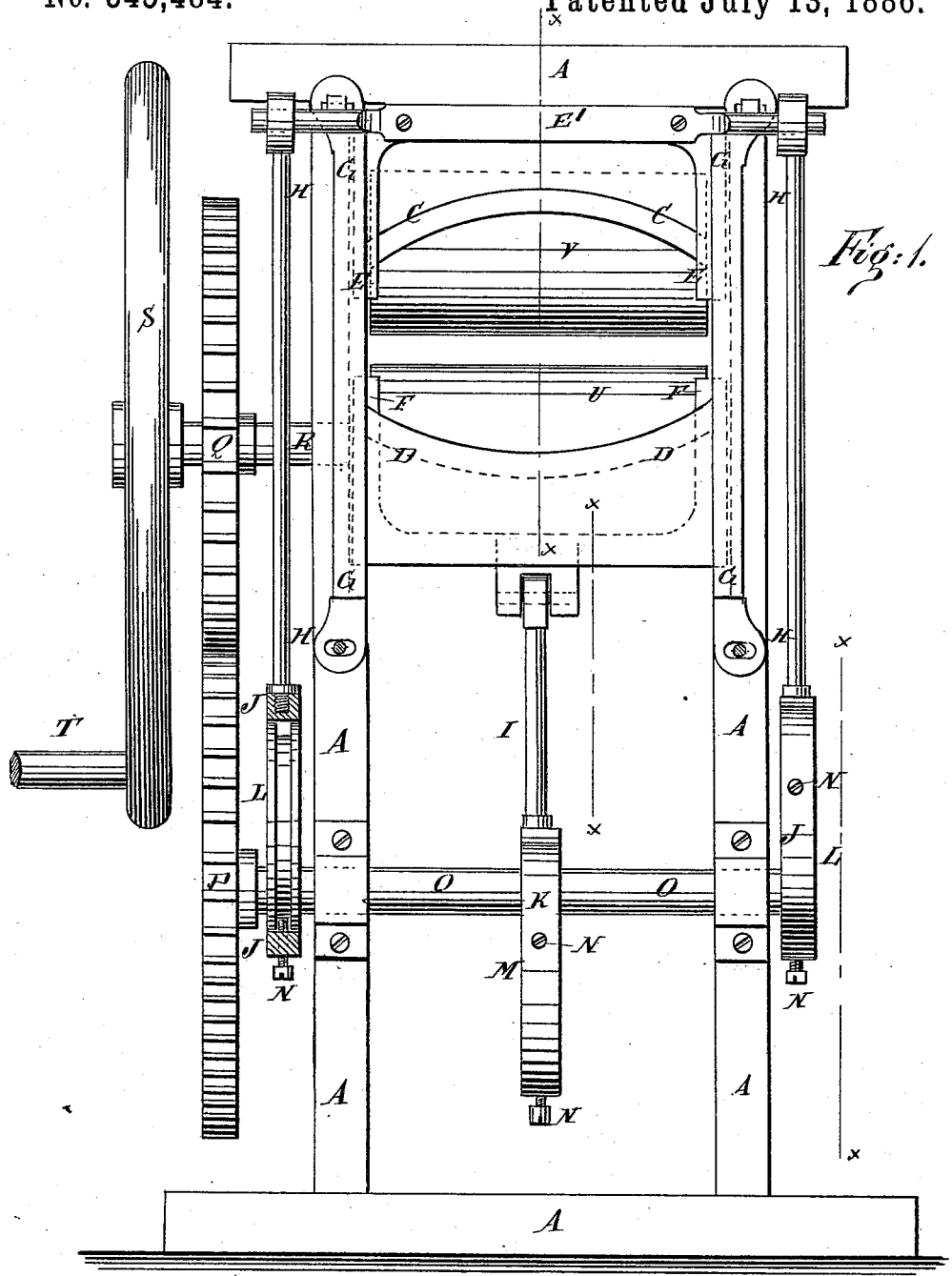

Fig. 1.

