

No. 606,824.

Patented July 5, 1898.

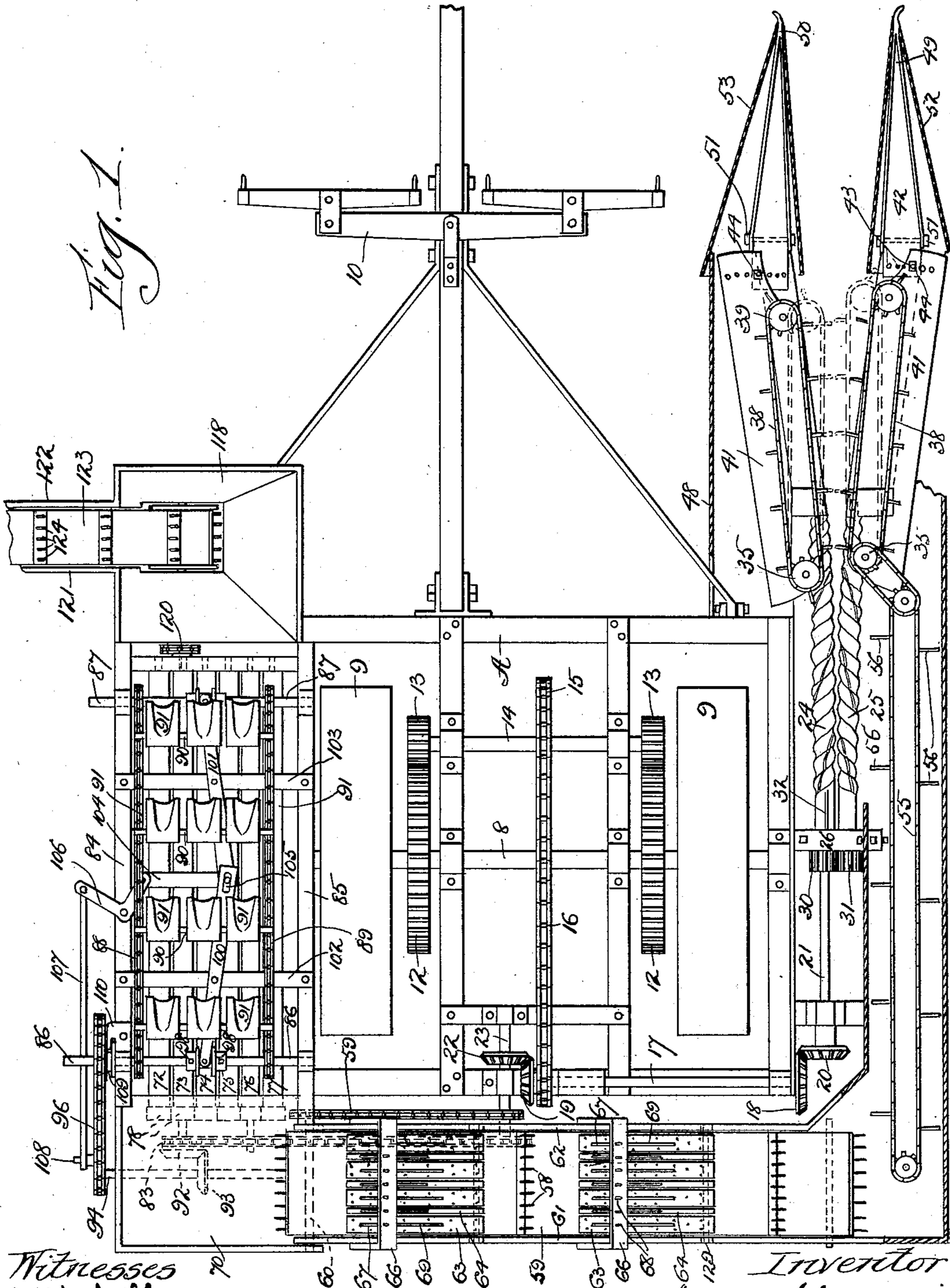
A. STEINER.

CORN STRIPPING AND HUSKING MECHANISM.

(Application filed Mar. 25, 1896.)

(No Model.)

3 Sheets—Sheet I.



Witnesses  
Wm. J. Flanning  
Geo. M. Rheem

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by Brown & Darby Attys.

