(No Model.) 3 Sheets—Sheet 1.

J. BOWER.

THRASHING MACHINE.

No. 284,600. Patented Sept. 11, 1883.

Fig. 1.

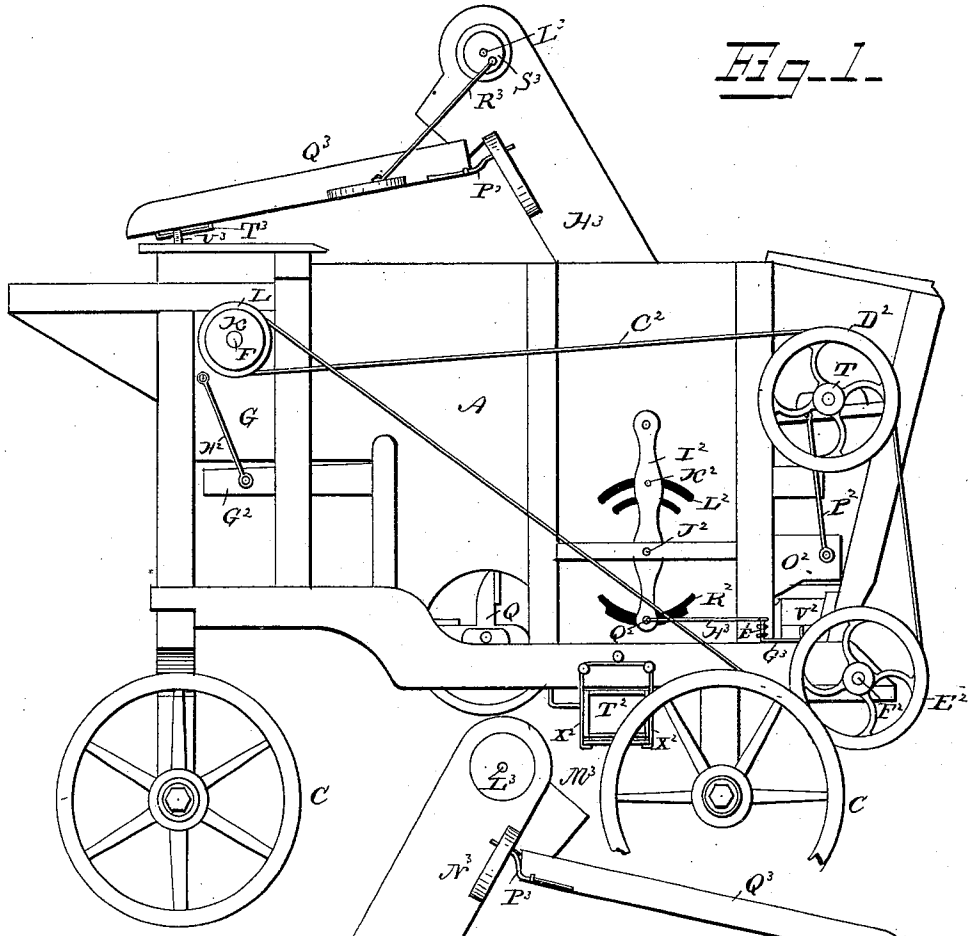
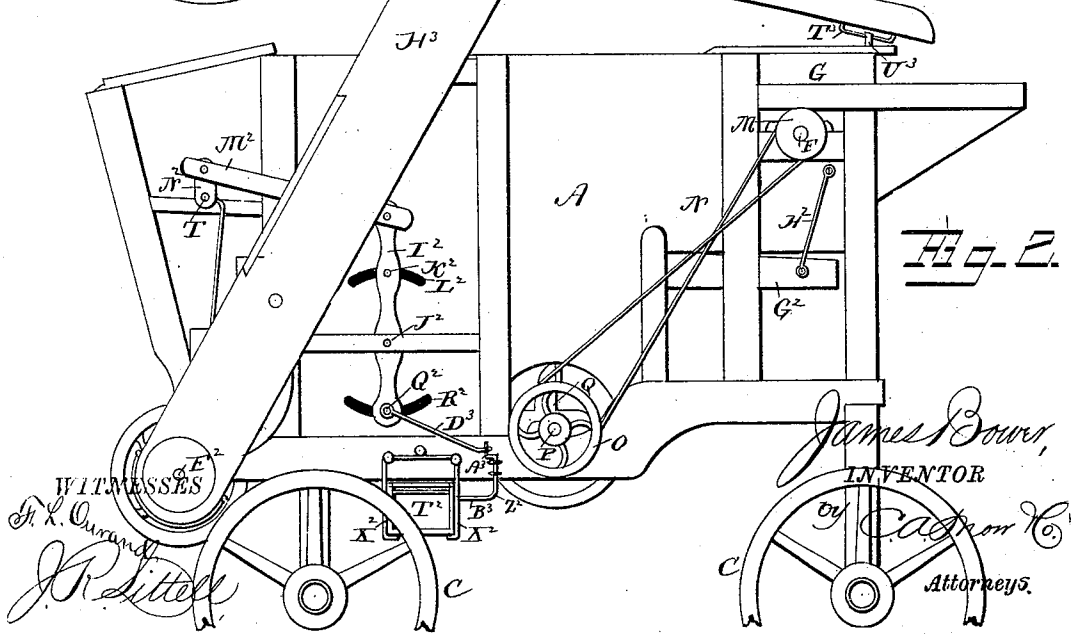


