

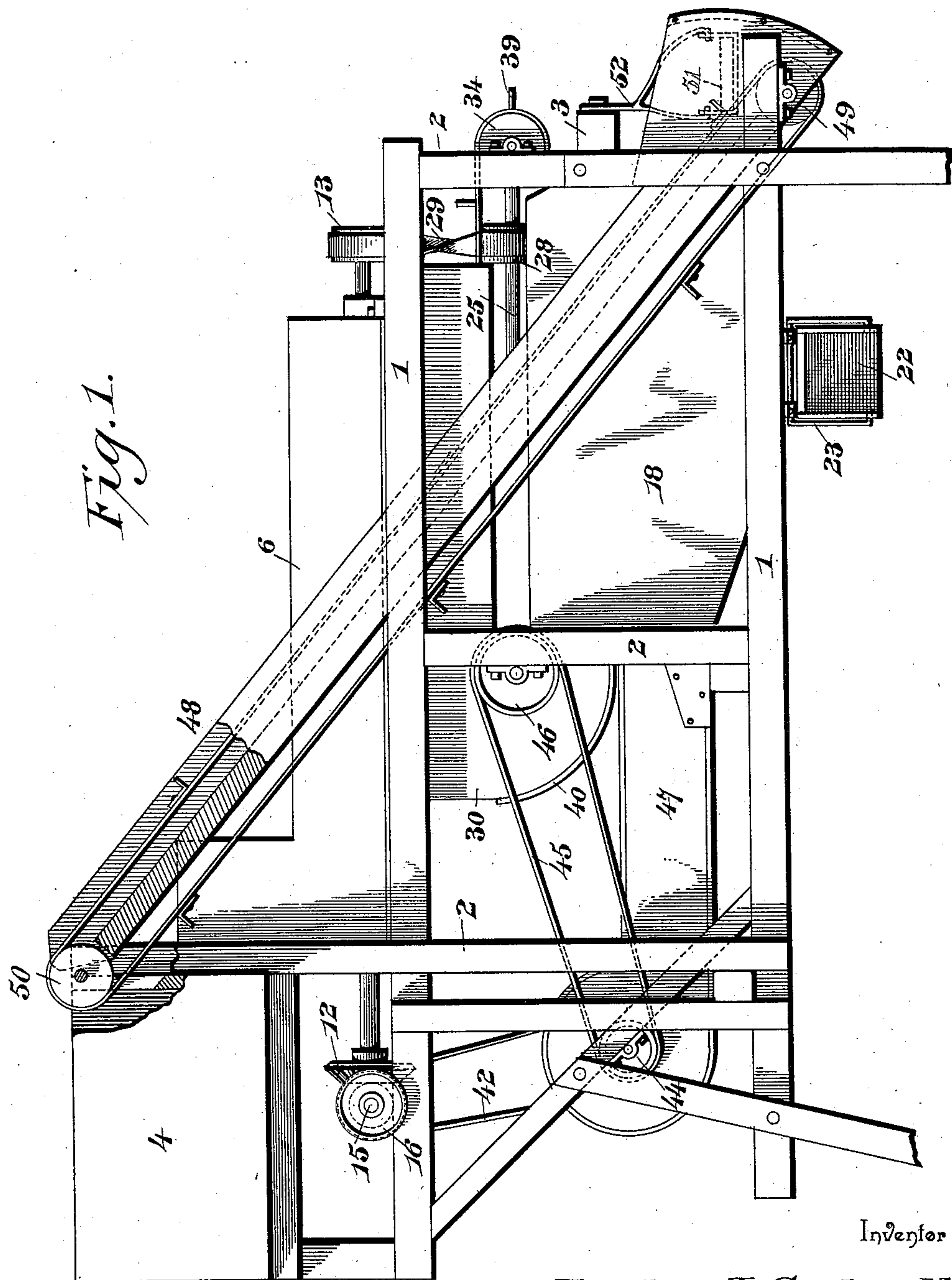
(No Model.)

