(No Model.) 3 Sheets—Sheet 1.

G. PACI.

MACHINE FOR SHELLING PEAS.

No. 433,302. Patented July 29, 1890.

Fig. 1.

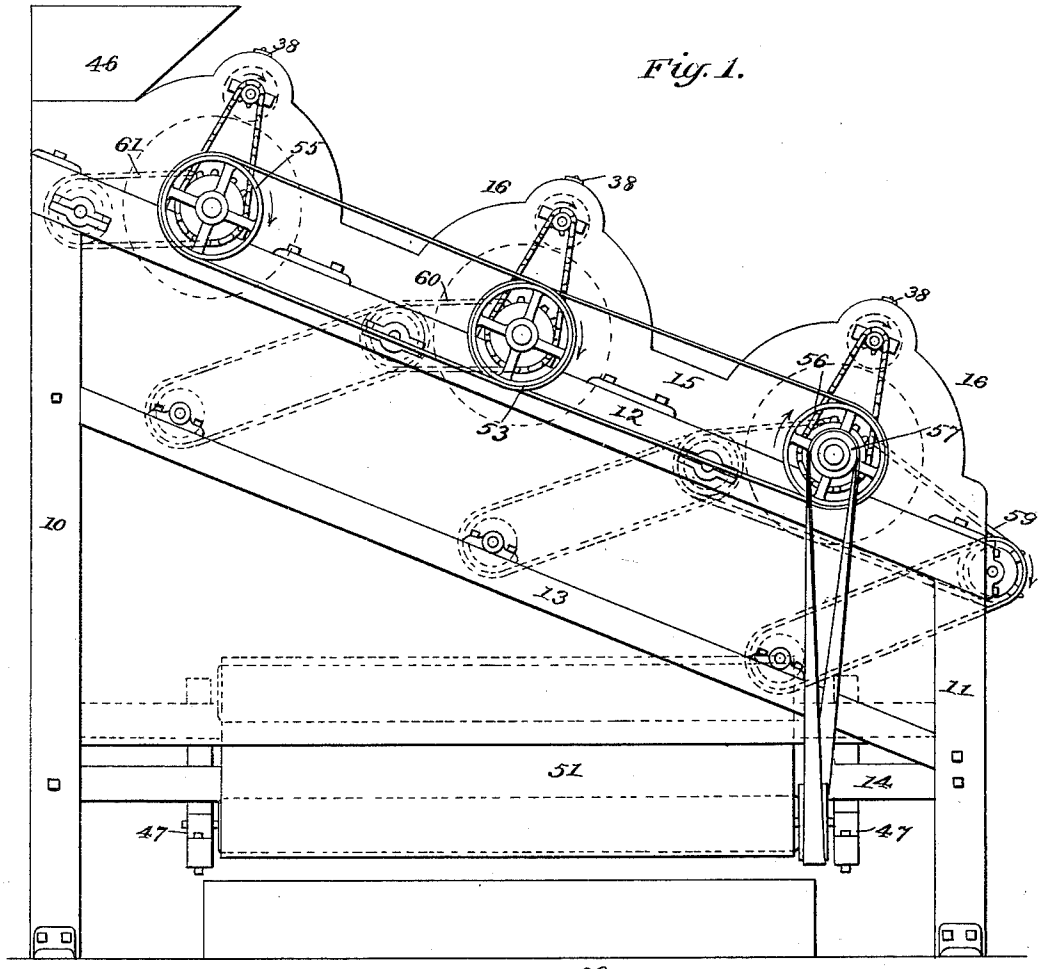
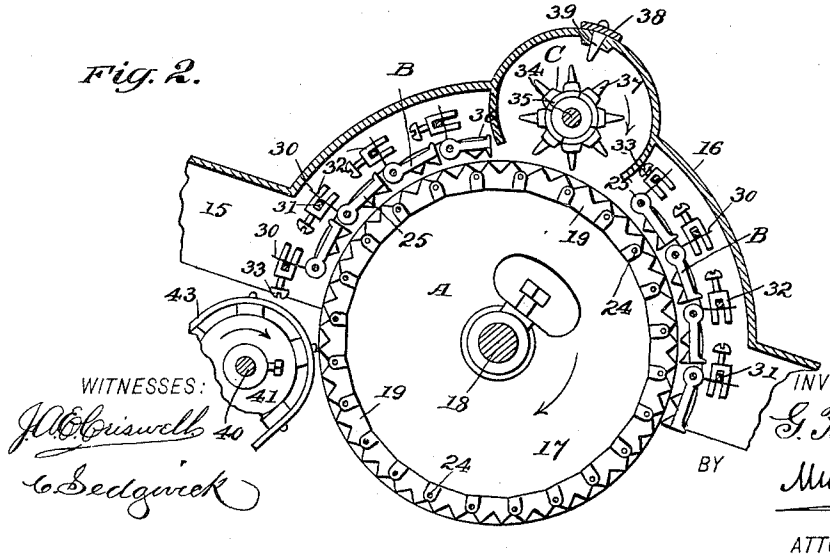


