A. Werner,

Straw Cutter.

No. 106,975. Patented Aug. 30. 1870.

Fig. 1

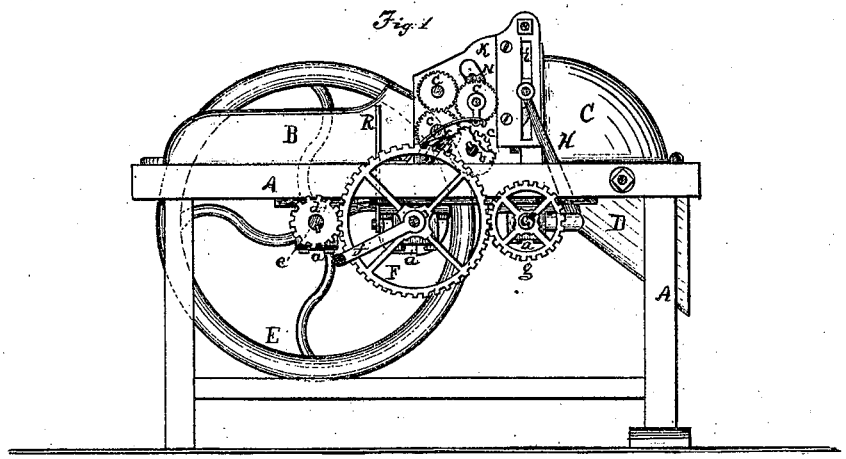


Fig. 2.

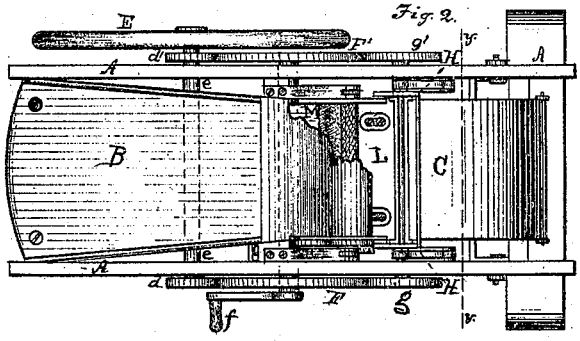


Fig. 3.

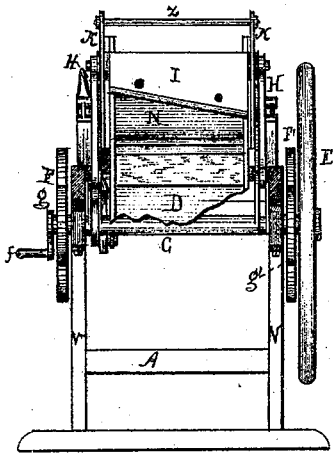


Fig. 4.

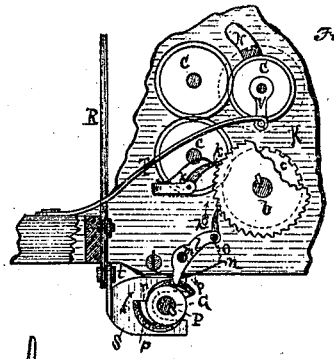
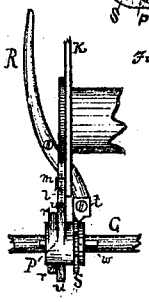


Fig. 5.



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AUGUST WERNER, OF BUFFALO, NEW YORK.

Letters Patent No. 106,975, *dated August* 30, 1870.

IMPROVEMENT IN STRAW AND FEED-CUTTER.

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, AUGUST WERNER, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Straw and Feed-Cutters; and I do hereby declare the following to be a full, clear, and exact description thereof, sufficient to enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a side elevation of a machine, illustrating my invention.

Figure 2 is a plan view of the same, with a portion of the feeding-throat broken away.

Figure 3 is a front view of the machine, with a part of the spout or chute broken away, so as to expose the interior mechanism.

Figures 4 and 5 are detail views, to be hereafter more fully described.

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

My invention consists in a peculiar arrangement and construction of the several features in straw and feed-cutters, and

First, in the method of attaching the connecting-rods, which give a vertically-reciprocating to the knife.

Second, in a peculiar mode of regulating the length of the material cut at each stroke of the knife.

Third, in the peculiar construction, location, and operation of the feed-rollers.

Fourth, in the two-part pawl, connected with the operating-cam and ratchet-wheel of the feed-rollers.

In the drawing—

A may represent the frame of a straw and feed-cutting machine, of ordinary form and construction, at one end of which a feed-box, B, is placed, and secured thereto by suitable means.

At the opposite end a spout or chute, D, is fastened, and projects below the level of the frame, said spout being covered by a cap or lid, C, which is hinged to the frame.

E is a large balance-wheel on the end of a shaft, *e*, motion to which is communicated through the medium of a driving-wheel, F, with a corresponding wheel, F′ at the opposite end of the shaft, both being toothed and engaging with pinions, *d d′*, which are secured to opposite ends of a shaft, *e*.

g g′ are spur-wheels on opposite ends of a crank shaft, G, said wheels engaging with the driving-wheel F and corresponding wheel F′, and these wheels into the pinions *d* and *d′*, the shaft bearing the pinions *d d′*, bearing, also, the large balance-wheel E.

