

(No Model.)

2 Sheets—Sheet 1.

E. E. SANFORD.

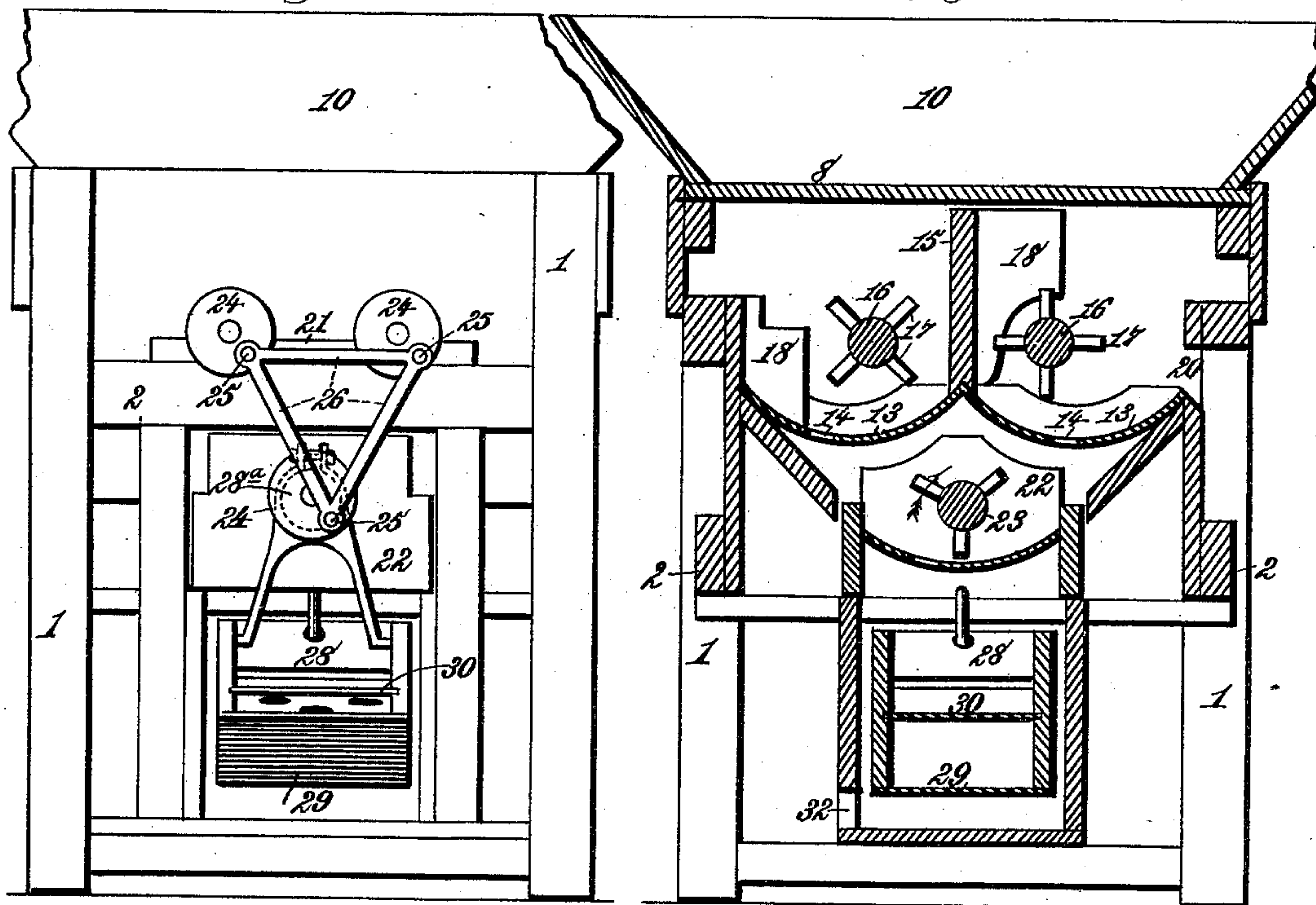
PEA THRASHER AND SEPARATOR.

No. 428,958.