Fig. 2.



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Fig. 3.

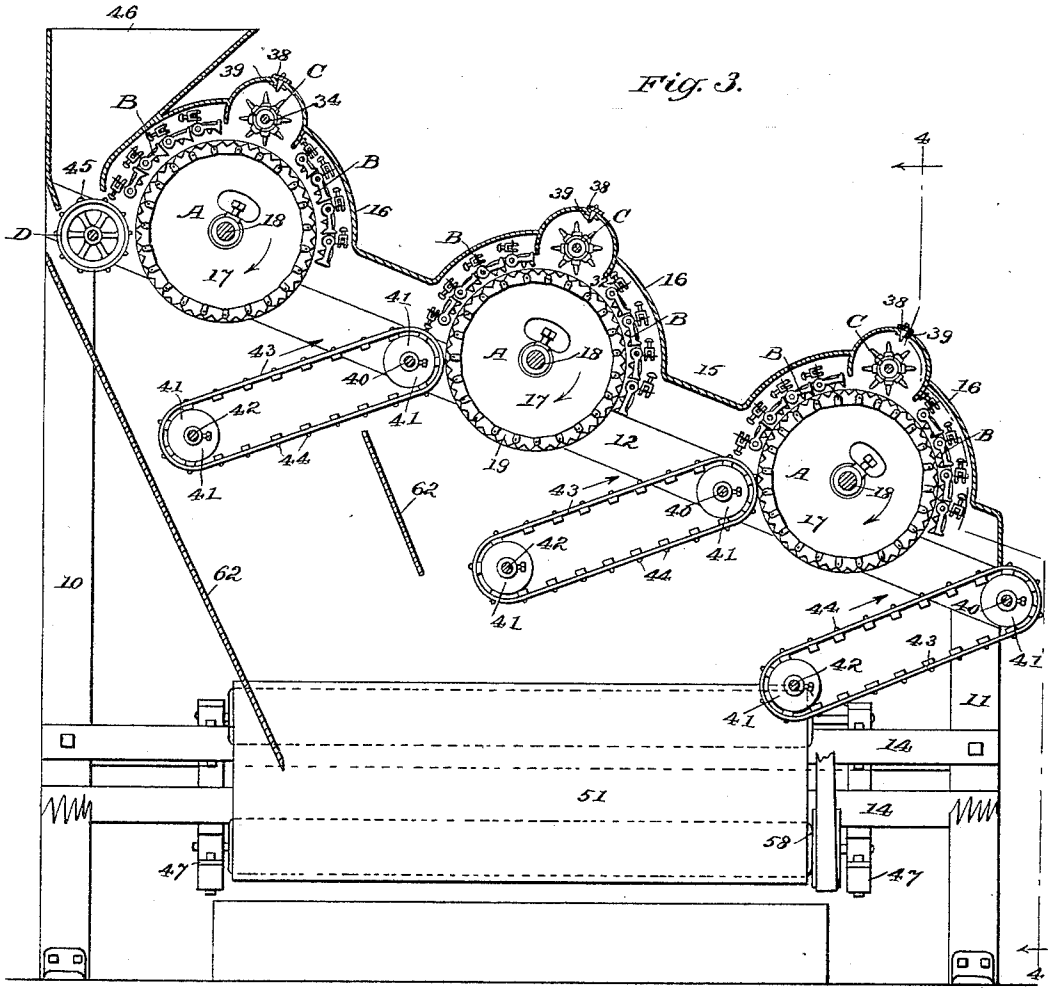
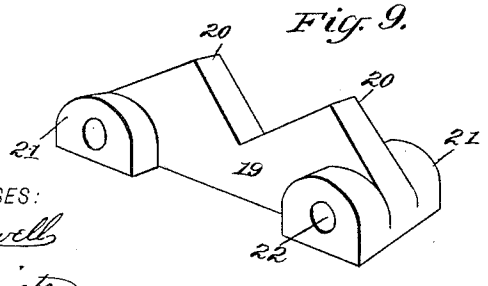


