H. L. WILLIAMS.

PEA AND BEAN THRESHER.

APPLICATION FILED APR. 24, 1911.

1,166,730.

Patented Jan. 4, 1916.

3 SHEETS—SHEET 1.

Fig. 1.

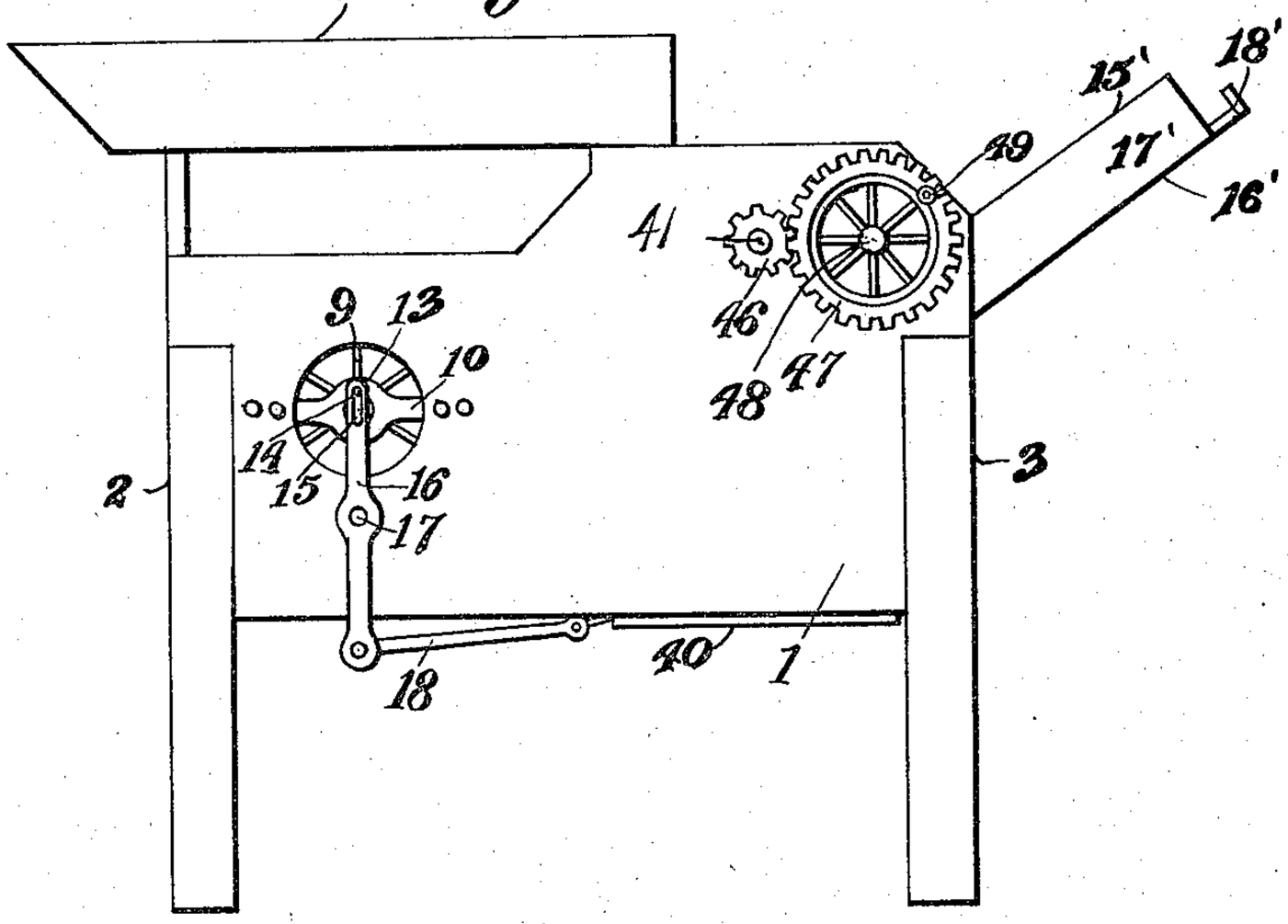
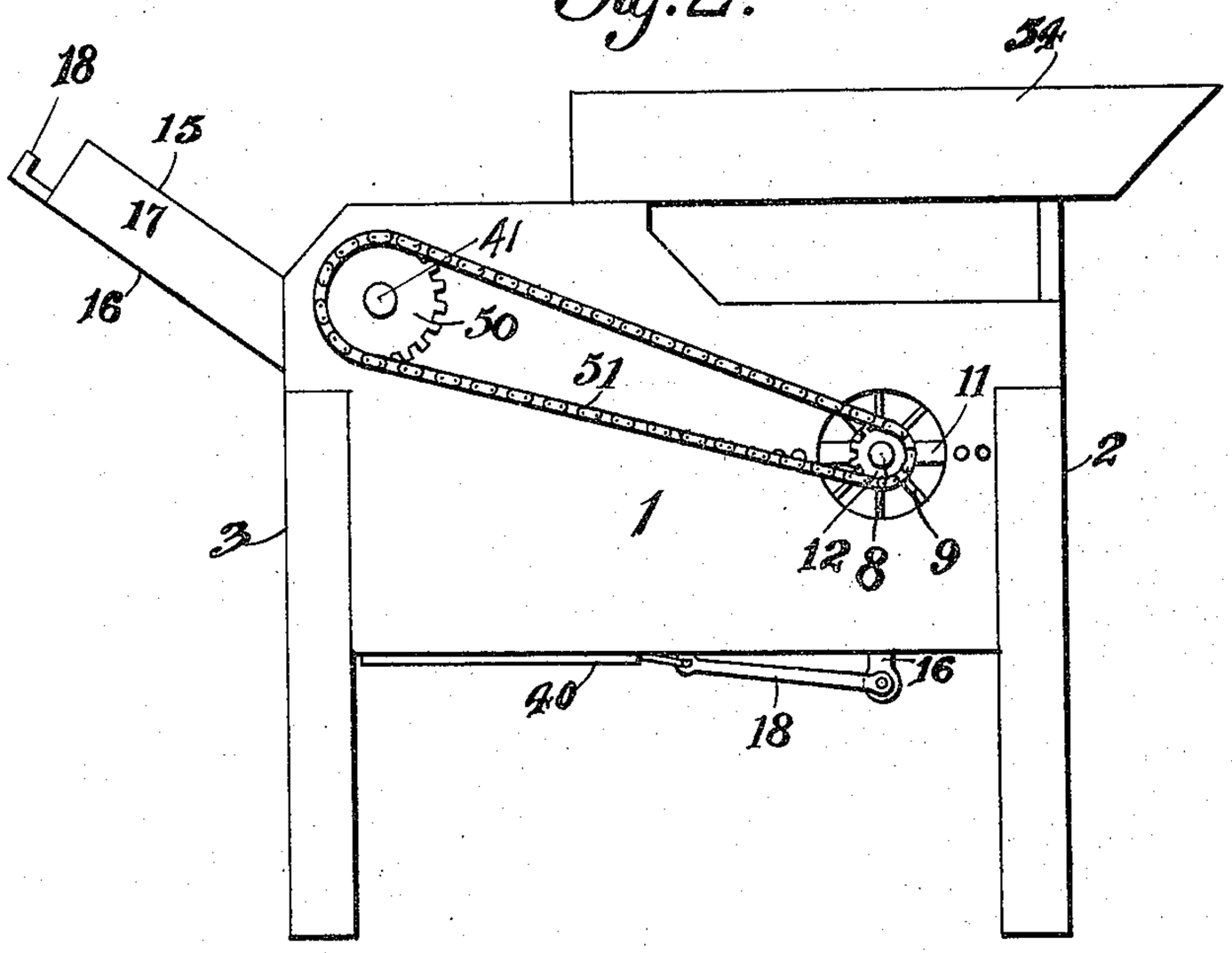


Fig. 2.