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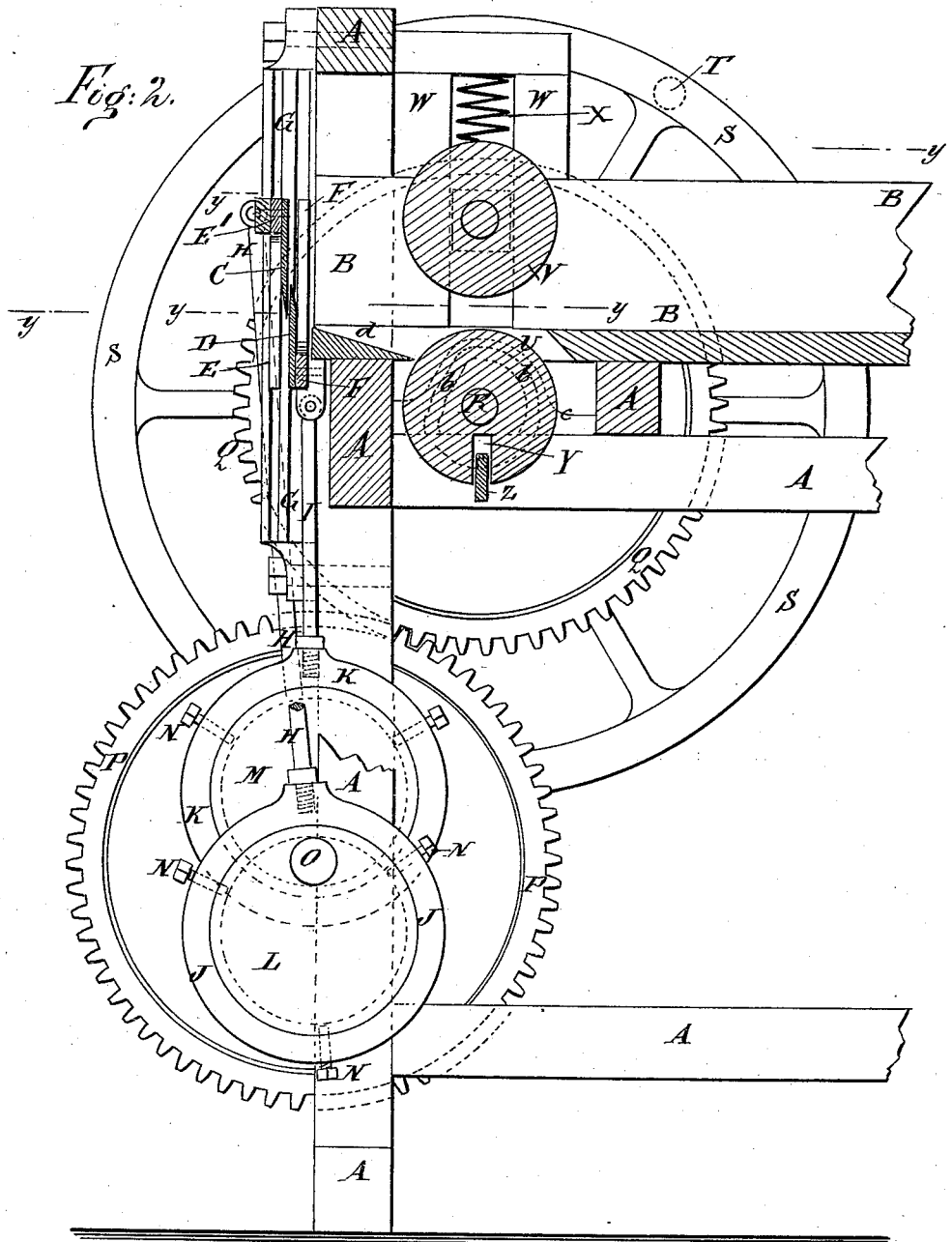
Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

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Fig. 4.

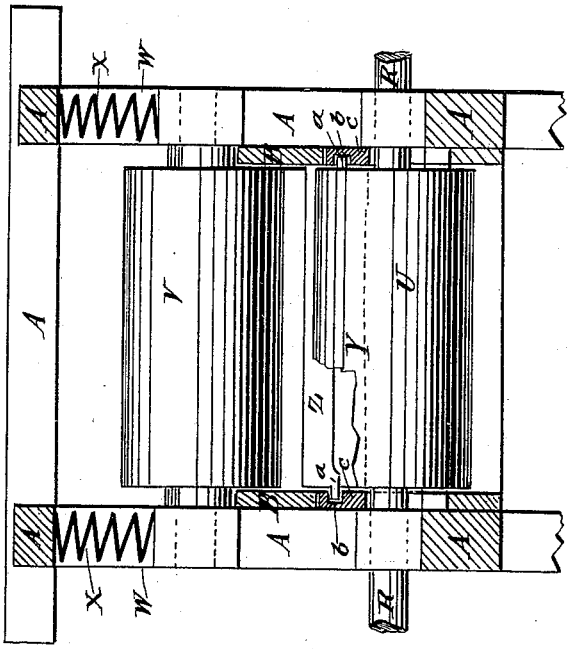


Fig. 5.