Fig. 2.



WITNESSES

F. L. Ourand

J. R. Littell

James Bower,

INVENTOR

by Cahoon & Co.

Attorneys.

(No Model.) 3 Sheets—Sheet 2.

J. BOWER.

THRASHING MACHINE.

No. 284,600. Patented Sept. 11, 1883.

Fig. 3.

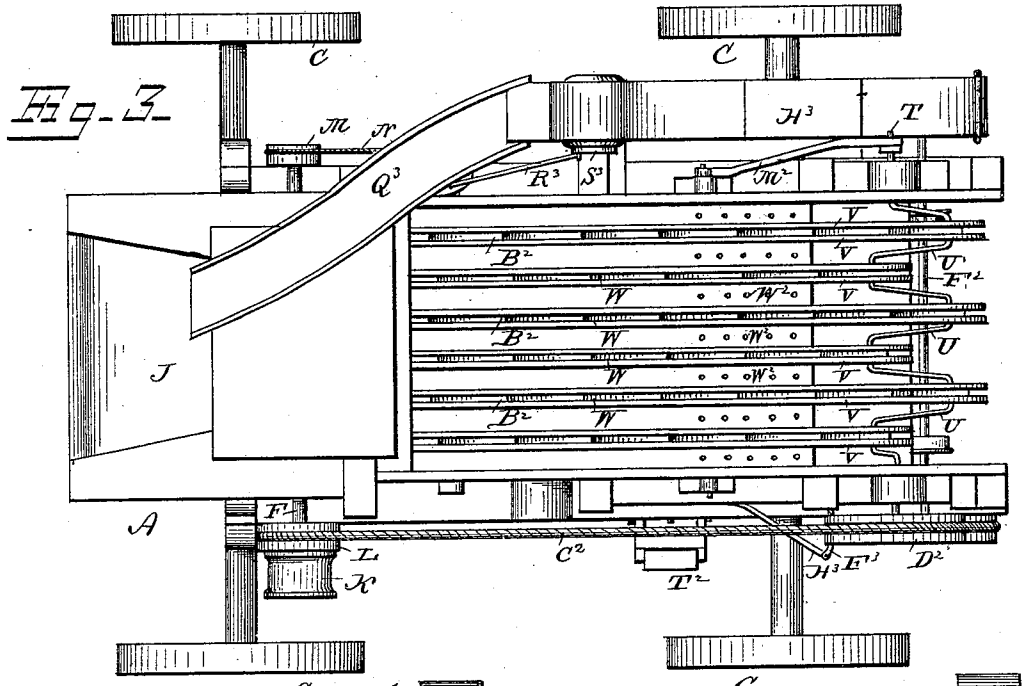


Fig. 6.

