

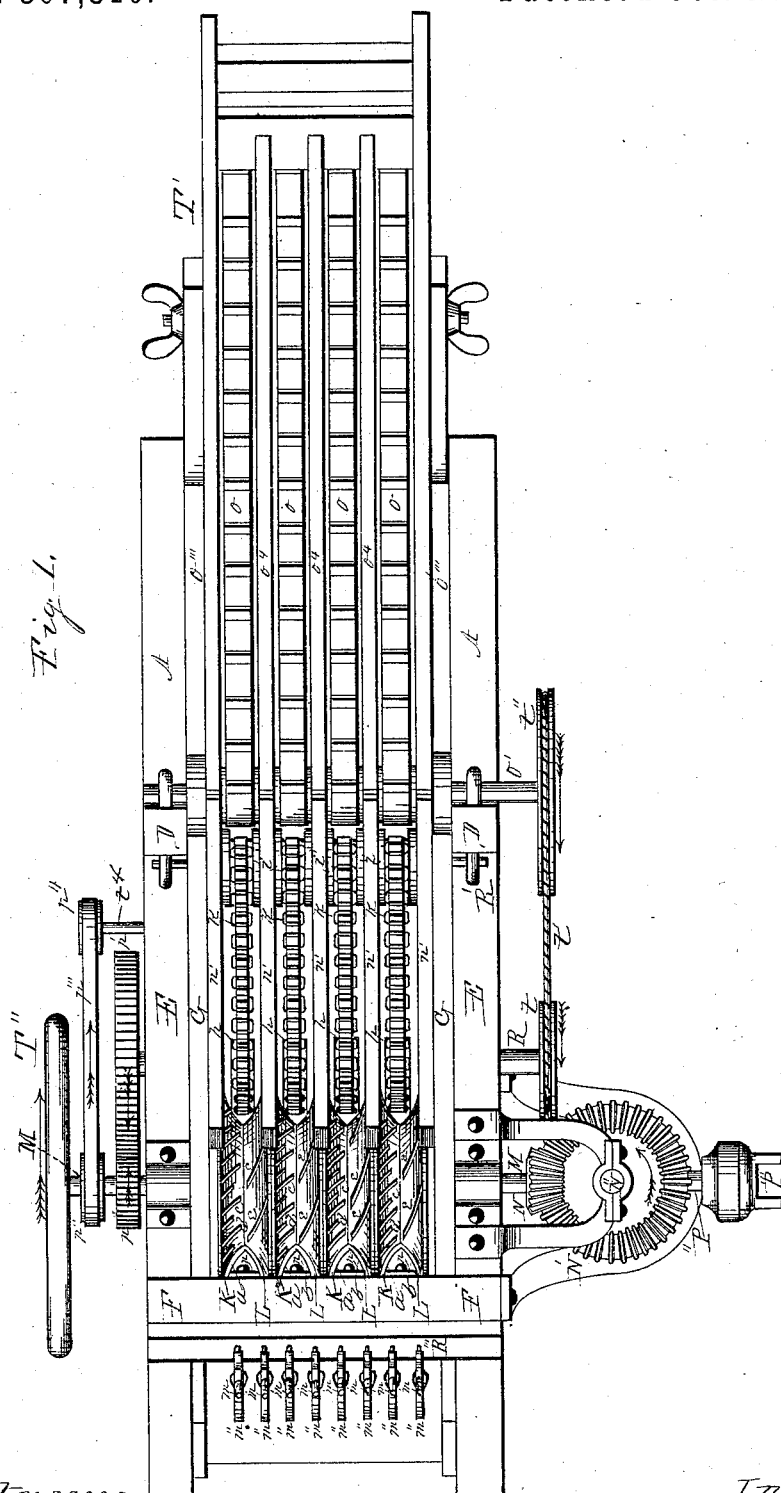
(No Model.)

5 Sheets—Sheet 1.

L. KNAUER.
CORN SHELLER.

No. 307,310.

Patented Oct. 28, 1884.