Witnesses

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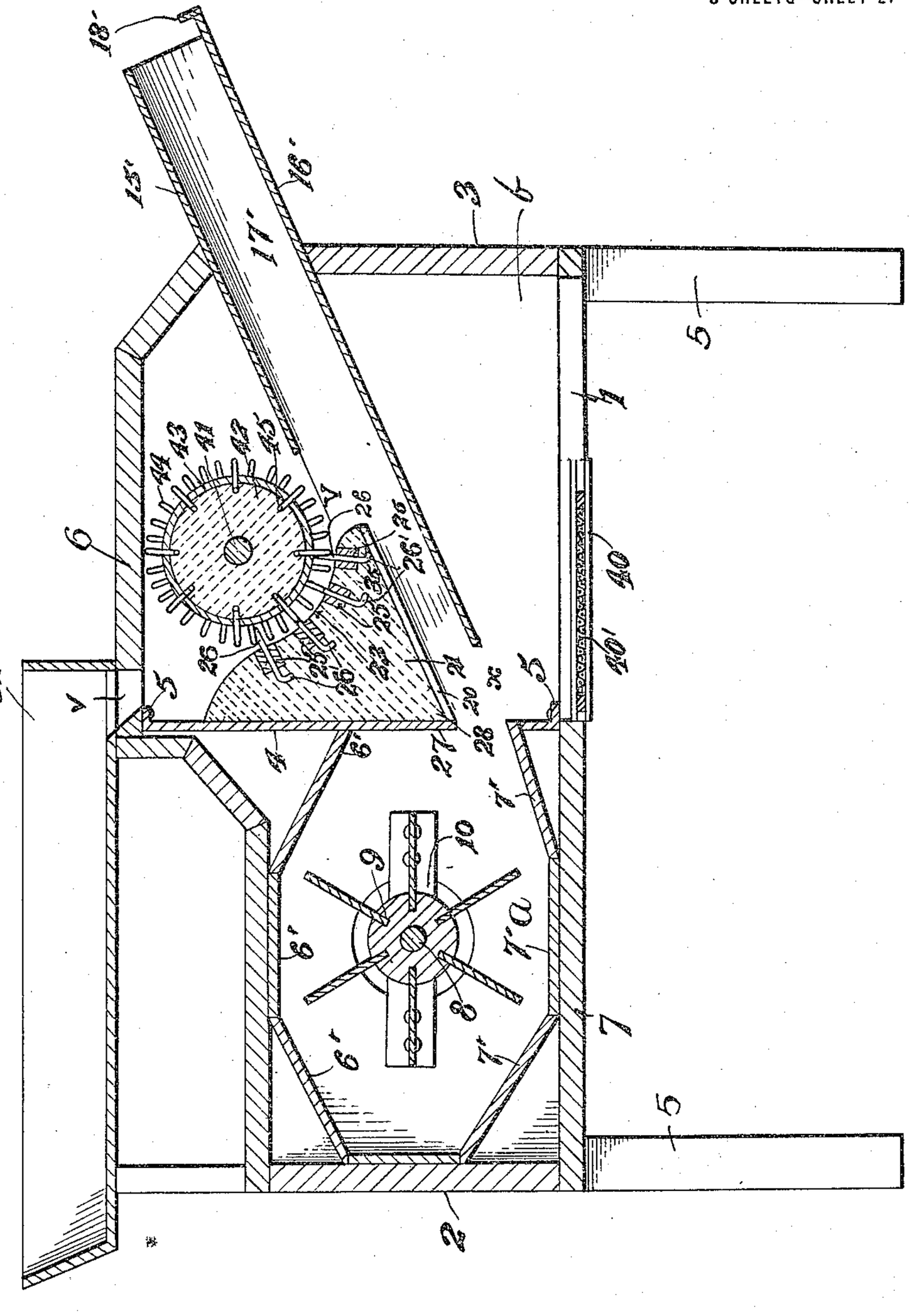
3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 5.

