



# United States Patent Office.

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## IMPROVEMENT IN STRAW-CUTTERS.

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

*To all whom it may concern :*

Be it known that I, GEORGE SUTTON GARTH, of Mill Hall, in the county of Clinton and State of Pennsylvania, have invented a new and useful Improvement in Straw-Cutters; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

My invention relates to straw-cutters; and my object is to introduce to the public certain improvements thereon, which will be first described, and then pointed out in the claim.

Figure 1 is a side elevation of my improved machine.

Figure 2 is an end view of the same.

Figure 3 is a detail, showing the arrangement of the feed-rollers.

Figure 4 is a view of one of the parts used, detached from the others.

Similar letters of reference indicate corresponding parts.

The box A is made with vertical sides, and the lower feed-roller, B, is mounted in fixed bearings near the bottom, and the upper one, C, is mounted in the upper ends of the vertically-sliding bars D, fitted to slide up and down in vertical grooves E in the side of the box, one being on the outside of one box side, and the other on the inside of the other side.

These bars have slots F to allow them to work over the journals of the roller C, which passes through the said slots, and the box side in which the vertical groove E for the bar D is made on the outside, also has a similar slot, G, to allow the shaft or journal of the roller C, which is supported at the outside, to work up and down.

The feed-rollers are fitted as to length, so that the ends work snugly against the sides of the box, so that the straw cannot be crowded in between the ends and the sides, and the bar D, which works on the inside, is arranged flush with the side, so that no space is left in which the straw can clog.

These bars extend below the bottom of the box, and are clamped between two cross-bars, I, fitted at the ends, so that being clamped by the bolts K against them, they will be permanently connected to the said cross-bars.

One of these bars has a slot at the center, into which the end of a long spring-bar, M, engages, to draw the upper roller down upon the straw being fed between the two rollers.

This spring-bar is attached to the rear end of the frame at N, and works over a stuffing-bridge, O, where

it is provided with a temper-screw, P, to vary the tension.

The said screw passes loosely through the spring-bar, and screws through a nut fastened to the block Q, against a plate let in the bridge, so that when turned one way the block will be forced down, and the spring will thereby be placed under greater strain; but when the screw is turned the other way, the block will have less pressure on the spring, and the tension will be lessened.

The axles of the rollers which project through one side of the box, as above stated, are provided with ratchet-wheels R S, the teeth of which are pitched in opposite directions, according to the directions of the movement of the different rollers.

These ratchet-wheels are intended to impart an intermittent rotary motion to the rollers, through the medium of the cutter-lever, and for this reason a double-acting pawl is used, consisting of the vertical bars V V', united by a horizontal bar, V'', arranged by the side of the ratchet-wheels, so as to support the said two bars of the pawl in such relation with their respective wheels, that, when a movement is imparted to the pawl in one direction, say the vertical, the teeth thereof will engage with and turn the roller, as required.

For causing this movement to the pawl, it is connected by a pin, W, with a lever, X, pivoted at Z, and arranged to be struck at the free end by a lug, Y, attached to the cutter-lever Y' near the pivot, so that when the cutter-lever is raised it will raise the lever X, and thereby cause the feeding movement of the rollers when the cutter-lever is rising.

For insuring the tightening-nut *a* of the pivot-bolt *b* of the cutter-lever against working loose, I introduce a washer between the nut and the plate *e*, having an arm, *f*, which projects beyond the plate *e* and bears against a stud, *g*, on the lever Y', so that it will turn with the bolt which is turned beyond the lever Y' in the hole in plate *e*, which does not turn the bolt, being fitted to the lever in a square hole for the purpose, the nut being screwed up against this washer and moving with it, and the bolt will not be disturbed or caused to work loose.

I prefer to make a socket in the face of the washer which fits against the plate *e*, and to make a stud or projection thereon around the hole, for the bolt to fit into the socket in the washer, but the two surfaces which come into contact may be plane.

By placing the feed-rollers nearer the mouth of the box, the lug Y on the cutter-lever may be caused to act on the feeding-pawl, and the lever X may be dispensed with; but I prefer the arrangement herein shown, for the purpose of having the rollers so far away from the mouth of the box that the straw will

spring up between the rollers and the cutter, so as to prevent it from slipping back through the rollers, as it will do if the rollers are close to the cutters, and the straw does not have freedom to spring up between the rollers and the cutters.

The wall of the hole through the plate  $a^1$ , against which the cutter acts, is commonly made in the curved form represented at  $a^2$ , to prevent the straw from collecting in a mass thereat, as would be the case if the plate  $a^1$  be made in the same angular form as the box, and behind this curved corner it is necessary to fill up the box in some way to prevent the straw from clogging against the inside of the plate; this I propose to do by means of the curved metallic angle-plate, represented in fig. 4, the same being cast in the requisite form, and provided with a countersunk hole, by which it may be attached by a single screw screwing through it into the angle of the feed-box.

This plate may be made much cheaper than a wood

block, and when secured in place will be much more durable.

Having thus described my invention,

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

1. The bentratchet-bar  $V V' V''$ , formed as described, and applied to move the ratchet-wheels  $R S$  simultaneously in opposite directions, as specified.

2. The combination of the bentratchet-bar  $V V' V''$ , constructed as described, and having pin  $W$  thereon, with slotted lever  $X$  and lug  $Y$  on cutter-bar  $Y'$ , for the purpose of enabling the cutter-lever to operate it in the manner described.

3. The combination of the face-plate  $a^1$ , formed as described, with the cutter-lever  $Y'$ , armed washer  $f$ , bolt  $b$ , and nut  $a$ , for the purpose set forth.

Witnesses: GEORGE SUTTON GARTH.

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