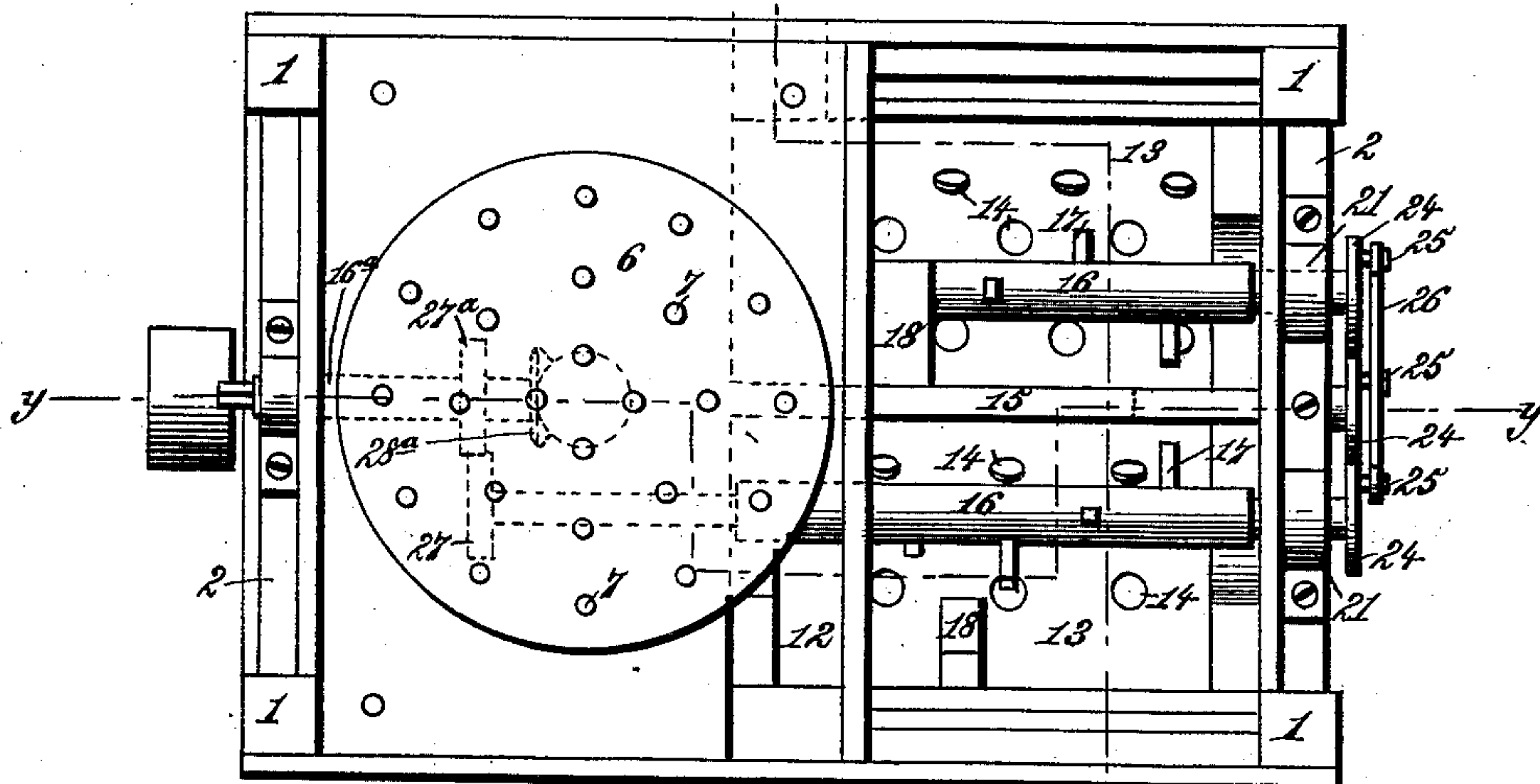
Patented May 27, 1890.

*Fig. 1.*

*Fig. 3.*



*Fig. 2.*



*Witnesses,*

Robert Everett,

J. A. Rutherford.

*Inventor:*

*Emerson E. Sanford.*

By James L. Norris.

Atty.

(No Model.)

