

No. 661,802.

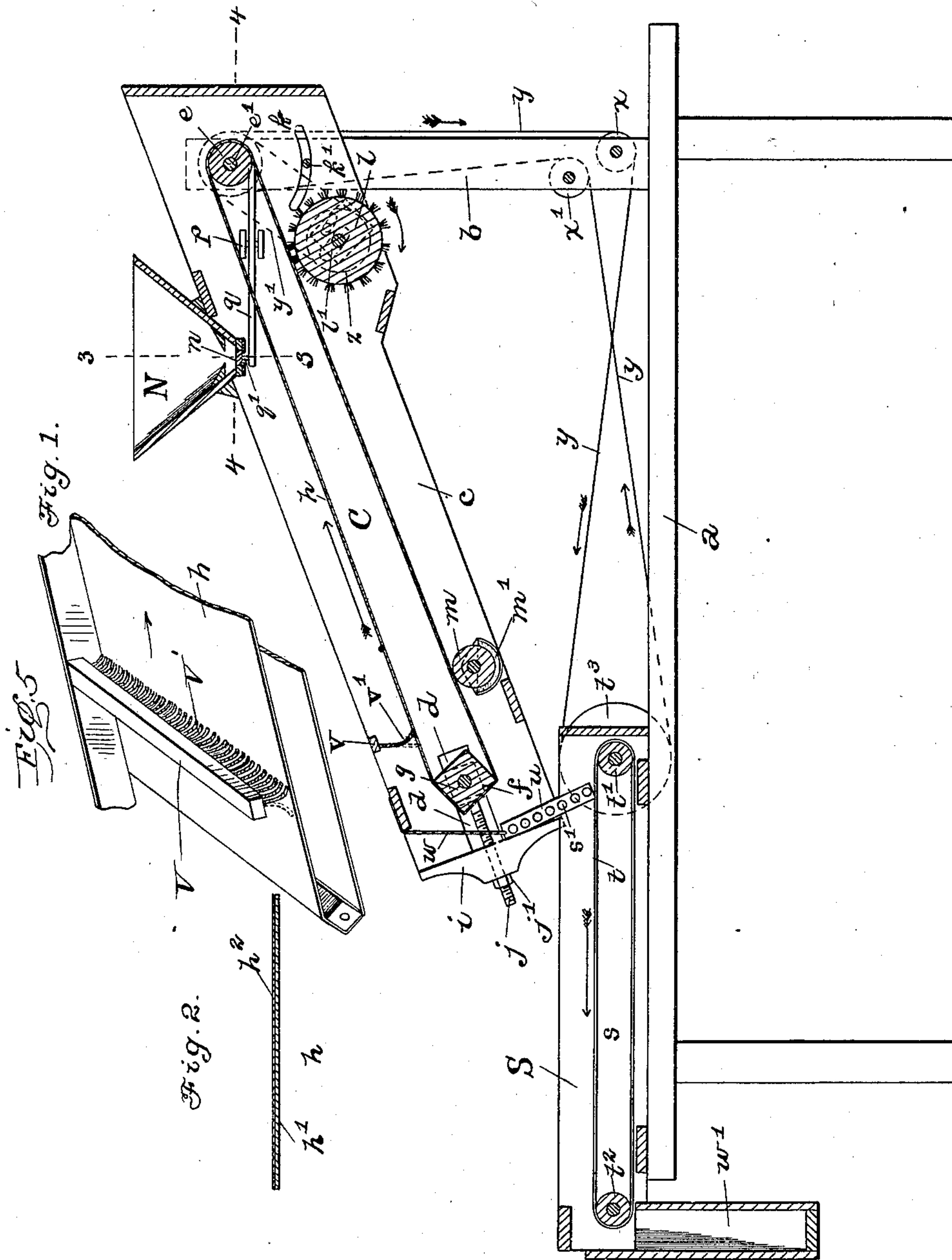
Patented Nov. 13, 1900.

W. T. HILLEARY, JR.
PEA CLEANER.

(Application filed Mar. 6, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:—

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2 Sheets—Sheet 2.

Fig. 3.