Witnesses,
A. O. Gehl
J. J. Sovereign

Inventor
Louis Knauer
Per Jacob Behel, Atty

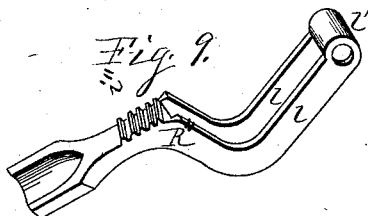
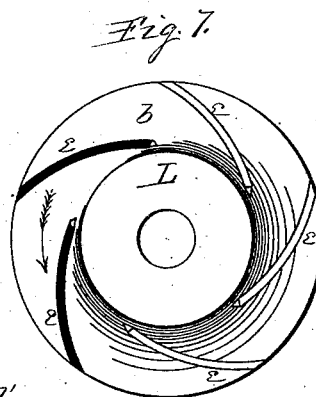
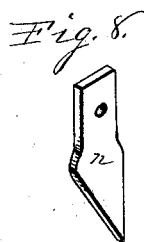
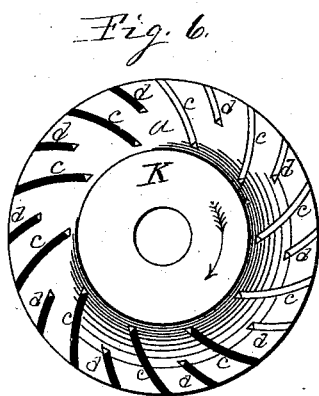
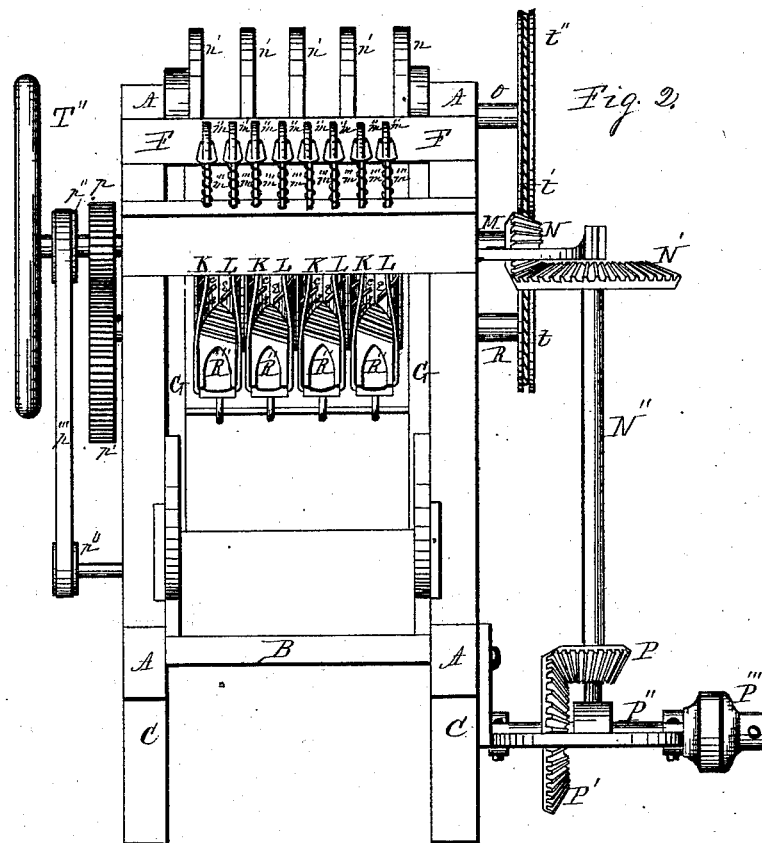
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Witnesses:
A. O. Behl
F. J. Sovereign

Inventor:
Louis Knauer
Per. Jacob Behl
Atty.

(No Model.)