3 Sheets—Sheet 1.

L. J. STILWELL.
PEA THRESHER AND CLEANER.

No. 601,026.

Patented Mar. 22, 1898.



Inventor

Witnesses

Jas. L. McLaughlin
W. B. Hillyard.

By *His* Attorneys,

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C. A. Snow & Co.

(No Model.)

L. J. STILWELL.

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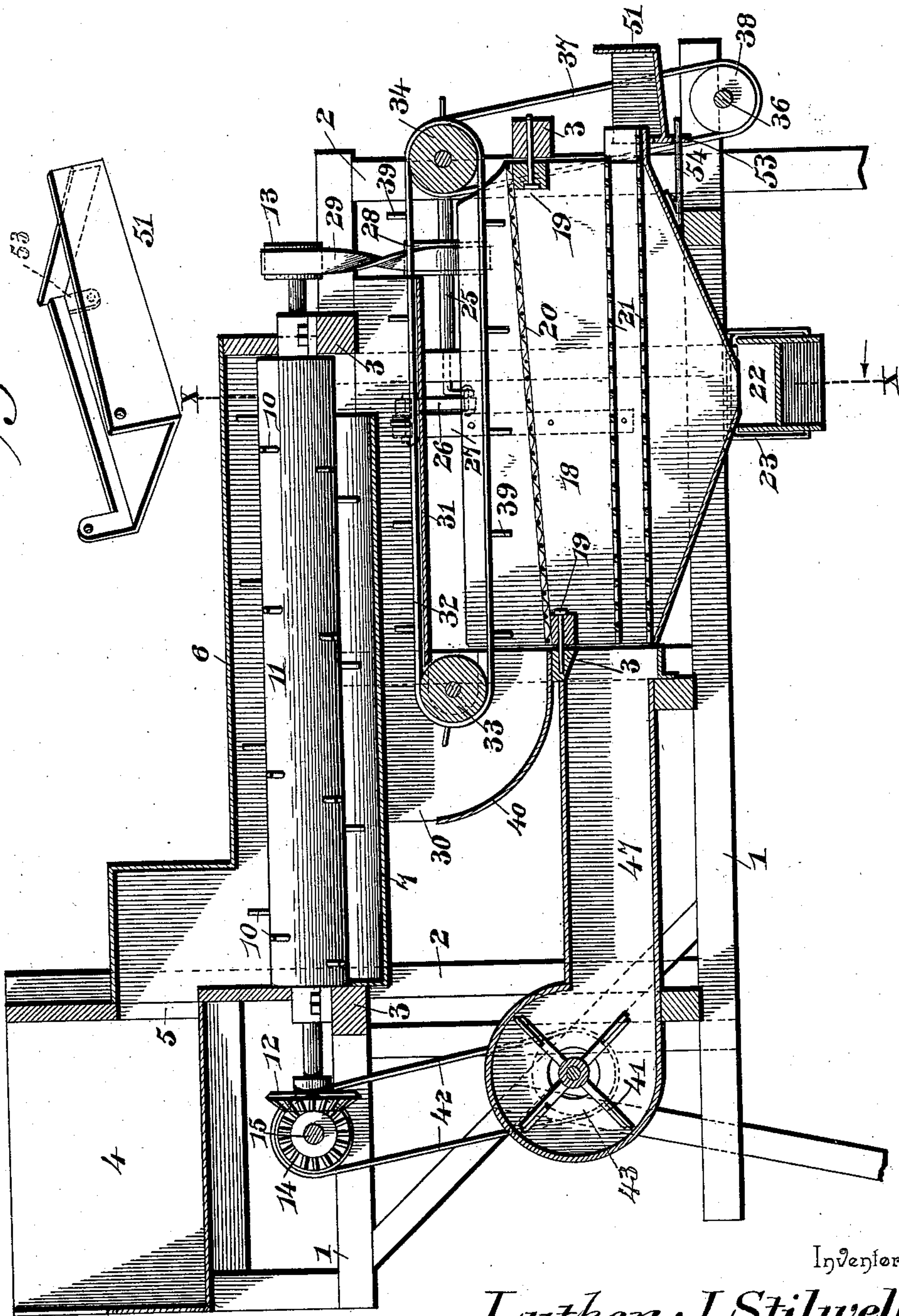
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Fig. 5.

