(No Model.)

4 Sheets—Sheet 1.

J. M. WILLIAMS.

PEANUT CLEANING MACHINE.

No. 436,645. Patented Sept. 16, 1890.

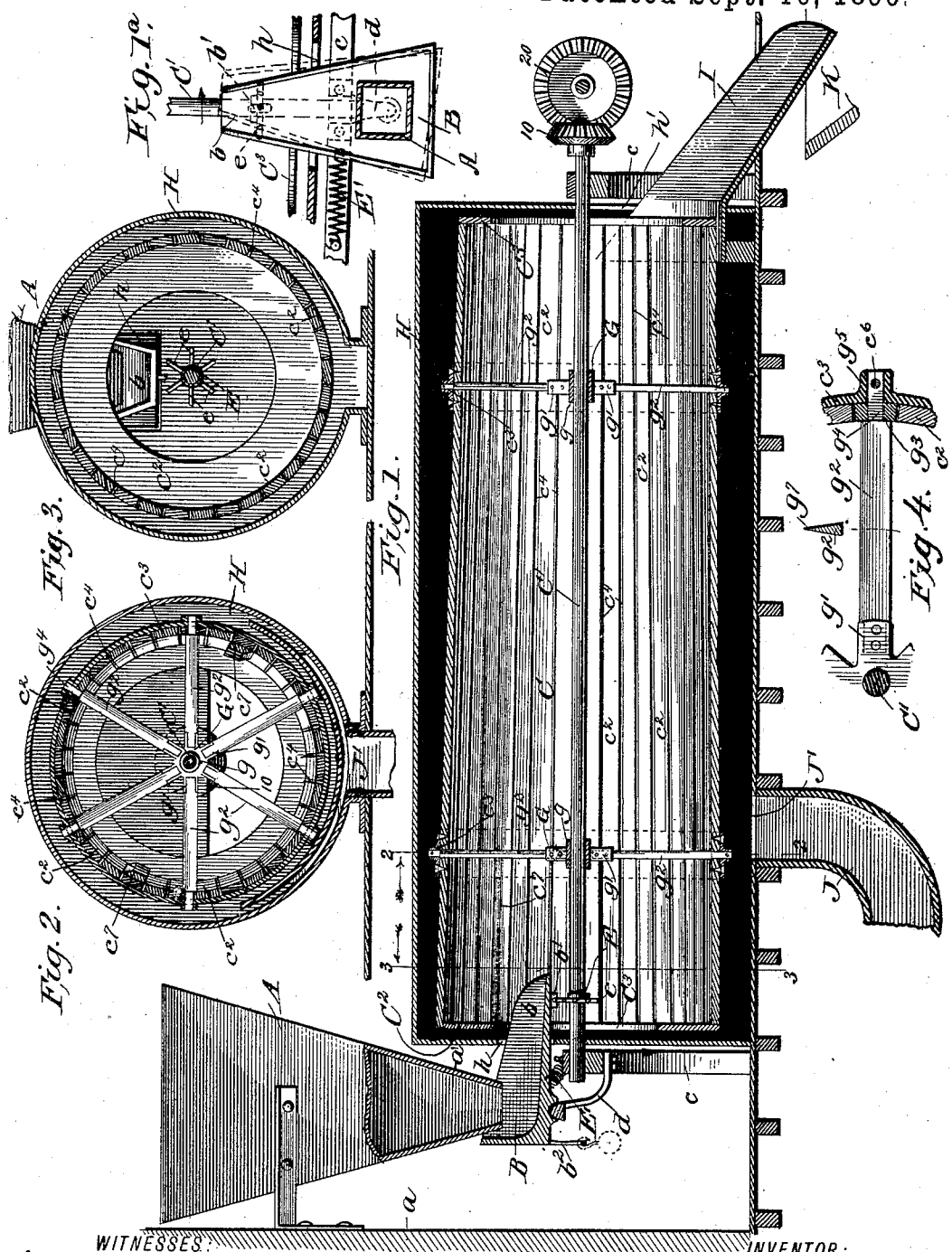


Fig. 1.

