

No. 670,687.

Patented Mar. 26, 1901.

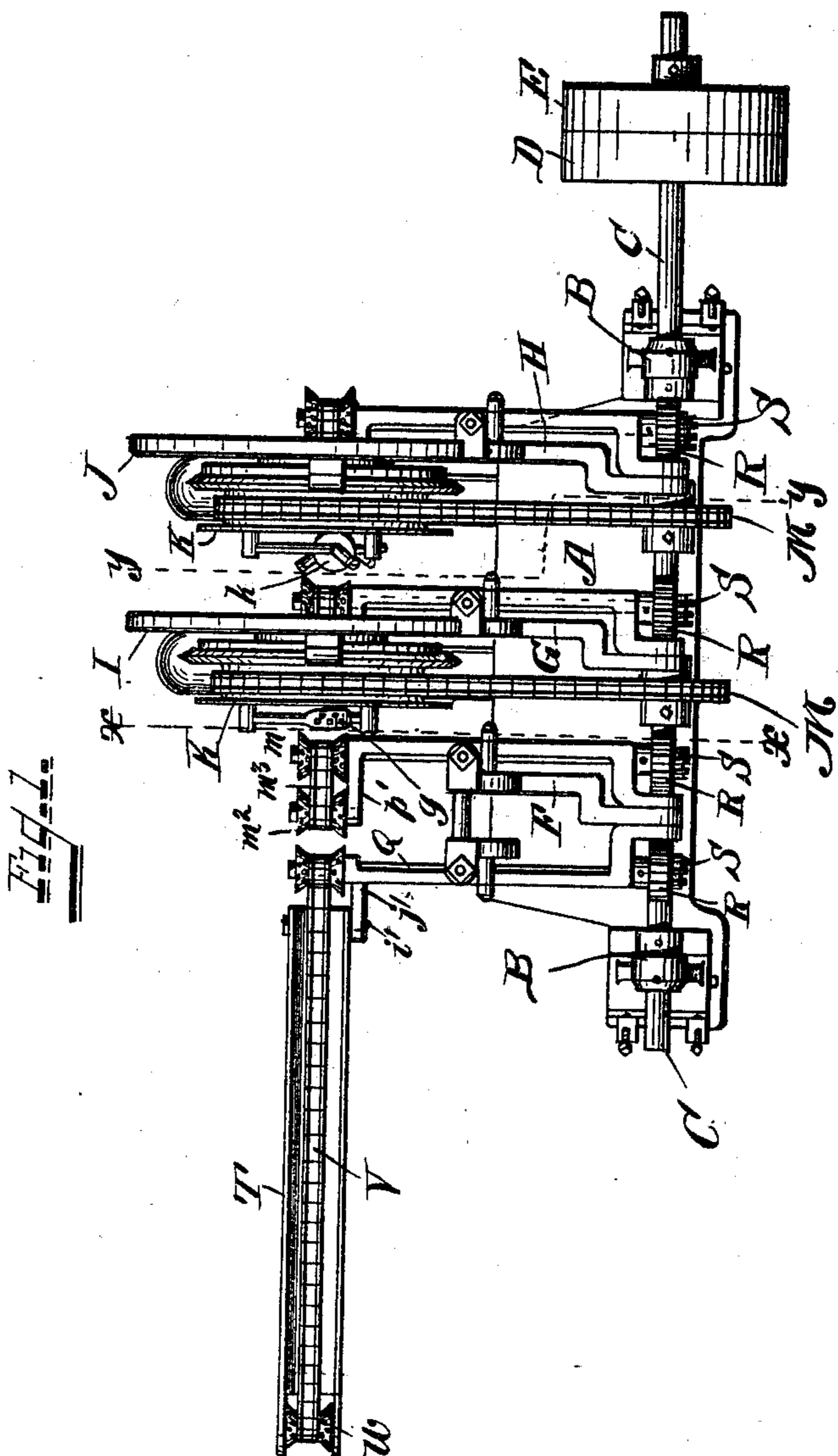
J. RITTY.

MACHINE FOR HULLING GREEN CORN.

(Application filed June 25, 1900.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses.
Wm. J. Beck.
Edward. Peck

Inventor.
John Ritty
by *Chas. M. Peck*
his Attorney.