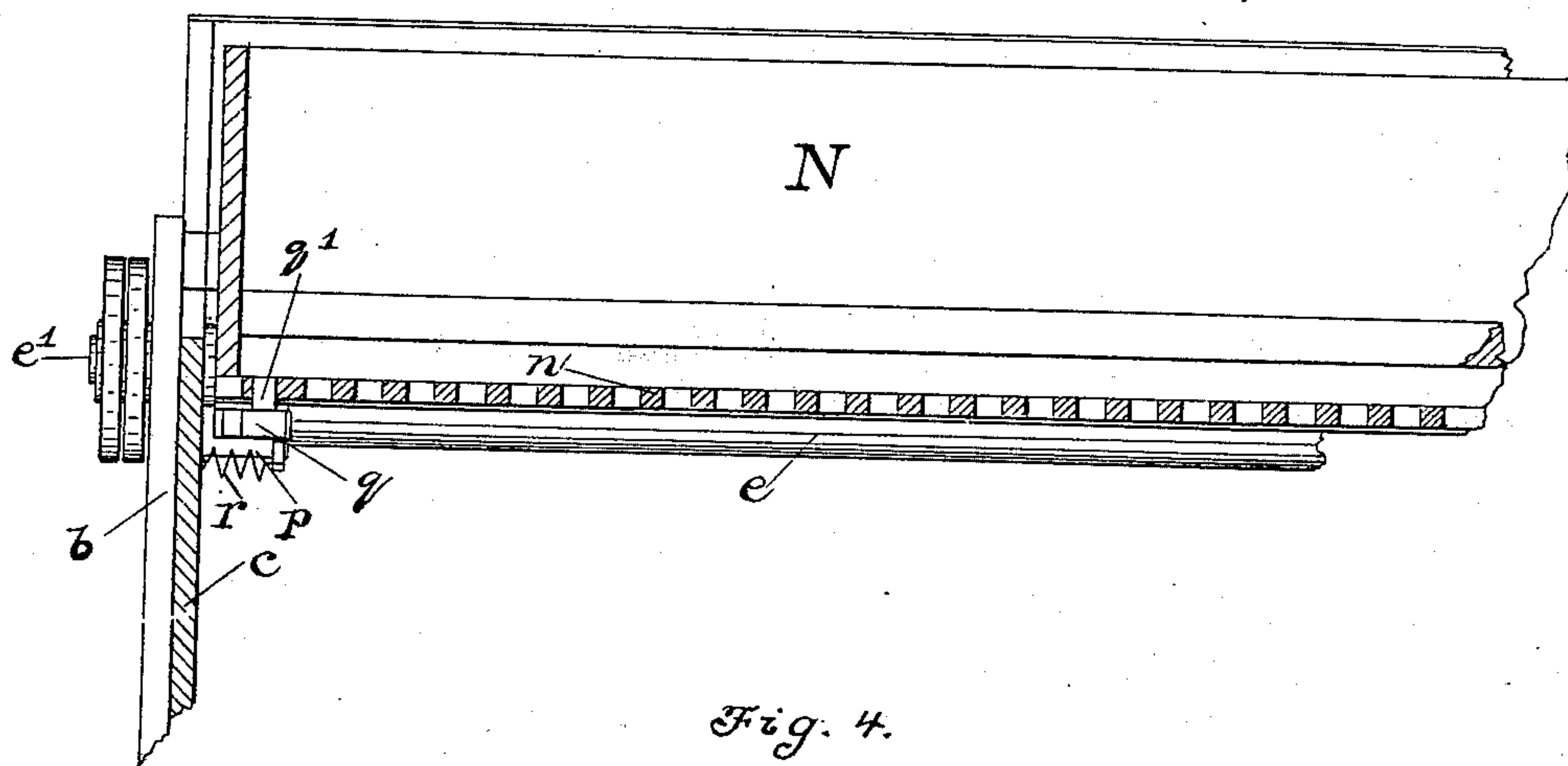
