

(No Model.)

2 Sheets—Sheet 1.

J. & P. RAHN.
STRAW CUTTER.

No. 412,040.

Patented Oct. 1, 1889.

Fig. 1.

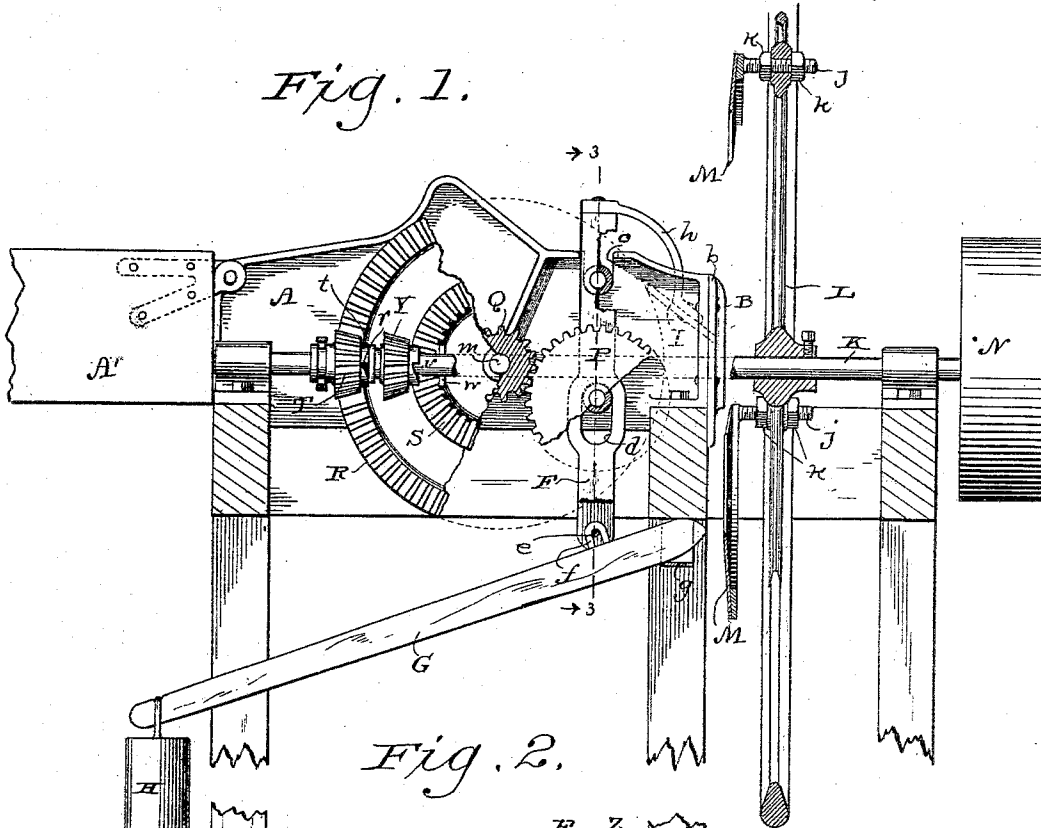
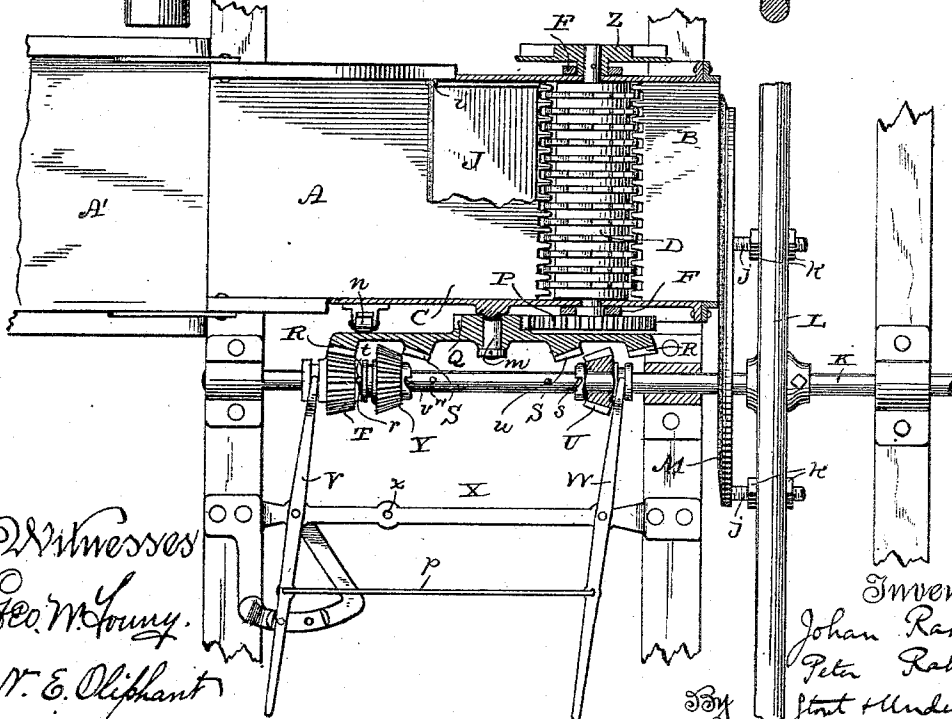