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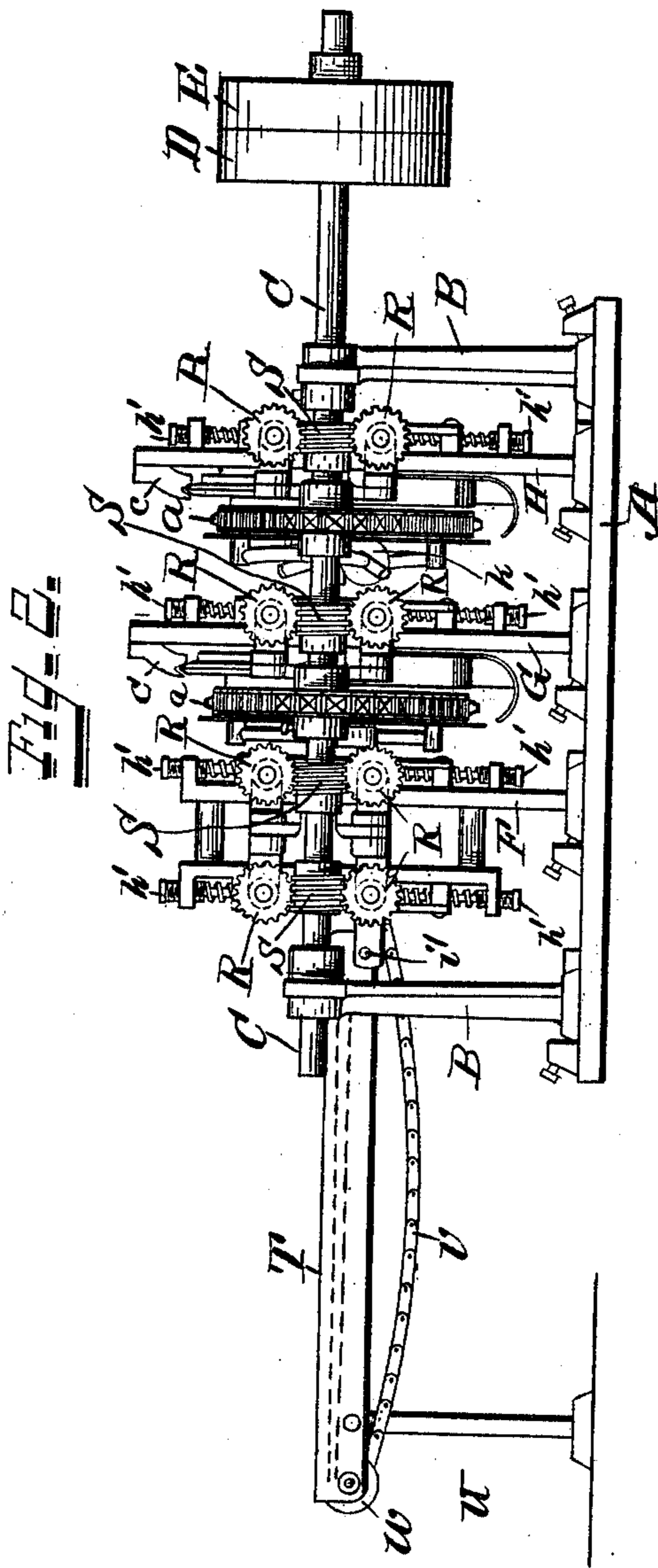
J. RITTY.

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4 Sheets—Sheet 2.



Witnesses.
Wm J. Beck
Edward Fock

Inventor.
John Ritty
by *Chas. M. Beck*
his Attorney.