Fig. 9.



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Fig. 4.

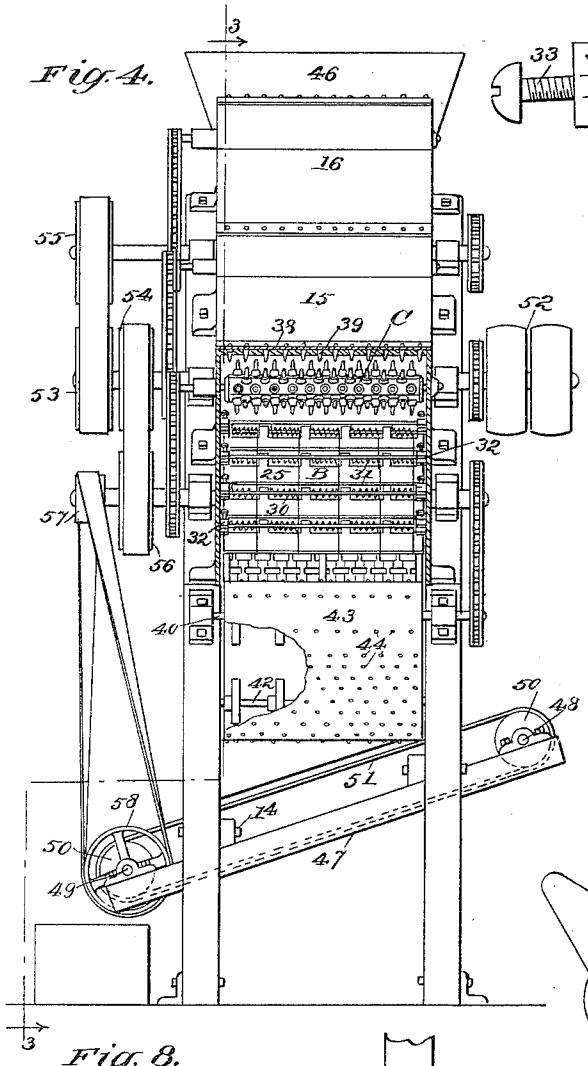


Fig. 5.

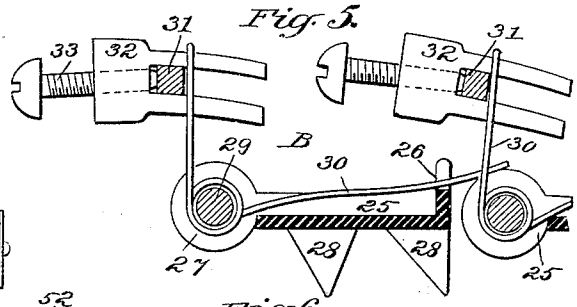


Fig. 6.