Fig. 2.



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Fig. 4.

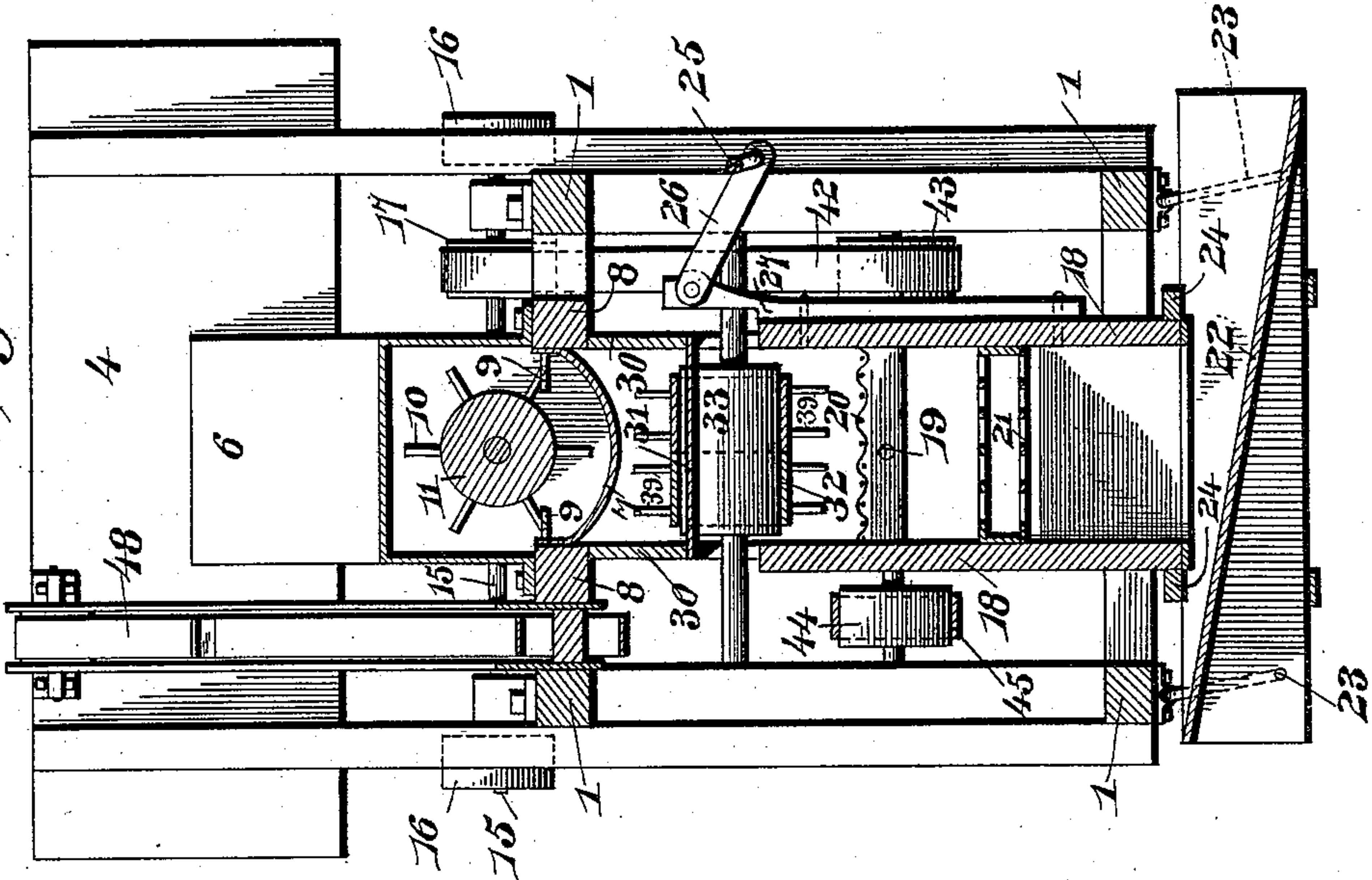
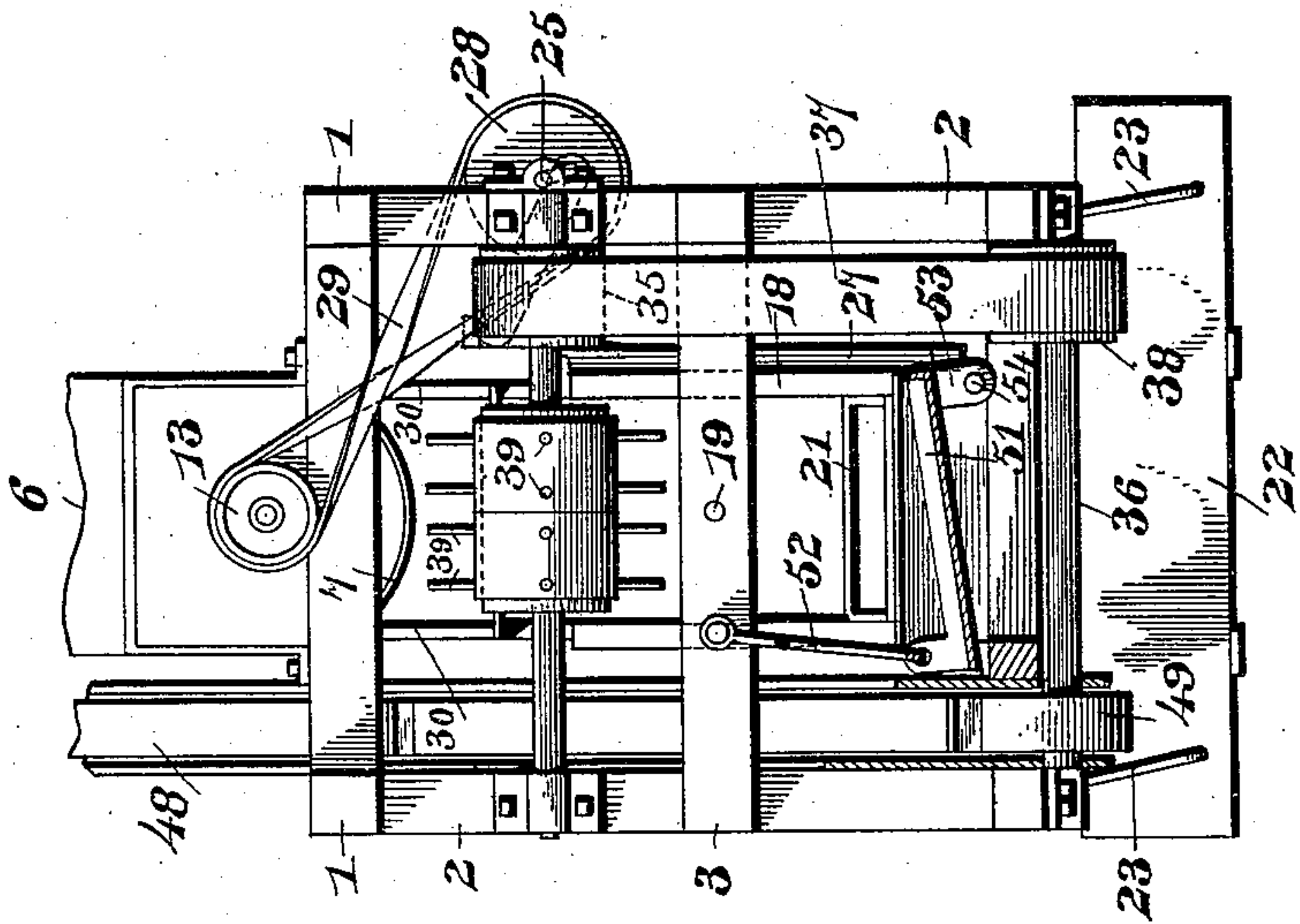