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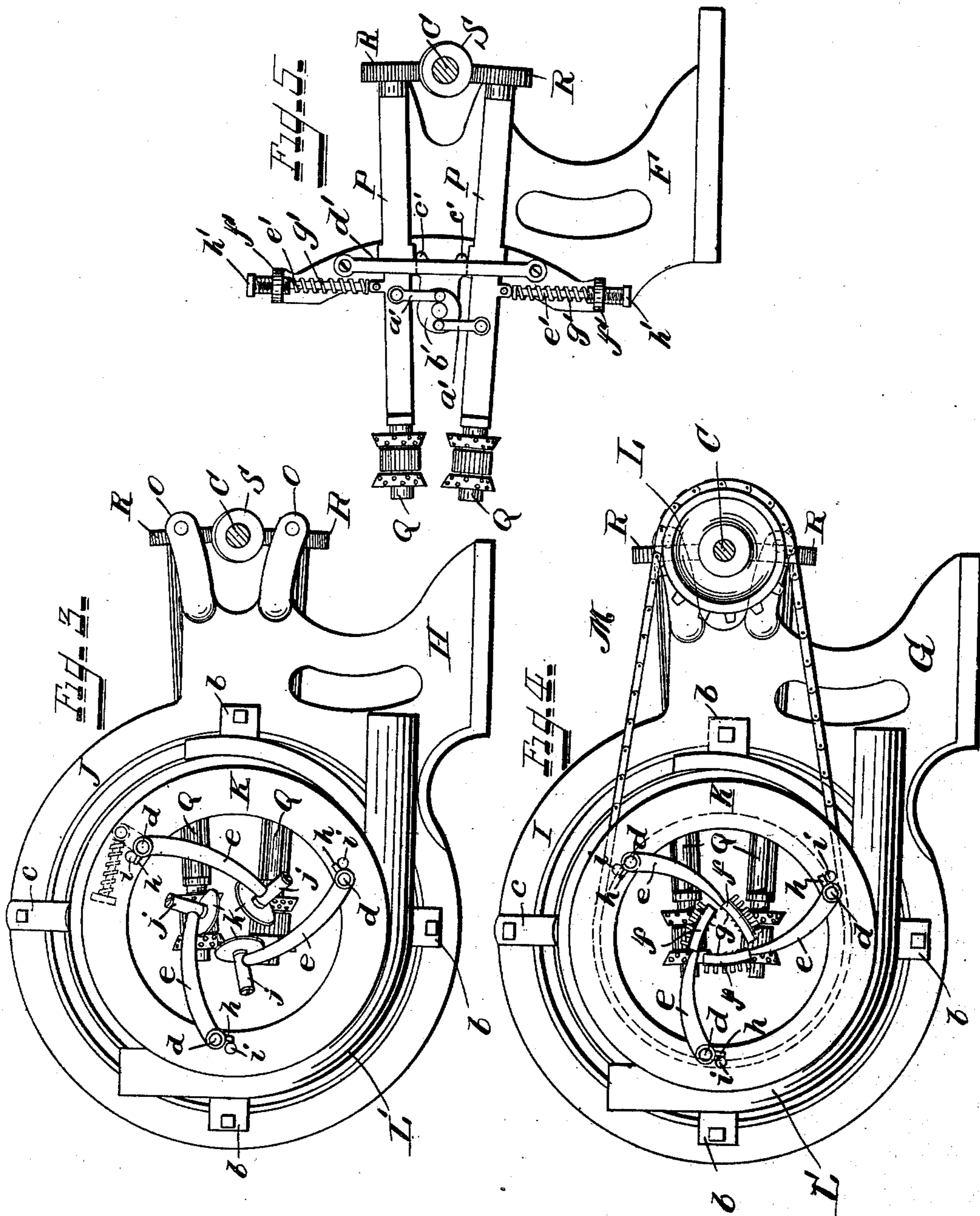
J. RITTY.

MACHINE FOR HULLING GREEN CORN.

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4 Sheets—Sheet 3.



Witnesses.
Wm. J. Reeb.
Edward Peck

Inventor.
John Ritty
by Chas. M. Peck
his Attorney.

No. 670,687.

