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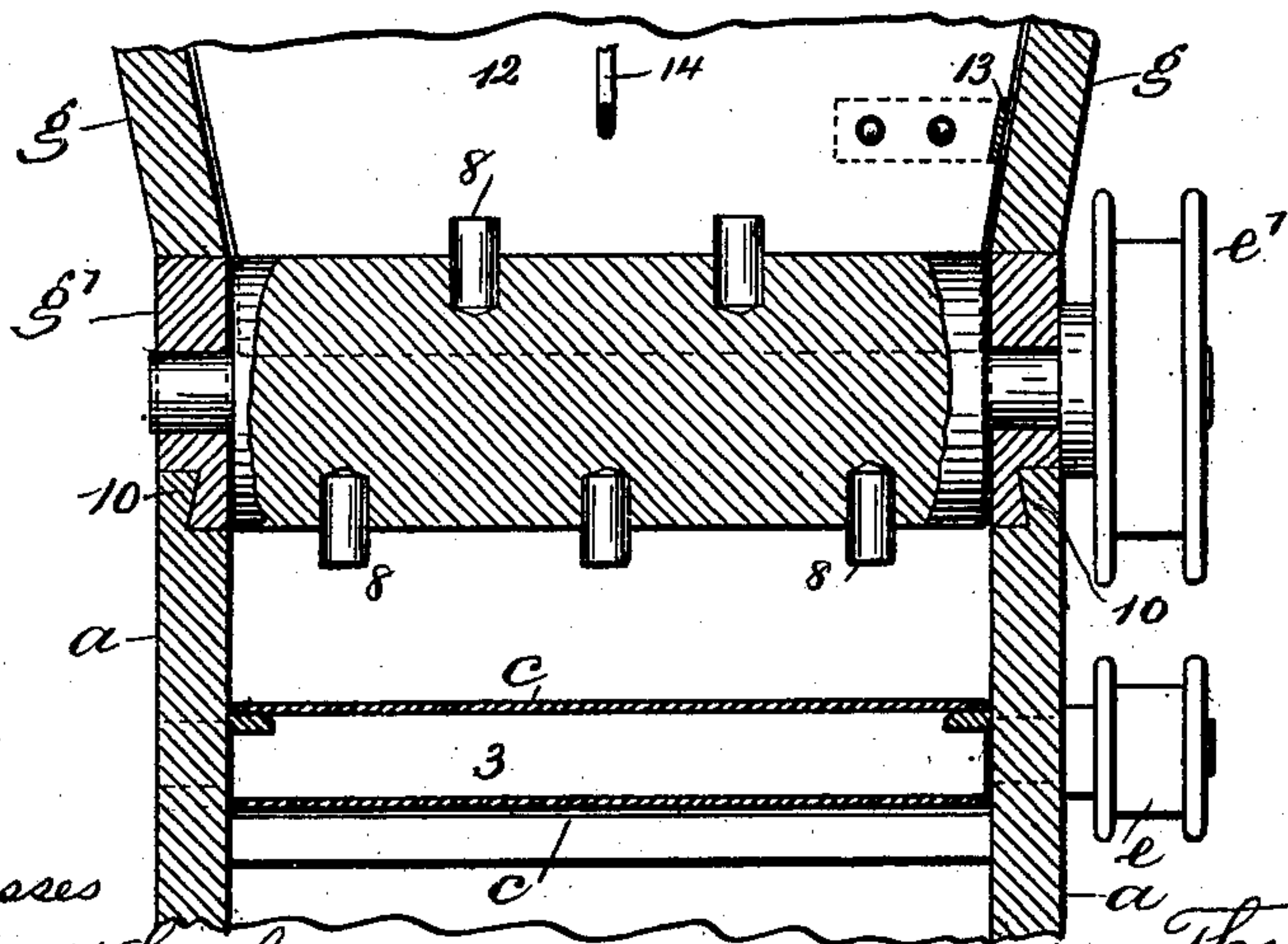