Fig. 3.



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UNITED STATES PATENT OFFICE.

LUTHER J. STILWELL, OF NEVIN, NORTH CAROLINA.

PEA THRESHER AND CLEANER.

SPECIFICATION forming part of Letters Patent No. 601,026, dated March 22, 1898.

Application filed February 4, 1897. Serial No. 622,035. (No model.)

To all whom it may concern:

Be it known that I, LUTHER J. STILWELL, a citizen of the United States, residing at Nevin, in the county of Mecklenburg and State of North Carolina, have invented a new and useful Pea Thresher and Cleaner, of which the following is a specification.

This invention relates to machines for hulling and separating peas, beans, and kindred products.

The purpose of the invention is the provision of a machine for the purpose aforesaid which will break the hulls and effect a separation of the berries therefrom without injuring the marketable product and to combine with a machine of this character a conveyor for returning to the hopper or threshing mechanism such hulls or portions thereof which may contain any of the berries, thereby preventing loss which would otherwise occur.

For a full understanding of the merits and advantages of the invention reference is to be had to the accompanying drawings and the following description.

The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and to a full disclosure of the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is a side elevation of a machine constructed in accordance with this invention, parts being broken away, showing the relation of the return-conveyor to the hopper. Fig. 2 is a vertical central longitudinal section thereof. Fig. 3 is a front end view of the machine, the upper portion of the return-conveyor and the hopper being omitted and the lower portion of the conveyor and the pan being in section. Fig. 4 is a transverse section about on the line X X of Fig. 2, looking to the left, as indicated by the arrow. Fig. 5 is a detail view of the pan.

Corresponding and like parts are referred to in the following description and indicated in the several views of the accompanying drawings by the same reference characters.

The frame of the machine is of skeleton form and comprises upper and lower longitudinal bars 1, vertical posts 2, connecting the longitudinal bars, and transverse bars 3, join-

ing the side pieces. A hopper 4 is located at one end of the framework and has an opening 5 in its inner wall immediately above the plane of the bottom, and a casing 6, closed at its top and sides and extending lengthwise of the machine, communicates at one end with the hopper by means of the opening 5. A trough 7 is located immediately below the casing 6 and is semicircular in cross-section. Parallel bars 8 have the longitudinal edges of the trough 7 and casing 6 secured thereto and are studded on their inner sides with pins 9, which coöperate with the teeth 10 of a drum 11, operating in the space formed between the casing 6 and trough 7. The teeth 10 are disposed spirally around the drum 11 and serve to feed the peas, &c., through the trough 7 and in conjunction with the pins 9 break the hulls and liberate the berries. The journals of the drum 11 are extended beyond their bearings and are supplied with a bevel-gear 12 and a band-pulley 13, the former meshing with a companion bevel-gear 14 on a transverse shaft 15, having end pulleys 16 and an intermediate pulley 17. The power for operating the machine is applied to one of the end pulleys 16 by means of a drive-belt (not shown) and extending from a convenient part or engine.