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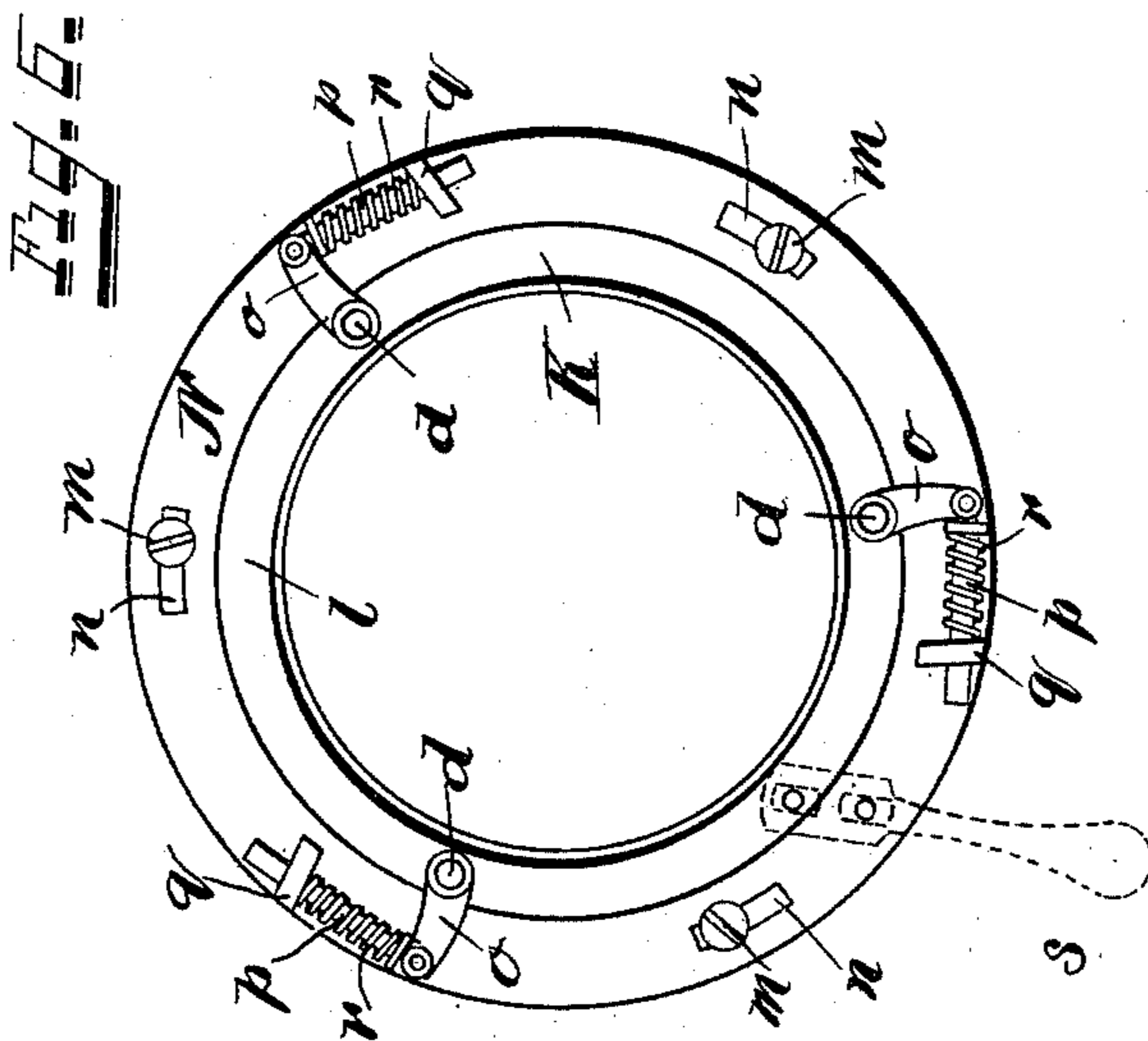