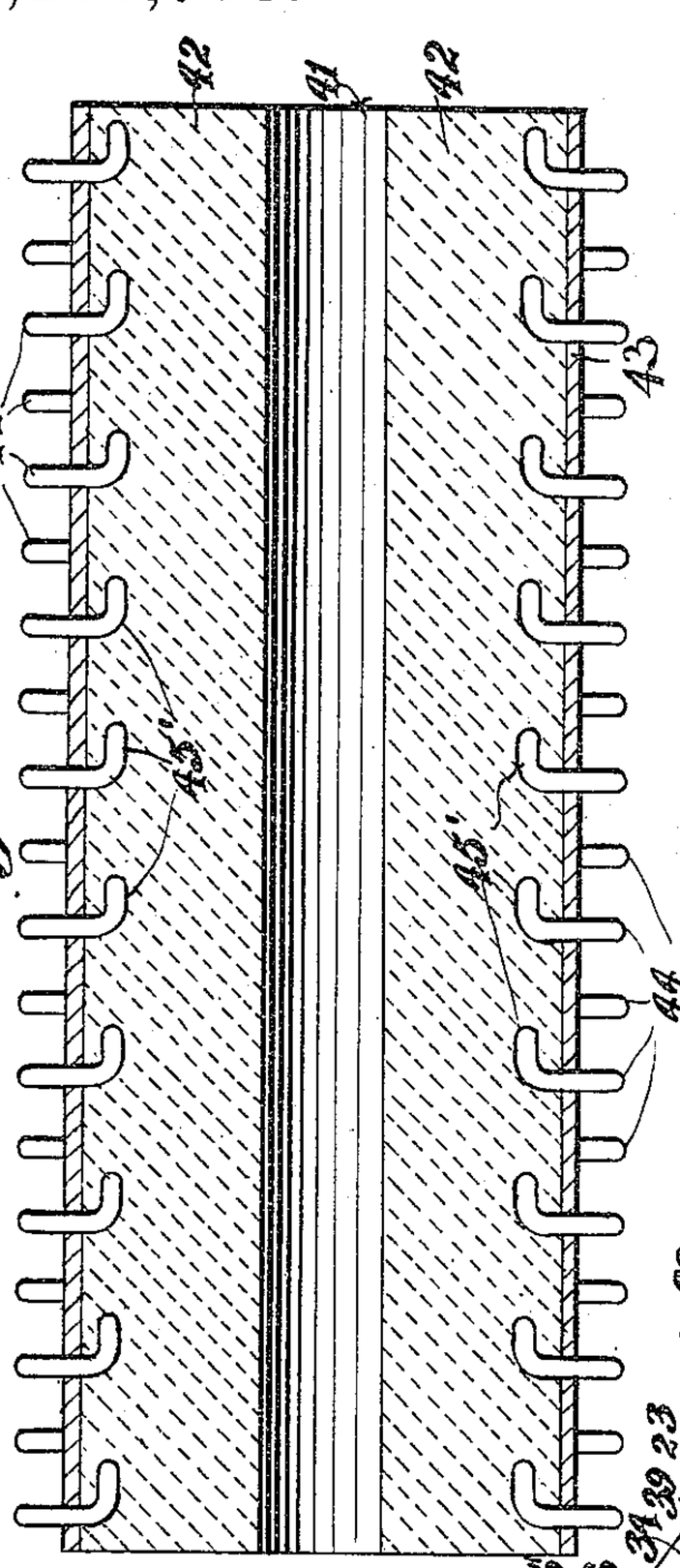

Fig. 7.