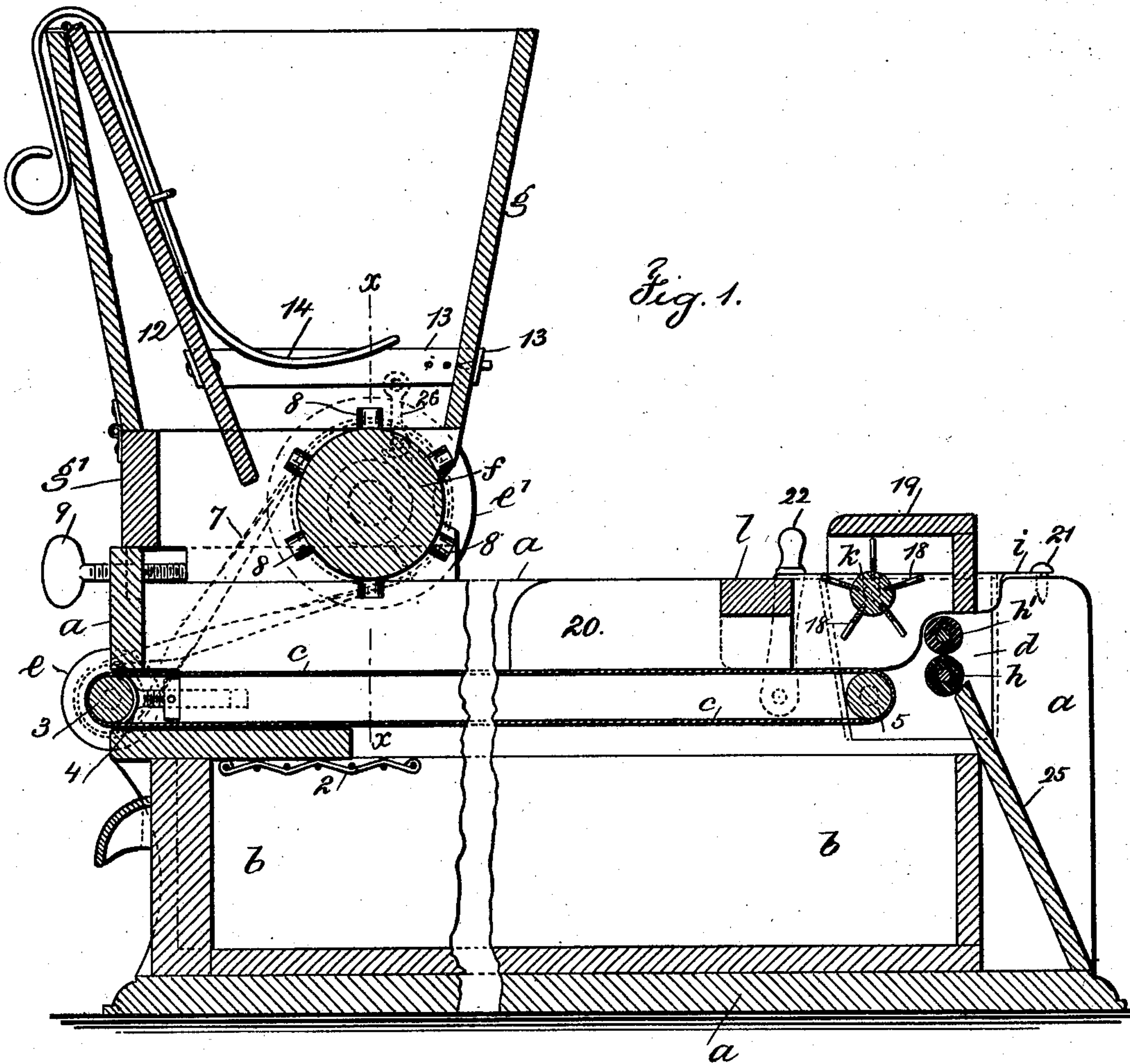
Patented May 20, 1902.