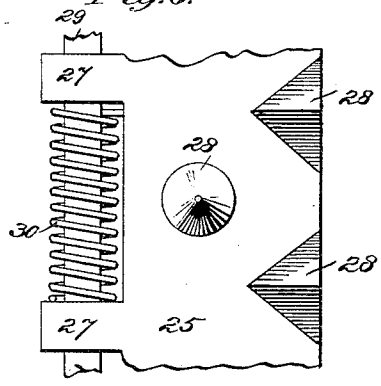


Fig. 7.

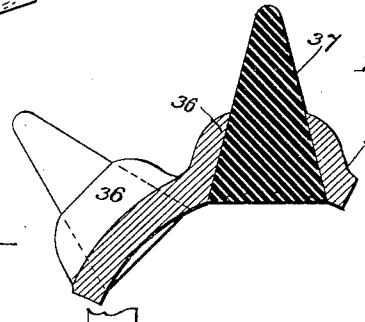
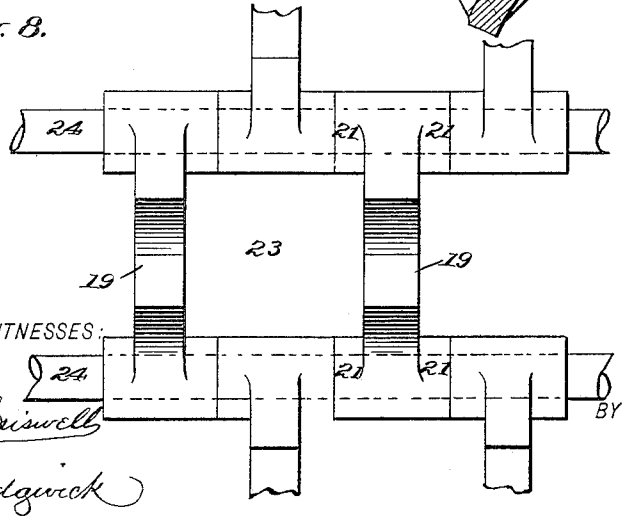


Fig. 8.



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UNITED STATES PATENT OFFICE.

GIUSEPPE PACI, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO GEROLAMO CELLA AND ESTA FRIEDMAN, BOTH OF SAME PLACE.

MACHINE FOR SHELLING PEAS.

SPECIFICATION forming part of Letters Patent No. 433,302, dated July 29, 1890.

Application filed March 12, 1890. Serial No. 343,591. (No model.)

To all whom it may concern:

Be it known that I, GIUSEPPE PACI, of New York city, in the county and State of New York, have invented a new and useful Improvement in Machines for Shelling Peas, of which the following is a full, clear, and exact description.

My invention relates to an improvement in machines for shelling peas, and has for its object to provide a means whereby green peas in the pod may be introduced in quantities into the machine and the peas cleaned and expeditiously separated from the pods irrespective of the size of the latter; and a further object of the invention is to provide a means for discharging the pods and the shelled peas separately from the machine into convenient receptacles.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters and figures of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the machine. Fig. 2 is an enlarged vertical section through the shelling mechanism. Fig. 3 is a vertical section on line 3 3 of Fig. 4, and Fig. 4 is a section on line 4 4 of Fig. 3. Fig. 5 is a detail sectional view of the upper set of shelling-teeth detached, and Fig. 6 is a bottom plan view of a portion of said teeth. Fig. 7 is a transverse section through a portion of the distributing-drum. Fig. 8 is a plan view of a portion of the lower shelling-drum, illustrating the application of the teeth thereto; and Fig. 9 is a perspective view of one of the teeth of the lower shelling-drum detached.