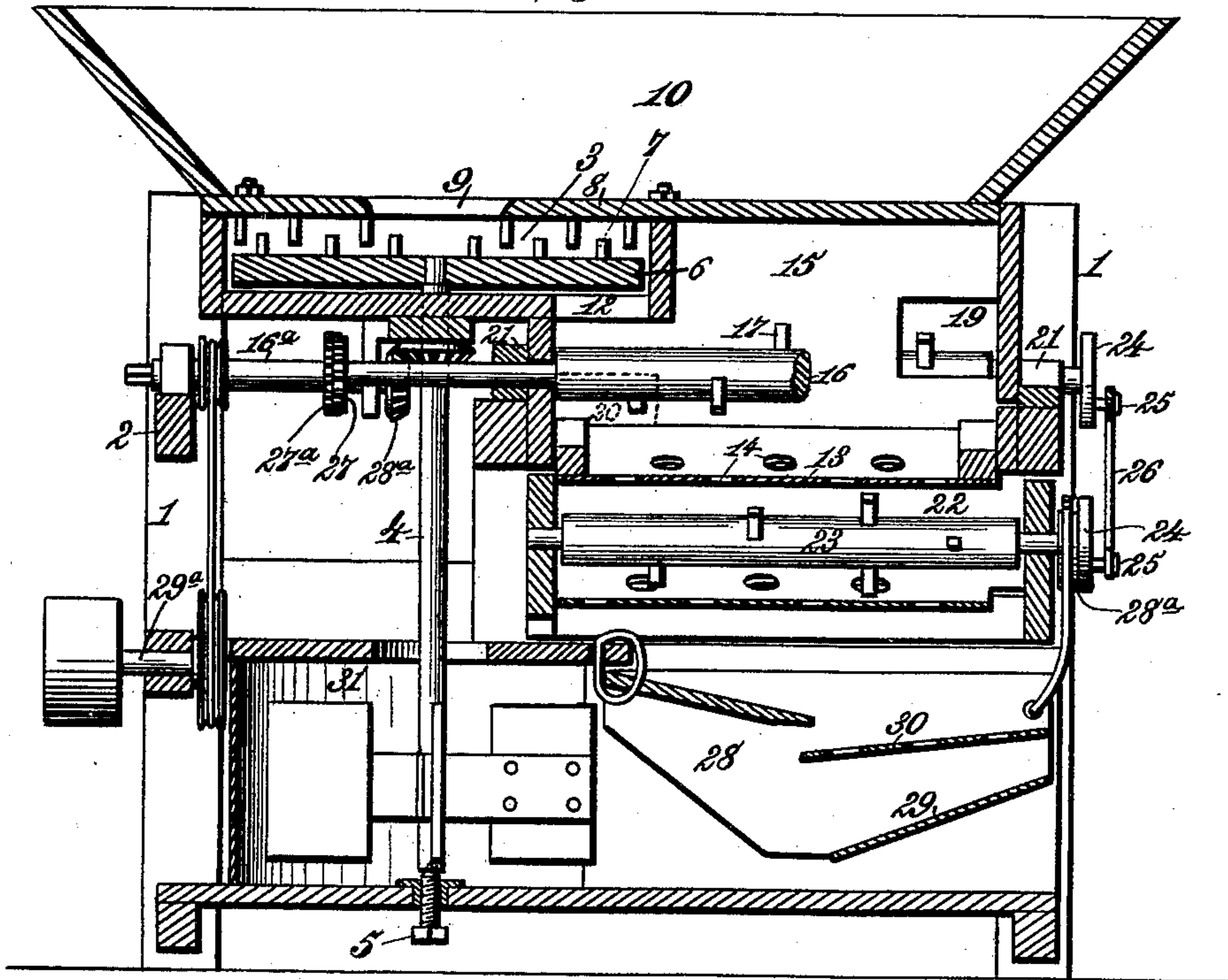
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PEA THRASHER AND SEPARATOR.