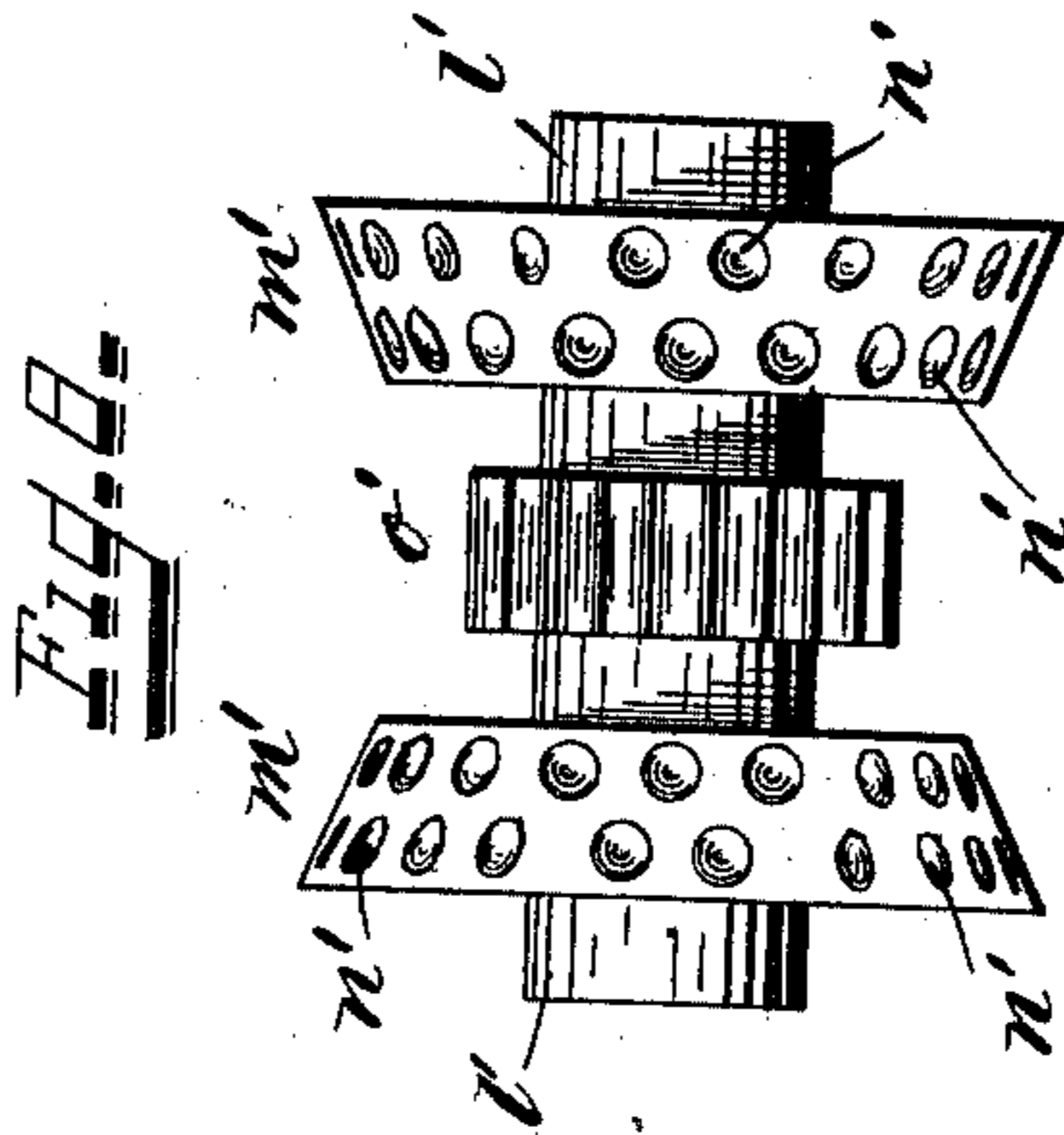
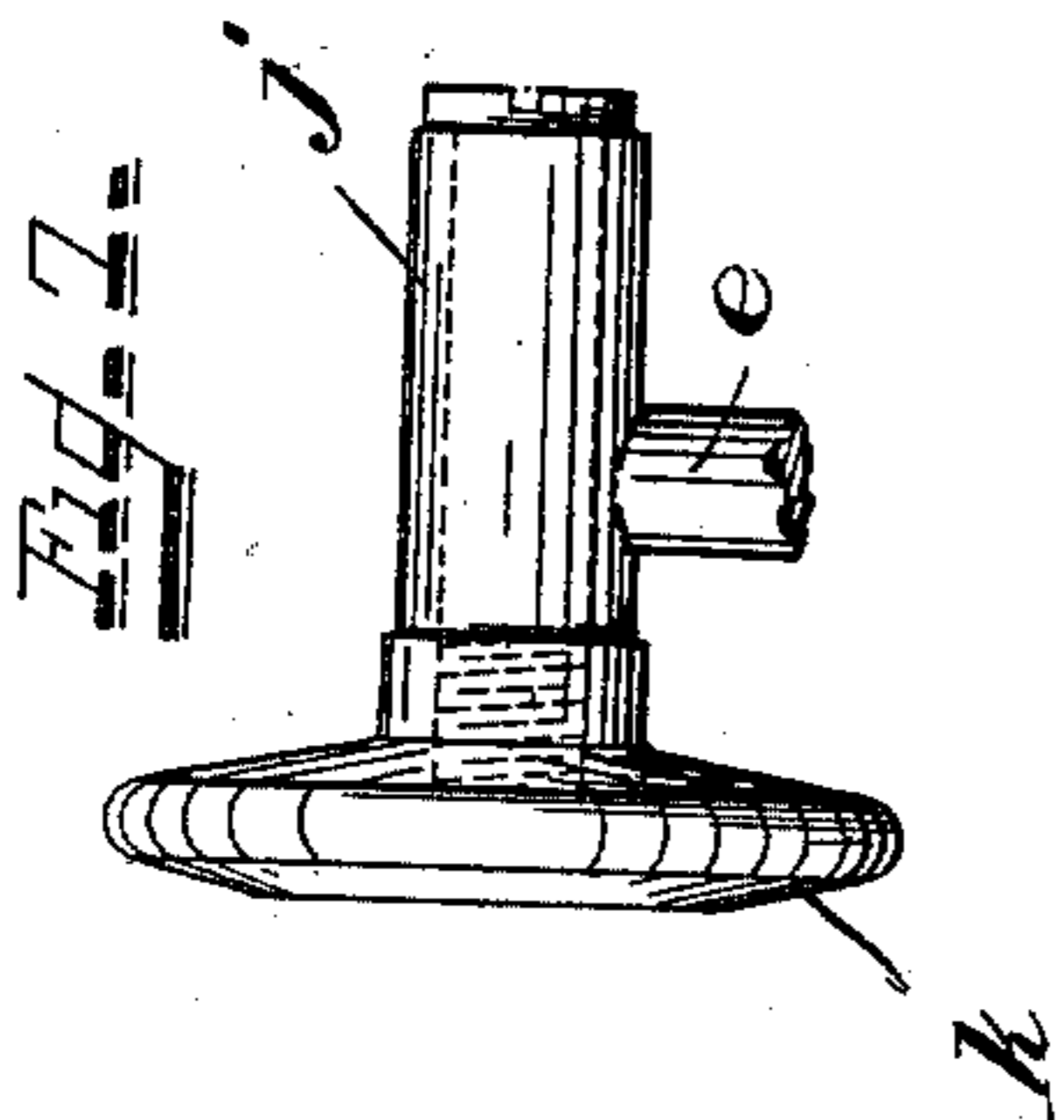
J. RITTY.