The frame of the machine consists of two rear uprights 10 and two shorter front uprights 11, each pair being preferably connected by rods, and the two pairs by inclined upper side beams 12, parallel intermediate beams 13, and lower straight beams 14, one of the latter being placed higher than the other. The frame of the machine is covered at its top by a housing 15, extending from end to end, having formed therein a series of domes 16. In each of the said domes 16 shelling mechanism is located, and as the shelling mechanism of each of the domes is identical I will describe the construction of the mechanism contained in the first dome only. The mechanism consists in a shelling-drum A, a series of adjustable teeth B, arranged at each side of said drum, and a distributing-drum C, placed between the adjustable teeth and over the top of the shelling-drum.

The shelling-drum is constructed of a series of disks 17, secured firmly to a shaft 18, journaled in suitable bearings upon the upper inclined beam 12 of the frame, each of said disks being preferably provided with an opening immediately above the aperture through which the axle passes to enable a set-screw to be passed through a portion of the disk and into the shaft. In this manner the disks are firmly secured to the shaft and turned therewith.

The teeth 19, composing the peripheral surface of the drum, are constructed as illustrated in detail in Fig. 9. The said teeth are preferably made of flexible or yielding rubber, and comprise a body portion having its upper edge formed in two, preferably triangular, spurs 20, and at each end of this body at each side an offset 21 is formed, having a flat outer face, and an opening 22 is produced in the ends of the teeth extending through the offsets and through the body. The teeth are arranged as shown in Fig. 8, being so placed as to form between each two teeth a rectangular space 23, and when the teeth are so arranged they are secured to the disks 17 by passing rods 24 through the openings 22 of the teeth, which rods are also passed through the intermediate disks 17 and are secured in any suitable or approved manner to the end disks. In this manner the outer face of the drum A is formed. The upper teeth B are arranged to correspond with the circular surface of the shelling-drum, and the said upper flexible teeth consist of a strip 25, of flexible rubber, of sufficient length to extend from end to end of the dome 16, and upon the upper surface

of the rubber strip, at its upper side, a flange 26 is formed, which flange extends upward at a right angle to the body of the strip, and at the opposite side edge of the said strip a series of spaced knuckles 27 is produced. The strip 25 may, however, be made in sections, if desired. Upon the lower surface of the strip a series of spurs 28 is produced, the said spurs being arranged, preferably, to extend downward from the flanged end of the strip, and also from its center portion, the center spurs being arranged intermediately of the outer spurs, as best shown in Fig. 6. Each toothed strip 25 is held within the dome 16 over the periphery of the shelling-drum 17 by passing a rod 29 through the knuckles 27, which rod at its extremities is secured to the ends of the dome, as best shown in Fig. 4. Around the rod 29, between each of the knuckles 27, a spring-wire 30 is coiled, one member of which wire extends over the upper face of the strip to a contact with the flange 26 thereof, and the other end of the wire is made to pass vertically upward to a contact with one side face of an adjusting-bar 31, which adjusting-bar is held to slide at its ends in a slotted casting 32, one of which castings is secured to each end surface of the dome, and each casting 32 is provided with an adjusting-screw 33, passed through one end to a contact with the adjusting-bar 31, as best shown in Fig. 5. Thus by manipulating the screws 33 of the castings 32 to press the adjusting-bar upward the said bar forces the vertical member of the spring 30 over in the direction of the toothed strip 25 and causes the horizontal member contacting with said strip to press downward more or less hard upon the strip, whereby when the strip is pressed upward it is quickly returned. The space between the adjustable teeth and the fixed teeth upon the shelling-drum may be increased by causing the adjusting-bar 31 to slide downward, and thereby relieve the vertical member of the spring 30 from tension.

Four or more of the adjustable toothed strips 25 are placed at each side of the shelling-drum A, and each toothed strip is provided with an adjusting-bar and a series of springs 30, operated in the manner above described.

