W. SPRAGUE.

Green-Corn Knife.

No. 206,364. Patented July 23, 1878.

Fig. 1.

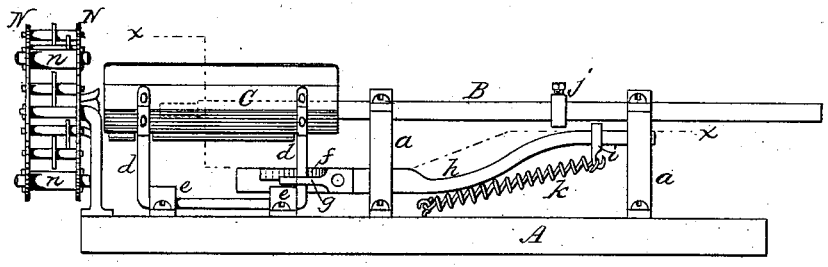


Fig. 2

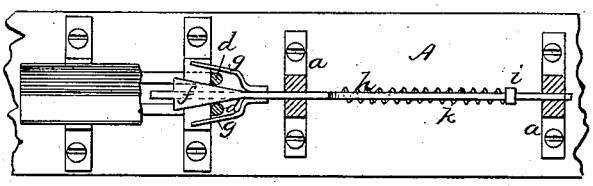
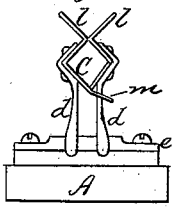


Fig. 3.



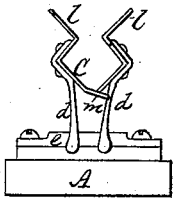


Fig. 4

Fig. 5

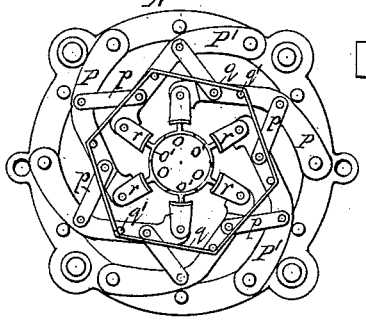


Fig. 6

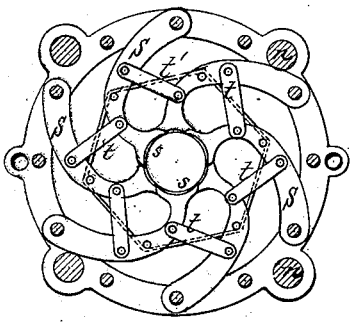


Fig. 7.

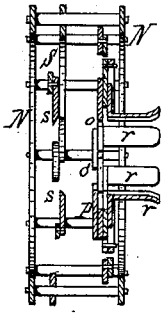


Fig. 9.

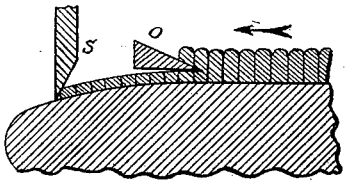
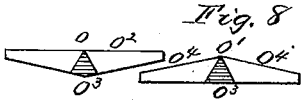


Fig. 8



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UNITED STATES PATENT OFFICE.

WELCOME SPRAGUE, OF BUFFALO, NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO THE ERIE PRESERVING COMPANY, OF SAME PLACE.

IMPROVEMENT IN GREEN-CORN KNIVES.

Specification forming part of Letters Patent No. **206,364**, dated July 23, 1878; application filed June 1, 1878.

To all whom it may concern:

Be it known that I, WELCOME SPRAGUE, of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Machines for Cutting Green Corn, of which the following is a specification, reference being had to the accompanying drawing.

This invention relates to a machine for cutting or shaving green corn, so as to detach and separate from the cobs the kernels and juice preparatory to canning the same, and more particularly to that class of machines in which this operation is accomplished by driving the ear of corn through a stationary cutter-head by means of a reciprocating plunger or follower.

My invention consists, first, of a very simple construction of the cutter-head, so that all the cutters are opened and closed simultaneously, as pointed out in claim 1; second, of the peculiar construction and arrangement of the cutters and scrapers, whereby the centering of the ears of corn and an even cutting of the kernels is insured; and, third, of the means for operating the jaws which hold or guide the ears as they are fed to the cutter-head, as will be hereinafter more fully set forth and claimed.

In the accompanying drawing, Figure 1 is a side elevation of a machine provided with my improvements. Fig. 2 is a horizontal section in line *x x* of Fig. 1. Fig. 3 is an end elevation of the guide-jaws in a closed position. Fig. 4 is a similar view of the jaws open. Fig. 5 is a front elevation of the knives or cutters. Fig. 6 is a front elevation of the scrapers. Fig. 7 is a vertical section through the cutter-head. Fig. 8 is a top-plan view of two of the knives. Fig. 9 is a view illustrating the operation of the knives and scrapers upon an ear of corn.

Like letters of reference refer to like parts in each of the figures.

