(No Model.) 2 Sheets—Sheet 1.

J. F. RHODES.

COMBINED PEA THRASHER AND SEPARATOR.

No. 522,493. Patented July 3, 1894.

Fig. 1.

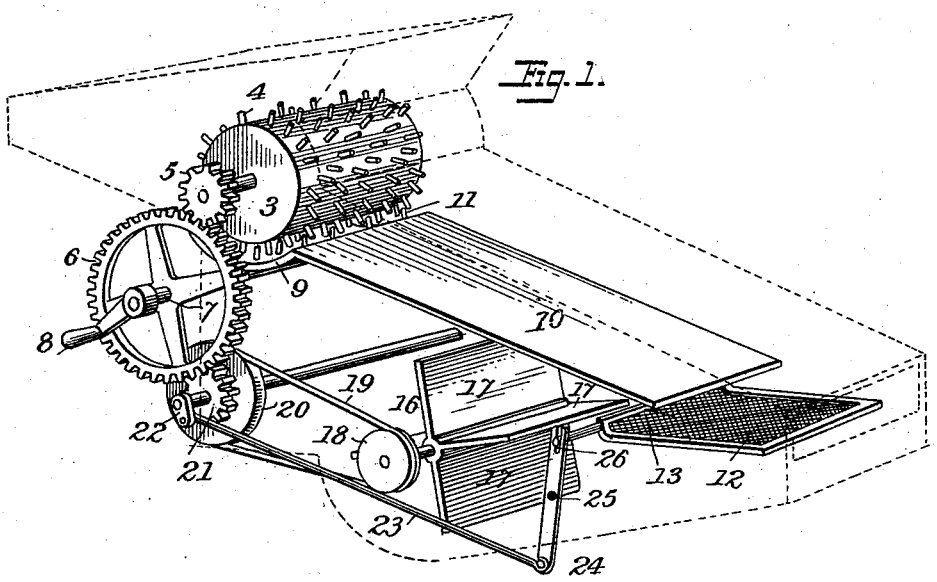
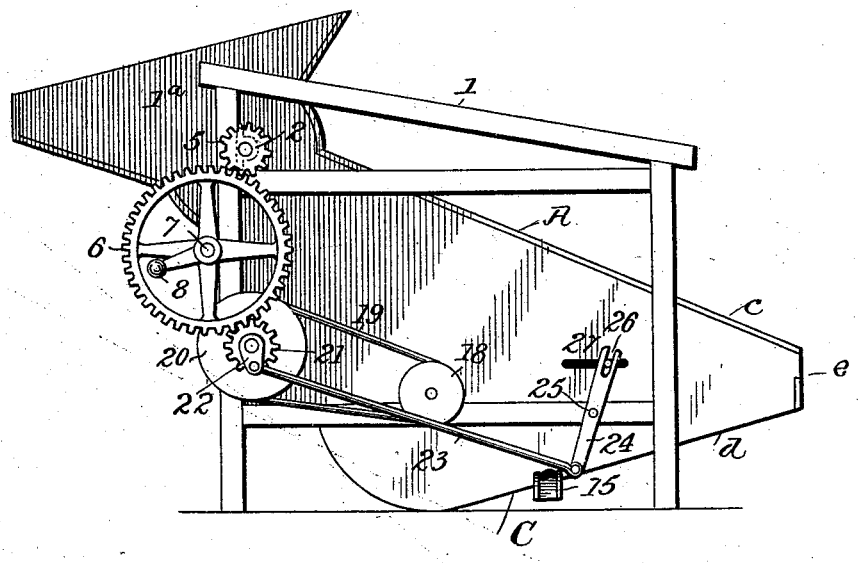


Fig. 2.



Witnesses
Albert Dobson
Alphonzo Youngs Jr

Inventor
John F. Rhodes
By Foster Freeman
Attorneys

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

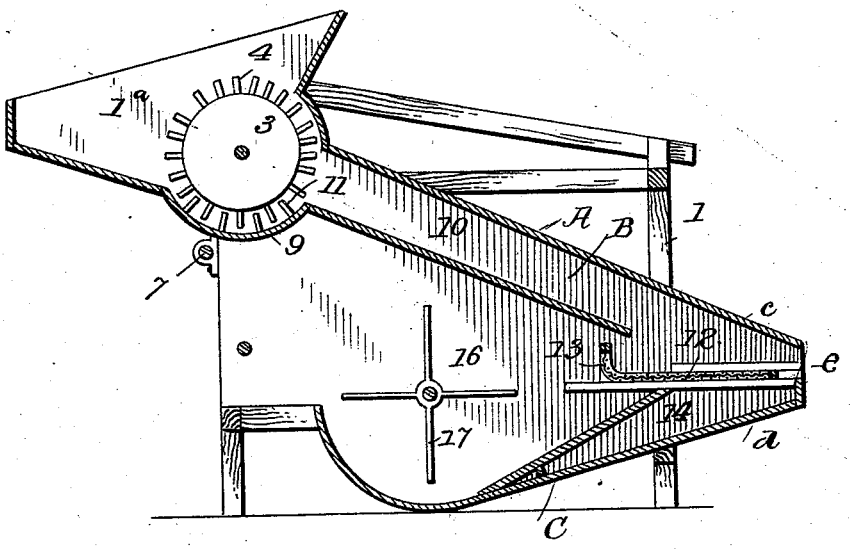
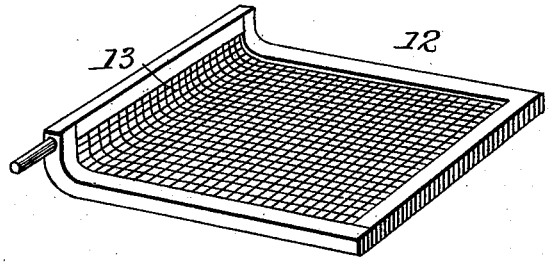