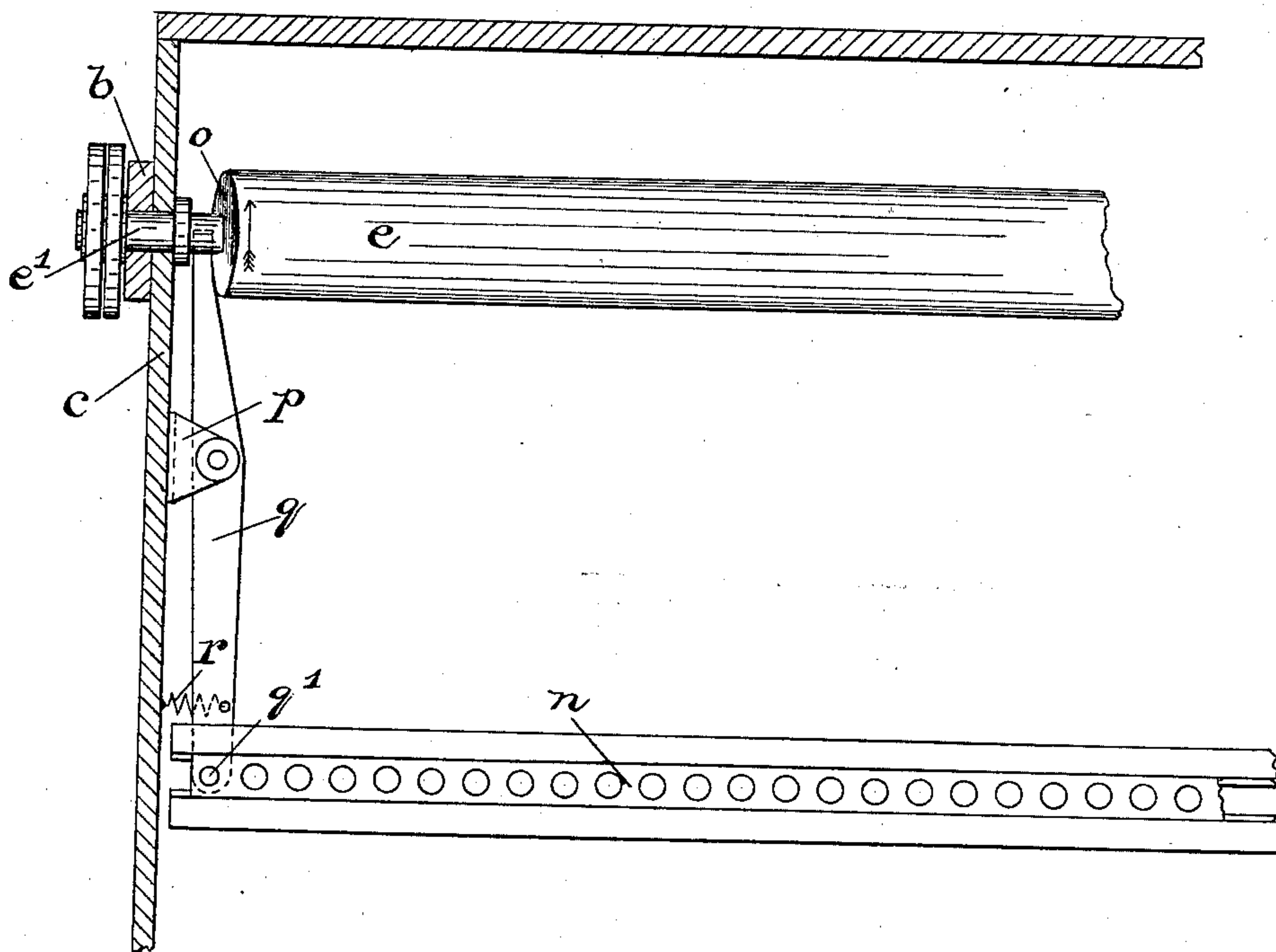