**T. BOSSHARD.**  
**PEA SHELLING MACHINE.**

(Application filed Sept. 10, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses  
*Chas. Smith*  
*W. B. Groll*

Inventor  
*Theodore Bosshard*  
By *L. H. Groll & Son atty*

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Fig. 6.

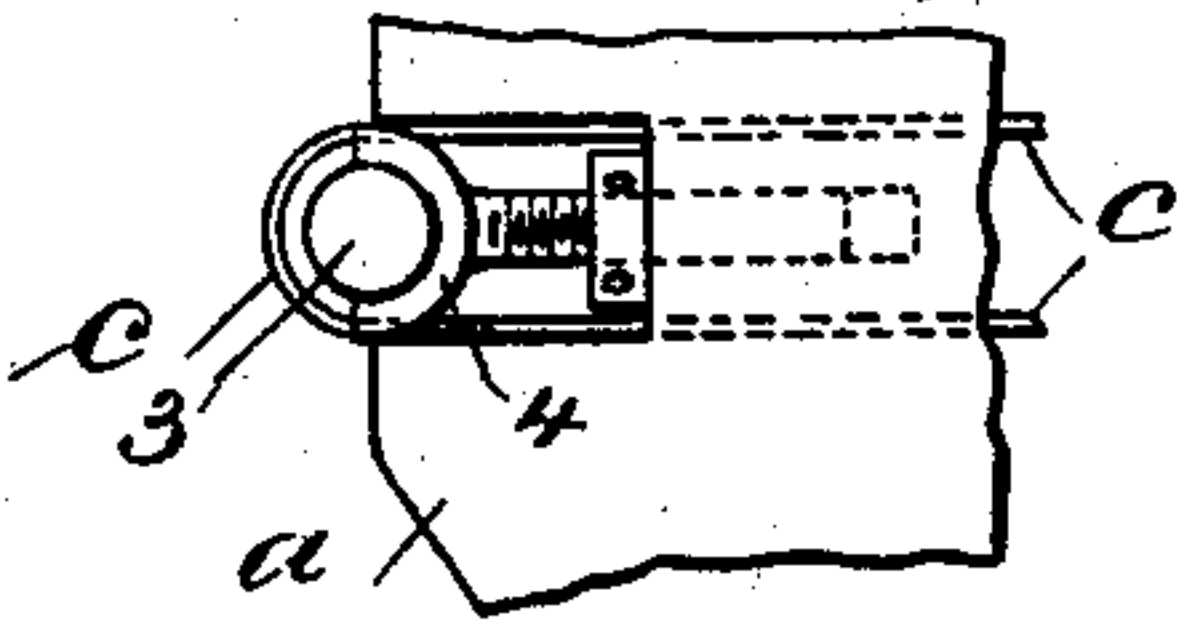


Fig. 4.