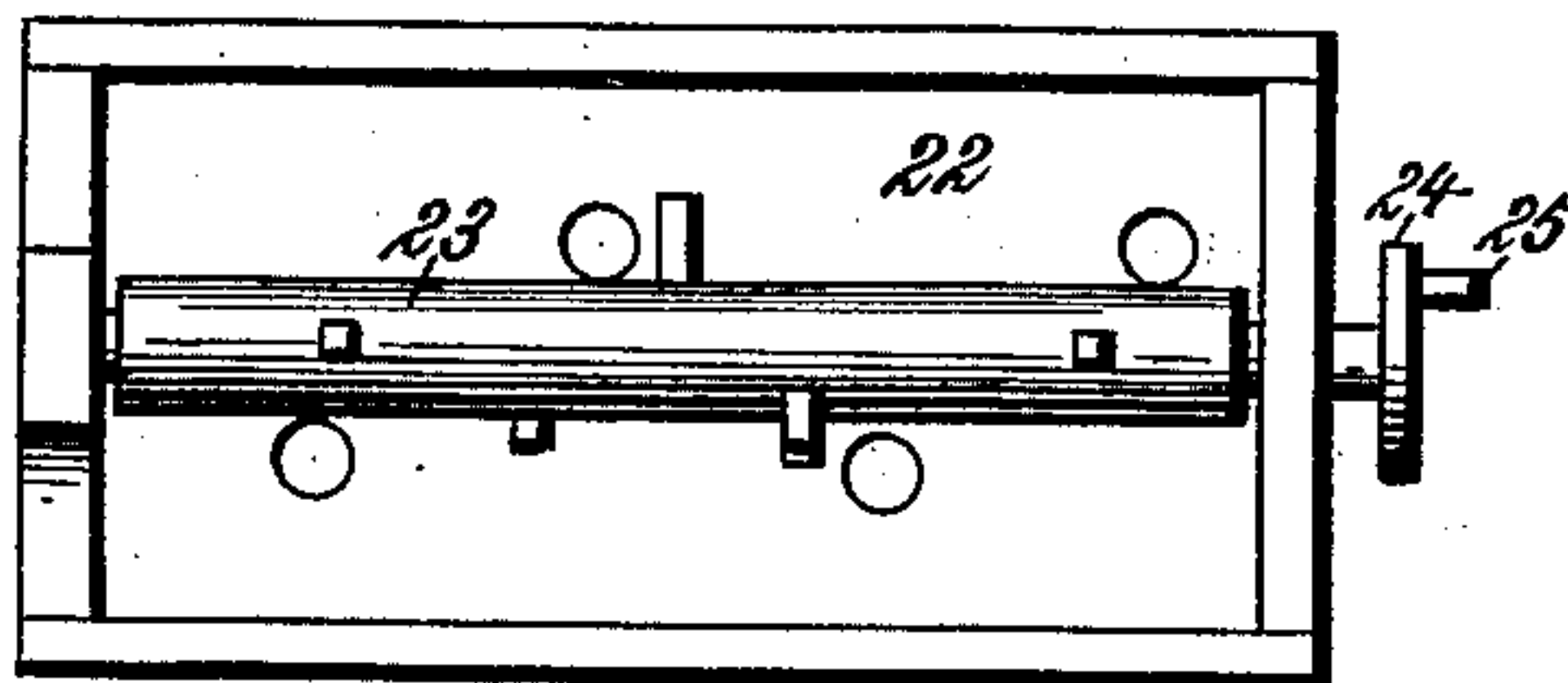
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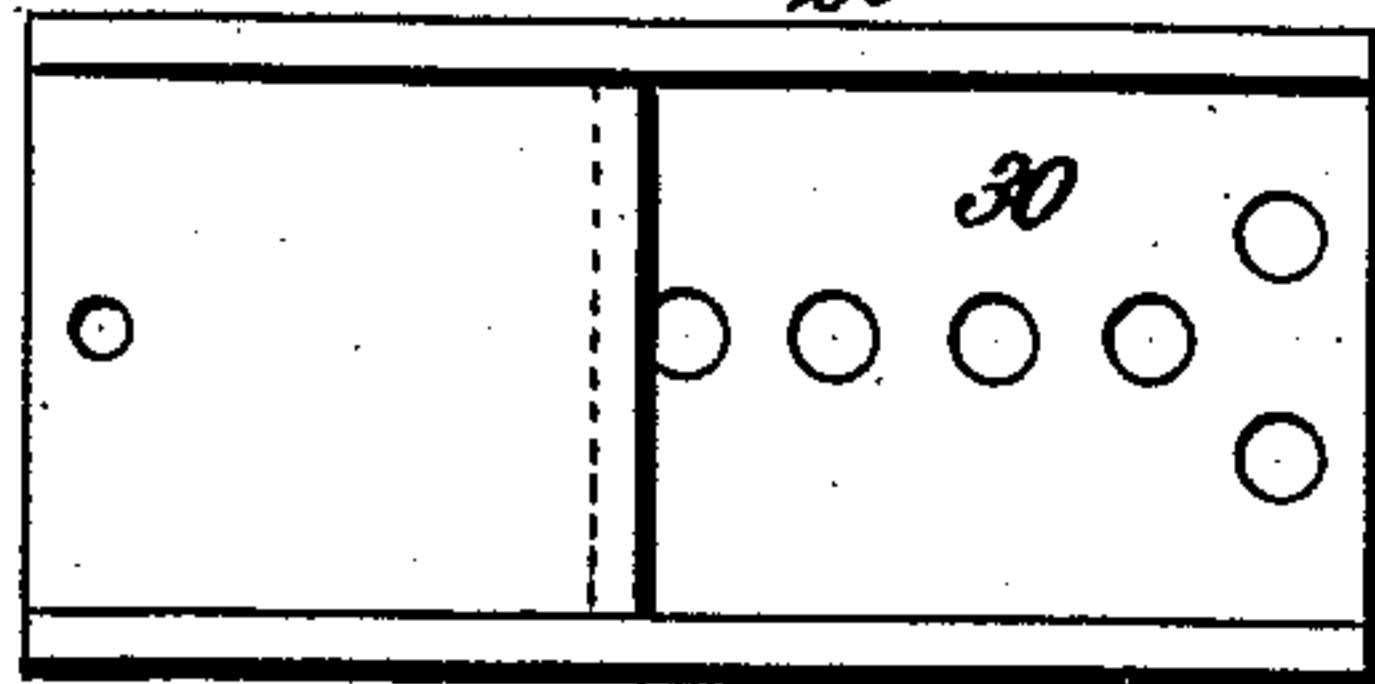
*Fig. 4.*



