

(No Model.)

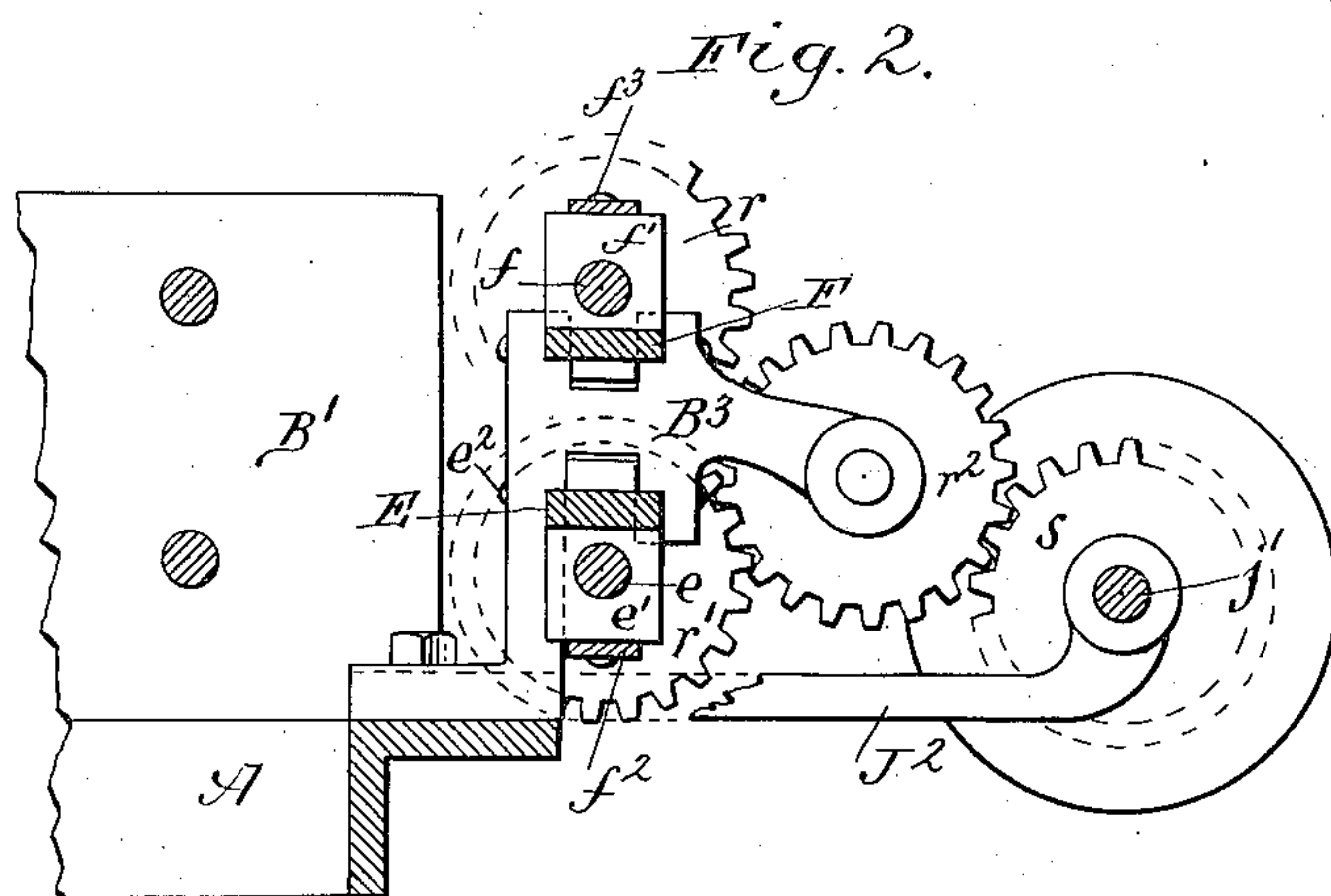
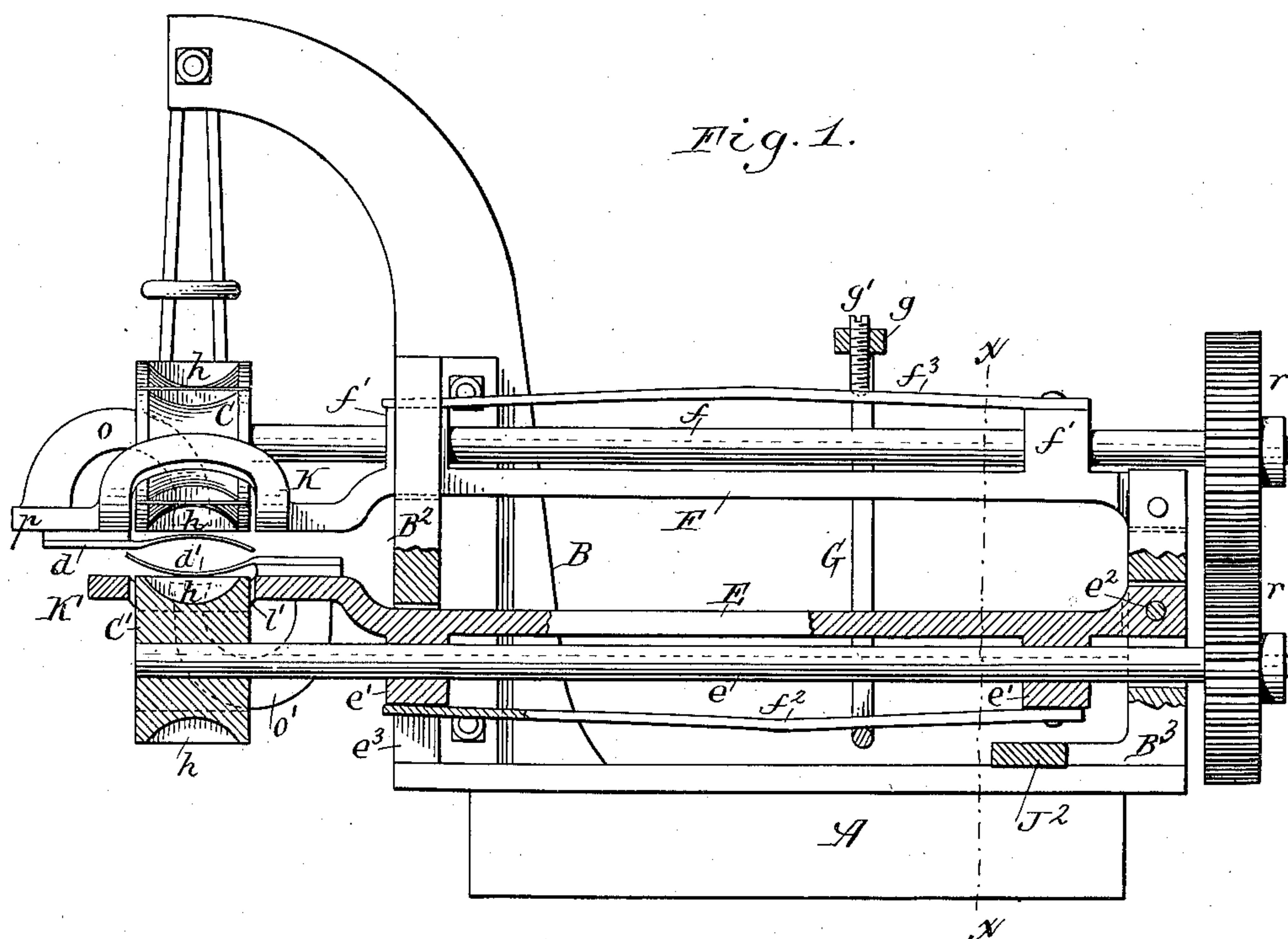
2 Sheets.—Sheet 1.