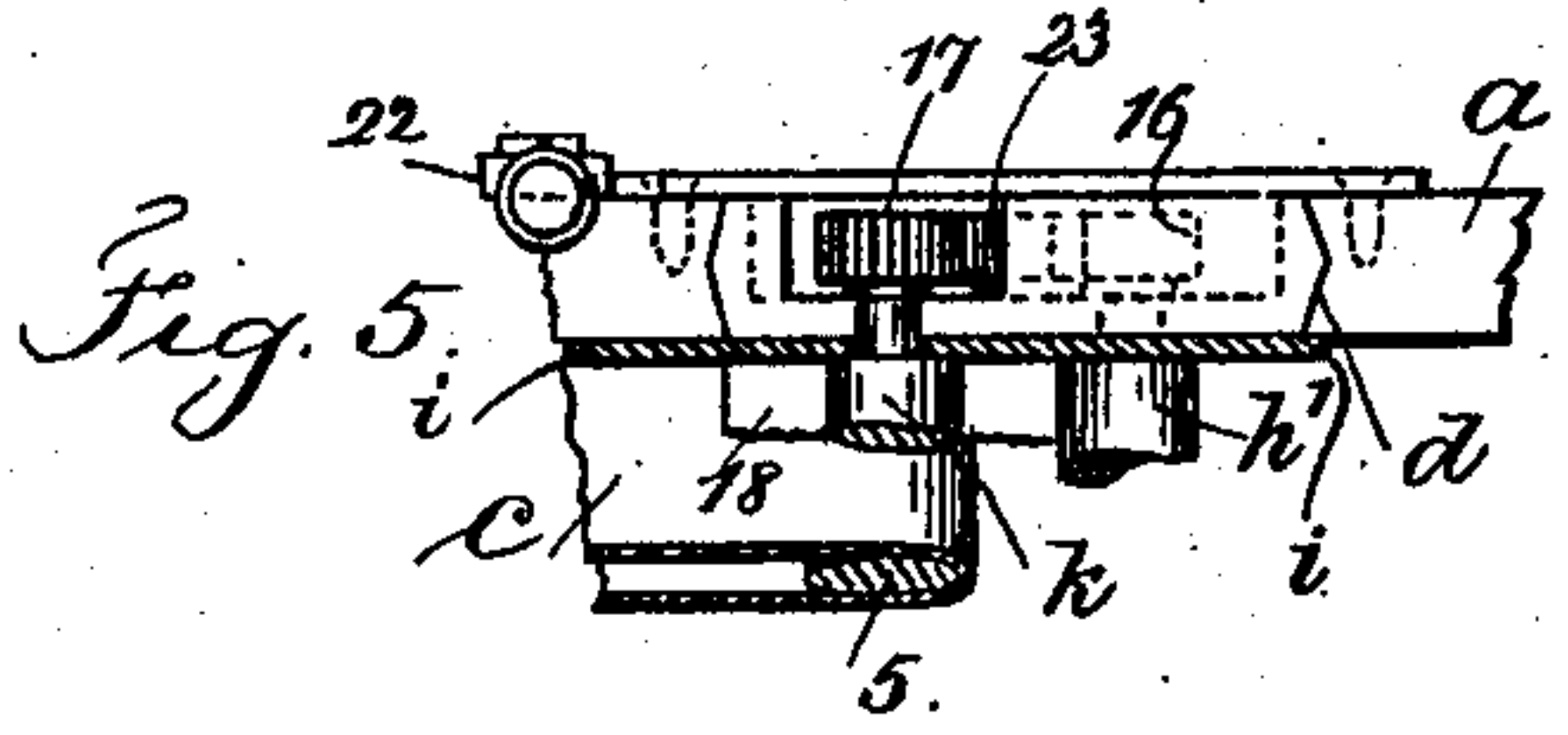
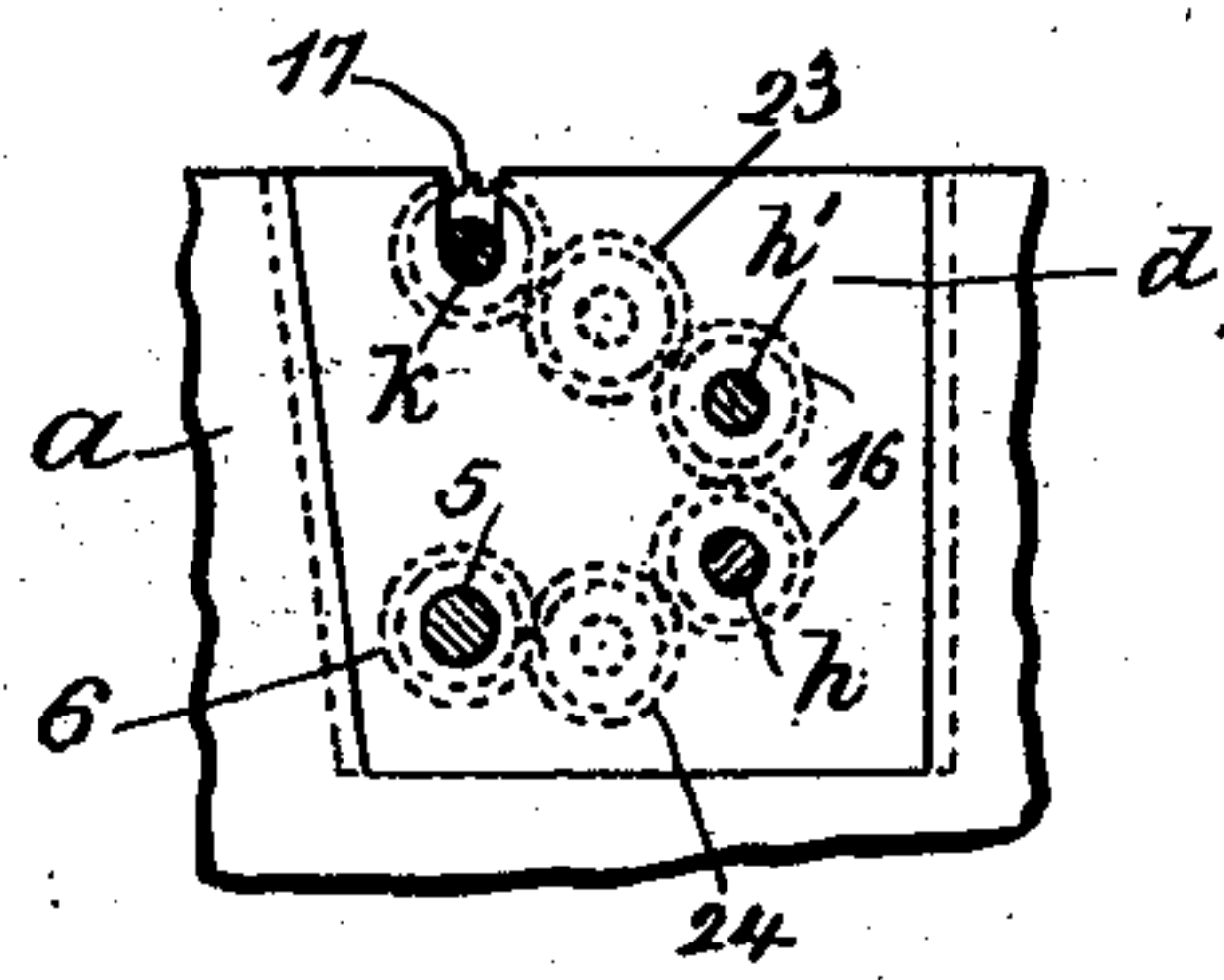