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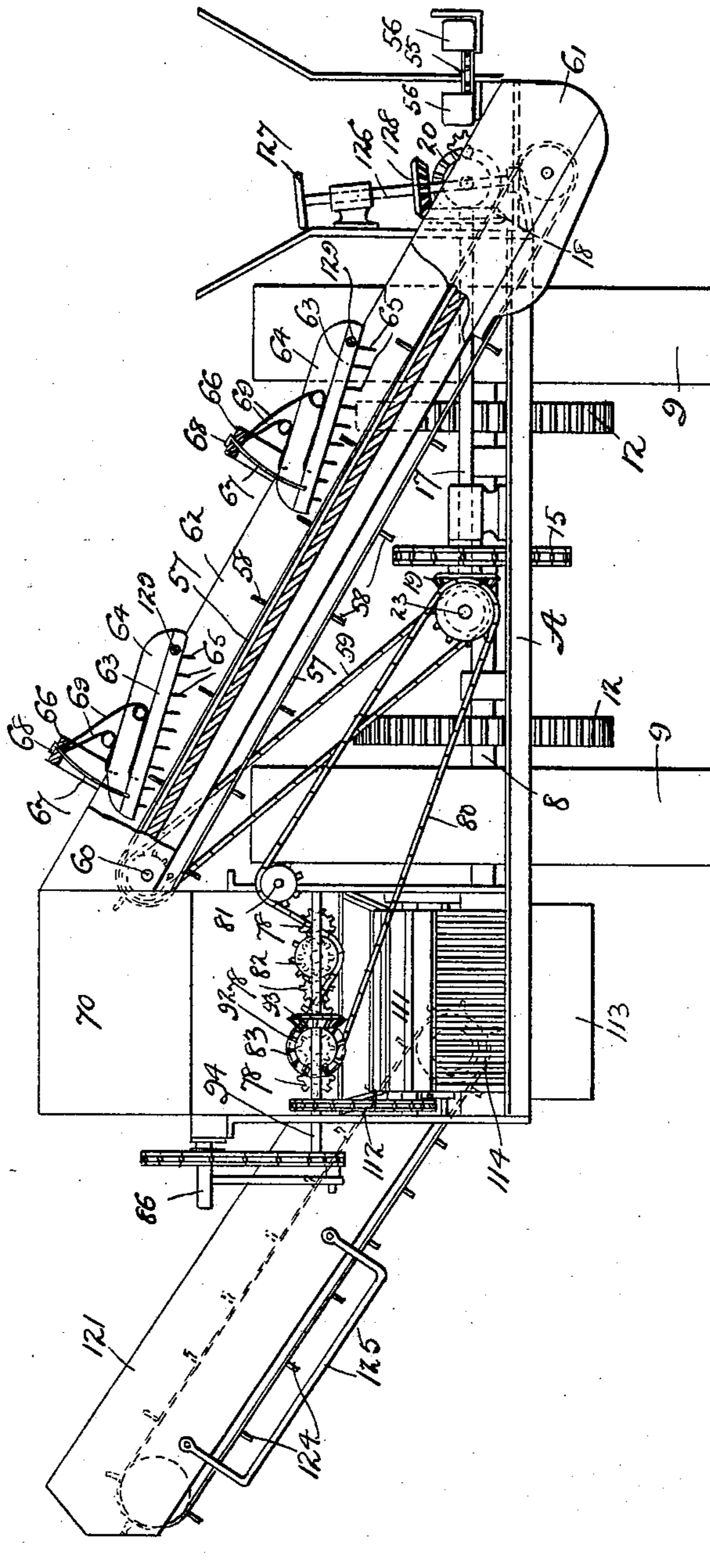
CORN STRIPPING AND HUSKING MECHANISM.

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3 Sheets—Sheet 2.

Fig. 2



Witnesses  
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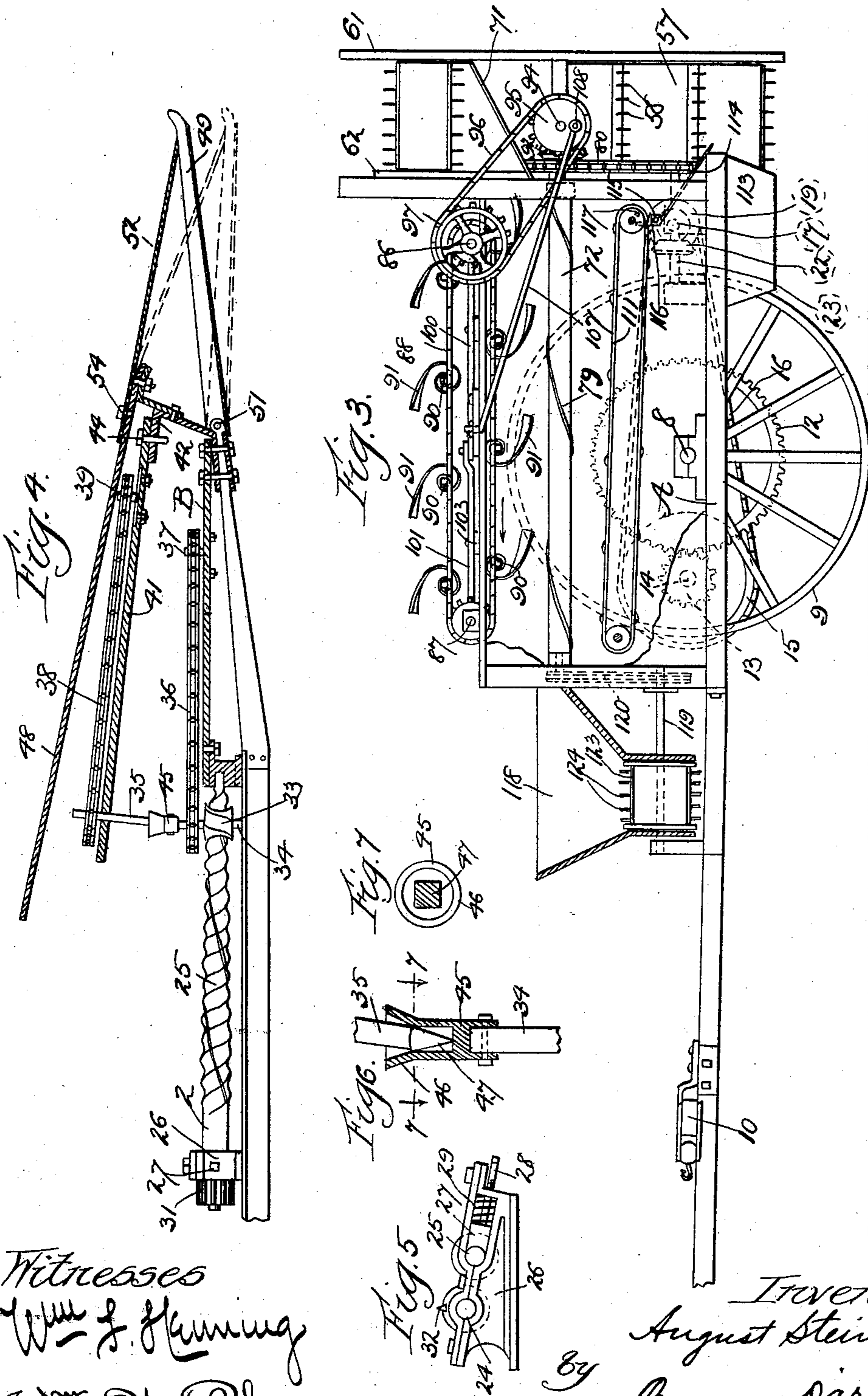
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3 Sheets—Sheet 3.