*Fig. 5.*



*Fig. 6.*  
28



Witnesses.

*Robert Emmett.*

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Inventor.

*Emerson E. Sanford.*

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# UNITED STATES PATENT OFFICE.

EMERSON E. SANFORD, OF MILAN, TENNESSEE.

## PEA THRASHER AND SEPARATOR.

**SPECIFICATION** forming part of Letters Patent No. 428,958, dated May 27, 1890.

Application filed February 8, 1890. Serial No. 339,639. (No model.)

*To all whom it may concern:*

Be it known that I, EMERSON E. SANFORD, a citizen of the United States, residing at Milan, in the county of Gibson and State of Tennessee, have invented new and useful Improvements in Pea Thrashers and Separators, of which the following is a specification.

My invention relates to mechanism for hulling peas, and it is the purpose thereof to provide means whereby the pods may be effectually broken open as they are fed to the machine, and then delivered to separators, which act successively upon the mass to separate the peas from the bruised pods, the final and complete separation being effected by a fan-blast.

It is my further purpose to provide a power machine for hulling peas or beans which will not break or mar them, which will perform the work with great rapidity, and effect a practically complete separation of the peas from the hulls and smaller particles of foreign matter, the machine being fed with great ease and rapidity and operated by horse-power or other suitable means.

My invention also contemplates other improvements in various details of construction and organization, which will be more fully pointed out in the following specification, and then defined in the claims.

To enable others skilled in the art to make and use my said invention, I will proceed to describe the same in detail, reference being had to the accompanying drawings, in which—

Figure 1 is an end elevation of a pea-hulling machine in which my invention is embodied. Fig. 2 is a plan view of the same, the hopper being removed to expose the thrashing or hulling wheel. Fig. 3 is a vertical transverse section in the line  $x x$ , Fig. 2. Fig. 4 is a longitudinal section on the line  $y y$ , Fig. 2. Fig. 5 is a detail plan view of the lower removable separator-chamber. Fig. 6 is a plan view of the riddle.

In the said drawings, the reference-numeral 1 indicates the frame of the machine, which consists of four posts or uprights arranged at the angles and connected by braces 2, which inclose a rectangular space, within which the several operative parts are arranged. In the upper part of said space, at the end of the frame, is arranged the thrashing or hulling

mechanism, by which the hulls are destroyed and removed from the peas or beans. This mechanism consists of a large wheel, which may, if preferred, be formed of wood or plank. This wheel is arranged horizontally within a thrashing or hulling chamber 3, and is carried upon the upper end of a vertical shaft 4, which has bearing in the bottom wall of the inner end of the thrashing or hulling chamber, and is stepped at its lower end upon an adjustable bearing 5. Upon the horizontal upper surface of the wheel 6 are arranged pins, spikes, or bolts 7, arranged in concentric circles. Depending from the cover or lid 8, which immediately overhangs the wheel, are arranged several separate series of spikes, which lie between those rising from the wheel. In said cover is formed a hopper-opening 9, which lies over the center of the wheel, a hopper 10, conducting the pods to said opening, being mounted on the lid.

From the grinding-chamber the hulls or pods, together with the peas, pass by way of a chute 12 to a duplex separator, which lies at the other end of the machine and a little below the level of the hulling-chamber. The bottom of the separator-chamber consists of a trough-shaped metallic screen 13, pierced with a large number of openings 14 of a size to allow the peas or beans to pass. The chamber inclosed by such a bottom is of the entire width of the machine-frame, and is divided by a central longitudinal partition 15 into two equal chambers, in each of which is arranged a horizontal shaft 16, provided with beaters or stirrers 17, which stir and agitate the mass, beating out the peas and suffering them to escape through the perforated bottom or screen 13.