Fig. 4.



Witnesses
Alex A. Dobson
Alphonzo Young Jr.

Inventor
John F. Rhodes
By Foster Freeman
Attorneys

UNITED STATES PATENT OFFICE.

JOHN FRANKLIN RHODES, OF ATHENS, GEORGIA.

COMBINED PEA THRASHER AND SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 522,493, dated July 3, 1894.

Application filed February 2, 1894. Serial No. 498,869. (No model.)

To all whom it may concern:

Be it known that I, JOHN FRANKLIN RHODES, a citizen of the United States, residing at Athens, Clarke county, State of Georgia, have invented certain new and useful Improvements in a Combined Pea Thrasher and Separator, of which the following is a specification.

This invention relates to certain new and useful improvements in combined pea-thrashers and separators; and it consists substantially in such features of construction, arrangement, and combinations of parts as will hereinafter be more particularly described.

The invention has for its object to provide a simplified and effective form of thrasher and separator which shall be capable of performing its work in a comparatively short space of time, and which shall be free of several disadvantages resulting from the use of many former inventions for a similar purpose.

A further object of the invention is to provide a pea-thrasher and separator which shall be capable of easy operation, and which shall permit ready access to the working parts either for oiling, cleaning or repair.

A still further object is to lessen the labor of thrashing and separating and also to provide a hand-operating machine, not requiring any experience or special knowledge to manipulate.

In the accompanying drawings, Figure 1, is a view in perspective of the preferred embodiment of my combined pea-thrasher and separator, with parts of the outer casing and supporting frame removed. Fig. 2, is a side view thereof. Fig. 3, is a longitudinal sectional view; and Fig. 4, is an enlarged detail perspective view of the riddle or sieve.

In the practice of my invention, peas, beans, or similar berries, are gathered from the vines and without any preliminary sorting, separating, or treatment, are fed to my improved machine, and such peas, beans, or similar berries, are thoroughly thrashed or loosened from their hulls, after which the hulls, as well as all dirt and chaff, are carried off while the peas or beans themselves are delivered into any suitable receptacle for the purpose.

Generally stated, my improved machine embodies a revolving thrashing cylinder, and a concave or breast; a trough, a narrow passage above the trough, a separating riddle or sieve, and a fan or blower, as well as a contracted outlet or escape for the air blast. The general arrangement of these parts, as well as the construction and specific details will be fully explained hereinafter.

Reference being had to the drawings, 1, represents the supporting frame which for the purposes of lightness and strength is composed of as few parts as possible, well connected together. 1^a, represents a feed-hopper. Mounted at one end of said supporting frame between the two sides thereof, and in suitable bearings, 2, is a thrashing cylinder or drum, 3, which is provided throughout its entire surface with projecting arms or spikes, 4, by the action of which, as hereinafter explained, the hulls of peas and beans are split or loosened. Instead of being arranged upon the cylinder in regular parallel, spiral or straight lines, as is the case with some forms of grain-thrashing cylinders, I arrange the said arms or spikes as irregularly as it is possible to have them, for in this way much better results are obtained. The said arms are of a length to distinguish them from the ordinary short projections such as are common to some forms of grain-thrashing cylinders. One end of the shaft of the said thrashing cylinder or drum, 3, is provided with a pinion, 5, which is engaged by the teeth of a spur driving wheel, 6, carried by a shaft, 7, supported in suitable bearings in the main frame, and which is formed or provided with an operating crank or handle, 8, as shown.

Arranged beneath the thrashing cylinder or drum, 3, is a concaved breast, 9, which, as shown, is arranged in a slightly inclined position which better facilitates the escape of the thrashed substances through to the chute or trough, 10, which leads to the separating devices hereinafter described. The inner concaved surface of said breast, 9, is also provided with a number or series of arms or spikes, 11, which are also irregularly arranged in like manner as the arms or spikes, 4, of the cylinder or drum, and which arms or spikes 11, are furthermore of about the same length. The arrangement of these latter arms with respect to those of the cylinder is, of course, such as will not interfere with a free and uninterrupted rotation of the cylinder;

and it will be obvious in what manner the cylinder and breast co-operate in the thrashing operation.