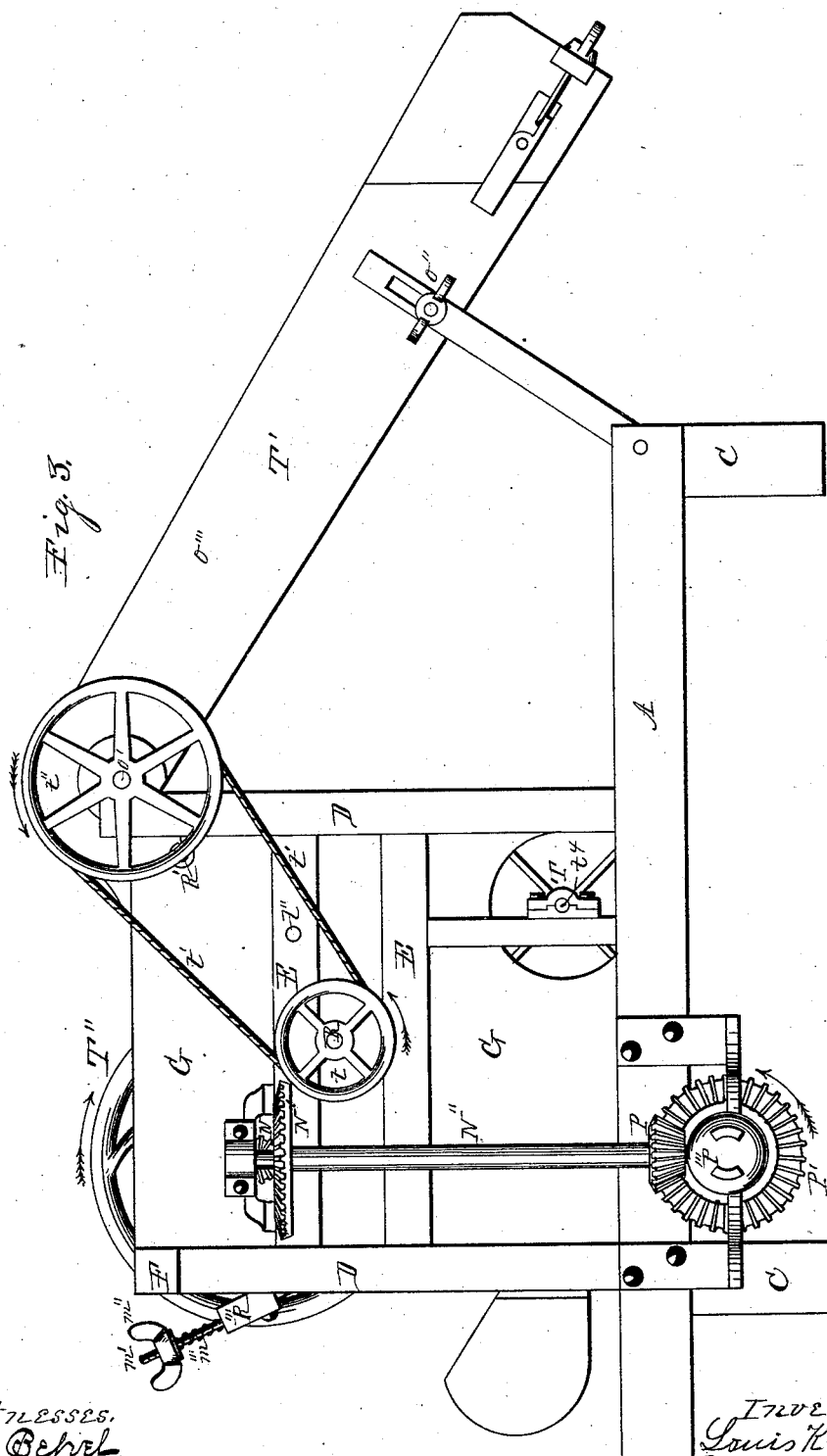
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L. KNAUER.

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No. 307,310.

Patented Oct. 28, 1884.



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F. J. Sovereign.

Inventor.
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Att'y.

(No Model.)