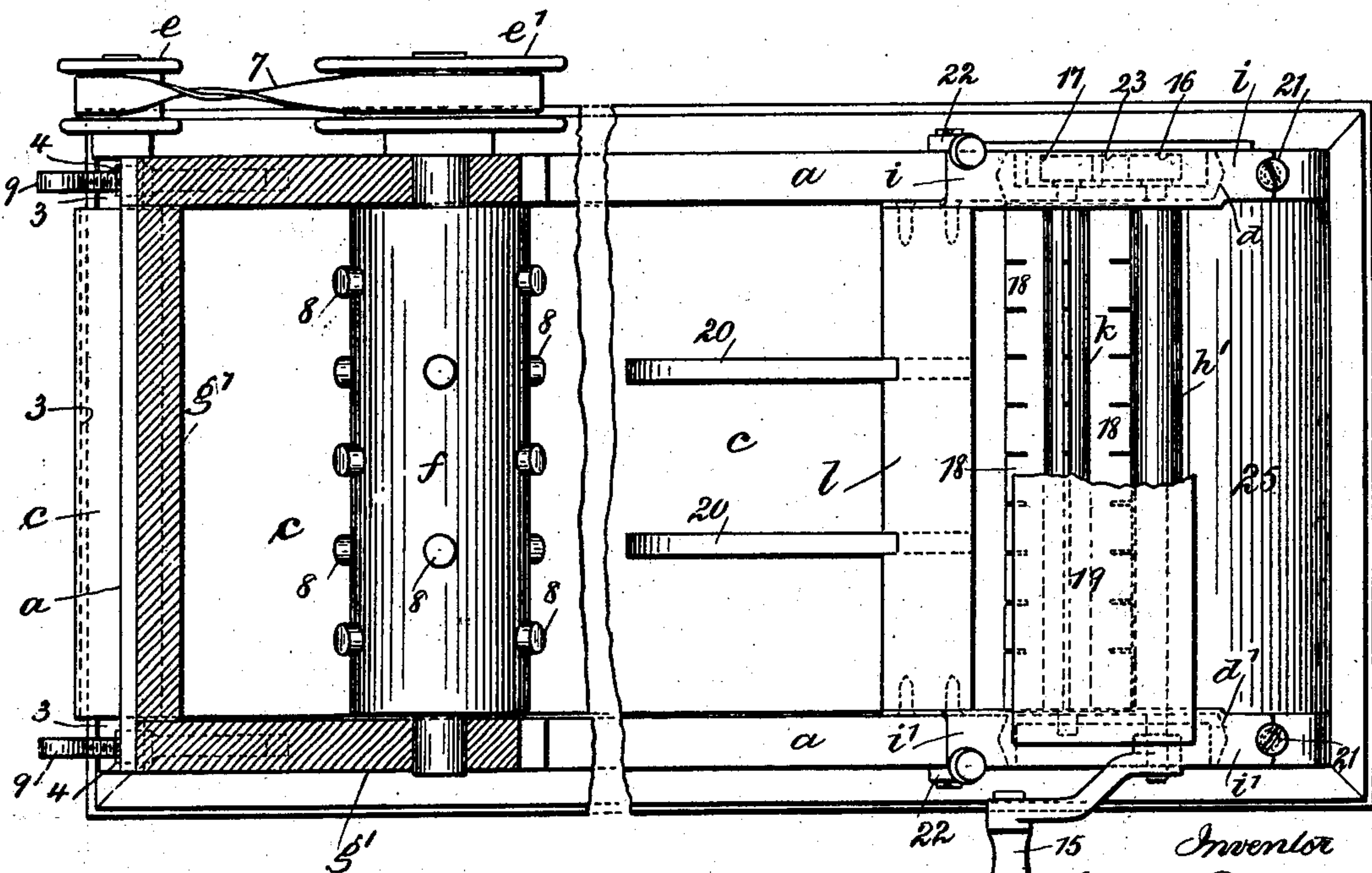