A shoe 18 is located immediately below the rear portion of the threshing mechanism and is pivotally supported at its ends by means of pins 19, upon which it vibrates laterally, and this shoe is supplied with an inclined riddle 20 and a series of screens 21, and its bottom is composed of oppositely-inclining portions which direct the berries centrally and into a laterally-discharging spout 22, and which is suspended from the frame by means of swinging hangers 23. The spout 22 is independent of the shoe, but vibrates therewith by means of cross-pieces 24, which connect its sides and engage with the opposite sides of the shoe, as most clearly indicated in Fig. 4. A shaft 25 is journaled longitudinally of the machine and is provided at one end with a crank which is connected by a pitman 26 with an arm 27, secured to a side of the shoe 18, thereby vibrating the latter. A pulley 28 is mounted upon the shaft 25, and a crossed belt 29 connects the pulleys 13 and 28 and serves to transmit motion from the drum

11 to the shaft 25, whereby the shoe is vibrated when the machine is in operation.

Parallel pieces 30 are connected at their upper ends in any suitable manner with the bars 8, and a plate 31 is fastened to the lower edges of the parts 30, and the upper portion of a conveyer 32 travels thereover to move the hulls and peas to the front or receiving end of the shoe. The conveyer 32 may consist of a single or a number of endless belts placed side by side and mounted upon rollers 33 and 34, the latter being located near or at the rear end of the machine and having a pulley 35 on its shaft for transmitting motion to a shaft 36 by means of a drive-belt 37 and a pulley 38, the latter being secured upon the shaft 36. The conveyer is provided with a series of pins or teeth 39, which make positive engagement with the peas and hulls and move them through the space formed between the side pieces 30, trough 7, and plate 31. The lower portion of the conveyer operates in the upper portion of the shoe 18 and over the riddle 20 and urges the berries and hulls over the said riddle and agitates and loosens them at the same time, whereby the berries will fall through the openings or meshes of the riddle, the larger hulls passing over the riddle and dropping and meeting with a blast of air which blows them over the rear end of the machine. A curved plate 40 is located at the inner end of the side pieces 30, and its lower end comes about opposite the riddle 20, and this plate gives proper direction to the berries and hulls when passing from the threshing mechanism to the separating-shoe.

A fan 41 is located at the front end of the machine, immediately below the hopper, and is driven by means of a belt 42, passing around the pulley 17 and a corresponding pulley 43 on the fan-shaft, and the latter is provided at its opposite end with a pulley 44, from which power is taken by means of a belt 45 for operating the conveyer 32, said belt 45 passing around a pulley 46 on the shaft of the roller 33. A spout 47 connects the fan-case with the front end of the shoe, so as to deliver a blast of air into and through the spaces formed between the riddle and screens, so as to carry off hulls and small particles. It will be understood that the speed of the fan will be such as not to drive off the berries or any hulls having berries attached thereto, thereby preventing any appreciable loss from the berries being blown over.

A conveyer 48 is located at one side of the machine and returns to the hopper any hulls containing berries, and this conveyer consists of a suitable trough and belt, the latter having buckets at intervals in its length and being supported at its ends upon suitable pulleys, the lower pulley 49 being secured to the shaft 36, so as to rotate therewith and by means of which the return-conveyer is set in motion. The upper pulley 50 is disposed so as to insure the hulls returned dropping into the hopper.

The pan 51, located at the receiving end of the return-conveyer and at the rear end of the machine, is suspended from the frame by means of a bifurcated link 52 and has a depending lug 53, which is apertured to receive an arm 54, extending from the shoe 18, whereby the pan is vibrated to agitate the hulls and attached berries contained therein, so as to move the same to the return-conveyer. This pan inclines toward the return-conveyer and is disposed so as to deliver the hulls having berries attached thereto.