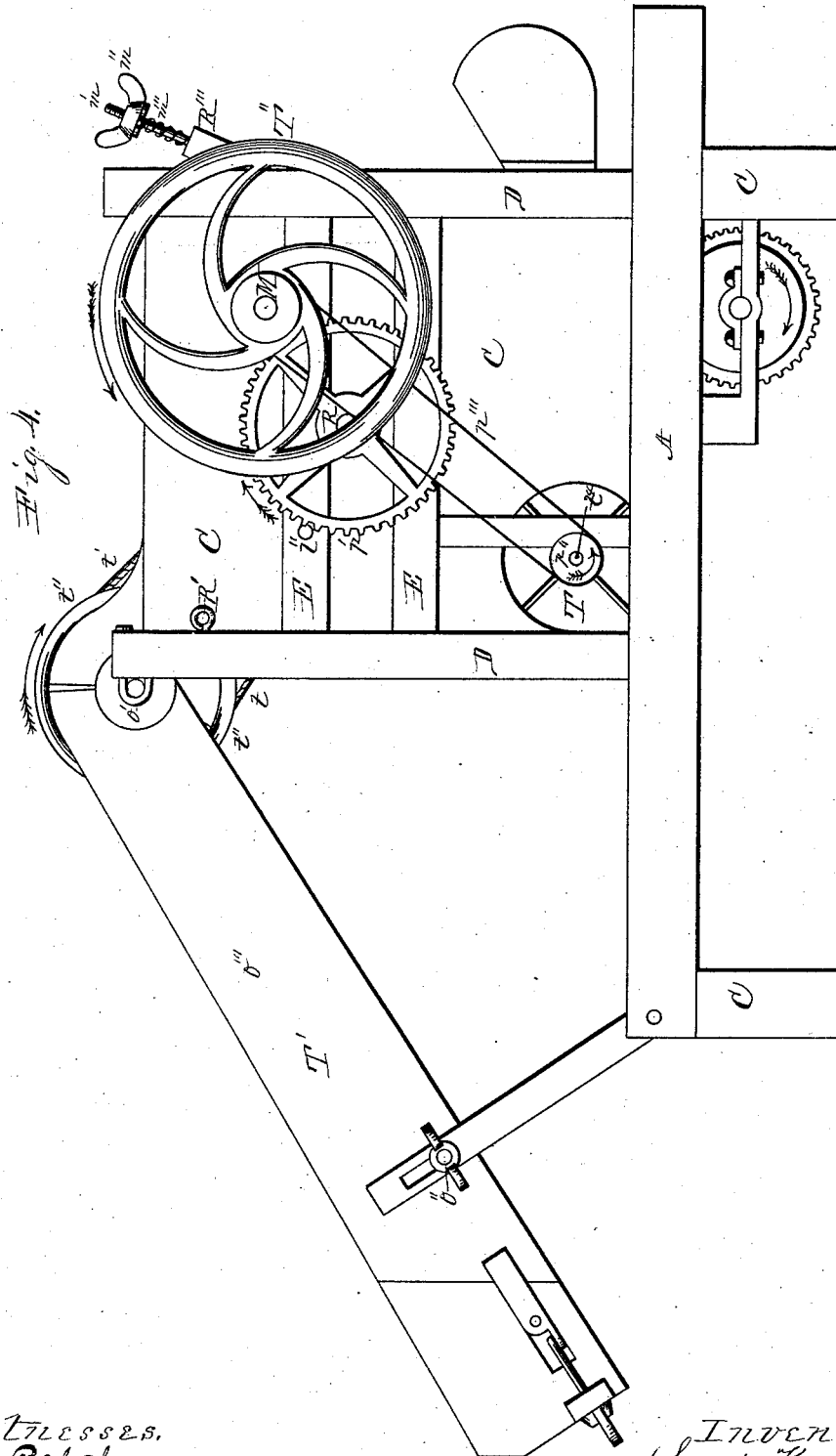
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L. KNAUER.

CORN SHELLER.

No. 307,310.

Patented Oct. 28, 1884.



Witnesses,
A. O. Behr
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Inventor,
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Atty.