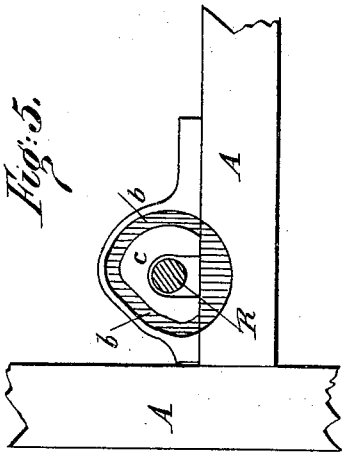
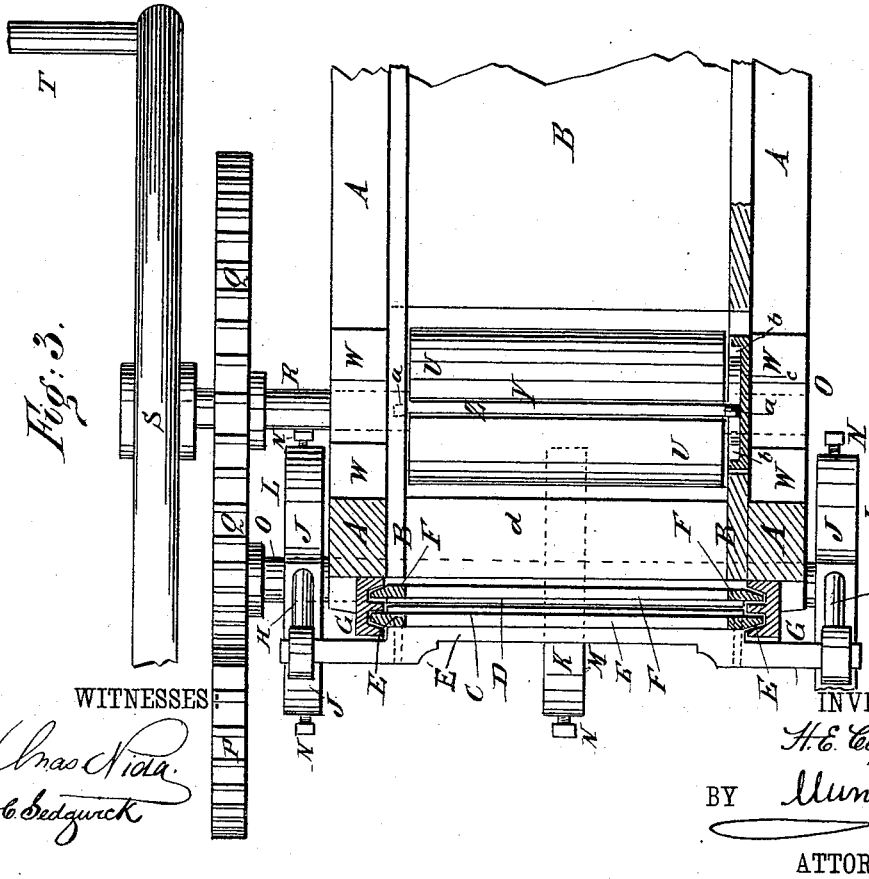


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HORATIO E. COLLINS, OF DETROIT, MICHIGAN, ASSIGNOR TO HIMSELF AND OTTO HARTMAN, OF SAME PLACE.

STRAW-CUTTER.

SPECIFICATION forming part of Letters Patent No. 345,484, dated July 13, 1886.

Application filed January 4, 1886. Serial No. 187,551. (No model.)

To all whom it may concern:

Be it known that I, HORATIO E. COLLINS, of Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Straw-Cutters, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of one of my improved straw-cutters, partly in section. Fig. 2 is a side elevation of the same, taken through the broken line *x x x x x x*, Fig. 1. Fig. 3 is a plan view of the same, partly in section, taken through the broken line *y y y y y*, Fig. 2. Fig. 4 is a sectional elevation of a part of the frame, feed-box, and feed-plate guide, and showing the feed-rollers and feed-plate, part of the lower feed-roller being broken away. Fig. 5 is a sectional elevation of a part of the straw-cutter, and showing the inner side of one of the feed-plate guides.

The object of this invention is to provide straw-cutters constructed in such a manner that they will cut a thicker layer of straw or hay than cutters constructed in the ordinary manner, and will thus do more work in the same time.

The invention consists in the construction and combination of various parts of the straw-cutter, as will be hereinafter fully described, and specifically pointed out in the claim.

A represents the frame, and B the feed-box, of a straw-cutter.

C D are the upper and lower knives, the edges of which are concaved in curved lines, as shown in Fig. 1. The edge of the upper knife, C, is beveled upon the forward side, and the edge of the lower knife, D, is beveled upon the rear side, as shown in Fig. 2.