A represents the bed or frame of the machine, provided with upright bearings *a*, in which slides the horizontal follower or plunger B, to which a reciprocating motion is imparted in any common and well-known manner. C C represent the horizontal guide-jaws, arranged in line with the plunger B and forming a trough, in which the ears of corn are received, one at a time, previous to forcing them through the cutter-head. The jaws C are attached to vertical arms *d*, pivoted in bearings *e* secured to the bed A, so as to permit the jaws to move laterally in opening and closing. *f* is a wedge or tapering block, arranged between two adjacent arms, *d d*; and *g* are inclined guide-pieces, secured to the wedge *f* and bearing against the arms *d* on their outer side, so that the wedge *f*, when moving in one direction, will spread the arms *d d* apart and open the jaws C C, and when moving in the opposite direction the guides *g* will bring the arms *d d* together and close the jaws. It is obvious, however, that the two arms *d d* may be connected by a spring or elastic band, so that they will be closed as soon as they are released by the wedge. The latter is secured to a bent rod, *h*, guided in the bearings *a a*, and provided with a stop or projection, *i*, near its rear end.

j is a collar, mounted on the plunger B, so as to engage against the stop *i* during the last part of the backward stroke of the plunger, thereby opening the jaws C C for the reception of the ear of corn before the plunger begins its forward movement.

k is a spiral spring or elastic band, connecting the rod *h* with one of the bearings *a* or frame A, so as to return the wedge *f* and guides *g* to their forward position as soon as the rod *h* is released by the forward movement of the plunger and collar *i*. This forward movement of the rod *h* takes place during the first part of the forward movement of the plunger, and causes the closing of the jaws C C by the compressing action of the inclined guides *g* upon the arms *d d*. In this manner the jaws C C are closed shortly after the forward movement of the plunger begins, and they form, during the remainder of the stroke of the plunger, a closed trough, by which the ear of corn is guided to the cutters. The jaws C C are provided at their upper sides with diverging plates *l l*, which form a V-shaped trough above the jaws, when the latter are closed, for the reception of a second ear of corn while the first ear is being operated upon. The ear, placed between the inclined plates *l l*, drops down between the jaws by its own gravity as soon as the jaws are opened. One of the jaws C C is provided at its lower edge

with a laterally-projecting plate, *m*, which forms the bottom of the trough when the jaws are open.

N N represent two annular plates, connected by stay-bolts *n*, and forming the frame of the cutter-head. *o* o^1 are the cutters or knives, designed for cutting off the outer portion of the kernels of corn. These knives are rigidly attached to the inner ends of arms P P′, which are pivoted with their outer ends to the annular plates or frames N. The cutters are, preferably, six in number, and the arms P are connected to each other by links *p*, so that the movement of one arm and cutter will be simultaneously imparted to all of the other arms and cutters. The cutters are retained in a closed position, or nearest the center of the cutter-head, by suitable springs, preferably by an endless elastic band, *q*, stretched over projecting studs *q′*, secured to each of the arms P, as shown in the drawing. The cutters *o* o^1 are arranged in two different planes, the cutters *o* being arranged in front, or nearest the feed device, and the cutters *o′* slightly in the rear thereof. Each cutter is made in the form of a circular segment, and the cutters *o* o^1 alternate, so that a front cutter, *o*, is always followed in the circle by a rear cutter, o^1.

The cutting-edge o^2 of the front cutters *o* is made straight, and their back is made inclined both ways from the central stem o^3, to correspond with the inclined cutting-edge o^4 of the rear cutters, thereby enabling the cutting-edges to be brought nearly in the same vertical plane. The cutters overlap each other sufficiently to form a complete circular cutting-edge when they are fully opened. The stem o^3, by which each cutter *o* o^1 is connected with the inner end of its respective arm P P′, is constructed with a sharp face or cutting-edge, as shown in Fig. 8.

r is a curved guide-plate, secured to the inner end of each cutter-arm, P P′, and projecting toward the feed-clamps C C, the plates *r* forming conjointly a funnel for directing the ear of corn toward the center of the cutter-head.

s represents the scrapers, arranged in the rear of the cutters *o* o^1, and formed at or secured to the inner ends of arms S, pivoted to the annular frame N. The arms S are connected by links *t*, and the scrapers are held closely together by an elastic band, *t′*, in the same manner as the arms P P′ and cutters *o* o^1. The latter are formed with a sharp cutting-edge, adapted to enter into the kernels and cut off the outer portion thereof, while the scrapers *s* are arranged with their cutting-edge about at right angles to the surface of the ear, so that they scrape the remaining portions of the kernels from the cob. The scrapers are made concave toward their edge on the side against which the ears are fed, whereby the centering of the ears is greatly facilitated.

The construction of the cutter-head so that all of the cutters and scrapers open and close simultaneously enables the cutters and scrapers to operate upon the entire surface of the ear uniformly, and prevents the ears from passing through the cutter-head with portions of the kernels remaining attached to the cob, while the cutters cut into the cob on the other side. My improved machine is, furthermore, very simple in construction, and easily operated at a very high speed.

I claim as my invention—

1. The combination, with the circular frame N, of the cutters *o* o^1, attached to the inner ends of arms P P′, pivoted with their outer ends to said frame, links *p*, connecting each adjacent pair of arms P P′, and elastic band *q*, substantially as shown, and for the purpose set forth.

2. The combination, with the circular frame N, of a series of cutters, *o* o^1, attached to arms P P′, all connected by links *p*, and a set of scrapers, *s*, attached to arms S, all connected by links *t*, and arranged in the rear of the cutters, and made concave on the side facing the cutters, for facilitating the cutting of the ears of corn, substantially as and for the purpose set forth.

3. The combination, with the jaws C C, arms *d d*, and plunger B, provided with collar *j*, of the rod *h*, wedge *f*, inclined guide-pieces *g*, and spring *k*, substantially as and for the purpose set forth.

Witnesses: WELCOME SPRAGUE.
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