Fig. 3.

Fig. 2.

Fig. 4.

Fig. 1a.

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(No Model.)

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Fig. 7.



Fig. 6.

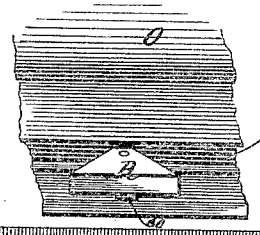


Fig. 5.

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(No Model.) 4 Sheets—Sheet 3.

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PEANUT CLEANING MACHINE.

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Fig. 8.

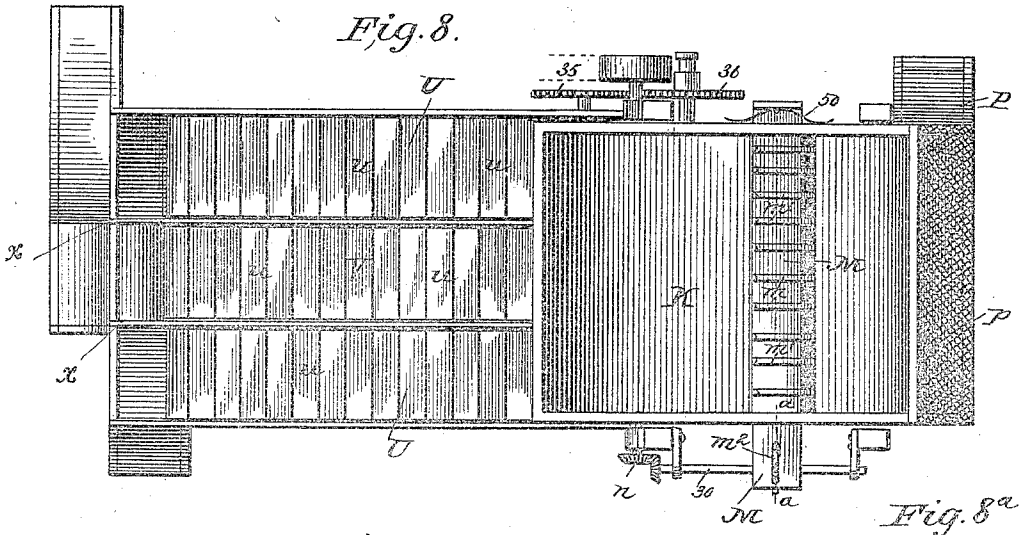


Fig. 8a

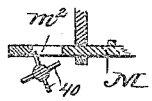


Fig. 10.

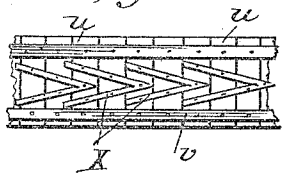
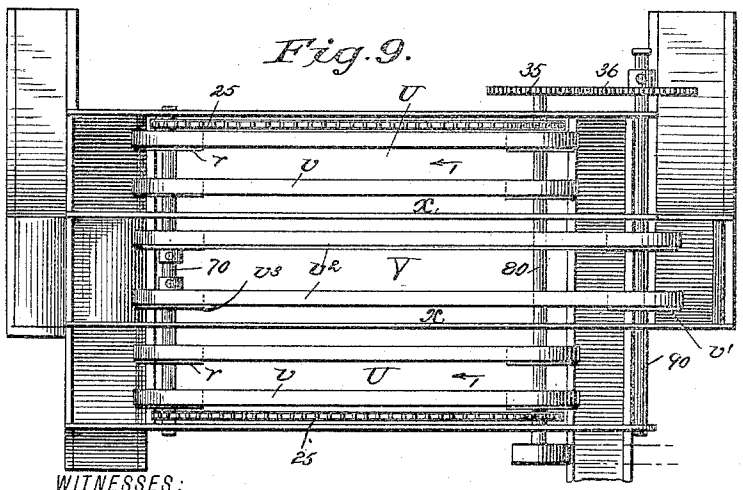


Fig. 9.



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(No Model.)