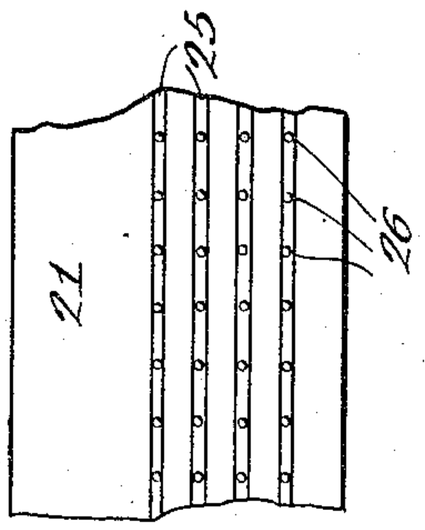

Fig. 6.

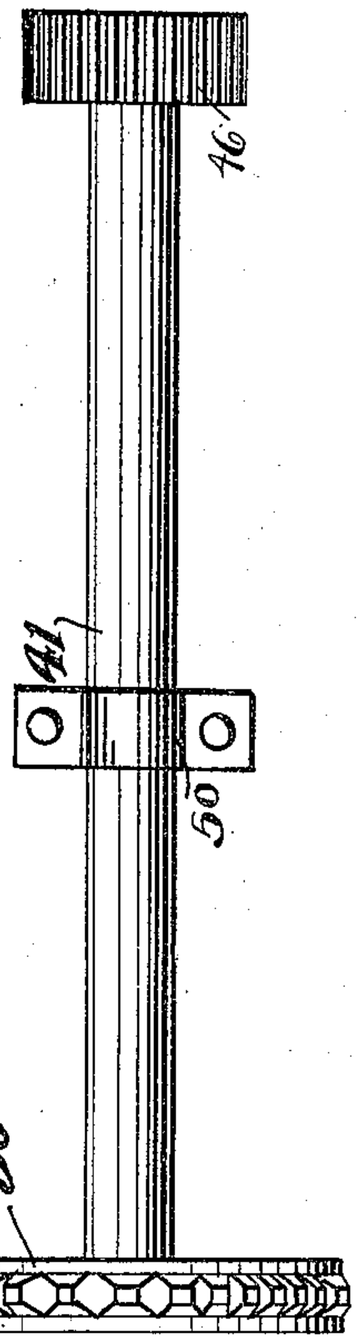

Fig. 4.

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UNITED STATES PATENT OFFICE.

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PEA AND BEAN THRESHER.

1,166,730. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed April 24, 1911. Serial No. 622,973.

To all whom it may concern:

Be it known that I, HORACE L. WILLIAMS, a citizen of the United States, and a resident of Dyersburg, in the county of Dyer and State of Tennessee, have invented certain new and useful Improvements in Pea and Bean Threshers, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to certain novel improvements in threshing machines of the character used in hulling peas and beans.

My invention has for its primary object to improve the construction and operation of especially the smaller sized machines of that class sold for individual use for the purpose of hulling and cleaning peas and beans. To this end the invention consists in the construction of the concave in such a manner that the position of the pins can be correctly determined while the concave is being made, the whole forming a strong and durable construction.

A further object is to improve the construction and operation of the cylinder so that the working efficiency of the machine will be increased while the work required to operate the machine will be reduced to a minimum, the whole machine being constructed to secure a maximum of work with a minimum of power expenditure.

With these and other objects in view the present invention consists in the combination and arrangement of parts as will be hereinafter more fully described and finally pointed out in the appended claim, it being further understood that changes in the specific structure shown and described may be made within the scope of the claim, without departing from the spirit of the invention.

In the accompanying drawings forming a part of this specification, and in which like numerals of reference indicate similar parts in the several views: Figure 1, shows a side elevational view of a machine embodying my invention disclosing the main driving gear. Fig. 2, shows a side elevational view disclosing the opposite side of the machine. Fig. 3, shows an enlarged lengthwise sectional detail with certain parts removed. Fig. 4, shows a sectional detail through the mold used in manufacturing the concave. Fig. 5, is an enlarged sectional detail through the cylinder showing the location of the pins, and Fig. 6, is a detached detail of the cylinder shaft. Fig. 7 shows a plan view of the concave.