MACHINE FOR HULLING GREEN CORN.

(Application filed June 25, 1900.)

(No Model.)

4 Sheets—Sheet 4.



Witnesses.
Wm J. Peck
Edward Peck

Inventor.
John Ritty
by *Chas. M. Peck*
his Attorney.

UNITED STATES PATENT OFFICE.

JOHN RITTY, OF DAYTON, OHIO.

MACHINE FOR HULLING GREEN CORN.

SPECIFICATION forming part of Letters Patent No. 670,687, dated March 26, 1901.

Application filed June 25, 1900. Serial No. 21,477. (No model.)

To all whom it may concern:

Be it known that I, JOHN RITTY, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Machines for Hulling Green Corn, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to that class of machines for hulling green corn of which my prior patents, No. 395,997, dated January 8, 1889, and No. 464,764, dated December 8, 1891, are examples, and in which the object is to provide a machine for hulling green corn on the ear in such manner that the entire hulls of the grain are left upon the cob and the meats are pressed or extracted therefrom for culinary or canning purposes.

The machine of my present invention, as distinguished from those of my patents referred to, is a power-driven machine intended especially for use in hotels or canning factories; and the invention consists in novel constructions and combinations of the parts for greatly increasing the efficiency and capacity of the machine, all as will be hereinafter more fully set forth, and the invention distinctly pointed out in the claims.

In the accompanying drawings, Figure 1, Sheet 1, is a plan view of a corn-hulling machine embodying my invention. Fig. 2, Sheet 2, is a side elevation of the machine looking upward from the bottom of Fig. 1. Fig. 3, Sheet 3, is an enlarged end elevation looking to the right on the dotted line *yy* of Fig. 1, with the sprocket-chain removed. Fig. 4, Sheet 3, is a corresponding view on the dotted line *xx* of Fig. 1. Fig. 5, Sheet 3, is an end elevation looking from the right of Fig. 1 of a pair of feed-rollers and their associated parts and the yielding tension mechanism for the same. Fig. 6, Sheet 4, is a rear elevation of the tension-regulating mechanism employed for both the pressing-roll arms and the rasping or slitting arms. Fig. 7, Sheet 4, is an enlarged detail view of one of the pressing-rolls. Fig. 8, Sheet 4, is an enlarged elevation of one of the guide and feeding rolls.

The same letters of reference are used to indicate identical parts in all the figures.

Upon any suitable base A, Figs. 1 and 2, are mounted at the ends thereof and in line with each other two uprights B, having journaled in their upper ends a horizontal shaft C, carrying at one end a fast pulley D and a loose pulley E for the driving-belt, which communicates rotation to the shaft C. Likewise secured to the base A, between the uprights B, are three more uprights F, G, and H, the last two of which are seen in side elevation in Figs. 3 and 4. These uprights G and H terminate at one side in annular rings I J, whose centers form a horizontal line parallel with the axis of the shaft C, and to each of these rings is rotatably attached a flanged drum K, having sprocket-teeth *a* surrounding its periphery, as seen in Fig. 2, which teeth lie between the flanges of the drum. The flanges of these drums adjacent to the rings I J have V-shaped peripheries which are confined, though free to turn in a guide-trough L', secured by lugs *b* to the rings, and which support the bottom and sides of the flange, and in a top bracket-lug *c*, likewise secured to the rings and having a V-shaped groove in its under side embracing the top edge of the flange in such manner that the drum is thus held to each ring, is concentric therewith, and is free to rotate. The rotation is imparted to the drums K by means of sprocket-wheels L, fast on the shaft C, Figs. 1 and 4, and sprocket-chains M, connecting said sprocket-wheels and the teeth *a* on the drums A. The drums K are both annular rings and have journaled through them near their inner peripheries three equidistant spindles *d*, Figs. 3 and 4, upon which on the feeding-in or forward side of the drums are made fast three curved arms *e*, which extend toward the center of the drums. The arms *e* of the drum, secured to the ring I, Fig. 4, carry upon their inner ends plates *f*, through which are inserted rasping-teeth *g*, which slightly project from the inner sides thereof, as seen in Fig. 4. Stop-lugs *h* project from the pivoted ends of the arm *e* and bear against stationary pins *i*, projecting from the adjacent flange of the drum to hold the arms from inward movement beyond the point indicated in Fig. 4. The arms *e*, secured to the other drum which is attached to the ring J, Fig. 3, are similarly provided with stop-lugs *h*, engaging pins *i* on the flange of the