In each separator-chamber are arranged two or more reversing-boards 18, which are simply flat strips mounted vertically on the side wall and projecting toward the beater-shaft. These reversing-boards serve to arrest the mass of broken pods as it tends to pass from end to end of the chamber and retain said material under the action of the beater-shaft for a longer time. The pods pass from one of the divided chambers to the other through an opening 19 in the partition-wall 15, and after traversing the second separator-chamber they are discharged through an open-



ing 20 in the side wall of the chamber, whence they may fall into a cart or basket.

The beater-shafts 16 are journaled in bearing-blocks 21, and beneath the two separator-chambers containing the beater-shaft 16 is located a third separator-chamber 22, of narrower dimensions and any suitable construction, which receives the hulled or shelled peas from the chambers above. The chamber 22 contains a beater-shaft 23, having beaters like those on the shaft 16. The third beater-shaft lies in parallelism with the other two and centrally between and below the same. Upon the ends of the three shafts, which lie at the three angles of an equilateral triangle, or substantially so, I mount wheels 24, of suitable diameter, from the flat faces of which project wrist-pins 25, placed eccentrically to the axes of the three shafts. Upon these wrists or pins is mounted a triangular frame 26, which may consist of a wire of suitable strength wound one or more times around each wrist. By this construction all three of the shafts are compelled to rotate in unison, rotation being derived from a spur-pinion 27 on one of the beater-shafts, meshing with a similar gear 27<sup>a</sup> on the horizontal shaft 16<sup>a</sup>.

Upon the horizontal shaft 16<sup>a</sup>, which is arranged centrally and in parallelism with the two shafts 16, is a miter-gear 28<sup>a</sup>, which meshes with a similar miter on the vertical fan and grinder shaft and is belted to a pulley on a short shaft 29<sup>a</sup>, below which may be provided with a belt-pulley belted to any suitable source of power.

In the inclosed space beneath the third separator-chamber is arranged the riddle or final separator, consisting of a trough-shaped box 28, pivotally fastened at its forward end to the box or frame of the machine and having connection at its other end with a ring-eccentric 28<sup>a</sup>, which is mounted on the stud carrying the wheel 24 of the lower separator 22, whereby a constant vibration or shaking movement will be given the riddle. This device consists of a trough having closed or imperforate bottom 29, immediately above which is a perforate or open screen or riddle 30, preferably set at a small inclination downward and rearward. Communicating with the rearward end of the box or casing in which the riddle is arranged is a fan-chamber 31, in which stands the lower end of the grinder-shaft 4, which is provided with fan-blades.

The peas dropping from the separators above are received upon the perforated plate of the vibrating box, whence they pass by way of the perforations thereof and drop upon the inclined plate and roll toward the rear, where they pass out by a small pea-hole 32. The blast from the fan serves to drive off the small particles of pods and other foreign matter, leaving the peas perfectly clean.

The machine may be driven by hand or by power of any suitable kind.

What I claim is—

1. In a pea-huller, the combination, with a hulling mechanism, of a pair of separator-chambers arranged to receive the hulls and peas and provided with screen-bottoms, a third separator-chamber located beneath said pair of chambers, a rotating beater-carrying shaft in each separator-chamber, a wheel mounted on each shaft and having a wrist-pin, and a triangular frame engaging the wrist-pins, substantially as described.

2. The combination, in a pea-huller, of a hulling mechanism, a pair of separator-chambers arranged side by side and having a hull-discharging orifice, a separator-chamber located beneath said pair of chambers and receiving the hulled peas therefrom, a beater-carrying shaft rotating in each separator-chamber, a vibrating riddle connected with one of the beater-carrying shafts, a driving-shaft, and means for simultaneously rotating the several beater-carrying shafts and operating a moving part of the hulling mechanism from the driving-shaft, substantially as described.

3. In a pea-huller, the combination, with a hulling mechanism, of a pair of separator-chambers arranged to receive the hulls and peas and having screen-chambers, a third separator-chamber beneath said pair of chambers, a rotating beater-carrying shaft arranged in each chamber and having a wheel provided with a wrist-pin, a triangular frame connecting the wrist-pins, a riddle located beneath the lowermost separator-chamber and connected with and vibrated by one of the beater-carrying shafts, and a fan, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

EMERSON E. SANFORD.

Witnesses:

S. G. STEWART,  
W. E. WILLIAMS.