W. SPRAGUE.

MACHINE FOR CUTTING GREEN CORN OFF THE COB.

No. 422,650.

Patented Mar. 4, 1890.



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Emil J. Neuhart

Witnesses.

W. Sprague

Inventor:

By Wilhelm Adornet

Attorneys.

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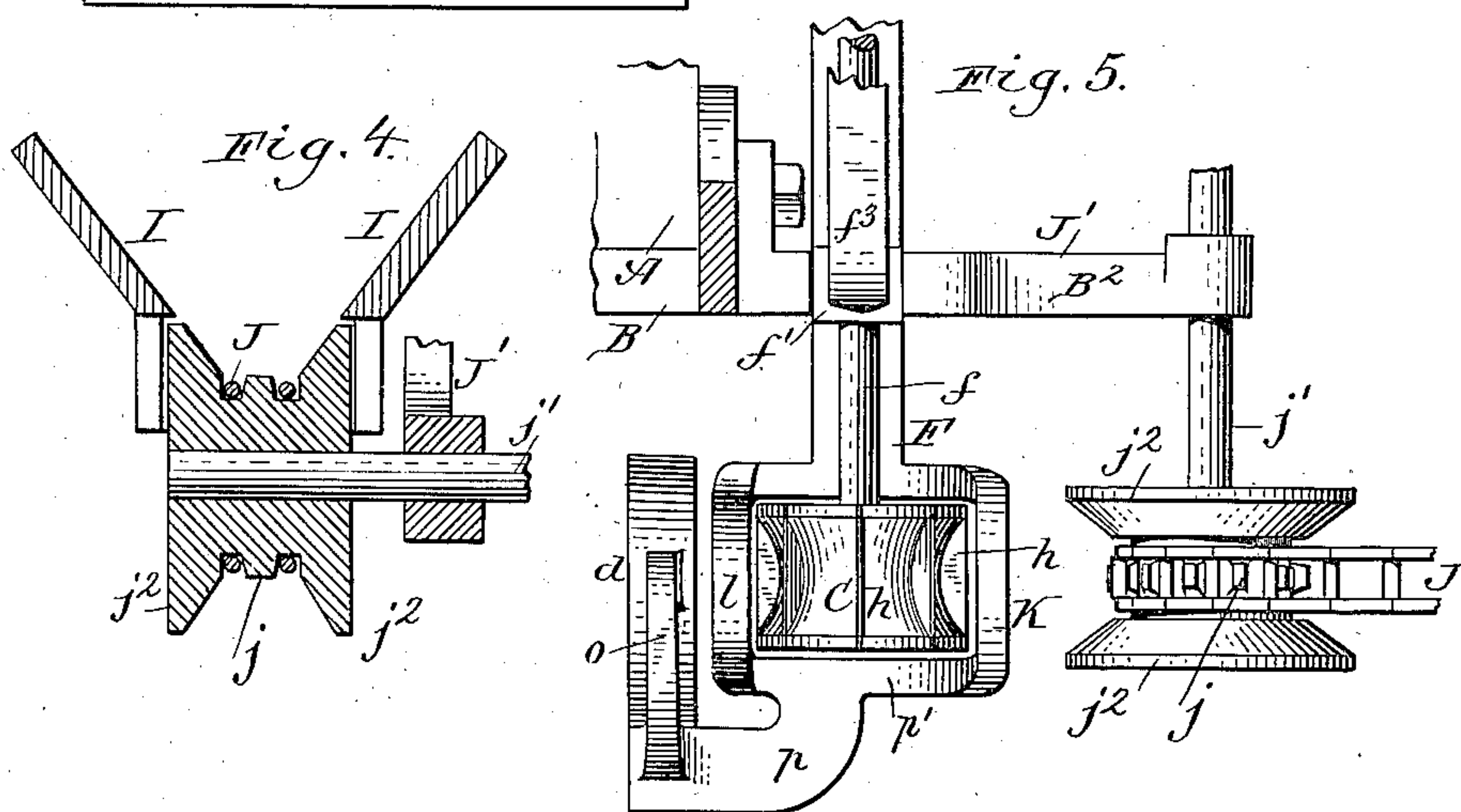
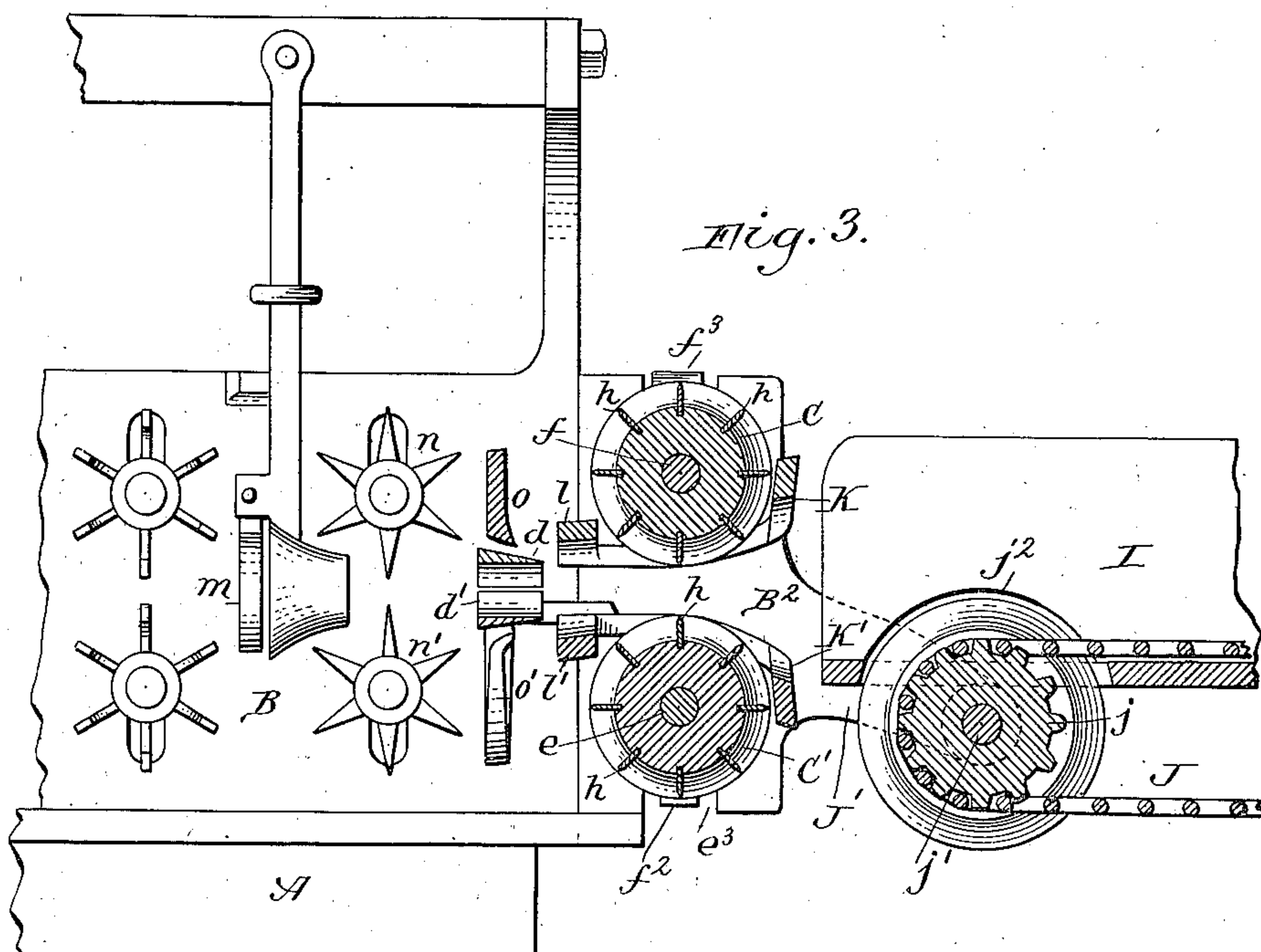
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UNITED STATES PATENT OFFICE.