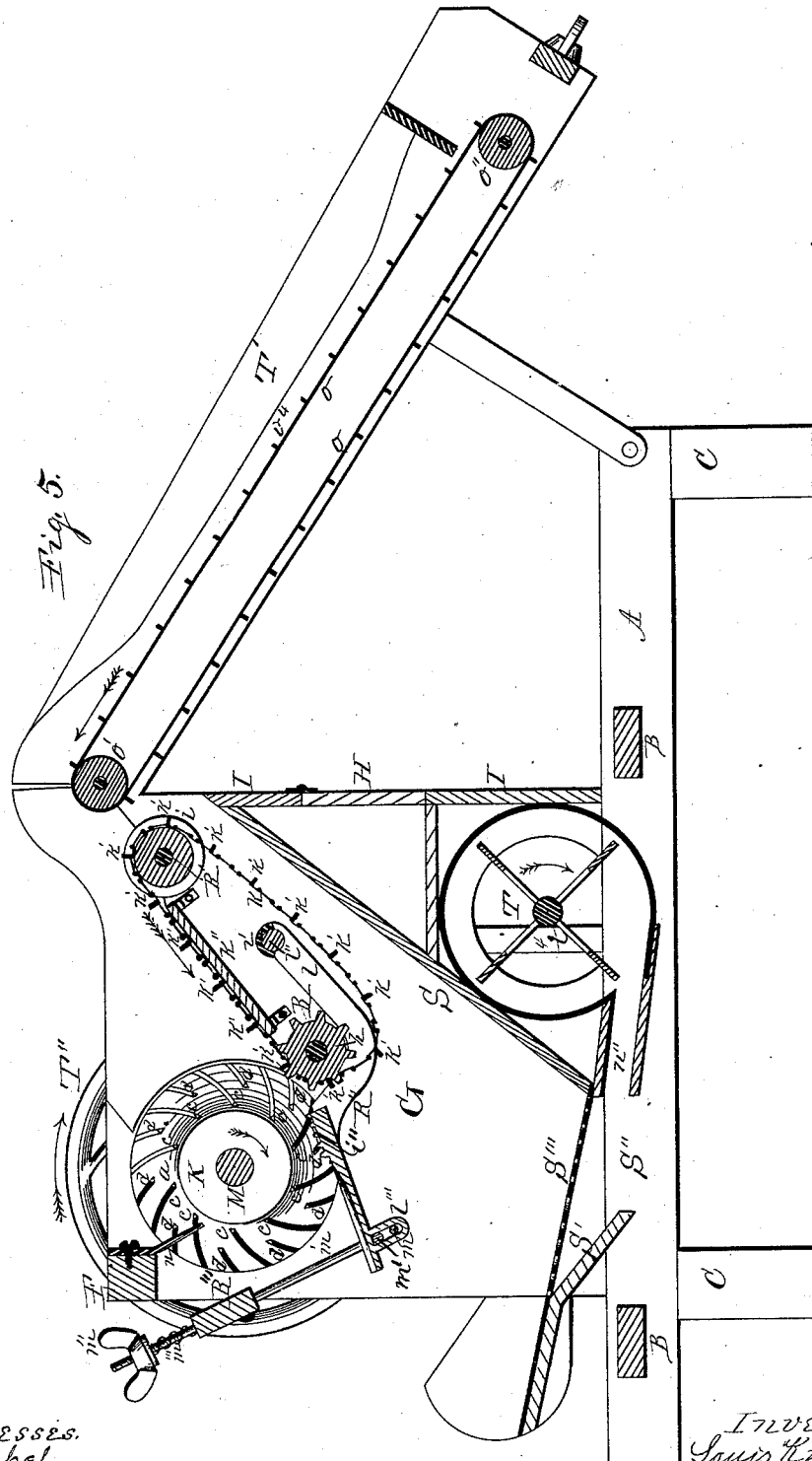
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L. KNAUER.
CORN SHELLER.

No. 307,310.

Patented Oct. 28, 1884.



Witnesses.
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INVENTOR.
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UNITED STATES PATENT OFFICE.