Between the two sets of adjustable toothed strips B, above the shelling-drum A, the distributing-drum C is located, as heretofore described, the axle or trunnions of which drum are journaled in the ends of the dome 16, and the said drum is not only intended as a distributing-drum, but also serves to clean the shelling-drum as it lifts the pea-shells therefrom. This distributing-drum C is of peculiar construction, and is built in the following manner: A cylindrical body 34, of wood or other material, is attached to the axle, spindle, or trunnions, and the peripheral surface of the body is covered by a series of plates 35 of sufficient length to extend from end to end of said body. The plate-sections are secured to the body in any suitable or approved manner, and each plate-section is formed with preferably two rows of sockets 36, the interior bore whereof is conical, and the said sockets are so arranged that one row will be intermediate of the other. In each of the sockets 36 a flexible rubber nipple 37, conical in form, is inserted, which nipples project beyond the upper surface of the sockets, as shown in Figs. 2 and 7, and are held in position by contact with the body of the drum when the plate-sections are secured thereon.

Immediately over the distributing-drum C a longitudinal slot is formed in the dome, which slot is covered by a strip 38, of any approved material, which strip is provided upon its under face with a series of flexible teeth 39, which teeth project downward within the dome, as shown in Fig. 3.

Between the first and second shell-drums A, near the second drum, a shaft 40 is journaled in the upper inclined beams 12, upon which shaft a series of pulleys 41 is attached, and upon the intermediate inclined beam 13 another shaft 42 is journaled, the said shaft 42 being located, essentially, beneath the first shelling-drum A. This shaft 42 is also provided with a series of attached pulleys 41, and over the pulleys 41 of each of the shafts 40 and 42 an endless apron 43 is fitted, which apron is preferably provided upon its under face with a series of slats and upon its outer face with a series of pin-like projections 44.

A second set of shafts, corresponding to the shafts 40 and 42, and an endless apron, similar to the one described, are provided between the second and third shelling-drums, and a third set of shafts and an apron are placed in front of the last drum.

Immediately in front of the first drum A a feed-drum D is journaled in the frame, the said feed-drum being provided on its periphery with a number of teeth or projections 45, and immediately over the feed-drum a hopper 46 is placed. Upon the under face of the lower horizontal beams 14, near each end thereof, beams 47 are secured, which extend beyond both sides of the machine, and as the horizontal frame-beams 14 are placed one below the other the beams attached thereto are made to assume a downwardly-inclined position. Upon the ends of the inclined beams 47 counter-shafts 48 and 49 are journaled, which shafts have attached thereto pulleys 50, and over said pulleys an endless belt or apron 51 is placed, which apron is of sufficient length to extend, preferably, beneath all of the shelling-drums A.

The drive-pulleys 52 are placed upon one end of the center shelling-drum shaft, as shown in Fig. 4, and upon the opposite end of said shaft two pulleys 53 and 54 are secured, the pulley 53 being connected by a belt with a pulley 55, secured to the shaft of the first or upper shelling-drum, whereby the said drum is rotated, and the pulley 54 is belted to a pulley 56, secured to the shaft of the lower shelling-drum, whereby said drum

receives motion from the drive-pulleys. Upon the lower shelling-drum shaft a small pulley 57 is also secured, which is belted to a pulley 58, attached to the counter-shaft 49, and through the medium of this belt-connection the lower endless apron 51 is driven.

Each distributing-drum C is driven from the shaft of the shelling-drum immediately beneath it, the connection being effected by sprocket-wheels and chain belts, as illustrated in Fig. 1, and the upper shafts 40 of the aprons 43 are driven by means of chain belts, the two lower drums being driven by a single belt 59, which passes over sprocket-wheels upon the end of the lower shelling-drum shaft and upon the extremities of the apron-shafts 40 the upper apron being driven by a belt 60, which passes over a sprocket-wheel upon its upper shaft 40 and a similar wheel upon the center shelling-drum. The feed-drum D is rotated by a belt-connection 61, passing over a sprocket-wheel attached to the upper shelling-drum shaft and to the shaft of the feed-drum, as best shown in dotted lines in Fig. 1.