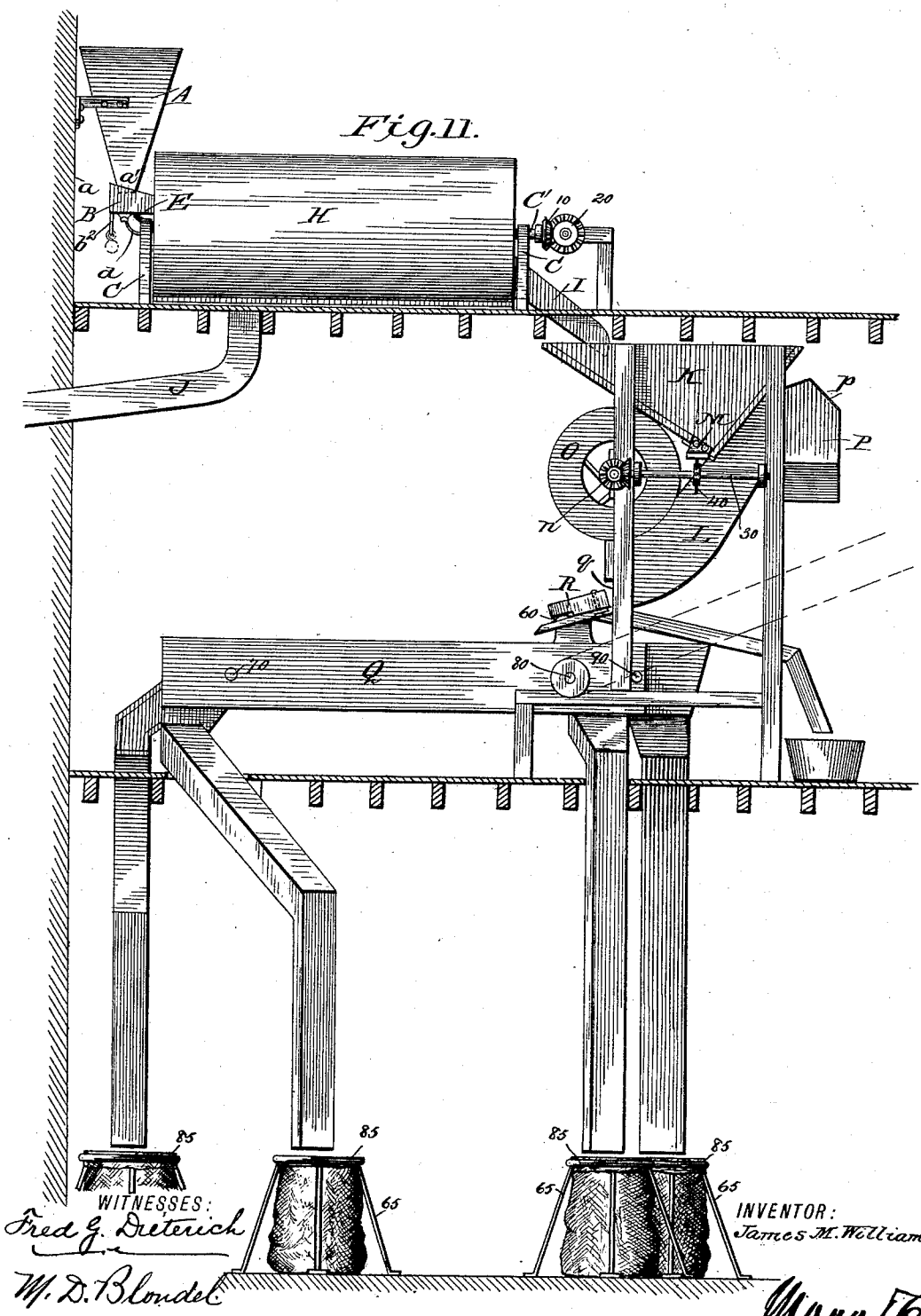
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PEANUT CLEANING MACHINE.

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Fig. 11.



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UNITED STATES PATENT OFFICE.