LOUIS KNAUER, OF MENDOTA, ILLINOIS.

CORN-SHELLER.

SPECIFICATION forming part of Letters Patent No. 307,310, dated October 28, 1884.

Application filed May 1, 1883. (No model.)

To all whom it may concern:

Be it known that I, LOUIS KNAUER, a citizen of the United States, residing in the city of Mendota, in the county of La Salle, in the State of Illinois, have invented new and useful Improvements in Corn-Shelling Machines, of which the following is a specification.

This invention relates to that class of corn-shelling machines known as "power-shell-ers," but capable of use in other forms of shelling-machines; and the object of this invention is to produce a more efficient machine at a less cost; and to this end I have embodied my improvements in the machine represented in the accompanying drawings—

Figure 1 of which is a plan view; Fig. 2, an elevation of the delivery end. Fig. 3 is an elevation of the side on which the main driving-gear train is mounted; Fig. 4, an elevation of the side on which the fly-wheel is mounted. Fig. 5 is a vertical lengthwise central section. Figs. 6 and 7 show the contiguous working-faces of the shelling-disks. Fig. 8 is an isometrical representation of a guard-plate, and Fig. 9 is an isometrical representation of a spring-actuated toothed shelling-lever.

In the figures, A represents lengthwise sills, and B transverse sills suitably framed, forming a base-frame rectangular in form. This base-frame is supported on posts C, framed into the under side of the side sills near the ends thereof.

At D are represented corner posts framed into the upper face of the lengthwise sills, from which they rise to a suitable height, and are connected on the sides of the frame about midway of their height by beams E, framed into the posts. The corner posts of the delivery end of the machine are connected at their upper ends by means of a transverse beam, F. The inner face of this frame, on the sides thereof, is provided with a vertical lining, G—in this instance of boards—securely fixed to the frame-timbers. The head end of this frame is also provided with a vertical wall consisting of a hinged door, H, and transverse boards I, securely fixed in place to the frame. These parts constitute the main supporting-frame of my improved machine, and are substantially such as have been heretofore employed in this class of shelling-machines.

K and L represent shelling-disks having the outer portions of their faces *a* and *b* concave, producing a gothic-formed peripheral groove when the concave faces of the disks are placed together. The concave portion *a* of the shelling-disk K is provided with a double series of V-formed ribs, consisting of alternate long ribs *c* and short ribs *d*, placed at equal distances and spirally inclined upon its concave surface. The concave portion *b* of the shelling-disk L is provided with a single series of V-formed ribs, *e*, placed at equal distances and spirally inclined upon its concave surface. The curved portions of these ribs upon the concave surfaces of the disks are such that when the disks are both laid with their ribbed sides up the curvature of the ribs will be in the same direction, and when mounted upon their shaft, with their concave sides together, the ribs on the respective disks will curve in opposite directions to cross each other, and when so mounted and made to revolve in the direction of the arrows the double series of ribs *c* and *d* on the disks K will operate to throw or carry from the center, and the single series of ribs *e* on disk L will operate to carry toward the center. A series of these disks are mounted in pairs upon a shaft, M, to which they are fixed in a manner to cause them to revolve therewith. This shaft with the shelling-disks mounted thereon is placed in the rear upper portion of the supporting-frame transversely thereof in such a manner that the disks thereon shall be within the vertical side linings of the frame, and the shaft being supported to revolve in bearings fixed to the frame outside of the vertical side linings.

N represents a beveled pinion mounted upon the outer end of the shaft M. The teeth of this pinion engage the teeth of the beveled wheel N', mounted upon the upper end of a vertical shaft, N'', supported to revolve in suitable bearings connected to the main frame. The lower end portion of this vertical shaft N'' is provided with a beveled pinion, P.

P' represents a beveled wheel mounted upon a horizontal shaft, P'', supported to revolve in suitable bearings fixed to the main frame. The outer end of the horizontal shaft P'' is fitted with a portion, P''', of a universal joint-coupling to connect with a tumbling-rod to connect the machine with the power employed.