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# UNITED STATES PATENT OFFICE.

AUGUST STEINER, OF HOMEWOOD, ILLINOIS.

## CORN STRIPPING AND HUSKING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 606,824, dated July 5, 1898.

Application filed March 25, 1896. Serial No. 584,794. (No model.)

*To all whom it may concern:*

Be it known that I, AUGUST STEINER, a citizen of the United States, residing at Homewood, in the county of Cook and State of Illinois, have invented new and useful Improvements in Corn Stripping and Husking Mechanism, of which the following is a specification.

This invention relates to corn stripping and husking mechanism; and is designed as an improvement on Patents Nos. 436,386 and 535,228, respectively granted to me on September 16, 1890, and March 5, 1895.

It is the object of the present invention to provide a machine of simple and improved construction, economical, and effective in operation for stripping ears of corn from the stalks, then husking or shucking the same in a thorough manner, and finally delivering the same from the machine.

The invention consists, substantially, in the construction, combination, relative arrangement, and location of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claims.

Reference is had to the accompanying drawings and to the various views and reference signs appearing thereon, and wherein—

Figure 1 is a plan view of my entire machine, parts being in horizontal section and parts being broken away, embodying in its construction the various features comprising the present invention. Fig. 2 is a view in rear elevation of the same, parts being broken away and parts in vertical section. Fig. 3 is a view in side elevation from the left-hand side of the machine, parts being broken and parts in section. Fig. 4 is a detached detail view in vertical section, showing the arrangement of the gathering devices. Fig. 5 is a detached detail view showing the manner of mounting the snapping-rolls. Fig. 6 is a detached detail view, parts being in vertical section, of the coupling of the shaft which drives the upper gathering-chain. Fig. 7 is a sectional view on the line 7 7, Fig. 6, looking in the direction of the arrows.

The same part is indicated by the same reference sign wherever it occurs throughout the several views.

Reference sign A designates the framework

of the machine, upon which the various parts hereinafter described and referred to are mounted. In this framework is suitably journaled a main driving-shaft 8, which may be rotated from any suitable source of power in case the machine is employed as a stationary machine, or upon which may be mounted the traction-wheels 9 and the draft appliances 10 in case the machine is used as a movable machine. The shaft 8 constitutes the main drive-shaft, from which the parts hereinafter to be described are driven.

Mounted upon shaft or axle 8 are the gears 12, arranged to mesh with similar gears 13, mounted upon a counter-shaft 14, suitably journaled in the framework of the machine. Upon shaft 14 is mounted a sprocket or other gear 15, arranged to engage with and actuate a sprocket-chain or other suitable gearing 16, which in turn engages and drives a sprocket-gear upon shaft 17, suitably journaled in the framework. Gears 18 and 19 are mounted upon and driven by shaft 17, said gear 18 arranged to engage and drive gear 20 upon the shaft 21, by which the snapping-rolls are driven, as will be presently more fully explained, and said gear 19 is arranged to drive through gear 22 a short shaft 23, from which the husk loosening and removing mechanisms are driven and actuated, as will presently be more fully explained.

In the main, and with the exception of shaft 23, the construction and arrangement so far described is substantially the same as that shown and described in my prior patent, No. 535,228.

In my prior patent the outer or forward ends of the snapping-rolls are held in independently-movable spring-supported frames in order that a certain resilience or yielding may be obtained in the rolls relative to each other. I have found in practice, however, that under the vastly-varying conditions and sizes of the individual stalks of corn in a corn-field which a practical and efficient machine is called upon to encounter such a construction is not sufficient to meet every requirement. Sometimes the stalk is too large to pass readily through the snapping-rolls, or a stick or stone or other hard substance may be encountered, requiring the rolls to spread apart beyond the capacity of any spring-

mounted frame construction, thereby resulting either in a breakage of parts or else in a material injury or loss of efficiency. In order to overcome the objections noted, I journal the rear ends of the snapping-rolls 24 25 in a casting 26, the journal of one of said rolls being movable. For instance, as shown in Fig. 5, the casting 26 is provided with an elongated slot adapted to receive the end of roll 25. A block 27 is arranged to slide back and forth in said slot and is shaped to engage the roll 25. A set-screw 28 serves to adjust the block 27 back and forth, and a spring 29 is arranged in said slot to bear against said block and hold the same yieldingly against the roll. By suitably loosening the set-screw 28 the roll 25 may be permitted a yielding lateral movement in its journal-box relative to its companion roll 24, whereby any abnormally large obstruction may pass between the rolls without danger or liability of breakage. The shaft 21 of roll 24 has mounted thereon a gear 30, arranged to mesh with a similar gear 31, mounted upon roll 25, whereby said rolls are driven in opposite directions, and to permit of the lateral motion above described of said roll 25 with reference to roll 24 the gear-teeth of said gears 30 31 are made of correspondingly-increased length to maintain their intermeshing.