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM T. HILLEARY, JR., OF BALTIMORE, MARYLAND.

PEA-CLEANER.

SPECIFICATION forming part of Letters Patent No. 661,802, dated November 13, 1900.

Application filed March 6, 1900. Serial No. 7,459. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. HILLEARY, Jr., a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Pea-Cleaners, of which the following is a specification.

This invention relates to improvements in machines for cleaning and separating peas after they have been hulled.

In the operation of hulling peas a number become broken in the hulling-machines, and the value of the output diminishes in proportion as the number of split peas contained in a lot increases.

By my present invention I provide a simple machine whereby the split and broken peas are separated from the whole peas and at the same time the peas are cleaned.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a vertical longitudinal section through the machine. Fig. 2 is a section of a portion of my inclined endless apron. Fig. 3 is a vertical cross-section, on a large scale, on the line 3 3 of Fig. 1 through the hopper and the sliding perforated bottom. Fig. 4 is a horizontal cross-section on the line 4 4 of Fig. 1 and illustrates the mechanism for vibrating the perforated bottom in the hopper. Fig. 5 is a perspective view of a portion of the apron and the cross-bar carrying the pendent strings.

In the drawings, *a* designates a table having at one end vertical standards *b*. An inclined rectangular frame *C*, having vertical side walls *c*, is supported at the elevated end by said standards *b*, and at the lower end said side walls are each provided with slots *d*, which extend parallel with the top and bottom edges of said frame, and a hole is also in each side wall at the lower end, which receives a pin, as will be presently explained. A roller *e*, carried on a shaft *e'*, is mounted in suitable bearings in the sides of the inclined frame *C* at the upper end and also in the standards *b*, and a square roller *f* is revolvable in movable bearings *g* at the lower end of the inclined frame, and said bearings are adjustable by means of the screw-rod *j* in the slots *d*. An endless apron *h* is passed around

the upper roller *e* and also the lower square roller *f* and travels in an inclined plane, the top or working stretch of the apron moving from the lower to the upper roller, as indicated by the arrow. By reference to Fig. 2 it will be seen that this endless apron comprises two plies or thicknesses of fabric, the inner ply or thickness *h'* next to the rollers being of some suitable belt material, with an outer ply or covering *h²* of some material or fabric having a nap.

The lower end of the inclined frame *C* at each side is provided with an end piece *i*, which takes over the slot *d*, and a screw-threaded rod *j* passes loosely through said end piece and is secured in the bearing *g*, which is movable in the slot *d*. A nut *j'* on the end of the rod screws up against the edge of the end piece *i* and serves as an adjusting device to draw the bearing *g* and square roller *f* downward to tighten the endless apron *h*. By the construction of the square roller *f* it will be seen that the apron at the lower end will be given a vibrating or waving motion as it passes over said roller. One of the side walls *c* of the frame at the upper end and below the roller *e* is provided with a segment-slot *k*, and a pin *k'* passes through said slot and enters the adjacent vertical standard *b*. A circular brush *l* has position beneath the apron at the upper end of the frame *C* and is mounted to revolve in adjustable bearings *l'* in the walls *c* of said frame. This brush *l* at the point of contact with the lower stretch of the apron *h* revolves in a direction opposite that in which the apron moves. A roller *m* has position beneath the apron at the lower end of the frame *C* and contacts with the apron and is revolved by the latter as it moves along. A water-receptacle *m'* is immediately below said roller and keeps the latter wet. As the apron moves the roller *m* contacting therewith will revolve and keep the apron damp.

A hopper *N* is supported at the upper end of the frame *C* above the apron and is provided with a vibrating perforated bottom *n*. The mechanism employed to vibrate the perforated bottom comprises the roller *e*, which at one end has a beveled face *o*. The side wall *c* of the frame is provided with a bracket *p*, which piv-

otally supports a bar *q*, one end of which con-
 tacts with the said beveled face *o* on the end of
 the roller *e*. The opposite end of the pivoted
 bar is provided with a vertically-projecting
 5 pin *q'*, which takes in a hole in the perforated
 bottom *n*. A spiral spring *r*, bearing against
 the pivoted bar, serves to keep the free end of
 the bar in contact with the said bevel-face *o*.
 It will thus be seen that as the roller *e* revolves
 10 the bevel-face *o* will cause the bar *q* to oscil-
 late and cause the perforated bottom *n* to vi-
 brate. A separator *S* is also carried on the
 table *a*, and comprises a rectangular frame *s*,
 surrounding an endless apron *t*. The upper
 15 stretch of this apron travels in a forward di-
 rection on two rollers *t'* and *t''*, one at each
 end of said frame. The shaft carrying the
 roller *t'* is also provided with a drive-pulley
t'''. A standard *u* projects up at either side
 20 above the separator-frame *s* and is provided
 with a number of holes *s'*. The lower end of
 the inclined frame *C* has position over the
 separator-frame *s*, and the standards *u* take
 on the inside of the side walls of said frame
 25 *C*. By passing a pin or bolt through the hole
 in the lower end of the side walls and also
 through one of the holes *s'* in the standard
u the lower end of the frame *C* may be raised
 or lowered. A cross-bar *v* extends from one
 30 side of the inclined frame to the other, and a
 plural number of strings *v'* hang pendent
 from the cross-bar and contact with the up-
 per stretch of the moving apron *h*.