This gear-train and its connection with the power is substantially the same as like parts of similar machines heretofore employed for like purposes.

5 **R** represents a sprocket-wheel shaft supported to revolve in bearings in the sides of the main frame. On this shaft within the main frame is mounted a series of sprocket-wheels, *h*, to revolve with the shaft. These sprocket-wheels are placed in such position 10 on the shaft as to revolve in the same vertical plane with the center of each pair of shelling-disks.

R' represents a carrying-shaft supported in 15 suitable bearings on the main frame. On this shaft is mounted a series of carrying-wheels, *i*, to revolve either with the shaft or to revolve on the shaft in the same lengthwise vertical plane with the sprocket-wheels.

20 **k** represents endless feeding chain-belts composed of links of a construction adapted to receive the teeth of the sprocket-wheels. These endless feeding-chain belts are provided at proper intervals with outwardly-projecting arms *k'*, and are mounted upon the 25 sprocket-wheels *h* and the carrying-wheels *i*, to move in the direction indicated by the arrow.

30 **k''** represents a sheeting placed under the upper branch of the chain feeding-belts extending across the machine between the sprocket and carrying wheels in position to prevent the chain-belts from sagging.

35 **R''** represents toothed shelling lever-bars, the inner portions of which are composed of two side bars, *l*, curved and suitably separated to span the sprocket-wheels and the feeding-chain belts. The inner or forward ends of these shelling-bars are provided with transverse tubular bearings *l'*, which receive the 40 transverse shaft *l''*, supported in the main frame. These shelling-bars, from their support upon the transverse shaft *l''*, extend rearward under the shelling-disks in such a manner as to receive the feeding-chain belts and sprocket-wheels between their side bars, *l*, and 45 the portions of the shelling-bars immediately under the shelling-disks are reduced in width to rise within the peripheral grooves of the shelling-disks, and their upper faces at the points within the grooves are provided with shelling-teeth oblique to the bars. The outer 50 or rear end of these shelling-bars are provided with loops *l'''*, of staple form, depending from their undersides, and receive a transverse bar, *m*, having its ends supported in the sides of the main frame, and which serves to limit the vertical movement of the rear ends of the 55 shelling-bars. The rear end portions of these shelling-bars are made concave on their upper faces, which serve to receive and conduct the cobs and corn passing from the rear of the machine and deliver them over their rear ends.

65 **m'** represents stirrups of suitable conformation to embrace the rear ends of the shelling-

bars. These stirrups are passed through the loops *l'''*, from which their arms rise on each side of the shelling-bars, and extend upward through a beam, *R'''*, fixed to the rear end of 70 the main frame. The end portions of the arms of these stirrups are screw-threaded, and are provided with thumb-nuts *m''*. The portions of the stirrup-arms between the beam *R'''* and the thumb-nuts *m''* are provided with 75 spiral springs *m'''*, which serve to hold the free or rear ends of the shelling-bars in their highest position, or in their position nearest the shelling-disks, but in such a manner as to permit the shelling-bars to vibrate vertically 80 within the limits of the devices to adapt the machine to shell ears of corn differing in size, and by means of the thumb-screws the shelling force of these bars can be varied by increasing or lessening the spring force. **n** represents 85 guard-plates of a pointed construction to enter the peripheral grooves in the shelling-disks. These guard-plates are fixed to the transverse beam *R'* of the main frame in position thereon to permit their depending pointed 90 ends to enter the peripheral grooves in the shelling-disks, and are employed for the double purpose of preventing cobs being carried up over the shelling-disks in the rear of the machine, and also to prevent corn being thrown 95 over the disks.

n' represents vertical walls rising on the sides of the feeding-chains, forming a channel-way to receive and conduct the corn carried 100 by the chains endwise into the shellers.

S and **S'** represent inner inclined walls extending across the machine, and inclining toward each other in hopper form, having a central opening, **S''**, to permit the passage of the 105 shelled corn.

S''' represents a screen placed over the central outlet-openings, **S''**.