It is not an easy matter to get good results in the use of the pea and bean hullers as usually constructed. This is especially true as to the smaller sized machines in connection with which the cylinders are less than a foot in length. Owing to the lightness of the cylinder and machine parts, it is hard to properly regulate the speed of the machine. In my present invention I overcome the objections encountered in these machines in that I give considerable weight to both the cylinder and concave; thereby adding stability to the machine while the cylinder is in addition provided with a smooth jacket, whereas the concave pins project through a base presenting a series of cross or transverse friction surfaces, so that while the progress of the pods over the concave is retarded, the cylinder owing to its smooth surface is permitted to freely revolve against the pods, resulting in the cylinder teeth shredding and tearing the pods to permit the ready escape of the seeds.

In the accompanying drawings, the numerals 1, 1, designate the two similar sides of a threshing machine housing embodying my invention, the numerals 2 and 3, designate the two ends and 6 and 7, the top and bottom of the housing. This housing is further strengthened by a middle transversely positioned partition 4, as shown in Fig. 3, which does not extend clear down to the bottom of the housing. By this means the housing is divided into a fan box *a*, and a communicating threshing compartment *b*. The housing is supported by means of the standards 5. The fan box has the panels 6′ and 7′ to give rigidity to the structure, though these panels 6′ and 7′ are not absolutely necessary.

Extending through the fan box is the shaft 8, carrying the fan 9, this fan being of conventional construction. As shown more clearly in Figs. 1 and 2, the fan shaft 8, is supported within a suitable bearing bracket 10, upon one side and a bearing bracket 11, upon the opposite side, the sides 1, of the housing having suitable air intake openings adjacent to the bearings 10 and 11, as is usual in fan box construction.

Upon one side the shaft 8, carries the chain pinion 12, and upon the opposite end the crank 13, having a suitable pin 14, work-

ing within the slot 15, of the rock lever 16, this lever being pivotally held to the pin 17. A pitman 18, extends from the lower end of this rock lever 16.

Extending obliquely from the lower end of the fan box through the upper end of the compartment *b*, is an open ended chute including the upper panel 15′, and the lower panel 16′, these panels being connected by means of the side panels 17′. The lower panel 16′, extends beyond the top 15′ and side panels 17′, and carries at its outermost end the upstanding top lip 18′, as clearly shown in Figs. 1 and 3. As disclosed in said Fig. 3, the bottom panel 7′, of the fan box forms a continuation of the lower member 16′, of the chute, this member 16′, ending proximal to the panel portion 7′, to provide the escape opening *x*.

Obliquely held to the sides of the housing 1, are two spaced battens 20, which give support to the concave 21, this concave being made of concrete in the shape more clearly shown in Fig. 4. This concave has an inwardly curved surface 23, within which at predetermined points are embedded the parallel rough surfaced wooden cleats 25, these cleats having suitable openings through which the concave pins 26, project. These pins 26, are L-shaped and have their bent stems 26′, embedded within the concrete body of the concave. As shown in Fig. 4, a suitable mold is used in making the concave, this mold comprising the flat section 27, to which the end members 28, are secured. In Fig. 4, the mold is shown reversed, in order to disclose the concave in its proper position. The end members 28, give support to the supporting legs 29. The edges of these ends 28, opposite the flat section 27, are in the shape of a reverse curve, as shown in Fig. 4, and secured to this curved edge of the mold ends 28, are the wooden end strips 30 and 31, held to the end members 28, by means of the thumb screws 32. Held in spaced relation between the ends 30 and 31, are the mold battens 33, 34 and 35, each of these being secured by means of a thumb screw 32. The opposite edges of the battens 33, as well as the inner ends of the end members 31 and 30, are chamfered to receive the apertured strips 35′, within the apertures of which are held the points of the concave pins 26, the shorter stems 26′, being held within the concrete body of the concave, as shown. The edges of the strips 35′, are chamfered, as clearly shown in Fig. 4, so that after the cement has hardened and the concave is ready to be removed from the mold, these strips can be drawn outward in releasing the thumb screws 32, and turning the securing plates 39, which are used to hold the members 35′ in place, lengthwise to permit the escape of these apertured mold strips. The wooden cleats 25, are held within the mold by means of the pins 26, which project through the strips 35′, and can so be nicely positioned, as the ends project through the strips and can be driven backward or forward before the cement hardens in order to secure correct location of the pins. After the pins have all been properly set, the concrete is introduced into the mold so that the cleats 25, form eventually a part of the concave. As shown, the outer faces or surfaces of these cleats come in alinement with the working face or surface of the concave. This construction provides not only a durable concave, but presents a rough retaring surface immediately surrounding the concave pins. This forms an important part of my invention. As shown in Fig. 3, the bottom of the concave forms part of the top of the chute.