Fig. 2.



Witnesses

Charles Smith  
A. J. Russell

Inventor

Theodore Bosshard

per L. W. Small & Son



# UNITED STATES PATENT OFFICE.

THEODORE BOSSHARD, OF BROOKLYN, NEW YORK.

## PEA-SHELLING MACHINE.

**SPECIFICATION** forming part of Letters Patent No. 700,476, dated May 20, 1902.

Application filed September 10, 1901. Serial No. 74,871. (No model.)

*To all whom it may concern:*

Be it known that I, THEODORE BOSSHARD, a citizen of the United States, residing at the borough of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Pea-Shelling Machines, of which the following is a specification.

The device of my present application comprises improvements upon similar machines heretofore employed by me, and especially upon the devices shown and described in my application for Letters Patent, filed October 20, 1900, Serial No. 33,727, and allowed May 11, 1901.

The object of my present invention is to simplify the mechanism and to make the machine more efficient and serviceable.

In carrying out my invention I provide a case along and through which a conveyer or endless belt is moved to convey the pea-pods from a hopper at one end of the case to separating and progressing devices and nipping-rollers at the other end of the case. In my improvement the feeding-aperture from the hopper for the pea-pods is adjustable by a moving plate, and I provide means for bodily moving the hopper to tighten the belt employed for rotating a cylinder at the base of the hopper which progressively feeds the pea-pods from the hopper to the conveyer, and at the other end of the case the nipping-rollers, the conveying-roller, and the progressing-roller are geared together, so as to be actuated from a common source of power, and the parts at this end of the machine are so constructed and connected that they are easily separable, not only for the purpose of cleaning, but for preventing the clogging up of the machine, and in this case I provide a drawer for receiving the peas as separated from the pods and a wire-netting covering part of the drawer and forming a sifter through which the peas may pass and any pods escaping into the drawer or parts thereof be left behind.

In the drawings, Figure 1 is a broken vertical section, and Fig. 2 a broken plan, representing my improvement. Fig. 3 is a cross-section on the vertical line  $xx$  of Fig. 1. Fig. 4 is a side elevation of one bearing-plate, part of the case, and section of the roller-shafts. Fig. 5 is a plan of the parts shown in Fig. 4,

and Fig. 6 is an elevation of the adjustable bearing at one end of the conveyer.

The case  $a$  comprises a bottom plate and side parts that are parallel to one another and partial end parts, the same being of general rectangular form and provided with a drawer  $b$ , passing in from one end and being practically of the length of the case and adapted to receive the peas as separated from the pods. I employ a wire-netting  $2$  of large mesh covering over a portion of the open part of the drawer near the outer end, so as to form of the drawer and wire-netting a sifter, the mesh being large enough to permit the peas to pass through the same and to retain in the drawer any whole pods or parts of pods that may not have passed through the machine, and it will be readily seen that this sifter device may be brought into operation when the drawer is removed from the case and turned up endwise.

$c$  represents the conveyer or endless belt passing lengthwise of the case between the sides. This conveyer passes around a roller  $3$  at one end, the axle of the roller being received in adjustable yoke-bearings  $4$ , passing into the sides of the case and having nuts by which the stems of the bearings may be moved longitudinally to apply tension to the conveyer. The said conveyer  $c$  passes around a roller  $5$  at the other end of the case, and this roller  $5$  is journaled in bearing-plates  $d$ , which plates are advantageously received in notches or recesses made in the sides, the said plates being let down into the sides and retained in place, as hereinafter specified.

The shaft of the roller  $5$  is provided with a pinion or gear  $6$  at one end, and I employ pulleys  $e$   $e'$ , around which passes a crossed belt  $7$ , the pulley  $e$  being upon the shaft of the roller  $3$  and the pulley  $e'$  upon the shaft of a cylinder  $f$ , which cylinder is provided at spaced-apart intervals with projecting pins  $8$ .

The hopper  $g$  is provided with a base  $g'$ , to which the same is hinged, and the base is provided over the sides of the case with tapering ribs engaging undercut ribs  $10$  on the upper surface of the case, said ribs forming slideways for the hopper and the hopper-base longitudinally of the case. The hopper  $g$  is



not only hinged to the hopper-base *g'*, but the parts are connected in their relation to one another and so held, preferably, by a hook or equivalent device 26, and as the cylinder *f* is journaled in the hopper-base *g'* the hopper may be swung over after being released by the device 26, so as to separate the parts for cleaning or in case the same becomes partly choked.