drum to restrict the inward movement of said arms. These latter arms have at their inner ends socket-pieces *j*, inclined toward the axis of the drum and at an angle to a plane at right angles to said axis, as seen in Figs. 1, 2, and 3. In these sockets *j* are journaled spindles, which carry on their inner ends pressing-rollers *k*, whose peripheries are rounded, as seen in Fig. 7. On the opposite sides of the drums K, as seen in Fig. 6, there is attached to each a ring N, which fits over an annular boss *l* on that side of the drum and is held in place by screws *m*, passing through segmental slots *n* in the ring N. Secured to the opposite ends of the spindles *d* and lying upon the rings N are crank-arms *o*, to the outer ends of which are pivoted stems *p*, whose outer ends pass through guide-lugs *q* on the rings N and between which lugs and the arms *o* are springs *r*, coiled around the pins *p*. Now by loosening the screws *m* and turning the rings N, by means of a spanner, (shown by dotted lines at *s*, Fig. 6,) the springs *r* can be put under the desired tension to hold the arms *e* inward with the necessary resistance to do the work of hulling the ears of corn properly. When the springs *r* are thus adjusted, the screws *m* are tightened up to secure the ring N fast to the drum K. It will thus be seen that the two drums K, with their supporting mechanism, the arms *e*, carried thereby, and the tension mechanism for said arms, are exact counterparts, with the only difference that the set of arms *e* on the ring I carry the rasping or slitting teeth *g*, while the other set of arms *e* on the ring J carry the pressing-rollers *k*, and also that both drums are rotated in the same direction and in unison by the sprocket-wheels L on the shaft C, and these mechanisms constitute the means by which the hulls on the ears of corn, which are passed successively between the rasping-teeth and thence between the pressing-rolls, are first slit at their tops and spirally around the ear and then have the meats pressed out of them and dropped into any suitable receptacle, the ears of corn passing on through and out of the machine without rotation and with the emptied hulls adhering to them when they are finally discharged from the rear end of the machine.

I will now proceed to describe the feeding mechanism for the ears of corn, reference being had to Figs. 1, 2, 5, and 8. Hung to bracket-arms O, projecting from the uprights F, G, and H, which bracket-arms straddle the shaft C, as seen in Fig. 3, are inwardly-projecting bearing-arms P, Fig. 5, in which are journaled spindles Q, having fast on their outer ends worm-wheels R, meshing with worms S, fast on the shaft C, the wheels R of each pair engaging opposite sides of their respective worms, as seen in Figs. 2, 3, and 5. The inner ends of the spindles Q have fast upon them feeding-wheels, Figs. 5 and 8, composed of a sleeve *l'*, having thereon two

frusto-conoidal wheels *m'* with staggered circular depressions *n'* in their periphery, and the conoidal surfaces of these wheels are inclined toward each other. Between them on the spindle is a sprocket-wheel *o'*. Each of the pairs of arms P is similarly equipped with feeding-wheels and driving mechanism, and the arms hung to the plate F have inward bracket extensions *p'*, upon which an additional pair of feed-wheels *m''* are journaled, and these are connected by a sprocket-chain *m'''* with their adjacent wheels *m'*, as seen in Fig. 1. Each of the pairs of arms P, as seen in Fig. 5, is connected by pivoted links *a'* with a pivoted disk *b'*, so that when one is moved upward the other is moved downward, and vice versa, and their movement toward each other is limited by stops *c'*, attached in any suitable manner to any stationary part of the framework, in this instance to the inner sides of guide-straps *d'*, which straddle the arms. To hold the arms P yieldingly pressed toward each other, I provide rods *e'*, pivoted to the arms P, and whose outer ends, which are threaded, pass through perforations in lugs *f'*, projecting from the frame. Coiled springs *g'* are secured around the rods *e'* between the lugs *f'* and the arms P, and nuts *h'* are screwed upon the outer threaded ends of the rods *e'* to regulate the tension of the springs *g'*. In this manner the corn-feeding wheels are yieldingly held toward each other and are free to be moved away from each other, though always under spring tension when so moved, so as to accommodate the ears of corn both at all points where their diameters differ and when ears of varying size are passed through the machine, as will be readily understood, and to facilitate the continuous and steady feeding in of the ears of corn I provide a feed-trough T, Figs. 1 and 2, of a width just sufficient to hold a single row of ears of corn in alinement and whose outer end is supported by an upright U and whose inner end is pivoted, as at *i'*, to a lug *j'* on the lower one of the first pair of arms P. A sprocket-chain V is passed around a sprocket-wheel W, journaled in the outer end of the trough, and around the sprocket-wheel *o'* on the sleeve of the lowermost feed-wheel last mentioned, said chain running on its upper side in the bottom of the trough and thence passing around under the trough, as seen in Fig. 2.

The operation of the machine above described is as follows: The green corn, previously steamed so as to solidify its meats and juices, is placed, point end foremost, in the trough, whence the ears are continuously fed between the feed-wheels *m'* which, owing to the depressions *n'*, grip them so as to hold them from turning, and the ears are passed first between the rasp-teeth *g*, which tear open or slit the tops of the kernels, and thence between the pressing rollers *k*, which press out the meats and any unsolidified juices, and finally deliver the cobs, with nothing left on

them but the empty hulls, at the tail end of the machine. The meats and juices are caught in any convenient receptacle or are carried off by any suitable conveyer.