JAMES M. WILLIAMS, OF PETERSBURG, VIRGINIA, ASSIGNOR TO WILLIAMS & SON, OF SAME PLACE.

PEANUT-CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 436,645, dated September 16, 1890.

Application filed June 4, 1890. Serial No. 354,270. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. WILLIAMS, residing at Petersburg, in the county of Dinwiddie and State of Virginia, have invented a new and Improved Peanut-Cleaning Machine, of which the following is a specification.

My invention relates to that class of machines in which the peanuts are first fed into a revolving cylinder, which serves to partially separate the good nuts from the dirt, pops, and trash, and which also serves to partially polish them. From this cylinder the nuts and a greater portion of the dirt, pops, and trash are fed into separating devices, from whence the different qualities of nuts are fed onto an endless belt or table, to the sides of which the "pickers" stand and separate the different qualities of the nuts and drop them into different discharging-troughs, which extend, preferably, below the floor and lead the nuts into bags or other receptacles.

I have found from practical experience with machines of the character described (which are in general use in the peanut-growing districts) that their work is far from satisfactory, as no means are provided for preventing the shelled peas, (which may be fed into the cylinder or which may become separated from the hull during the operation of cleaning and polishing) from falling through the slatted side walls of the cylinder and being drawn off with the dirt and fine dust when a suction-blast is used, or from becoming mixed with the mixed dirt and shells as they fall from the cylinder into a suitable receiver, from whence the said mixed shells, dirt, and peas are to be again placed in a cleaning device. My invention has for its object to avoid all of these objections and to produce a machine which will be of great capacity, which can be run continuously without causing any of the dust to be circulated in the rooms, wherein the dirt will be positively drawn from the nuts in the cylinder, so they will rub against each other and produce a smooth polished finish, and wherein none of the nuts or shells are allowed to be dropped through the side walls of the said cylinder.

It has also for its object to provide simple means for separating the pops and shells from the good nuts, for feeding the nuts onto two endless belts or tables, and providing an additional table, which is located intermediate of the two tables, whereby the pickers will always look direct at the table and pass the poorer quality of nuts from the end tables onto the center table.

It has further for its object to provide means whereby the nuts may be discharged to either end of the separating-table as the condition of the room may require.

Finally, my invention has for its object to provide certain details of mechanism whereby the machine will effectually serve to produce a finer quality of nuts than are now produced with a minimum degree of waste.

To this end my invention consists in certain novel features of construction and peculiar combination of parts, all of which will be hereinafter fully described in the annexed specification, and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal section of the peanut receiving, cleaning, and polishing cylinder, showing the feed-hopper and agitator-shoe connected therewith. Fig. 1^a is a detail plan view of the vibrating shoe. Fig. 2 is a transverse section of the cylinder, taken on the line 2 2, Fig. 1. Fig. 3 is a similar view on the line 3 3, Fig. 1. Fig. 4 is a detail view of one of the spider-arms, showing its connection with the cylinder shaft and rim. Fig. 5 is a longitudinal section of the separating devices. Fig. 6 is a detail view of the feed-gate hereinafter referred to. Fig. 7 is a detail view of the manner of holding the bag under the ends of the discharge-troughs. Fig. 8 is a top view of the separating devices. Fig. 8^a is a detail section on the line *a a*, Fig. 8. Fig. 9 is a detail top plan of the picking or separating tables. Fig. 10 is a detail view of a portion of the table-belts; and Fig. 11 is a side elevation of the entire apparatus, showing same in operative position.

For the sake of clearness I shall describe my invention beginning at the point where the nuts are first entered into the machine, following the course of the same through the machine, and explaining the construction of

the various details and operations thereof to the point where they are bagged ready for shipment.

By referring to Sheet 1 of the drawings, which illustrates the feed-hopper and the cylinder, which are usually located on one of the upper floors of the building, A indicates the receiving-hopper, which is made large to hold a great quantity of nuts at a time, and which is suitably secured to the wall *a* or other support at the receiving end of the cylinder, the lower end *a'* of which is contracted and projects into an inclined shoe or trough B, the inner end of which projects within the cylinder C, as shown.