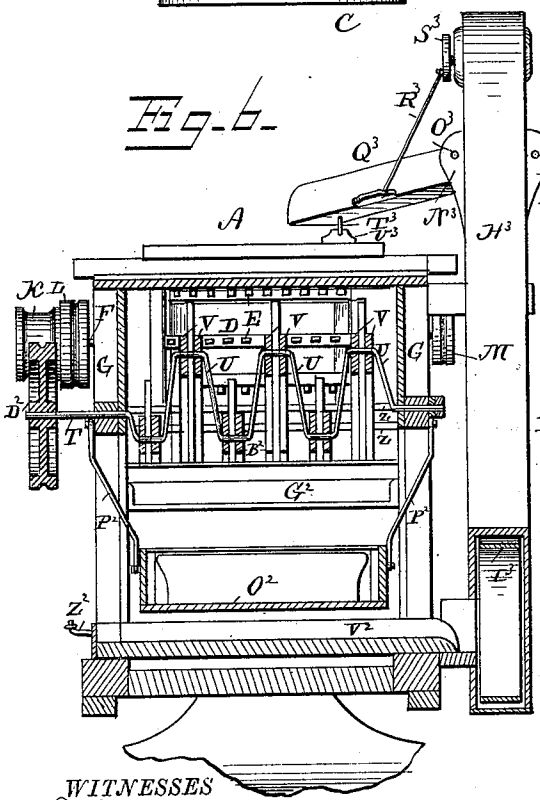
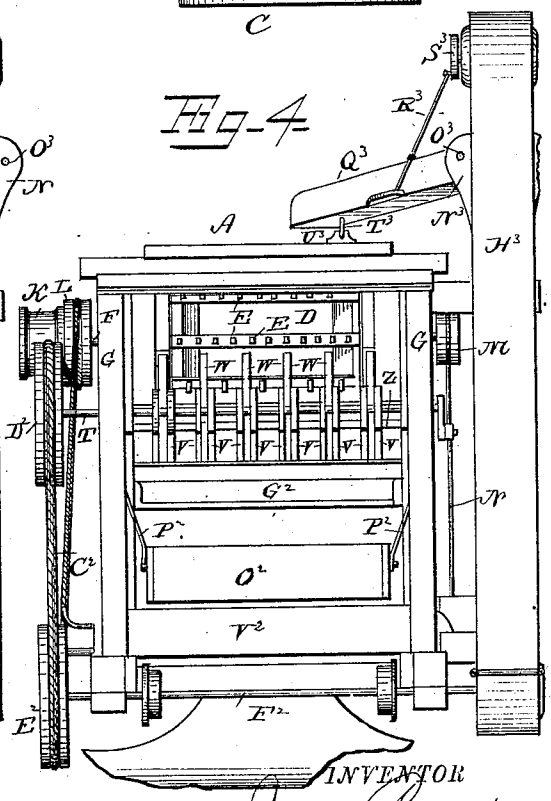


Fig. 4.



WITNESSES

F. L. Durand.

J. R. Sitlett

INVENTOR

James Bower,

by A. Brown & Co.

Attorneys.

(No Model.) 3 Sheets—Sheet 3.

J. BOWER.

THRASHING MACHINE.

No. 284,600. Patented Sept. 11, 1883.

Fig. 5.