These several shafts are secured to the frame of the cutter by means of suitable boxes or bearings, *a a a*, which are connected, by screws or other means, with the frame A.

To the crank-shaft G are secured pitman-rods H H, which, at the opposite ends, are attached to a knife, I, the top of which is extended into gudgeons, which work in slots *i* of side-pieces K, which rise from the frame-work, and are secured thereto by suitable bolts or screws, and, at the top, are joined by a rod, *z*.

The knife is composed of two parts, one, the larger, being made of hard iron or other suitable metal, but the other, the blade proper, is made of steel.

The removable bed-plate L is also made of hard metal, and has a sharpened edge, so that, at each descending stroke of the knife, the plate and blade of the knife together act as shears.

Immediately back of the knife feed-rollers M N are situated, both of which are made, by preference, of a hard metal, the upper one, N, being transversely grooved, and the lower one, M, rough ground, or hacked, so that, when the straw approaches them, the upper or grooved roller siezes it, and bears it against the lower one, when it is drawn through to the knife, by which it is cut.

Motion is given to the rollers by means of four or more pinions, *c c c c*, and a ratchet-wheel, *b*, one of the pinions, the ratchet-wheel, and the lower roller, M, being secured to the same axle or shaft.

On both ends of the axle of roller N there are secured removable projections, V, through the lower ends of which are passed pins, on which rest the slotted ends of flat springs, T, which are secured to a cross-bar, or other part of the frame.

In the side-pieces K K slots are cut, which serve as guides for the journals of the roller N when said roller is raised by matted straw, or from other causes, when in action, and thus obviates the trouble of stopping to remove the obstacle. When the roller is raised, the springs T serve to bring it back to its proper place again.

Motion is applied to the ratchet *b* by means of two spring pawls, *k k′*, the pawl *k′* being jointed with a cam, *l*, which is secured to side-piece K by means of a pivot, *m*.

To the same end of the cam to which the pawl is attached there is secured one end of a hook, *n*, the other end being fastened to a spring, *p*, said spring being secured to the side-piece K.

Cam *l* is moved by a cam-wheel, P, sliding on the crank-shaft G, which has a projection or lug, *w*, wrought or cast on it, to keep cam-wheel P in place.

The cam-wheel P is composed of a body, on which are cast or wrought two or more angular projections, *r u*, fig. 5. When motion is applied to the machine, the projections on cam-wheel P strike against cam *l*,

and this, by means of the pawl *k*, engages with ratchet *b*, thus giving motion to the rollers.

A hand-lever, R, is connected with cam-wheel P, and serves to adjust it by means of a forked plate, S, to which it is properly secured.

The operation is as follows:

The operator stands facing the front of the cutter, and turns the handle of the driving-wheel in the same direction. This wheel, as described heretofore, moves the pinions and spur-wheel, the pinion-shaft moves the balance-wheel, the spur-wheel or crank-shaft moves the pitman-rods and the knife, the main or driving-wheel shaft, by means of the cam-wheel and mechanism before described, moves the feed-rollers, and then the machine is ready for the straw or other substance to be cut.

The straw, being placed in the feed-box, is drawn, by the grooved and hacked rollers, toward the knife, and passing through the rollers, is cut by the descending stroke of the knife. The length of the cut is regulated by the lever R and cam P. When the lever is moved toward the operator, the cam *l* is struck by the small lug *r*, and the straw is cut fine; but when moved inwardly, toward the feed-box, cam *l* is struck by the large lug *u*, and the straw is cut in long pieces, the difference being caused by the number of revolutions made by the rollers, as they regulate the supply of straw; also, because of the different lengths, the cam *l* is carried by the two lugs.

It will be seen that the journal of one of the feed-rollers is mounted on springs within curved slots, so that the pinion which operates the roller moves with it, as the rollers are clogged or clear.

I am aware that the general principles of my invention are not new. The arrangement of some parts and the other parts added are my invention.

I remove a great disadvantage experienced in a large number of other cutters, viz., the placing of the operating (except, of course, the knife) mechanism on the sides of and underneath the frame-work, and not in front, and thus the cut feed is allowed to pass freely out, and is prevented from flying up and being scattered, by the cap or lid, over the spout.

Again, the operation and weight of the fly or balance-wheel are such that any accidental obstacle is easily overcome by the head-way the wheel makes.

Having thus described my invention,

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

1. The pitman-rods, pivoted to the projecting ends of the knife or cutter, and connected with the crank-shaft below the knife, so as to leave a free space in front of the cutter, substantially as described.

2. The arrangement and combination of two or more cams, of different pitch, (constructed as shown,) with the feed-rollers, for the purpose described.

3. The feed-rollers, constructed as described, with the journals of one roller mounted on springs and arranged within curved slots, in combination with the pinion which operates said roller and moves with it as the rollers are clogged or clear.

4. The two-part pawl, constructed as shown, in combination with the operating-cam and the ratchet-wheel of the feed-rollers, substantially as described.

The above signed by me this 20th day of November, 1869.

AUGUST WERNER.

Witnesses:

WM. H. SLADE,

ERNEST SCHULTZ.