The rolls 24 25 are formed with the intermeshing corrugations and spiral raised ribs, the same as in my prior patent, and one of said rolls is raised in a slightly-higher plane than the other, as shown.

In order to prevent clogging or choking up of the stalks of corn at the extreme rear ends of the snapping-rolls, I provide one of said rolls with a blade or knife 32, arranged to extend longitudinally of the roll, as shown. By this means I insure a detachment of the ear of corn from the stalk which might be of such a height as to fail to pass through the snapping-rolls entirely before the length of the rolls is traversed thereby or where the stalk is not fed properly, the said knife or blade operating to sever the ear from the stalk.

In my prior patent is shown and described a structure wherein, in case the machine is employed in the field as a traction-machine, the stalks of corn are properly gathered and fed to the snapping-rolls by gathering-chains, one chain being employed on each side. I have found in practice that sometimes the stalks are weak and brittle, and when the machine is not driven in a perfectly straight line the impingement of some part of the machine against the stalk causes it to break and to fall forwardly or in the direction in which the machine is traveling before the gathering-chains can feed it to the roll, or after being engaged by the projecting fingers of the gathering-chains the stalks sometimes break and from the overweight of the ear it falls forwardly without being fed to the rolls, and, again, the stalks of corn may be bent over in various directions by the wind and are broken

down by the machine without being fed to the machine. In all such cases the ears of corn are not harvested, thereby requiring the machine to be followed up in order to collect and harvest the corn thus left by the machine. In order to avoid these defects and objections and to produce an efficient machine wherein the liability to loss from the causes stated is reduced to a minimum, I provide the following construction: Arranged to intermesh with and to be driven by the corrugations of the rolls 24 25, after the manner of my prior patent, are the worm-blocks 33, each of which is mounted upon shaft 34. Upon each shaft 34 is mounted a sprocket-gear arranged and adapted to actuate a gathering-chain 36, suitably mounted around a guide-sprocket (indicated at 37, Fig. 4) carried by a suitable projection B of the framework. This gathering-chain is provided with projecting fingers, and its arrangement, construction and function, and mode of operation may be substantially the same as in my prior patents. Loosely coupled to rotate with shaft 34 is a section of shaft 35, having thereon a sprocket adapted to actuate a gathering-chain 38, mounted around a sprocket-wheel 39 and having the projecting fingers, as shown, similar to the gathering-chains 36. The sprockets 39 and chains 38 are supported upon a bracket 41, pivotally mounted on shaft 35 and adjustably secured at their front ends upon a bracket 42, the series of holes 43 and the bolts 44 affording means for adjusting the front ends of said brackets toward or from each other. In this manner the projecting fingers of the pair of gathering-chains 38 may be brought in close proximity to each other and form an inclosing bracket to grasp the stalk of corn and feed the same and prevent the same from falling forwardly or in the direction in which the machine is traveling, the said pairs of chains 38 being, as shown, elevated above their cooperating chains 36. In order to permit of this swinging movement or adjustment toward and from each other of the front portions or supports of the gathering-chains 38, I loosely and flexibly connect and couple the sections of shafts 34 and 35, as clearly shown in Figs. 6 and 7, wherein I mount a coupling-thimble 45 on one of said sections, preferably on section 34. This thimble 45 is provided with a socket 46 comprising a square base and a flaring outer edge, as shown, and the end of the section of shaft to be coupled is pointed and has planed sides, thereby forming a pyramid, as at 47, which is adapted to be received loosely in the squared portion of socket 46. From this construction it will be seen that the rotation imparted to section 34 of the shaft through worm-block 33 is transmitted to section 35 through the engagement of the squared portion of the socket 46 with the pyramidal end of said section 35, while at the same time the connection is flexible, the section 35 being permitted a movement in said socket without releasing said engagement. The holding-chains 38 are

each suitably covered over to prevent portions of the stalks from clogging the same up by means of a cover 48.

Extending forwardly from the front ends of the supports for chains 36 and 38 are the toes 49 50, pivotally mounted on the framework of the machine, as at 51, to swing in a vertical plane. A suitable conically-shaped covering or casing 52 53 is arranged to inclose said toes, and said coverings are adjustably secured to the casing or coverings 48, as by means of the bolts 54. By securing said bolt in either one or the other of the holes provided therefor the degree of depression or elevation of the toes in a vertical plane may be readily regulated. It will be seen that the forward end of casing 48 is inclined or arc-shaped about the pivot-bolt 51 as a center in order to permit toes 49 50 to swing or be adjusted as to their inclination to the longitudinal. The toes 49 50 and their adjustment in a vertical plane play an important part in the successful operation of the machine. The function of these toes is to insure that the stalks of corn are properly guided to the gathering and holding devices. As the machine travels through the field, for instance, the toes, one on each side of the row of corn, form a channel. It frequently happens that the stalk is broken or bent down. By adjusting the inclination of the toes so that their extreme forward tips are in close proximity to the ground the stalks that are bent over or blown down are raised up into position to be grasped by the gathering and holding devices.