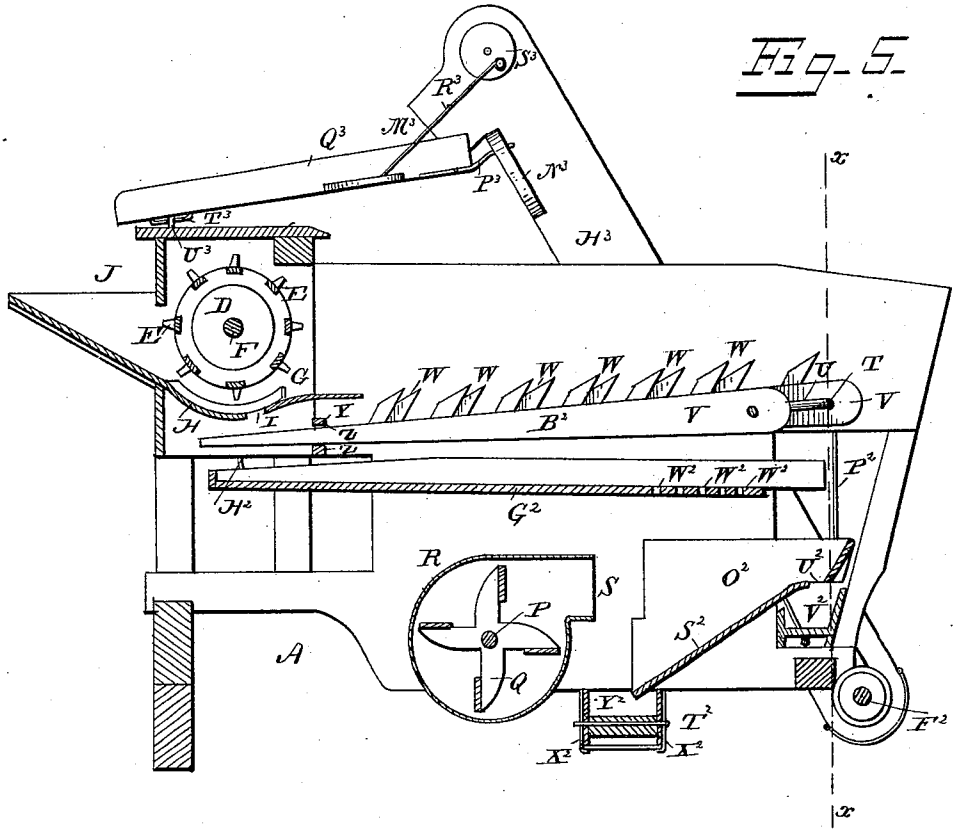
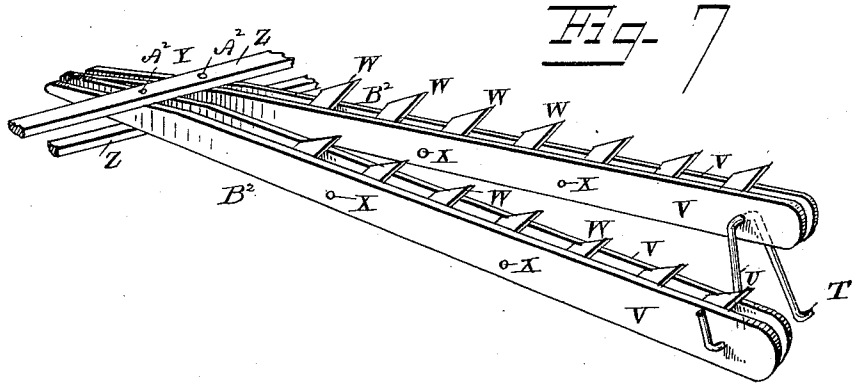


Fig. 7.



WITNESSES

F. L. Ourand

J. R. Sittell

James Bower,

INVENTOR

by C. A. Snow & Co.

Attorneys.

UNITED STATES PATENT OFFICE.

JAMES BOWER, OF FOREST CITY, ILLINOIS, ASSIGNOR OF ONE-HALF TO HORACE A. WRIGHT, OF SAME PLACE.

THRASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 284,600, dated September 11, 1883.

Application filed May 12, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES BOWER, a citizen of the United States, residing at Forest City, in the county of Mason and State of Illinois, have invented a new and useful Thrashing-Machine, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to grain-separators; and its object is to provide a separator possessing superior advantages in point of simplicity, ease of operation, and general efficiency.

In the drawings, Figure 1 is a side view of the machine. Fig. 2 is a view of the opposite side. Fig. 3 is a top view of the separator, the top of the casing being removed. Fig. 4 is a rear end view of the same. Fig. 5 is a vertical longitudinal sectional view. Fig. 6 is a vertical transverse sectional view, taken through the rock-arms for operating the grain-conveyer and the shoe, and through the grain-spout, on the line *x x*, Fig. 5. Fig. 7 is a perspective detail view illustrating the construction and arrangement of the separating-rakes.

Referring to the drawings, A designates the frame or casing of the machine, which may be mainly of any suitable construction, and is preferably mounted upon wheels C for convenience in transportation.