The cylinder C, which is constructed in a manner presently described, has its shaft C' supported on cross-pieces *c c*, and has an end wall C^2 formed of an annular rim about fourteen inches wide, whereby a central opening C^3 is formed, into which the end *b* of the shoe B projects, and from which the nuts fall into the interior of the cylinder. To provide means whereby a continuous feed is assured or the feed entirely cut off, I pivot said shoe upon an arm *d* for vertical and lateral movement and form the inner end of the shoe with a depending lug *b'*, with which engages a series of fingers *e e* on a hub E, secured to the shaft C', (see Fig. 3,) by means of which the shoe is rapidly swung in one direction, a spring E' being employed, which normally draws the shoe in the opposite direction. It will be understood that any number of the fingers *e* may be employed, whereby the number of vibrations of said shoe may be governed, and as the cylinder is revolved at a great speed the vibrations of said shoe will be rapid and abrupt, thereby always assuring a continuous feed when desired.

In case it is desired to temporarily stop the feed of the nuts while the cylinder is in motion, I provide the rear end of the shoe with an arm or lug b^2, to which a suitable weight can be attached, which will overbalance the shoe and lift its end *b* from engagement with the knocking-arms *e*.

The cylinder C is constructed, preferably, by providing a series of longitudinal slats c^2 and securing them tightly together and holding them together by means of metallic bands c^3 c^3, fitted around the outside thereof. In the practical construction of my cylinder I make the same, usually, about twelve feet long, with a four-foot diameter at its receiving end and about three feet six inches diameter at its discharge end, whereby the cylinder is slightly cone-shaped, thus feeding the nuts slowly outward. Before or after the bands c^3 c^3 are slipped over the cylinder I saw between the meeting ends of the several slats, so as to make a series of longitudinal openings c^4 between the slats, which openings are about one-sixteenth of an inch wide, and which, while permitting all of the dirt or dust being drawn from the interior of the cylinder, are not large enough to permit any of the pops, shells, or peas being drawn therethrough, thus effectually preventing any loss of the peas.

The cylinder is supported on its shaft C' by means of two spiders G G, each of which consists of a metallic hub portion *g*, secured to the shaft C', formed with a series of socket-arms *g' g'*, into which fit the lower ends of wooden spider-arms g^2 g^2, which are usually about three inches wide, the upper ends of which are reduced at g^4 to form a shoulder g^3, the stems g^4 of which enter bosses c^5, formed on the bands c^3 c^3, and are held fast therein by the pins c^6, as shown, thereby forming a solid and substantial means for bracing the cylinder-body about the shaft.

As the cylinder is usually revolved at a high rate of speed and as the spider-arms g^2 engage the nuts transversely to their path of movement, it is necessary to provide that such arms do not break or carry the nuts upward. To this end I taper the arms g^2 in the direction of their movement (see Fig. 4) and make their edges sharp, as at g^7, whereby as the arms revolve they will cut between the nuts and gently push them apart, and thereby entirely avoid the danger of breaking them.

As the nuts while in the cylinder should be thoroughly tumbled, so that their shells shall have a polished finish, I provide on the diametrically-opposite inner faces of the cylinder longitudinal ribs c^7, beveled in the direction of the movement of the cylinder, which ribs serve to alternately engage the nuts and turn the lowermost nuts over and prevent same hanging to the bottom of the cylinder.

By forming the cylinder slightly cone-shaped it will be seen that while the nuts will be gradually fed to the discharge end of the cylinder a large quantity of the nuts will always remain at the larger end of the cylinder. For this purpose I form the end wall C^3 also of an annular ring about four inches wide, by means of which and the end wall C^2 a large amount of the nuts is always held on the cylinder.

As before stated, I form a series of longitudinal slots in the annular body of the cylinder, which, while being of a size sufficiently large to allow the dirt and dust to be drawn therethrough, are not large enough to allow of the passage therebetween of a pea, pop, or shell.