WELCOME SPRAGUE, OF FARNHAM, NEW YORK.

MACHINE FOR CUTTING GREEN CORN OFF THE COB.

SPECIFICATION forming part of Letters Patent No. 422,650, dated March 4, 1890.

Application filed October 28, 1889. Serial No. 328,450. (No model.)

To all whom it may concern:

Be it known that I, WELCOME SPRAGUE, a citizen of the United States, residing at Farnham, in the county of Erie and State of New York, have invented new and useful Improvements in Machines for Cutting Green Corn off the Cob, of which the following is a specification.

This invention relates to that class of green-corn-cutting machines which are provided with self-adjusting cutters, between which the ear is fed, and whereby the kernels are removed from the cob, and with feed mechanism for presenting the ears of corn to the cutters and propelling the same past the cutters. A machine of this character is described and shown in Letters Patent of the United States No. 256,926, granted to me April 25, 1882, and the present invention is an improvement on said machine.

One of the objects of my invention is to provide a simple and reliable feed mechanism which will firmly seize the ears of corn and properly center the same without lacerating the kernels.

The invention has the further objects to simplify the construction of the frame-carrying the self-adjusting cutters and to provide means whereby mangling of the severed kernels by the feed devices between the sets of cutters is prevented.

The invention consists to these ends of the improvements which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 is a front elevation of my improved machine, partly in section. Fig. 2 is a fragmentary sectional side elevation of the machine in line *x x*, Fig. 1, showing the manner of driving the shafts of the feed-wheels. Fig. 3 is a fragmentary vertical section of the machine through the feed-wheels. Fig. 4 is a cross-section of the feed-trough. Fig. 5 is a top plan view of the feed mechanism.

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

A represents the base or bed of the machine, B B' the upright side frames secured to the base, and B² B³ upright brackets secured to opposite ends of the bed and forming part of the frame.