A curtain *w* hangs pendent in front of the
 35 square roller *f*, against which the peas strike
 as they roll down the inclined apron and are
 directed on the slowly-moving separator-
 apron *t*, where they are spread out and the
 yellow peas, of which there are sometimes
 40 quite a number, are picked out by hand,
 while the good peas are carried forward by
 the apron *t* and discharged into a chute *w'*.

Motion is imparted to the several aprons
 and rollers as follows: A belt *y* is passed over
 45 one of the pulleys on the shaft of the roller *e*,
 then down around an idler *x*, then forward
 and over the top of the pulley *t'''*, back around
 another idler *x'*, and up around the pulley on
 the shaft *e'*. A short belt *y'* connects a sec-
 50 ond pulley on the shaft *e'* with a pulley *z* on
 the shaft of the circular brush *l*, by which the
 latter is driven.

The operation is as follows: Peas are thrown
 into the hopper *N*, from which they pass
 55 through the perforated bottom onto the apron
h. The working surface of the apron just be-
 neath the hopper moves upward at an incline
 and the peas dropping thereon roll down the
 upward-moving belt. The peas roll down the
 60 upwardly-moving apron until they come in
 contact with the pendent strings *v'*. Now it
 is to be noted in this connection that there is
 a coaction between the row of strings and the
 nappy covering *h''* on the apron, to wit: As
 65 the apron moves upwardly its nap will take
 hold of the ends of the strings and tend to

carry them upward, causing the lower ends
 of the strings to assume an upwardly-curved
 position, which forms a sort of pocket for the
 peas. The strings will check or stop the
 70 down-rolling peas and the latter will revolve
 in such pocket on account of the continuous
 upward movement of the apron. As the peas
 revolve they will have a slight abrasive action
 with each other and with the apron and strings
 75 and any dirt, pieces of pod, or other refuse
 or trash will be thoroughly rubbed off them
 and be carried upward by this apron and dis-
 charged at the upper end. The abrasive ac-
 tion and revolution of the peas will continue
 80 only for a moment and until an accumulation
 of peas at one or several strings causes the
 said string or strings to swing down and let
 such accumulated peas roll down the inclined
 apron. As soon as these peas pass the said
 85 string or strings the latter will at once be
 caught by the nap of the upwardly-moving
 apron and carried up to again form the pocket
 or pockets for other peas. It is evident that
 the accumulation of peas at one or several
 90 adjacent strings will swing down only those
 strings and produce a slight opening at only
 one point and will have no effect on any
 other strings, whereas if each string were not
 95 movable independently of all the others—
 that is, if a continuous flap or curtain were
 stretched across the apron—this downwardly-
 swinging or opening action would not be con-
 fined to one slight point, but would produce
 a broad opening of the flap, and thus let some
 100 peas and refuse or trash pass through before
 the peas had received the rubbing action
 just described. If there are half-peas in the
 lot, these will not ordinarily roll, but lie flat,
 and will be carried upward by the belt and
 105 discharged with the dirt at the upper end.
 Sometimes a half-pea will roll on its edge,
 and such halves will strike against the pend-
 ent strings and be upset and then with the
 trash be carried upward. The good peas dis-
 110 charging at the bottom will strike against the
 curtain *w* and drop down on the endless
 apron *t*. Any dirt remaining on the apron
 after the same turns around the roller *e* will
 be brushed off by the brush *l*. The roller
 115 *m* is provided to dampen the apron *h*, as the
 matter to be separated will cling to the cover-
 ing *h''* better when the latter is damp.

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

1. In a device of the character described,
 the combination of an endless apron com-
 posed of two plies, the inner ply being of in-
 elastic belt material and the outer ply having
 125 a napped surface, and arranged to travel in
 an inclined plane with its napped surface
 moving from its lower to its higher end; and
 a plurality or row of independently-movable
 flexible strings hanging with their lower ends
 130 normally in contact with said upwardly-mov-
 ing napped surface, whereby the strings will

be caught by the napped surface and caused to assume an upwardly-curved position, as set forth.

5 2. In a device of the character described, the combination of a napped endless apron whose upper surface is movable in an inclined plane from the lower to the higher end; a hopper adapted to discharge peas on said apron; and a plurality or row of flexible strings hang-

ing with their lower ends normally in contact with the napped surface of the upwardly-moving stretch of said apron, as set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

WILLIAM T. HILLEARY, JR.

Witnesses:

CHARLES B. MANN, Jr.,

CHARLES L. VIETSCH.