Fig. 2.



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2 Sheets—Sheet 2.

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Fig. 3.

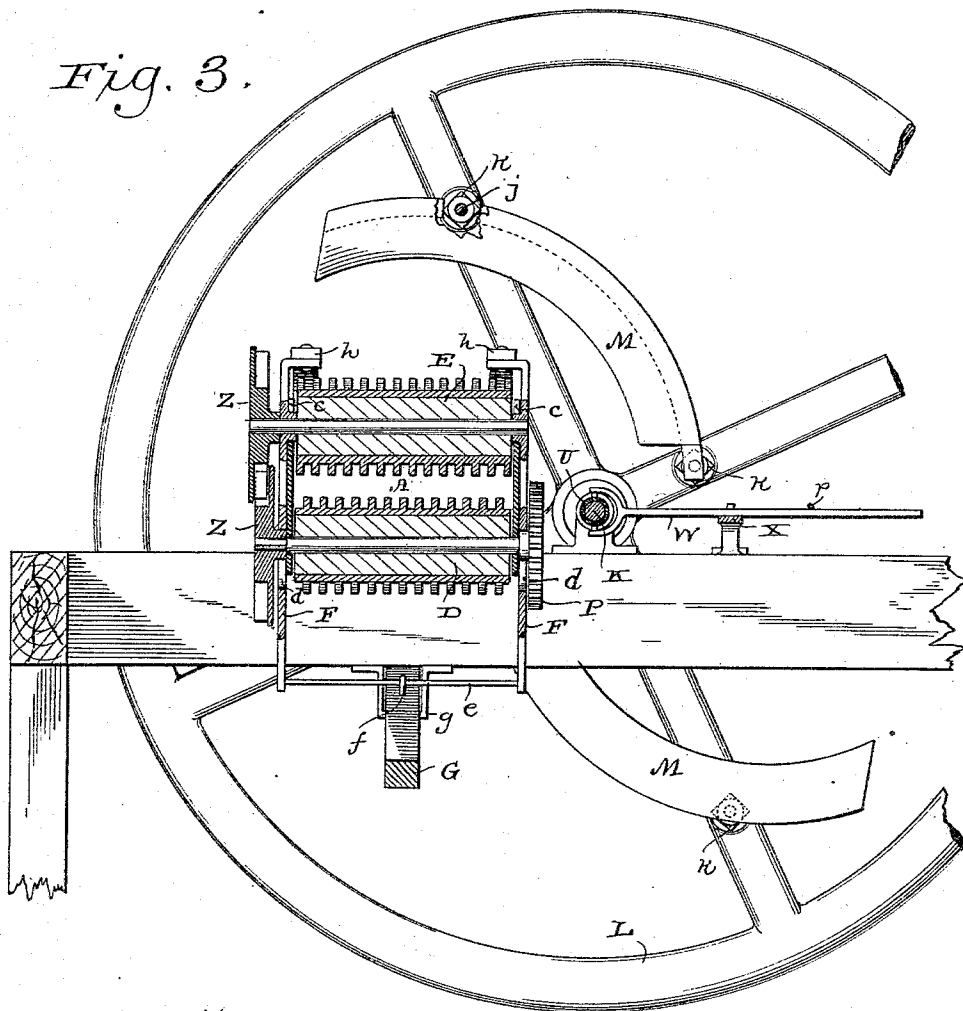


Fig. 4.