After the ear of corn has been detached from the stalk by the snapping-rolls 24 25 it falls into a raceway or channel arranged alongside the rolls, being assisted into the said raceway or channel by the arrangement of the rolls 24 25 with respect to each other--that is, the arrangement of the roll 24 in a higher plane than roll 25. In the raceway or channel is arranged a carrier-chain 55, having flanges 56 thereon and driven by suitable gearing from shaft 35 in a manner similar to that shown and described in my prior patents.

The ears of corn are delivered by the carrier 55 into a casing in which operates a suitable carrier, which in the form shown comprises an endless belt 57, having pusher-fingers 58 thereon and suitably driven or actuated, as by means of a sprocket-chain 59, driven from shaft 23, said sprocket-chain driving the roll 60, upon which the carrier-belt 57 is mounted. The carrier 57 is arranged to travel in a casing comprising the side frames 61 62, forming a trough. In this casing and arranged to operate upon the ears of corn as they are fed along by the carrier-belt 57 are the husk-loosening devices, the function of which is to loosen the husks upon the ears, thereby facilitating the action of the husking mechanism, presently to be described. I will now describe the construction and mode of operation of the husk-loosening devices. Suitably supported in the casing are two or

more sets of bars, the bars of each set comprising alternating flatwise and edgewise arranged plates 63 64. Spikes 65 are arranged in the under surface of the flatwise-arranged plates or bars 63, while the under edges of the edgewise-arranged plates or bars 64 are smooth. The sets of bars 63 64 are arranged above the path in which the ears of corn are carried by the pusher-fingers 58 of carrier 57. It is important that these loosening-bars be yieldingly mounted in order to yieldingly hold the ears of corn and at the same time to accommodate for varying sizes of ears. It is also important that the entrance of the ears of corn to the space between the loosening-bars and the carrier be unobstructed. In order to secure these objects, I mount these bars in the following manner: Cross-bars 66 are arranged to extend at suitable distances apart transversely across the trough from one side frame 61 to the other frame 62, and said cross-bars are provided with perforations, through which are arranged to pass loosely the rods 67, which rods are secured to the bars or plates 63 64, each bar or plate being provided with a rod 67, said rods being secured to said bars or plates at the far ends thereof with reference to the direction in which the carrier 57 travels. The rods 67 are provided with heads, as shown at 68, which serve to support the bars or plates. To each bar or plate 63 64, adjacent to the point of attachment of rod 64, is secured one end of a U-shaped leaf or other suitably-shaped spring 69, the other ends of said spring being arranged to bear against the under side of cross-bars 66. The action of the springs 69 is to normally and yieldingly hold the bars or plates 63 64 in their lowest position, the sliding connection of rods 67 in the perforations in cross-bars 66 permitting said plates or bars 64 63 to rock about the shaft or support 129 for the rear ends of said bars or plates when an abnormally-large-sized ear of corn is encountered.

By the construction above described the forward ends of the bars or plates 63 64 with reference to the direction of travel of the carrier 57 are normally held in close proximity to the surface of the carrier-belt 57, while the rear ends of said bars or plates are elevated a sufficient distance above the carrier-belt by the supporting-shafts 129 in the side frames 61 62 to insure the admission of the largest-sized ear without obstruction to the space between said bars or plates and the carrier.

The operation of this part of my invention is as follows: The ears of corn after being delivered from the snapping-rolls are forced by the pusher-fingers 58 of the carrier-belt 57 under the husk-loosening bars or plates 63 64. The edgewise-arranged plates 64, having their under edges smooth, serve to hold the ears with sufficient firmness down upon the carrier-belt 57, while the spikes 65 on the under surface of the bars 63 effect a loosening or tearing of the husk, leaving the husks in condition to be acted upon by the husk-

ing-rolls presently to be described. From the upper end of the carrier-belt 57 the ears of corn, after being subjected to this action of the husk-loosening devices above described, are delivered into a suitable hopper 70, having an inclined bottom 71, Fig. 3, down which the ears slide and from which they are delivered to the husking mechanism, which will now be described.