In operation the flexible teeth of the first drum at its front are set a predetermined distance from the teeth upon the periphery of the upper shelling-drum, and the adjustable teeth in rear of the said drum are set closer. Each set of adjustable teeth used in connection with the intermediate and lower shelling-drums are so adjusted that the space between the shelling-drum and said adjustable teeth will be diminished until the last set of adjustable teeth virtually contact with the teeth of the lower shelling-drum. The peas in the pod are placed in the hopper 46 and the machine is set in operation. The feed-drum D carries the pods upward between the adjustable teeth B and the upper shelling-drum A, and as all the shafts turn to the right the pods are passed from the first drum to the upper endless apron 43 and carried by said apron to the second drum. They are delivered from thence to the intermediate apron and conveyed to the lower drum, from which the pods drop, with all the peas extracted, upon the lower apron, and are carried thereby to the rear of the machine and deposited in any suitable receptacle placed there to receive them. The large pods, when brought in contact with the first drum, are opened and the peas loosened therefrom and caused to drop through the openings 23 of the drum A down upon the lower apron 51, from whence they are delivered to a suitable receptacle placed in front of the machine. The smaller pods are carried up by the distributing-drum C and delivered to the drum A between its peripheral surface and the second set of adjustable teeth, and the pods that are too small to be opened upon the first drum are opened when delivered to the second drum, while those having escaped being opened at the second drum will be opened at the third drum. Any number of these drums may be provided; but three are ordinarily deemed sufficient. The interior of the machine may be divided into compartments, if desired, by suitable partitions 62, as shown in Fig. 3.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a hollow shelling-drum, the peripheral surface whereof is provided with flexible teeth and openings between the said teeth, of yielding toothed strips arranged at each side of the drum and capable of adjustment to and from the same, substantially as and for the purpose specified.

2. The combination, with a hollow shelling-drum, the peripheral surface whereof is provided with flexible teeth and openings between said teeth, of spring-pressed toothed strips arranged at each side of the upper portion of the drum, substantially as shown and described.

3. The combination, with a shelling-drum provided with flexible peripheral teeth and openings between said teeth, of a series of flexible toothed strips adjustably located at each side of the drum, a smaller drum journaled above the shelling-drum between the side adjustable toothed strips, the said upper drum being provided with a series of peripheral flexible fingers, substantially as and for the purpose specified.

4. The combination, with a shelling-drum provided with flexible peripheral teeth and openings between said teeth, of a series of flexible toothed strips adjustably located at each side of the drum, a smaller drum journaled above the shelling-drum between the side adjustable toothed strips, the said upper drum being provided with a series of peripheral flexible fingers, and stationary fingers arranged above the smaller drum, substantially as and for the purpose specified.

5. The combination, with a shelling-drum provided with a series of flexible peripheral teeth and openings between said teeth, flexible finger-carrying strips located at each side of the shelling-drum, and mechanism, substantially as shown and described, for adjusting the fingers of the strips toward and from the teeth of the drum, of a smaller drum located above the shelling-drum between the side flexible finger-carrying strips, the said smaller drum being provided with a series of flexible peripheral fingers, stationary flexible fingers arranged above the finger-carrying drum, and an endless apron located beneath the shelling-drum, substantially as shown and described.

6. The combination, with a series of shelling-drums provided with flexible peripheral teeth and openings between said teeth, flexible finger-carrying strips arranged at each side of each shelling-drum and capable of adjustment to and from the drum, of a flexible finger-carrying drum journaled above each of the shelling-drums, stationary fingers arranged above each of the finger-carrying

drums, and endless aprons arranged beneath and between the shelling-drums, all combined for operation, substantially as and for the purpose specified.

7. In a pea-shelling machine, a shelling-drum consisting of a shaft, disks mounted upon said shaft, and a series of flexible teeth provided with offsets upon their side faces at each end, the said teeth being arranged to provide openings between them, and rods passed through the ends of the teeth and secured to the said disks, substantially as and for the purpose specified.

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Witnesses:
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