C C' represent two vertical feed rollers or wheels, arranged at the front portion of the machine one above the other, and *d d'* represent the first set of knives or cutters, arranged horizontally in rear of the feed-rollers, and which receives the ear of corn from the latter. The lower feed-roller C' is secured to the outer end of a horizontal shaft *e*, which is journaled in bearings *e'*, formed on a movable horizontal arm E. The latter is pivoted at its inner end to the bracket B³ at *e*², and its outer portion extends through an upright slot or way *e*³, formed in the opposite bracket B², as clearly represented in Fig. 1. The outer end of the pivoted carrying-arm E is free to move vertically and is guided in its movements in the slot of the adjacent bracket. The upper feed-roller C is mounted on a horizontal shaft *f*, which is journaled in bearings *f'*, formed on a movable carrying-arm F, which latter is pivoted at its inner end to the bracket B³ above the carrying-arm E, and is guided at its outer end in the opposite bracket in a manner similar to the lower arm E.

*f*² *f*³ represent flat springs secured at their inner ends to the movable arms E F, respectively, near the inner ends of the arms, and bearing with their free outer ends against the outer portions of the arms.

G represents a yoke or strap embracing the two movable arms E F and the springs *f*² *f*³, and which tends to prevent spreading of the arms and the feed-wheels carried by the same. The upper cross-bar *g* of the yoke G is provided with a vertical set-screw *g'*, which bears upon the upper spring *f*³, and whereby the tension of the two springs and the force with which the two arms are pressed toward each other may be regulated. The springs *f*² *f*³ and yoke G, while pressing the arms inwardly toward each other, permit the arms to yield and the feed-wheels to spread apart, as may be necessary to accommodate themselves to ears of corn of varying size.

The feed-wheels C C' are each provided with a concave face, as shown, so as to present curved bearing-faces, which seize opposite sides of the ear of corn and center the ear between the wheels. Each feed-wheel is provided in its concave face with projecting transverse radial blades or knives *h*, which extend from side to side of the wheel. The

feed-wheels are provided in their periphery with radial slots, in which the blades *h* are seated, and the blades are secured in these slots by soldering or otherwise. These blades
 5 penetrate the ear as it passes between the rotating feed-wheels and firmly seize it and force it between the cutters *d d'*. As the blades extend across the entire face of the feed-wheels, they embed themselves transversely
 10 in a considerable portion of the ear, and thereby prevent the ear from being twisted or deflected laterally after entering between the wheels. The blades, although they slit some of the kernels in penetrating the ear,
 15 do not tear or otherwise mangle the kernels. The blades are made very thin, and are preferably provided with a sharp edge, as shown, so as to form a very narrow slit in the kernels.

20 I represents the horizontal feed-trough arranged in front of the feed-rollers, and *J* is the endless chain or apron, running with its upper portion in the feed-trough, and whereby the ears of corn are successively delivered
 25 to the feed-wheels. The rear or delivery portion of this carrying-chain runs around a sprocket-wheel *j*, mounted on a horizontal shaft *j'*, arranged transversely underneath the feed-trough. This shaft is mounted near
 30 one end in a bearing formed in an arm *J'* on the bracket *B²*, as shown in Figs. 3 and 5, and at its opposite end in a projecting arm *J²*, secured to the bed *A*, as shown in Fig. 2. The sprocket-wheel *j* projects through an opening
 35 in the bottom of the feed-trough, and is provided with marginal flanges *j²*, having beveled inner edges. The edges of the flanges *j²* are beveled to correspond to the angle of the inclined sides of the feed-trough, as shown in
 40 Fig. 4, so as to guide the ears of corn upon the apron and assist in aligning and centering the same upon the apron preparatory to delivering them to the feed-wheels.

45 *K K'* represent curved guides arranged immediately in front of the feed-wheels *C C'*, respectively above and below the space or passage between the wheels, and whereby the ears of corn are properly guided between the feed-wheels. These guides are preferably
 50 formed at the outer ends of the movable carrying-arms *E F*, as shown in Figs. 1 and 5. *l l'* represent a similar set of guides arranged between the feed-wheels and the cutters *d d'*, above and below the path of the ear, whereby
 55 the ear as it issues from the feed-wheels is guided between the cutters. The inner guides *l l'* are also preferably formed at the outer ends of the carrying-arms *E F*. The two sets of guides thus take part in the spreading movements of the feed-wheels and always maintain the same relative position with reference to the feed-wheels. The upper cutter *d* is secured to the outer end of the upper movable arm *F*, while the lower cutter *d'* is
 60 secured to the outer end of the lower arm *E*. As the cutters are mounted on the same frame with the feed-rollers, they are permitted to

yield in the same measure as the feed-rollers and adjust themselves to the size of the ear passing between the cutters.