T represents a fan having its shaft *t'* mounted to revolve in suitable bearings in the main frame. The outlet-opening *n''* of this fan-case 110 is such as to direct the current of air delivered from the fan between the screen and rear inclined wall, *s'*, to cause the air to rise through the screen, to separate the dust and other light impurities from the shelled corn and discharge 115 them from the rear of the machine.

T' represents an elevator of the usual form, consisting, essentially, of endless carrying-belts *o*, fitted with transverse battens, and mounted upon carrying-rollers *o'* and *o''*, to 120 move in a separate guideway, formed by vertical outside walls, *o'''*, and inner division-walls, *o'*. This elevator is connected with and adjustably supported upon the main frame of the machine to elevate the corn to be shelled 125 substantially in the same manner that like elevators are connected and employed in like machines.

p represents a pinion mounted upon the shaft *M* of the shelling-disks, and its teeth engage the teeth of the wheel *p'*, mounted upon 130 the outer end of the sprocket-wheel shaft *R*,

to impart motion to the endless carrying-chains to deliver the corn to the shellers. The disk-supporting shaft M is also provided with a pulley, p'' , which is connected by a belt, p''' , with the pulley p^4 on the shaft t^4 of the fan T.

T' represents a fly-wheel mounted on the outer end of the shaft M, on which the shelling-disks are mounted.

t represents a sheave fixed on the outer end of the sprocket-wheel shaft R, and connected by a belt, t' , with a sheave, t'' , fixed on the outer end of the shaft of the upper carrying-roller, o' , of the elevator.

From the foregoing it will be seen that if motion be imparted to the machine through the universal-joint connection P''' that motion will be transmitted to the several parts by means of their gear or belt connections, causing them to move in the direction indicated by the arrows, from which it will be seen that corn placed upon the carrying-belts at the foot of the elevator will be elevated and deposited on the endless-chain feeding-belts, and by them will be fed or carried into the shellers. It will further be noticed that the action of the double series of V-formed shelling-ribs on the disks K will be outward, or from the center, to depress the ear of corn downward against the shelling-bar in passing through the shellers, and the single series of V-formed shelling-ribs on the disk L will exert a lifting action upon the ear of corn, and these opposite actions will operate in unison to cause the ear of corn to revolve axially in its passage through the machine, and the combined opposite actions of the disks, in connection with the toothed shelling-bar, will operate to strip the corn from the cob with certainty and with great rapidity.

In the construction of my improved shelling-machine I prefer to proportion the driving mechanism in such a manner that the endless-chain feeding-belts, located between the shelling mechanism and the delivery end of the

elevators, shall move at a velocity less than the velocity of the shelling mechanism, that the corn may be entirely stripped from the cob before being forced through the shellers, and that they shall move at a greater velocity than the elevator-belts to prevent clogging the shellers by the accumulation of corn on the feeding-belts.

I claim as my invention—

1. A rotary sheller consisting of independent disks whose contiguous faces are concaved to form a groove, one of said disks having alternate long and short spiral ribs, while the other disk is formed with oppositely-curved ribs, substantially as set forth.

2. The combination, with the rotary shelling-disks, of a shelling-bar pivotally secured at its inner end, formed with teeth projecting between said disks, and inclined and concaved at its outer end, and yielding supporting devices, substantially as set forth.

3. The combination, with the shelling-disks and the sprocket-wheel adjacent thereto, of a curved shelling-bar pivoted at its inner end, and extending below said wheel, and projecting upwardly in rear of said wheel to allow the teeth of the bar to enter between the disks, and yielding adjusting devices, substantially as set forth.

4. The combination, with the rotary disks and the adjacent cross-bar of the machine, of rigid guard-fingers removably secured to said cross-bar to enter the space between the disks, substantially as set forth.

5. The combination, with the rotary disks and the sprocket-wheels R R', of the endless feed-belts arranged at an angle to said disks, and provided with arms k' , and the elevator-belts o , substantially as set forth.

LOUIS KNAUER.

Witnesses:

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GEO. L. LAUTERBACH.