Disposed about said cylinder and arranged as nearly air-tight as possible is a casing H, formed with an opening *h* at one end sufficiently large to allow for the vibratory play of the feed-shoe B, and at its opposite end with an opening *h'*, through which the discharge-spout I passes, into which the nuts discharge from the cylinder, said opening *h'* also serving as the air-supply for suitable suction devices, (not shown,) which are connected to the end of a suction-spout J, which communicates with an opening J' in the floor beneath the cylinder. By this arrangement it will be seen that as a suction-blast is applied

to the spout J all the dirt and fine dust will be drawn from under the cylinder and discharged to a point outside of the room or building, it being understood, however, that the blast, while being of sufficient power to carry off the dust and dirt, will not draw in the loose peas, shells, and nuts.

Any suitable means—such as the gears 10 20—may be employed to operate the cylinder, which may be set for a high or low speed, as may be desired.

As the mixed nuts, shells, and strings drop into the spout I they are carried to the hopper K of the separating devices, which are most clearly shown in Figs. 5 and 8 of the drawings, by reference to which it will be seen that at the lower edge of the hopper is formed a discharge-opening *k*, of a size sufficient to allow them to gradually feed out into the inclined feed-chamber L, which leads the nuts to the separating-tables, presently referred to. At the mouth of the opening *k* I arrange an agitator device, which serves to keep the nuts in motion and prevents choking at this point, said device consisting of a longitudinal board M, held to slide reciprocally in guides *m m*, upon the upper face of which are arranged a number of transverse strips or fingers *m'*, which lap over the end of the board M and serve to project out to the edge of the chamber L, as shown.

Any suitable means may be provided for moving the board M back and forth; but I preferably employ the means shown in Figs. 8 and 8^a, which consists of a short shaft 30, which is geared with the fan-shaft *n*, and which is provided with radiating fingers 40, which engage the slotted end m^2 of the board M and serve to throw it out in one direction, a leaf-spring 50 being employed, which pulls it backward, thus constantly keeping the nuts at the discharge *k* in motion, and thereby preventing any danger of choking or breaking at this point.

Located just below the hopper is a fan-chamber O, which communicates with the chamber L, a large blast-opening *o* being provided, so that a light blast only is forced up into said chamber, the upper end of which is open and covered by a wire-cloth, said end also communicating with a laterally-arranged spout P into which the trash, strings, and shells fall, and from which they are discharged. Thus it will be seen that the dirt, which forms the major and heavier part of the trash being drawn away, as described, before it enters the hopper K, makes only a light blast necessary to force the lighter parts—such as the broken hulls, strings, &c.—which are blown up against the gauze top *p* and deflected into the spout P.

The lower end of the feed-chamber L stops over one end of the separating-tables Q, a feed-opening *q* being provided, centrally of which is located a pivoted deflector R, for a purpose presently explained. Just in advance of said deflector R, I form the bottom *l* of the chamber L with a transversely-adjustable section S, the inner end of which is formed with a slight projection *s*, which, while of a size sufficient to arrest the movement of a loose shelled pea, will not stop the movement of a hull. In adjusting said section the same may be placed to form an opening T entirely across the bottom *l*, of either one-eighth of an inch width, which would permit a loose "Spanish" pea to fall through it, or one-fourth of an inch width for a Virginia pea, thus effectually preventing any of the shelled peas falling onto the separating-board and mixing with the good peas.

The separating-tables, which are placed at the lower end of the chamber L, as stated, may be of any desired length, preferably about twelve to fifteen feet long, so that ten pickers may stand to each side thereof.

As before stated, it is my purpose to allow the pickers to always have their eyes on the tables and avoid the necessity of turning their attention away therefrom. To this end I form said table into three sections, the outer ones U U of which always travel in the same direction, while the inner one V is adapted to run either in the same or reverse directions with the end sections U U. Each of the table-sections is formed of a series of slats *u u*, secured upon two endless straps or belts *v v*, which pass over a series of rollers *r r*, journaled in the side walls of the table-frame, division-walls *x x* being provided between each section, which projects above the belts and prevents the nuts from being accidentally mixed.