The knives C D are bolted to the adjacent sides of the knife-frames E F, which are made in the form of half-rectangles, as indicated in Fig. 1. The side arms of the knife-frames E F slide in grooves in the guide-bars G, attached to the forward uprights of the frame A. The outer sides of the grooves in the guide-bars G are beveled, and also the corresponding sides of the arms of the knife-frames E F, as shown in Fig. 3.

Upon the ends of the top bar, E′, of the upper knife-frame, E, are formed gudgeons, to which are pivoted the upper ends of the pitmen H, and upon the center of the cross-bar of the lower knife-frame, F, are formed lugs, to which is pivoted the upper end of the pitman I. The lower ends of the pitmen H I are screwed into screw-sockets in the rings J K, placed upon the eccentric wheels L M, to which they are secured by set-screws N, passing through the said rings J K, and entering annular grooves in the faces of the eccentric wheels L M, as shown in Fig. 1, so as to keep the said ring in place upon the said eccentrics, while allowing the said eccentrics to revolve freely within the said rings.

The eccentric wheels L M are keyed or otherwise secured to the shaft O in such positions that the longest radii of the eccentrics L will be on the opposite side of the shaft O from the longest radius of the eccentric M, so that the two knife-frames and knives will be moved to and from each other simultaneously.

The parting-bead between the two grooves of the guide-bars G is made of a width equal to the combined thickness of the two knives, so that the said knives will be close to each other as they move up and down.

The shaft O revolves in bearings attached to the lower parts of the front uprights of the frame A, and to one of the ends of the said shaft is attached a gear-wheel, P, the teeth of which mesh into the teeth of the gear-wheel Q, attached to the shaft R near one end. To the end of the shaft R is attached a balance-wheel, S, which is provided with a crank-pin, T, to serve as a handle in operating the machine. The shaft R is placed below and at a little distance from the forward end of the feed-box B, as shown in Fig. 2. To the shaft R is attached the lower feed-roller, U, the upper part of which projects into an opening in the bottom of the feed-box B, so that its upper surface will be flush with the upper surface of the said bottom.

V is the upper feed-roller, the journals of which revolve in vertical slots in standards

W, attached to the frame A, and the said roller is held down with the desired force by spiral springs X, placed in the said slots, and interposed between the said journals and the caps of the said standards.

In one side of the lower feed-roller, U, is formed a longitudinal groove, Y, extending from the surface of the said roller nearly to its center, and within which is placed the feed-plate Z, of the same length as the said roller, of a breadth equal to the depth of the groove Y, and of such a thickness as to move freely within the said groove.

Upon the ends of the feed-plate Z are formed lugs *a*, which enter guide-grooves *b* in the inner sides of the guide-plates *c*, secured to the frame A. The guide-grooves *b* are formed with an inward incline, so that the feed-plate Z, as it passes over the axis of the roller U, will be drawn inward to pass the inner edge of the metallic plate *d*, that forms the forward part of the bottom of the feed-box B, and which inner edge is close to the surface of the said feed-roller U. The upper surface of the plate *d* is beveled or inclined downward toward the roller U, to provide space for the feed-plate Z to be drawn inward. As the feed-plate Z passes the plate *d* it again moves outward, and is held out by the curved part of the grooves *b* until it again passes over the axis of the said feed-roller U.

I am aware that a sausage-stuffer has had a rotary cylinder provided with a series of longitudinal slots, in which were placed sliding plates having end lugs working in guide-slots in the end of the machine; also, that straw-cutters have had concave knives mounted on ⊔-shaped frames sliding in opposite directions, and operated from a shaft having three cranks and their pitmen, the outer pitman being connected to end projections on the lower knife-frame, and the middle pitman being pivoted to two lugs on the top of the upper knife-frame; and I do not claim the same as of my invention.

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

The combination, with the box, the vertically-moving knives, and means for reciprocating them in opposite directions, of the upper feed-roller, V, the lower longitudinally-slotted feed-roller, U, projecting up into an opening in the bottom of the box, and having the plate Z, provided with end lugs, plates on the box provided with grooves *b b* for the said end lugs, and gearing for operating the said rollers connected with the knife-operating mechanism, the parts being relatively adjusted to bring the plate Z next to the lower surface of the upper roller when the knives are opened, whereby the material to be cut will be fed to the knives when separated, and the feed will cease when the knives meet, substantially as set forth.

HORATIO E. COLLINS.

Witnesses:
JOHN MCHUGH,
OTTO HARTMANN.