Held upon the cleats 40, secured to the sides 1, of the housing, is a shaker in the form of a slidably held sieve 40′, the pitman 18, actuated by the fan shaft being connected to this sieve so that as the fan rotates, a shaking movement is imparted to the sieve 40′. Transversely held within the upper part of the housing and approximately above the intake opening *v*, is the driven shaft 41, which carries the concrete cylinder 42, covered by means of a smooth sheet metal foraminous jacket 43, through the foramini of which extend the cylinder pins 44, the lower stems 45′, of which are embedded within the concrete body of the cylinder. This shaft 41, has a chain sprocket 50, bolted to it, as shown in Fig. 6. Upon one end this driven shaft 41, gives support to a gear 46, in mesh with the driving pinion 47, held upon a pin 48, and operated by means of a handle 49.

The opposite end of the shaft carries a chain sprocket 50, from which passes a chain 51, in mesh with the chain pinion 12, as clearly shown in Fig. 2. The concrete cylinder is cast about the shaft 41, in any approved manner, the jacket 43, serving as a mold resting upon a suitable bottom. The pins 44, are placed within the jacket openings before the concrete is tamped into the jacket.

A hopper 54, is secured to the machine and empties at a point above and between the concave and cylinder, as clearly shown at *v* in Fig. 3.

The operation of my device is very simple. The pods to be threshed are placed within the hopper 54, and fed through the opening, the driving pinion 47, in the meantime being actuated. This results in the cylinder being rotated and through the connecting intermedium the fan as well as the shaker are actuated. Owing to the weight of the cylinder after the machine is started, this cylinder operates as a balance wheel in regulating the speed of the machine. The great advantage of this construction lies in the fact

that the pods are held and retarded by the concave pins and the rough cleats, while the cylinder pins are permitted to quickly work through the pods, owing to the smooth surface of the jacket 43. As the pods are torn the seeds and pods drop into the chute where they encounter the air blast generated by the fan which is sufficient to carry the pods up the chute, while the seeds drop downward and are gathered upon the shaker through which the impurities pass, while the seeds are collected at the end of the shaker, as is usual in this class of machinery.

A threshing machine constructed according to my invention is simple and inexpensive and both durable and efficient in operation.

It is of course understood that while my construction is especially adapted to be used in connection with the smallest sized machines, the same can with equal advantage be used in connection with the larger sized machines.

As shown, the chute extends obliquely from the lower end of the fan box through the upper outer end of the concave compartment and the intake opening x, is located within the top of the chute and approximately mid-length of its ends. If desired, the shaft 41, may be provided with a balance wheel. The teeth within the cylinder and concave being round, do not damage the seed.

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

A device of the type described, including a concave of plastic material having a recurved working face with a plurality of spaced rough-surfaced cleats forming retarding surfaces and provided with openings extending transversely therethrough, said cleats being embedded in said plastic material with their outer rough-surfaces alining the working face of the concave, said cleats having pins extending through their openings, said pins having bent stems with their inner bent terminals also embedded in said plastic material.

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

HORACE L. WILLIAMS.

Witnesses:

WILLIE TODD,

OSCAR ROGERS.