The peas, beans, &c., to be threshed and cleaned are placed in the hopper 4 and fed through the opening 5 into the casing 6 and are taken up by the teeth on the drum 11 and advanced through the trough 7, the teeth of the drum lifting the hulls and cooperating with the pins 9 to break the same, so as to liberate the berries contained therein. The broken hulls and berries are delivered upon the upper portion of the conveyer 32 and are moved by it over the plate 31 and through the shoe over the riddle 20, and in their passage over the said riddle the peas and small particles will pass through the openings or meshes of the riddle and dropping upon the screens 21 are subjected to a blast of air from the fan 41, which carries off the small particles, the peas or berries passing through the openings of the screens and into the spout 22 and to one side of the machine, as herein described. The hulls dropping from the riddle meet with the blast of air and are blown over the pan 51. Any hulls having peas attached drop into the pan and by the agitation thereof are moved to the side conveyer and returned to the hopper to be again passed through the machine.

Having thus described the invention, what is claimed as new is—

1. In a combined thresher and separator, the combination of a horizontally-disposed threshing mechanism, a vibrating shoe placed beneath the threshing mechanism and having its receiving end a distance from the delivery end thereof, and an endless conveyer between the threshing mechanism and shoe, the upper portion carrying the hulls and berries from the threshing mechanism to the separator, and the lower portion moving the said hulls and berries over the riddle of the shoe, substantially as specified.

2. In a combined thresher and separator, the combination of a threshing mechanism, a vibrating shoe placed beneath the threshing mechanism, side pieces pendent from the framework of the threshing mechanism and connected at their lower edges by a plate forming a space between the shoe and thresher, and an endless conveyer having its upper portion disposed to travel through the said space and over the plate, and having its lower portion operating through the upper portion of the shoe to positively move the hulls and berries over the topmost riddle, substantially in the manner set forth.

3. In a combined thresher and separator for
 peas, &c., the combination of a threshing
 mechanism comprising a horizontally-dis-
 posed trough and toothed drum, a vibrating
 shoe located below the threshing mechanism
 with its receiving end a distance from the de-
 livering end of the trough, side pieces connected
 by means of a plate and inclosing a space
 which is closed at its upper side by the said
 trough, a curved plate at the inner or front
 end of the said space for properly directing
 the hulls and berries into the shoe, and an
 endless conveyer having its upper portion
 adapted to operate in the aforesaid space over
 the plate, and having its lower portion work-
 ing through the upper portion of the shoe to
 move the berries and hulls over the topmost
 riddle, substantially as described.

4. In combination, a hopper, a threshing
 and separating mechanism, a pan suspended
 from the frame at one end and having a lug
 at its opposite end, an arm projecting from
 the shoe and engaging with the lug to support
 the opposite end of the pan and impart a vi-
 bratory movement thereto, and a conveyer
 for returning the hulls having berries cling-
 ing thereto from the pan to the hopper, sub-
 stantially as and for the purpose set forth.

5. In combination, a frame, a vibrating shoe,
 a spout independent of the shoe and sus-
 pended from the frame, and cross-pieces con-
 necting the sides of the spout and coming upon

opposite sides of the shoe, whereby the shoe
 and spout are caused to vibrate together, sub-
 stantially as specified.

6. In combination, a hopper, a horizontally-
 disposed trough, a drum operating in the
 trough and having spirally-arranged teeth, a
 casing having communication with the hopper
 and closing the drum and trough, a plate be-
 neath the trough and projecting a short dis-
 tance beyond the delivery end thereof, side
 pieces closing the space formed between the
 plate and trough, a vibrating shoe, an endless
 conveyer having its upper portion operating
 over the aforesaid plate and through the space
 formed thereby, and having its lower portion
 operating through the upper portion of the
 shoe and over the topmost riddle, a vibrating
 pan independent of and at the rear end of the
 shoe, a spout independent of the shoe and
 caused to move therewith, a fan disposed to
 deliver a blast of air through the shoe, and
 a return-conveyer receiving the unthreshed
 berries from the vibrating pan and conveying
 them back to the hopper, substantially in the
 manner set forth for the purpose described.

In testimony that I claim the foregoing as
 my own I have hereto affixed my signature in
 the presence of two witnesses.

LUTHER J. STILWELL.

Witnesses:

J. S. SPENCER,
 R. M. MILLER.