70 *m* represents a second set of curved cutters arranged in rear of the first set *d d'*, at right angles to the latter, and whereby the kernels on the sides of the ear are removed. This second set of cutters may be constructed
 75 and arranged as described and shown in the Letters Patent hereinbefore mentioned, to which reference is made for a full description thereof.

80 *n n'* represent two vertical feed-wheels arranged between the cutters *d, d'*, and *m*, respectively above and below the path of the ear of corn, and provided with pivoted teeth or spurs, as shown.

85 *o o'* represent a pair of upright deflectors arranged in front of the toothed feed-wheels *n n'*, above and below the front cutters *d d'*, and extending to within a short distance from the cutters, as represented in Figs. 1 and 3. These deflectors divert the kernels of corn
 90 laterally on opposite sides of the toothed feed-wheels as the kernels are severed from the cob, and thereby keep the kernels out of contact with the teeth of the wheels and prevent mangling thereof. The upper deflector
 95 *o* is preferably formed on or secured to a laterally-projecting arm *p*, formed on a cross-bar *p'*, connecting the guides *K'* of the upper feed-roller, as represented in Fig. 5, and the lower deflector *o'* is formed on or secured to
 100 the outer portion of the lower carrying-arm *E*, as represented in Fig. 1.

105 *r r'* represent spur-wheels secured to the shafts of the feed-wheels *C C'* and meshing with each other. Motion is imparted to these shafts from the actuating-shafts of the feed-apron by an idler *r²*, interposed between the lower spur-wheel *r'* and a spur-wheel *s*, mounted on the shaft *j'* of the feed-apron, as represented in Fig. 2.

110 From the second set of cutters the ears of corn may be passed through a set of scrapers for the purpose of receiving any portions of the kernels which have not been removed by the cutters, as in the Letters Patent before
 115 mentioned.

I claim as my invention—

1. The combination, with the stationary frame of the machine, of two horizontal arms pivoted at one end to the stationary frame
 120 and capable of moving vertically at their opposite ends, springs secured to said frames, a yoke embracing said springs and pressing the arms toward each other, horizontal shafts journaled in said arms, and feed-wheels mounted
 125 on said shafts, substantially as set forth.

2. The combination, with the stationary frame, of two horizontal arms pivoted at one end to the frame and guided at their opposite free ends in vertical ways in the frame, flat
 130 springs secured at one end to said arms and bearing with their free ends upon the arms, an adjustable yoke embracing said springs, horizontal shafts journaled in said arms, and

feed-wheels mounted on said shafts, substantially as set forth.

3. The combination, with the cutters, of a feed-roller provided in its face with transverse blades extending from side to side of the roller, substantially as set forth.

4. The combination, with the cutters, of a feed-roller having a concave face and provided in its face with transverse radial blades extending from side to side of the roller, substantially as set forth.

5. The combination, with the carrying-apron, the feed-rollers, and the cutters, of guides arranged in front of said feed-rollers above and below the path of the ear of corn, and a second set of guides arranged between the feed-rollers and the cutters above and below the cutters, substantially as set forth.

6. The combination, with a pair of feed-wheels and the cutters, of a second set of feed-wheels arranged in rear of the cutters, and deflectors arranged in front of the second set of feed-wheels, whereby the kernels removed by the cutters are diverted out of the path of said feed-wheels, substantially as set forth.

7. The combination, with the arms E F,

capable of movement toward and from each other, of horizontal shafts journaled in said arms one above the other, feed-wheels mounted on said shafts, and cutters attached to said arms in rear of the feed-wheels, substantially as set forth.

8. The combination, with the arms E F, capable of movement toward and from each other, of horizontal shafts journaled in said arms one above the other, feed-wheels mounted on said shafts, cutters attached to said arms in rear of the feed-wheels, and deflectors *o o'*, attached to said movable arms above and below the cutters, substantially as set forth.

9. The combination, with the horizontal adjustable shafts *e f* and the feed-rollers mounted thereon, of cutters arranged in rear of said feed-rollers, and guides arranged between the feed-rollers and the cutters and made movable with the feed-rollers, substantially as set forth.

Witness my hand this 9th day of October, 1889.

WELCOME SPRAGUE.

Witnesses:

JNO. J. BONNER,
FRED. C. GEYER.