Suitably journaled in the framework of the machine are a series of parallelly-arranged rolls 72, 73, 74, 75, 76, and 77. In the form shown I provide six of the rolls, though it is evident that any suitable or desired number of rolls may be employed. Through suitable intermeshing gears 78, mounted on these rolls, said rolls are rotated simultaneously, adjacent rolls rotating in opposite directions with respect to each other. If desired, one or more of the rolls may be provided with a spirally-arranged rib or projection 79, the function of which is to grasp the loosened husks of the ears of corn and tear the same from the ear as it is fed along the rolls. The rolls may be driven in any suitable or convenient manner. I have shown a form of driving-gearing wherein a sprocket-chain 80 is driven from the shaft 23, and after passing over a suitable guide-sprocket 81 it passes first under a gear 82 upon the shaft of one of the husking-rolls—for instance, roll 76—thence over a gear 83 on the shaft of another of the rolls, as roll 73, and thence back to shaft 23. By this means rolls 73 and 76 are driven in opposite directions, thereby properly rotating all of said rolls through the intermeshing gears 78, as will be readily understood. It is important that the ears of corn be held yieldingly, though with sufficient firmness, to the action of the husking-rolls in order that the husks may be thoroughly and efficiently removed. It is also important that provision be made for operating on different-sized ears with equal efficiency. It is also important that provision be made whereby the ears of corn are prevented from being fed along the husking-rolls without having their husks grasped by said rolls and properly removed—as, for instance, the case would be if the ears are fed in a straight line and endwise down the groove or channel between two adjacent rolls rotating in a direction away from each other. In order to secure these advantageous results, I provide the following mechanism: In the side frames 84 85, forming the trough or casing in which the husking-rolls are mounted and at points adjacent to the ends of said rolls, I suitably journal the shafts 86 87, and upon these shafts and adapted to be actuated thereby I mount the endless chains 88 89, one at each end of said shafts. The cross-bars 90 are arranged to connect said chains at suitable intervals. Upon each of the cross-bars 90 I mount a series of spring-plates 91. The spring-plates are preferably in the form of spirals, being attached at one end to the bar, and after forming one or more loose convolutions having their free ends extended rearwardly with reference to the direction in which the said bars are moved by the chains 88 89. Preferably the rearwardly-extending ends of the spring-plates have extended surfaces and are stamped out or otherwise provided with central hollows or corrugations extending lengthwise thereof, as clearly shown. The spring-plates 91 are arranged in such close proximity to each other that their rearwardly-extending ends form practically a continuous surface, as shown. The shaft 86 is positively driven in the following manner: Upon one of the husking-rolls is mounted a gear 92, arranged to mesh with and drive a gear 93 upon a shaft 94, suitably journaled in the framework and upon which is mounted a sprocket 95, adapted to engage and drive a sprocket-chain 96, which in turn engages and drives a gear 97, mounted on to rotate with said shaft 86, but permitting said shaft to move endwise there-through. In order to impart to the ears of corn while being subjected to the action of the husking-rolls and while fed therealong under the influence of the spring-plates 91 a reciprocatory rolling motion to insure a complete and efficient husking of the ears under all conditions, I mount the shafts 86 87 to reciprocate endwise in their bearings, and I so mount the chains 88 89 as to move with said shafts when they are reciprocated, while at the same time said chains are driven by the simultaneous rotation of said shaft 86. The reciprocatory movements are imparted to the shafts 86 87 simultaneously with their rotation in the following manner: Upon each shaft 86 87 are rigidly mounted a pair of collars 98. Between each pair of collars is adapted to be received the end of a lever 100 101. Each lever is pivotally mounted intermediate its ends upon a stationarily-held cross-bar 102 103, and the adjacent or meeting ends of said levers 100 101 are loosely connected to a common sliding bar 104, as by means of a slot-and-pin connection, as indicated at 105, Fig. 1. When this bar 104 is reciprocated, the levers 100 101 are simultaneously rocked and the shafts 86 87 are reciprocated in unison. In order to secure an automatic reciprocation of bar 104 during the operation of this part of my invention, I connect one arm of a bell-crank lever 106 to said bar 104, and to the other arm of said bell-crank lever I attach one end of a pitman 107, the other end of said pitman being connected to a crank-arm 108 upon gear 95. In order to hold gear 97 against movement other than rotary during the endwise reciprocation of its supporting-shaft 86, I provide said gear with a flanged hub 109, the flange of said hub adapted to be received and held in a grooved plate 110, suitably mounted upon the side frame 84. It will also be understood that the bell-crank lever 106 is pivotally mounted upon the side frame 84 or other suitable fixed part of the machine-frame.

The operation of this part of my invention is as follows: The ears of corn are delivered upon the husking-rolls 72 73, &c., and are fed down and longitudinally with respect to said rolls, being fed along and at the same time held to the action of said rolls by the traveling spring-plates 91. By the rotation of said rolls, adjacent rolls being rotated in opposite directions, the husks which have previously been torn or loosened by the husk-loosening devices above described are grasped between the rolls and torn from the ear and are fed through or between the rolls while the ears are fed onwardly. The reciprocatory movement imparted to the traveling springs 91 imparts a rolling motion to the ears from one pair of rolls to another, thereby presenting different portions of the husks to the grasping action of the husking-rolls, the hollowed or stamped out corrugations or grooves in the spring-plates 91 facilitating this rolling action of the ears and the spring-plates yielding sufficiently to accommodate the vastly-varying sizes of ears which the machine is called upon to husk. The husks, after being removed from the ears by the husking-rolls, are received upon a conveyer-belt 111, suitably actuated, as by means of a sprocket-chain 112, from shaft 94, and by which said husks are delivered to the rear of the machine, where they may be collected, if desired, in any suitable manner and preserved for future use. Immediately beneath the delivery end of the husk conveyer-belt 111 I provide a suitable receptacle 113, adapted to receive and save from loss any loose grains of corn which may become detached from the ear during the husk loosening or removing operations. In order to prevent the husks from filling this receptacle, but at the same time to permit the grains of corn to be deposited in said receptacle, I pivotally mount an inclined grating 114 over the receptacle 113 and immediately adjacent to the delivery end of the husk conveyer-belt, said grating being inclined downwardly and away from said belt, as shown, (see more particularly Fig. 3,) the said grating being mounted on suitable pintles, as indicated at 115. A projection 116 of said grating is arranged in the path of a pin 117 upon the feed-roll of the conveyer-belt 111, whereby an agitation is imparted to said grating, thereby facilitating the discharge of the loose husks and preventing the same from clogging up the entrance to the receptacle 113. From the husking-rolls the husked ears are delivered into a hopper 118, in the bottom of which is mounted a shaft 119, suitably driven, as by means of a sprocket-chain 120, from a gear on the forward end of one of the husking-rolls. Side frames 121 and 122, extending upwardly and outwardly from this hopper, form a trough or channel, and a conveyer-belt 123 is mounted in this trough or channel and is provided with suitable pusher-fingers or paddles 124 and is arranged around said shaft 119 and

around another shaft in the outer ends of said side frames 121 and 122, thus forming a means for delivering the husked ear from the machine into any suitably-arranged receiver—as, for instance, a wagon—which may travel along through the field alongside the husking-machine for that purpose. In order to prevent the pusher-fingers from catching the wagon-bed and thereby being broken off, I provide the guard-plate 125 to cover and protect said conveyer at the point where the wagon-bed would strike said belt, as clearly shown in Fig. 2.