5 It is to be observed that while the ears of corn are passed through the machine without turning both the rasping-teeth *g* and the pressing-rollers *k* are continuously rotated around the ears as the latter are fed forward
10 in order to slit the tops of the kernels properly and to thoroughly press out the meats and juices, the forward movement of the ears through these rotating devices causing the latter to act in spiral paths and the inclina-
15 tion of the rollers *k* to the ears being largely conducive to the thorough stripping of the meats from the cobs. It is also to be observed that the feeding-wheels are so spaced as to hold the ears firmly and prevent their turning
20 at all points during their passage through the machine.

While I prefer to use pressing-rollers *k*, it would be no departure from my invention to employ in their place pressing-plates secured
25 to the arms *e* without rotation—such, for instance, as are shown in my Patent No. 395,997, above referred to.

Having thus fully described my invention, I claim—

30 1. In a machine for hulling green corn, the combination with mechanism for feeding the ears of corn through the machine and for holding the ears from turning while being thus fed, of a rotating rasping device through which
35 the ears are first passed to slit the hulls at the ends or tops of the kernels, and a rotating pressing device through which the ears are subsequently passed to express the meats and juices from the hulls.

40 2. In a machine for hulling green corn, the combination with rotating feeding-wheels for passing the ears of corn through the machine and for holding the ears from turning, of a rotating carrier provided with yielding-
45 mounted rasping devices between which the ears are first passed to slit the hulls at the ends or tops of the kernels, and a rotating carrier provided with yielding- mounted pressing devices which subsequently act
50 upon the slitted kernels to express the meats and juices from the hulls thereof.

3. In a machine for hulling green corn, the combination with rotating feeding-wheels for passing the ears of corn through the machine
55 and for holding the ears from turning, of a rotating carrier through which the ears are first fed and which is provided with yielding- mounted rasping devices for slitting the hulls at the ends or tops of the kernels, and
60 a rotating carrier provided with yielding- mounted pressure-rollers through which the ears are subsequently passed to express the meats and juices from the slitted hulls.

4. In a machine for hulling green corn, the
65 combination with mechanism for feeding the ears of corn through the machine and for hold-

ing the ears from turning while being thus fed, of a rotating rasping mechanism through which the ears are first passed to slit the hulls
70 at the ends or tops of the kernels, a rotating pressing mechanism through which the ears are subsequently passed to express the meats and juices from the slitted hulls, and a single power-driven shaft connected to and serving to operate all of the said mechanisms. 75

5. In a machine for hulling green corn, the combination of rotating feeding-wheels for passing the ears of corn through the machine and for holding the ears from turning while
80 being fed, of a rotating carrier provided with yielding rasping mechanism through which the ears are first passed to slit the hulls at the ends or tops of the kernels, a rotating carrier provided with yielding pressing mechanism
85 through which the ears are subsequently passed to express the meats and juices from the said hulls, and a single power-driven shaft connected to and serving to operate said feeding-wheels and said carriers.

6. In a machine for hulling green corn, the
90 combination with rotating feeding-wheels for passing the ears of corn through the machine and for holding the ears from turning while being fed, of a rotating carrier provided with yielding- mounted rasping devices through
95 which the ears are first passed to slit the hulls at the tops or ends of the kernels, a rotating carrier provided with yielding- mounted pressure-rollers through which the ears are subsequently passed to express the meats and
100 juices from the slitted hulls, and a single power-driven shaft connected to and serving to operate the said feeding-wheels and said carriers.

7. In a machine for hulling green corn, the
105 combination of a main frame, a power-driven shaft journaled thereon, sprocket-wheels and worms fast to said power-shaft, drums or carriers having sprocket-wheels on their periph-
110 eries and rotatably mounted on rings forming part of the said main frame, drive-chains connecting the said drums or carriers with the sprocket-wheels on the said power-shaft, spring-pressed arms pivoted to one of said
115 drums or carriers and provided with rasping teeth or knives for slitting the hulls at the ends or tops of the kernels of the ears of corn, spring-pressed arms pivoted to the other of
120 said drums or carriers and provided with pressing-rollers for expressing the meats and juices from the slitted hulls, pivoted arms hung to the main frame, each of said arms having fast thereon at one end a worm-wheel engaging a worm on the power-shaft, and each
125 of said arms being provided at its other end with a feeding-wheel, the feeding-wheels serving to grasp and pass through the machine the ears of corn, and spring-tension mechanism for the said last-named arms to enable the feeding-wheels to yieldingly grasp the ears
130 of corn to be fed through the machine.

8. In a machine for hulling green corn, the

combination with a feeding-trough provided
with an endless carrier, of rotating feeding-
wheels for passing through the machine the
ears of corn presented thereto by the said end-
less carrier, rotating rasping devices which
5 first act upon the ears of corn to slit the hulls
at the ends or tops of the kernels, and rotat-

ing pressing devices which subsequently act
upon the slitted kernels to express the meats
and juices from the hulls thereof.

JOHN RITTY.

Witnesses:

GEORGE S. BAILY,
EDWARD PECK.