The chute or trough 10 leads directly from beneath the cylinder and breast and is given a sufficient inclination to cause the thrashed materials to gravitate to the separating devices arranged at the opposite end of the machine and at a lower height or elevation. The said chute or trough 10, together with the correspondingly inclined top or cover A of the frame or casing 1, form between them a somewhat narrowed passage or channel B, down through which the material has to fall, and the said top or cover projects some distance beyond the chute, as shown at *c*. The bottom C of the casing is inclined at *d* reversely to the top or cover A, leaving an outlet or contracted opening *e* between the two, through which opening the air blast from a fan hereinafter described has its exit. The lower end or exit of such chute or trough delivers the thrashed material upon a shaking or vibrating sieve or riddle 12, which, as shown, is constructed of wire-cloth or gauze having meshes of suitable size. The said vibrating sieve or riddle is supported and works in suitable grooves provided therefor on the inner sides of the supporting frame, and at the end thereof contiguous to the lower end of the chute or trough it is bent or turned up so as to constitute a guard 13 for preventing the thrashed peas or any of their hulls from falling or being carried backward into the fan-chamber by the shaking motion of said sieve or riddle. Leading from beneath the sieve or riddle is an incline or chute 14 having a spout 15 through which the thrashed material is discharged.

Located beneath the trough or chute 10 and to the rear of the sieve or riddle is a suitable fan or blower 16 provided with suitable blades 17, and having its axis of rotation parallel with the axis of the thrashing cylinder 3. The end of the shaft of said fan or blower is provided with a small pulley 18 which receives a belt or band 19, leading from a larger pulley 20 having its axis or bearing in one side of the supporting frame, as shown. The larger pulley carries a spur pinion 21 meshing with the driving spur wheel 6 and the journal of said pulley is formed or provided with a crank or wrist pin 22, to which is fastened one end of a connecting rod 23, the other end thereof being connected to a swinging or pivoted rod or lever 24, having its fulcrum at 25, and being slotted at its inner end at 26 and forming a movable connection 27 with the shaking or vibrating screen.

It will be seen that when motion is imparted to the spur wheel 6 through the medium of the crank or handle, such motion will be communicated to the thrashing cylinder and to the fan or blower simultaneously, while at the same time the connecting rod will impart a shaking or vibrating motion to the sieve or riddle through the medium of the pivoted lever and movable connection. In this way as the material is fed into the hopper just as it comes from the vines, a very quick and thorough thrashing and separation are effected. The fan forces a blast of air through the meshes of the upright portion of the riddle, and all the hulls, chaff and dirt will be thus carried off while the peas themselves will be falling to the incline or chute beneath the sieve, and collected from time to time.

It will further be seen that by reason of having to pass or fall through the narrow passage or channel B, the material does not gravitate too rapidly; and that as the outlet for the air blast is contracted the material is subjected to a much more effective or thorough action. The blast of air meeting the material as it falls from the lower end of the chute onto the riddle carries off the extreme lighter particles, while the inclined projecting portion *c* of the top or cover A will arrest to a great extent some of the heavier particles and cause them to fall upon the screen and be carried therethrough, thence out at 15. The shaking or vibration of this screen or riddle stirs up the material in such manner as to bring to the top all refuse, which is carried off by the blast of air passing through the upright portion of the screen, the hulled peas being prevented by such portion from falling into the fan-case. Heretofore to effect the results accomplished by this single vibrating screen or riddle constructed as described, it has frequently required the use of separate guards placed above or intermediate of the fan-case and riddle, together with independently operating sieves. In other instances, heretofore, it has been common to curve or extend the inner end of a stationary sieve, but in such instance, it is apparent that the same result is not effected as in the present case, although in the instance referred to it is the purpose to have the air-blast pass through the vertical upright portion.

From the foregoing description it is thought the construction, arrangement, and operation of my invention will be fully understood; and it will be evident also that in thus describing the preferred embodiment, I am not to be limited to the specific details shown.

I claim—

1. In a combined pea thrasher and separator, the combination of the casing having at its upper end a feed hopper, and formed or provided with an inclined projecting top or cover, a reversely inclined bottom uniting with said projecting top or cover to form a contracted air-outlet *e*, a revolving cylinder or drum and a concaved breast adjacent the hopper and each provided with irregularly arranged spikes, an inclined chute leading from said breast and forming with the top or cover a narrowed passage B, a vibrating riddle located at the lower end of the chute and in line with the air-outlet, a fan behind the

screen, and means for operating the drum, the fan and the riddle simultaneously, substantially as described.

2. In a combined pea thrasher and separator, the combination of the casing having at its upper end a feed-hopper, and formed or provided with an inclined projecting top or cover, a reversely inclined bottom uniting with said projecting top or cover to form a contracted air outlet *e*, a revolving cylinder or drum and a concaved breast adjacent the hopper and each provided with teeth or spikes, an inclined chute leading from said breast and forming with the top or cover a narrowed passage B, a vibrating riddle formed with the upturned portion or guard and located at the lower end of the chute in line with the air outlet, the fan behind said riddle the gearing and connecting rod, and the movable connection between said rod and riddle, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN FRANKLIN RHODES.

Witnesses:

J. F. WILLS,

JACK F. JACKSON.