It may sometimes occur that a stalk or ear or other matter will choke up the snapping-rolls or other part of the machine, and thereby prevent the machine from performing effective work. In such case it may be desirable to operate the mechanism by hand and independently of the usual or main driving mechanism. In order to accomplish this object, I provide a short shaft 126, upon which are mounted a hand operating-wheel 127 and a gear-wheel 128, said gear-wheel being arranged to mesh with gear 18, by which the snapping-rolls are driven. By suitably manipulating the hand-wheel 127 the snapping-rolls may be rotated independently of the main driving means. Of course it will be understood that it is customary to provide a suitable clutch in the train of gearing, by which the several parts are actuated from the main shaft or axle, though none is shown in the present case, whereby the machine may be drawn from place to place without actuating the several mechanisms, and when it is desired to rotate the snapping-rolls independently of the main shaft through the medium of hand-wheel 127, as above explained, the gearing whereby said rolls are driven from the main shaft is unclutched. By constructing the hand-wheel 127 of considerable size and arranging the gears 128 and 18 to be in constant mesh with said hand-wheel it operates as a balance-wheel for the snapping-rolls during the operation of the machine, thereby securing greater steadiness of operation.

It will be observed that the snapping-rolls are arranged fore and aft with reference to the direction of travel of the machine and upon the outside of the draft-wheels, and that the husking-rolls are similarly arranged and upon the outside of the draft-wheels and on the opposite side of the machine from the snapping-rolls, and that the husk-loosening devices are arranged in the path of the conveyer, which transfers the ears of corn from the snapping-rolls to the husking-rolls, and that such conveyer is arranged to extend transverse to the direction in which the machine moves and at the rear of the machine, and that the main driving-gearing for all parts of the machine is arranged between the traction-wheels. From this organization and general arrangement and relative location of parts the machine is evenly balanced, there-

by reducing to a minimum the power required to operate the machine.

The operation of the machine will be fully understood from the foregoing description when taken in connection with the accompanying drawings.

Having now explained the object and nature of my invention and a form of apparatus embodying the same and having explained the construction, function, and mode of operation of such apparatus, I desire it to be distinctly understood that I do not confine or limit myself to the exact details of construction shown and described, as many variations therefrom would readily suggest themselves to persons skilled in the art and still fall within the spirit and scope of my invention; but

What I do claim as new and of my own invention, and desire to secure by Letters Patent of the United States, is—

1. In a corn harvester and husker, a main frame, an axle journaled therein, traction-wheels mounted on said axle, ear-detaching devices arranged in said main frame, alongside the traction-wheel on one side of the machine but on the outside of such wheel, said ear-detaching device extending longitudinally of the machine, husking devices arranged alongside the traction-wheel on the opposite side of the machine but on the outside of said wheel, and extending longitudinally of the machine, husk-loosening devices arranged to extend transversely of the machine and to the rear of the traction-wheels, and means for conveying the detached ear from said detaching devices past said husk-loosening devices and delivering the same to said husking devices, as and for the purpose set forth.

2. In a corn harvester and husker, a main frame, an axle journaled therein, traction-wheels mounted on said axle and adapted to support said main frame, snapping-rolls for detaching the ears of corn, said rolls being arranged to extend in the direction of travel of the machine and alongside the traction-wheel on one side of the machine but outside of such wheel, husk-removing rolls arranged to extend in the direction in which the machine travels, and alongside the traction-wheel on the opposite side of the machine, but on the outside of said wheel, a carrier for conveying the detached ear from the snapping-rolls to the husk-removing rolls, said carrier arranged to travel transversely of the machine, to the rear of the traction-wheels, and husk-loosening devices arranged in the path of travel of such carrier, as and for the purpose set forth.

3. In a corn-harvester, snapping-rolls, means for actuating the same, gathering devices for engaging and presenting the stalks to said rolls, vertical shafts arranged to be driven by said snapping-rolls for actuating said gathering devices, auxiliary chains arranged above said gathering devices for sup-

porting and guiding the stalks while being presented to said snapping-rolls, vertical shafts for actuating said auxiliary chains, said shafts loosely connected to and driven by the gathering devices driving-shafts, as and for the purpose set forth.

4. In a corn-harvester, snapping-rolls, means for actuating the same, gathering devices, vertical shafts arranged to be driven by said snapping-rolls for actuating said gathering devices, auxiliary chains arranged above said gathering devices for supporting and guiding the stalks, means for adjusting said chains toward and from each other, vertical shafts for actuating said auxiliary chains, and flexible connections, whereby said shafts are driven by the driving-shafts of said gathering devices; as and for the purpose set forth.