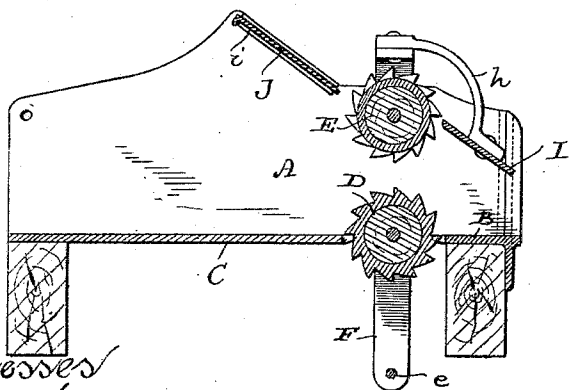
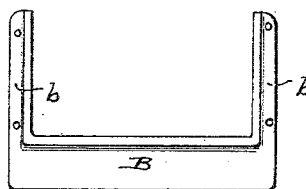


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHAN RAHN AND PETER RAHN, OF RACINE, WISCONSIN.

STRAW-CUTTER.

SPECIFICATION forming part of Letters Patent No. 412,040, dated October 1, 1889.

Application filed March 1, 1889. Serial No. 301,615. (No model.)

To all whom it may concern:

Be it known that we, JOHAN RAHN and PETER RAHN, of Racine, in the county of Racine, and in the State of Wisconsin, have
5 invented certain new and useful Improvements in Straw-Cutters; and we do hereby declare that the following is a full, clear, and exact description thereof.

Our invention relates to straw-cutters; and
10 it consists in certain peculiarities of construction and combination of parts to be hereinafter described with reference to the accompanying drawings and subsequently claimed.

15 In the drawings, Figure 1 represents a side elevation, partly in section, of a machine constructed according to our invention; Fig. 2, a plan view of the same with parts broken away; Fig. 3, a section taken on line 3 3 of
20 Fig. 1; Fig. 4, a vertical longitudinal section of the feed-box, rollers, rear guard, and pressure-plate; and Fig. 5, a detail elevation of the shear-plate.

Referring by letter to the drawings, A represents the feed-box of a straw-cutter constructed according to our invention, said feed-box being provided with the usual folding extension A', as illustrated in Figs. 1 and 2. Bolted or otherwise secured to the
30 front of the feed-box A are the flanges b of a shear-plate B, the rear edge of the latter being provided with teeth, as is also the front edge of the bottom C of said feed-box. The space between the toothed edges of the feed-box bottom and shear-plate is occupied by a
35 feed-roller D, having its bearings in the sides of said feed-box, this roller being provided with teeth arranged in a series of parallel circles to pass between the opposing teeth on
40 said feed-box bottom and shear-plate. Another toothed roller E is journaled to vertically-yielding links F and arranged just above the roller D, the sides of the feed-box A being provided with slots c to permit of
45 the vertical movement of said roller E, while the teeth on this roller are arranged in a series of parallel circles in line with the spaces between the teeth on the opposing roller, whereby the material to be cut is firmly
50 grasped and fed forward to the cutting-point, the toothed edges of the feed-box bottom and shear-plate serving to clean the lower roller

and prevent clogging or carrying down of the material.

The vertical links F are provided with longitudinal slots d, through which the journals of the lower feed-roller D pass, and are connected at their lower ends by a rod e, that passes through an eye f on a weighted lever G, the forward or fulcrum end of the latter
60 being loosely supported in a loop g, depending from the frame of the machine, as best illustrated by Fig. 1, whereby the lever is free to have a slight fore-and-aft movement as it rises and lowers.

The weight H on the lever G is in opposition to the pressure exerted by the material passed between the feed-rollers, and the resistance to this pressure may be varied by
65 different weights.

Fast to the upper ends of the links F are curved arms h, that support a pressure-plate I, as best illustrated in Fig. 4. Just back of the feed-rollers D E is a guard J, the latter being arranged in grooves i on the inner sides
70 of the feed-box.

Supported in bearings on the frame of the machine is a shaft K, the latter carrying a cutter-wheel L, arranged to come in front of the feed-box of said machine. The spokes of
80 the fly-wheel are provided with perforations to receive the screw-threaded projections j on segmental blades M, and these blades are held in position by means of nuts k, engaged with said screw-threaded projections and arranged
85 to come on opposite sides of said spokes.