I provide screws 9, passing through one end of the case and nuts connected therewith and bearing at their ends against one end of the hopper-base, and as the cylinder is journaled in the hopper-base it is apparent that the movement of the screws 9, shifting the hopper-base, will apply tension to the belt 7 to tighten the same upon the pulleys. Within the hopper and extending across the machine I provide a plate 12, hinged to the upper edge of the hopper, and a strap or equivalent device 13, attached to the lower free edge of said plate, passing through the hopper and having holes to connect the strap to a pin, as shown. By the operation of this strap said plate is moved and permitted to occupy a graded relation to the cylinder *f*, so as to decrease or increase the opening within the mouth of the hopper, and thus regulate the opening through which the peas pass from the hopper onto the conveyer *c*.

In the hopper I provide a stirrer 14 in the form of a rod extending over the upper edge of the hopper, with a handle portion outside of the hopper and passing through an eye secured to the inner surface of the hopper. This stirrer may be moved about within the hopper by hand, so as to loosen up the pea-pods in case the hopper becomes at all choked. I provide a pair of delivery-rolls *h h'*, pivoted in the bearing-plates *d d'*. These rolls are connected together at one end by meshing gears 16, and at the other ends of said rolls a crank and handle 15 are secured on the shaft of the roll *h*.

I provide flanged side plates *i i'*, preferably of metal and of inverted-L form, the longer portions lying within and adjacent to the sides of the case and the shorter portions resting horizontally upon the upper edges of the sides. A roller *k* is journaled in these side plates *i i'*, and the ends of the shaft of said roller pass through notches in the upper edges of the plates *d d'*, and there is a gear 17 on one end of the shaft of the roller *k*, meshing with a gear 23 intermediate thereto and to the gear on the roll *h'*, and I provide a further gear 24, that is intermediate to the gear of the roll *h'* and the pinion or gear 6, so that by the crank and handle 15 the rolls *h h'* are revolved together with the roller *k*, the roll 5, and by the rotation of the roll 5 the conveyer or endless belt *c* is moved, and through the same and the belt 7 and pulleys *e e'* the cylinder *f* is revolved to feed the pea-pods from the hopper onto the conveyer. This roller *k* is provided with radial flexible blades 18, that extend the length of the roller be-

tween the sides of the case, and these blades are notched at spaced-apart intervals, practically dividing the flexible blades up into independent flexible fingers, and I provide a cover 19 over the roller *k*, connected to the flanged side plates *i i'*, and which cover also forms an end to the case above the delivery-rolls *h h'* to prevent the escape of any pea-pods above the said rolls.

A transverse bar *l* extends across between the sides of the case and is connected to the plates *i i'*, and separator-fingers 20 are secured to the said transverse bar *l* and extend longitudinally of the case above the conveyer, dividing the space between the sides above the conveyer into three portions. The flanges of these side plates *i i'* are preferably prolonged at one end and notched to pass beneath portions of pins 21 or equivalent devices, that are fastened in the upper surface of the sides, and latch-bars 22, pivotally connected to the sides, are adapted to swing over upon the flanged side plates after the same are in position, so as to hold the same to the case of the machine.

In the operation of the pea-shelling machine the plate 12 is to be adjusted according to the size of the pea-pods, and the strap 13, connected thereto, may be secured and held in any desired manner. I have shown holes in the strap and a pin on the hopper for this purpose. The pods are placed in the hopper and the mechanism set in motion by the crank and handle 15. The pods are progressively fed from the hopper by the cylinder *f* and its pins down upon the moving conveyer. The said conveyer carries the pods along, and as the pods come up to the fingers 20 the latter act against the pods to shift their position, so as to bring them approximately lengthwise of the case and present them endwise to the roller *k*. There is an appreciable space between the surface of the conveyer and the edges of the flexible blades 18, and these blades engage the pods and advance the same positively toward and against the rolls *h h'*. These flexible blades may possibly in practice have more or less of a tendency to separate the parts of the pods, and as the pod lengthwise will in practice be engaged by several of these flexible blades there is a tendency to separate the peas from the pods, the main separation, however, occurring through the action of the delivery-rolls *h h'*, as these rolls nip the pods and run sufficiently close together to hold the pods tightly and force the same through between the rolls, pressing out and separating the peas from the pods. There is a space between the end of the conveyer adjacent to these rolls and the end of the case, and the peas as separated from the pods pass through this space down into the drawer *b*, and the pods as they pass through between the rolls *h h'* fall over an incline 25, which I prefer to employ and make a part of the case, so as to divert the pods into a suitable receptacle. After the shelling operation



the drawer *b* is removed with the peas, and should there be any whole pods or parts of pods or pieces the peas may be separated or sifted therefrom by passing the same through the wire-netting 2, covering a portion of the drawer at the forward end thereof.