5. In a corn-harvester, snapping-rolls, means for actuating the same, vertical shafts arranged to be driven by said rolls, gathering devices actuated by said shafts, a coupling-joint provided with squared sockets mounted on the upper ends of said shafts, auxiliary shafts vertically arranged and adapted to be loosely stepped in and driven by said coupling-joint, supporting-chains actuated by said auxiliary shafts, and means for adjusting said chains toward and from each other; as and for the purpose set forth.

6. In a corn-harvester, snapping-rolls, for detaching the ears from the stalks, said snapping-rolls provided with spiral corrugations, means for rotating said rolls in opposite directions, one of said rolls provided with a knife adjacent to the rear end thereof, said knife being arranged longitudinally with respect to said roll; as and for the purpose set forth.

7. In a corn-harvester, a pair of snapping-rolls for detaching the ears of corn from the stalks, means for rotating said rolls in opposite directions, an independent journal-box for the front end of each of said rolls, said journal-boxes being rigid with reference to each other, a journal-box common to both of said rolls at the rear ends thereof, the bearing for the rear end of one of said rolls being immovable, said last-mentioned journal-box provided with an elongated slot to receive the rear end of the other of said rolls, a spring-pressed adjustable block mounted in said slot and adapted to form part of the bearing for said roll whereby said roll is permitted a lateral yielding movement only at the rear end thereof with reference to its companion roll, as and for the purpose set forth.

8. In a corn-harvester, means for loosening the husks on the ears preparatory to the removal thereof from said ears, comprising a conveyer belt or chain arranged to convey the ears of corn, means for actuating the same, and a series of independent plates arranged above the plane of, and in angular relation to the path of travel of said conveyer, said plates being pivotally mounted independently of each other at the end thereof farthest from the conveyer, and yieldingly

mounted at the end thereof in closest proximity to the conveyer, as and for the purpose set forth.

9. In a corn-harvester, means for loosening the husks on the ears preparatory to the removal thereof from said ears, comprising a conveyer arranged to convey the ears of corn, means for actuating the same, and a series of independent plates arranged alternately edgewise and flatwise in a plane above, and in angular relation to the path of travel of said conveyer, said flatwise-arranged plates provided with spikes and said edgewise-arranged plates presenting a smooth under surface, and all of said plates pivotally mounted independently of each other at the end thereof farthest from the conveyer, and yieldingly mounted at the end thereof in closest proximity to the conveyer, as and for the purpose set forth.

10. In a corn-husker, a trough, a conveyer-belt arranged to travel therein, cross-bars supported upon said trough, a series of plates having rods secured thereto, said rods arranged to be slidably supported by said cross-bars, said plates having spikes projecting from the under side thereof, and springs interposed between said plates and said cross-bars; as and for the purpose set forth.

11. In a corn-harvester, husking-rolls, adapted to remove the husks from the ears, means for rotating said rolls, a traveling carrier arranged over said rolls, a series of spring-plates mounted on said carrier and adapted to feed the ears along and hold the same to the action of said rolls, and means for imparting a lateral vibration to said carrier; as and for the purpose set forth.

12. In a corn-harvester, husking-rolls adapted to remove the husks from the ears, means for rotating said rolls, a series of spring-plates attached at one end thereof to said carrier and then bent to form one or more spiral convolutions, and having their other or free ends extending in a direction opposite to that in which the carrier travels, and means for imparting a lateral vibration to said carrier; as and for the purpose set forth.

13. In a corn-husker, husking-rolls adapted to remove the husks from the ears, means for rotating said rolls, a traveling carrier arranged over said rolls, a series of spring-plates attached at one end thereof to said carrier and then bent to form one or more spiral convolutions and having their other or free ends

extending in a direction opposite to that in which said carrier travels, said free ends being bent or stamped to form a hollow or corrugation longitudinally thereof, and means for imparting a lateral reciprocation to said carrier; as and for the purpose set forth.

14. In a corn-husker, a trough, a series of husking-rolls mounted therein, means for rotating said rolls, a shaft mounted transversely in said trough at each end thereof, a pair of sprocket-chains mounted on said shaft, cross-bars connecting said chains, spring-plates mounted on said bars, means for rotating one of said shafts, and means for simultaneously therewith imparting a lateral reciprocation to said chains; as and for the purpose set forth.

15. In a corn-husker, a trough, a series of husking-rolls journaled therein, means for rotating the same, a shaft arranged transversely in said trough at each end thereof, a carrier mounted on and adapted to be actuated by said shafts, collars mounted on each shaft, pivoted levers having their ends arranged between said collars, means for positively rotating one of said shafts, and means for simultaneously therewith vibrating the opposite ends of said levers, whereby a reciprocatory vibration is imparted to said carrier; as and for the purpose set forth.

16. In a corn-husker, means for husking the ears, a conveyer-belt adapted to receive and deliver the husks, a receptacle arranged adjacent to the delivery end of said conveyer, adapted to receive the detached grains of corn, a grating arranged over said receptacle, and means for vibrating said grating; as and for the purpose set forth.

17. In a corn-husker, means for removing the husks from the ears, a conveyer-belt adapted to receive and deliver the husks, a receptacle arranged adjacent to the delivery end of said conveyer, adapted to receive the detached grains of corn, a pivotally-mounted rearwardly-inclined grating arranged over said receptacle, and means for periodically rocking said grating about its pivots; as and for the purpose set forth.

In witness whereof I have hereunto set my hand this 21st day of March, 1896.

AUGUST STEINER.

Witnesses:

SIDNEY BRIGGS,  
S. E. DARBY.