Heretofore great trouble has been experienced in getting the belt to run true, and various means—such as grooved rollers, &c.—have been used to keep the belts from binding, none of which, however, would keep the belt in the position desired. I have found by employing the supplemental >-shaped strips X, which are each fastened to a series of wooden strips, and each wooden strip to at least two more of the >-shaped leather strips, that the belt will always be held to run true over its supporting-rollers.

The deflector R heretofore referred to is located centrally of the discharge-opening and is formed △-shaped, its apex projecting inward into the chamber L, while its base is of a width slightly greater than the central table V, said deflector serving when adjusted centrally of the opening *q* to cause the nuts to distribute equally onto each of the end tables U.

From practical experience in the art of peanut-cleaning I have found that women when steadily employed to pick out the black from the bright nuts as they pass along the tables U U and V get so accustomed to the use of their hands in a certain manner while working at one side of the table that when they are changed to the opposite side of the table the operation of picking is almost new to them, as they are obliged to change the motions of their hands. It is therefore the prac-

tice to employ them as what is termed "rights and lefts," and keep them always employed on the sides of the table to which they are accustomed. Machines which I have now in practical use usually employ ten pickers to each side of the table Q, thus forming two sets of workers, and as it frequently happens that one or more of either set may, through sickness or other reasons, not come to work, and as such persons are only skilled to their particular sets, it is necessary that, should the full ten be at work on one side and but eight on the other, more nuts be fed to the side where ten pickers stand than to the other table. To this end I pivot the deflector R so that it can be swung laterally, and thereby increase the feed-opening to one side and proportionately close it on the other side and cause the nuts to feed more to one side than the other, any suitable means being provided—such as the friction-spring 60, for example—which will hold the deflector in its adjusted position.

By reference to Fig. 9 of the drawings it will be seen that the shafts 70 80, on which the belt-carrying pulleys are mounted, are connected by means of the sprocket-chains 25 25, while the outer end of the shaft 80 is provided with a cog-gear 35, which meshes with a gear on a supplemental shaft 90, upon which are fixedly mounted a pair of pulleys v' v', over which pass the belts v^2 v^2, the other ends of which pass over pulleys v^3 v^3, loosely held on the shaft 70. Thus it will be seen that when the parts are adjusted, as shown in Fig. 8, the outer tables U U will discharge in the direction indicated by arrow marked 1, while the table V will discharge in the opposite direction. By the aforesaid arrangement it will be seen that the pickers can quickly pick out the poor or black nuts and place them onto the center table, whereby said nuts will be discharged into a separate chute.

When, however, it is desired that the center table shall discharge in the same direction as the outer table-sections, the pulleys v^3 are made fast to the shaft 70 and the gear 36 slid from contact with the gear 35 on the shaft 80. Any means may be employed to drive the tables, it being understood, however, that while I have not so shown it in the drawings the operating-gears are disposed under the table in such a manner that the clothes of the pickers will not become entangled therewith. It will also be seen that the tables are arranged to be run in either direction and that separate troughs are employed to lead the nuts down into the packing-room, the arrangement of such troughs being clearly understood by reference to the drawings.

As the peanuts fall into the troughs and as such troughs are of some length, I provide alternately-inclined deflectors 55 in the troughs, (see Fig. 5,) which serve to arrest the fall of the nuts and prevent their being broken.

As a final means for preventing any of the poor nuts which might accidentally pass down the chute or trough which discharges the good nuts I arrange a suitable bag-holding device, which is located so as to hold the mouth of the bag a short distance below the discharge end of the chute, thereby affording the attendant an opportunity of watching the nuts as they pass into the bag. Said device, which is clearly shown in Figs. 5 and 7, consists of the skeleton frame 65, formed with an annular rim 75, over which the mouth of the bag is placed, and which is held thereon by the band or ring 85, as shown.