The flanged side plates *i i'*, the roller *k* with its blades 18 and the gear 17, the cover portion 19, the transverse bar *l*, and the fingers 20 are connected so as to be collectively removable from the case of the machine by the swinging of the latch-bars 22. The transverse bar *l* is so placed between the side plates *i i'* that its under edge is above the surface of the conveyer a distance that approximately agrees with the thickness of a pea-pod. This construction acts, further, to separate the pods as they pass along on the conveyer between the fingers 20 and prevents superposed pods passing into the machine, compelling the pods to pass single depth upon the conveyer, and I prefer to make the opposite vertical edges of the bearing-plates *d d'* pointed or V-shaped and to cut the vertical edges of the recesses in the sides of the case receiving said plates correspondingly. This prevents lateral movement of the said plates and the parts connected therewith, but does not hinder the vertical movement in removing the same from the case or putting the same in place.

I claim as my invention—

1. In a pea-shelling machine, the combination with the case and the conveyer or endless belt, rollers therefor and means for operating the conveyer, of a hopper, a feeding-cylinder journaled in the hopper, and a device pivotally connected to and extending across the hopper and having its free edge adjustable in relation to the cylinder for regulating the delivery-opening at the base of the hopper and a stirrer-rod extending over the upper edge of the hopper and movable over the surface of the pivotally-connected device, substantially as and for the purposes set forth.

2. In a pea-shelling machine, the combination with a case, a conveyer or endless belt, rollers around which the same passes, and means for operating the conveyer, of a hopper, a cylinder transversely of the hopper and journaled therein and having projections from the surface thereof, ways upon the upper edge of the case receiving the hopper and on which the hopper moves longitudinally of the case, pulleys upon the shaft of the cylinder and the shaft of one roller of the conveyer and a belt around the pulleys and an adjusting-screw or equivalent device for moving the hopper bodily upon the case and applying tension to the belt, substantially as set forth.

3. In a pea-shelling machine, the combination with a case, of a conveyer or endless belt, rollers therefor, rolls for nipping the pods, gears connecting said rolls and connecting the same with one roller of the conveyer, bearing-plates let into the sides of the case and in which the said rolls and roller at one

end of the conveyer are all journaled, whereby said parts are collectively held to the sides of the case and may be bodily removed therefrom, substantially as set forth.

4. In a pea-shelling machine, the combination with the case, a conveyer or endless belt, rollers therefor, rolls for engaging the pods and means for connecting and operating the parts, of a roller having radially-placed longitudinal flexible blades notched at spaced-apart intervals, a support therefor and a gear connecting the same operatively with the aforesaid rolls, substantially as set forth.

5. In a pea-shelling machine, the combination with the case, a conveyer, or endless belt, rollers therefor, rolls for engaging the pods and means for connecting and operating the parts, of a roller having radially-placed longitudinal flexible blades notched at spaced-apart intervals, a support therefor and a gear connecting the same operatively with the aforesaid rolls, a cover over said roller, a transverse bar adjacent thereto and fingers extending from the transverse bar and acting to turn the pea-pods on the conveyer and the bar to arrange the pods into single depth so that the pods are presented endwise to the said roller, substantially as set forth.

6. In a pea-shelling machine, the combination with the case, a conveyer or endless belt, rollers therefor, rolls for engaging the pods and means for connecting and operating the parts, of flanged side plates, a roller journaled in said side plates and having a gear on the end meshing with the gears of the operative rolls, said roller having longitudinal radially-placed flexible blades notched at spaced-apart intervals, a transverse bar secured between the said side plates, separator-fingers at right angles to said bar and lengthwise of the case between the sides thereof, substantially as and for the purposes set forth.

7. In a pea-shelling machine, the combination with the case, a conveyer or endless belt, rollers therefor, rolls for engaging the pods and means for connecting and operating the parts, of flanged side plates, a roller journaled in said side plates and having a gear on the end meshing with the gears of the operative rolls, said roller having longitudinal radially-placed flexible blades notched at spaced-apart intervals, a transverse bar secured between the same side plates, separator-fingers at right angles to said bar and lengthwise of the case between the sides thereof, and pins 21 on the sides of the case for engaging the said side plates at one end, and latch-bars pivotally connected to the sides and adapted to engage the flanged side plates at their other ends for connecting the same to the case of the machine, substantially as set forth.

Signed by me this 30th day of August, 1901.  
THEODORE BOSSHARD.

Witnesses:

A. H. SERRELL,  
S. T. HAVILAND.