By the construction and arrangement of parts just described a very fine adjustment for wear and to insure a perfect cut of the material. By the arrangement of the blades M
90 a gradual shear cut in a diagonal direction across the front of the feed-box is the result.

As shown in the drawings, the shaft K is driven by a belt-pulley N; but it is obvious
95 that a crank or other suitable power may be as readily employed for the same purpose. Fast to the lower feed-roller journal on the power side of the machine is a gear-wheel P, that meshes with a pinion Q in one piece with
100 a wheel provided with sets R S of bevel gear-teeth and having its bearing on a stud m, projecting from the adjacent side of the feed-box A, said wheel being supported by an anti-fric-

tion roller *n*, also arranged on said side of the feed-box. Loosely arranged on the shaft K are bevel-pinions T U, having spanner-connections with levers V W, pivoted to a brace X on the machine-frame and united by a link *p*, as best illustrated in Fig. 2. The hubs of the pinions T U are respectively provided with notches *r s*, that clutch with pins *t u* on the shaft K, according as the levers V W are actuated. Another bevel-pinion Y is also loosely arranged on the shaft K, and has its hub provided with a spanner-groove for engagement with the lever V and notches *v*, that clutch with a pin *w* on said shaft, as will be hereinafter more fully described.

We prefer to provide the lever V with a pin and the brace X with a segmental bracket having perforations therein for engagement with said pin, whereby both levers V W may be locked in their adjusted position, the bracket being also provided with stops to limit the movement of said levers in either direction; but it is obvious that any other suitable construction may be employed for the same purpose.

Fast on the journals of the feed-rollers D E, at that side of the machine farthest from the shaft K, are intermeshing gear-wheels Z Z, the teeth on these gear-wheels being of such length as to allow for the vertical play of the upper one of said rollers.

As shown by Fig. 2, the pinion T is in mesh with the teeth R on the double gear-wheel and the rollers D E are feeding forward, the machine being run at slow speed. Should it become necessary or desirable to reverse the rotation of the feed-rollers, the levers V W are actuated and the pinion T disengaged with the teeth R on the double gear-wheel and the clutch-pin *t* on the shaft K, while at the same time the pinion U is brought into mesh with the teeth S on said gear-wheel, and the notch *s* in the latter pinion engages the clutch-pin *u* on said shaft.

If a faster feed is desirable, the lever V is fulcrumed at the point marked *x* on the brace X and connected to the bevel-pinion Y on the shaft K, the link *p* being correspondingly shortened. By this arrangement of parts the pinions Y U will be brought in and out of

engagement with the teeth S on the double gear-wheel, according to the desired rotation of the feed-rollers, and said teeth being on a circle smaller than that of the teeth R the speed is proportionately increased.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a straw-cutter, the combination of a power-shaft provided with clutch-pins, pinions loosely arranged on the shaft and provided with notches for engagement with said pins, levers connected to the pinions and united by a link, and a double gear-wheel arranged with relation to said pinions, whereby when one of the latter is thrown out of engagement with the adjacent set of gear-teeth on said wheel the other pinion and set of gear-teeth are brought into engagement, substantially as set forth.

2. In a straw-cutter, the combination of a power-shaft, pinions loosely arranged on the shaft, means, substantially as described, for clutching said shaft and pinions, levers connected to the pinions and to each other, a double gear-wheel arranged to be in mesh with one or the other of said pinions, according to the position of the levers, a pinion carried by the gear-wheel, and the lower feed-roller geared to the pinion and upper feed-roller, as set forth.

3. In a straw-cutter, the combination of a power-shaft, pinions loosely arranged on the shaft, means, substantially as described, for clutching said shaft and pinions, levers connected to the pinions and each other, a double gear-wheel arranged to be in mesh with one or the other of the pinions, according to the position of the levers, and an anti-friction roller arranged to support said gear-wheel, as set forth.

In testimony that we claim the foregoing we have hereunto set our hands, at Racine, in the county of Racine and State of Wisconsin, in the presence of two witnesses.

JOHAN RAHN.
PETER RAHN.

Witnesses:

LARS ANDERSEN,
MAGGIE MIERS.