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

1. The combination, with a cleaning-cylinder formed with a series of fine slits whereby the dirt and fine dust can escape and means for drawing said dust and dirt from the cylinder through said slits, of a combined fanning and separating device adapted to receive the nuts, shells, strings, and shelled peas from the cylinder, said separator formed with a discharge-chute, an endless picking-table adapted to receive the nuts from the chute, said chute formed with a shelled-pea arrester consisting of a transverse opening of a size sufficient to allow the loose peas to fall therethrough, and a discharge-trough connected with said opening, all arranged substantially as shown, whereby all the nuts and shelled peas will be discharged from the cleaning-cylinder separated from the loose chaff and strings and the loose peas from the good nuts before falling on the picker-table, substantially as described.

2. In a peanut-cleaning machine, the combination of the feed-hopper, the revolving polishing and cleaning cylinder, the vibrating shoe disposed intermediate the hopper and the cylinder, said shoe pivotally supported for lateral and vertical movement, the inner end b thereof projecting within the cylinder-chamber, knocker devices secured to the cylinder-shaft adapted to engage the said end b and vibrate the shoe in one direction of movement, the spring E′, for drawing it in a reverse direction, and means for overbalancing the front end b' of the shoe, whereby it will be held from engagement with said knocker devices, substantially as and for the purpose described.

3. In a peanut-cleaning machine, the combination, with the separator K and the picking-table, of the receiving-chamber L, disposed intermediately of the table and hopper and adapted to lead the nuts to the table, a device arranged in said chamber in advance of its discharge ends, adapted to arrest the loose peas and discharge them before they reach the table, said device consisting of a transverse opening in the bottom of the chamber L, said opening being of a width sufficient to allow of the passage of the loose peas, but not of the good nuts, and a transverse strip

arranged at the lower edge of said opening to check the passage of the said peas, substantially as shown, and for the purpose described.

4. In a peanut-cleaning machine, the combination, with the separator-hopper K and the picking-tables, of the receiving-chamber L, disposed intermediate of the table and hopper and adapted to lead the nuts to the tables, and an adjustable section S, arranged transversely across the bottom of said chamber in advance of its discharge end, said section S formed with a rib *s* and adapted when adjusted to form a continuous transverse opening T, whereby as the loose peas engage said rib *s* they will be arrested in their movement and caused to fall through said opening.

5. In a peanut-cleaning machine, the combination, with the discharging-chamber L, of a picking-table formed in sections arranged to travel in reverse directions, and means for leading the nuts to one or more sections of the table, substantially as and for the purpose described.

6. In a peanut-cleaning machine, the combination, with the discharging-chamber L and the picking-table, said table consisting of the outer sections U U and the intermediate section V, said outer sections U and the intermediate section V adapted to be run in the same or in reverse directions, of a deflector R, arranged at the mouth of said chamber, whereby the nuts are deflected from the said chamber to the side tables, and means for operating the tables, substantially as shown and described.

7. In a peanut-cleaning machine, the combination, with the discharging-chamber L and the picking-table, said table consisting of the outer sections U and the intermediate section V, of the deflector R, adjustably secured to the lower end of said chamber L centrally of the discharge-opening *q*, whereby said deflector may be turned, so as to enlarge said opening at one side and proportionately close it on the opposite side, and thereby feed more nuts to one of the outer tables U than to the other, all arranged substantially as and for the purpose described.

8. In a peanut-cleaning machine, a picking-table formed in three sections, the outer ones of which are adapted to receive the nuts from the separator and the inner one to serve as a carrier-dump for the black nuts when placed thereon by the pickers, substantially as and for the purpose described.

9. In a peanut-cleaning machine, a picking-table formed in three sections, two outer ones U and an intermediate one V, said sections U adapted to receive the nuts from the separator, said section V to receive them from the pickers, troughs connecting the side sections, troughs connected with the center section, whereby the separated nuts are led to separate bags, and means for operating said sections in either direction, all in the same direction or the central one in reverse direction to the outer ones, substantially as and for the purpose described.

10. In a peanut-cleaning machine, a picking-table consisting of the sections U V, each formed of a series of transverse strips *u*, endless belts *v*, connecting said strips *u*, and the supplemental >-shaped strips X, each connected with two or more of the strips *u*, all arranged substantially as and for the purpose described.

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Witnesses:
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