D is the feeding-cylinder, which is provided with the usual projecting teeth, E, and is carried by a transverse rotary shaft, F, having bearings in the sides G G of the casing, and projecting therefrom. This cylinder D is arranged over a convergent inclined bottom, H, having a transverse slot, I, through which the grain separated from the straw can pass onto the shoe. A suitable box or hopper, J, is arranged at this front end of the casing, which opens into the cylinder-chamber, as shown.

On one end of the shaft F is fixed a band-wheel, K, or other suitable mechanism, by which a rotary motion can be transmitted to the said shaft to drive the machine, and on this end is also fixed another band wheel or pulley, L, for purposes that will be presently described. At the other end of the shaft F is fixed a band-wheel, M, that is connected by a band, N, with a band-wheel, O, fixed on the end of the fan-shaft P. This fan-shaft P carries the fan Q, which is arranged to rotate in a chamber, R, arranged at the bottom of the casing A, and at about the middle thereof, and having the mouth or flue S at its rear end.

T designates a transverse shaft that has its bearings in the sides of the casing A, at the rear end thereof, and near the top of the same. The ends of this shaft project from the sides of the casing, and inside the latter the shaft is formed with a series of counterbalanced cranks, U, each of which is arranged to carry a pair of longitudinal strips or bars, V V, between which are secured upwardly-projecting fingers W, and which are secured together by cross pins or bolts X.

Y is a transverse guide-rack arranged between the sides of the casing, and at the front end of the latter, preferably on a plane lower than the bearings of the shaft T. This rack comprises two horizontal strips, Z Z, between which are secured vertical guide-pins A^2, which enter between the pairs of strips V V. The rack Y is preferably arranged under the bottom H, and supports and guides the front ends of the longitudinal riddle-bars B^2, that are formed by the strips V V and the fingers W. The shaft T is rotated by an endless band, C^2, which passes around the pulley L, over a band-wheel, D^2, on the said shaft T, and around a band-wheel, E^2, fixed on the end of a transverse shaft, F^2, that is journaled at the bottom rear end of the casing, and has its ends projecting from the latter. As this counterbalanced crank-shaft T revolves the riddle-bars B^2 travel alternately up and down and forward and backward, half of the bars being up and moving toward the rear end of the machine while the remaining bars are down and traveling toward the front end of the machine. This motion thoroughly separates and picks and scatters the bunches of straw as they come from the feeding-cylinder, and works the straw off at the rear end of the machine in a step motion, caused by the alternate movement of the counterbalanced riddle-bars. This operation of the riddle-bars causes a quicker and more efficient separation of the grain and chaff from the straw than is effected with the machines now generally in use.

G² is the grain-conveyer, which is arranged longitudinally in the casing, so that it will be under the opening I and under the riddle-bars B². This grain-conveyer is preferably inclined toward the rear end of the machine, and is swung from pivoted rods H², on which it has a reciprocating or shaking movement. This movement is effected by means of vertically-disposed operating-arms I² I², which are pivoted, as shown at J² J², one at each side of the casing A, and are each provided with an inwardly-projecting arm, K², that works in a segmental guide-slot, L², in the side of the casing, and is secured to the said grain-conveyer. A pitman, M², extends from a crank, N², on one end of the shaft T to the top of one of these rock-arms I², and thus the movement of the shaft T is transmitted to operate the grain-conveyer.

O² is the shoe, which is arranged at the rear end of the grain-conveyer, and under the same. The shoe is swung upon pivoted rods P² P², and is reciprocated on the latter by means of inwardly-extending arms Q² Q², that project from the lower portions of the rock-arms I² I², and work through segmental guide-slots R² R² in the sides G G of the casing.

It will be observed that the grain-conveyer is swung at its forward end and connected to the rock-arm at its rear end, and above the pivot of the latter, while the shoe is swung at its rear end, and is connected to the rock-arms at its front end, and below the pivot of said arms. By reason of this arrangement the conveyer and the shoe have counterbalanced movements. The bottom S² of the shoe is inclined downwardly and forwardly to the transversely-arranged grain trough or spout T², and is provided at its top rear end with a transverse slot, U², which opens into the transversely-arranged tailings trough or spout V². The tail end of the grain-conveyer G² is provided with perforations W², above the shoe, which facilitate the passage of the grain from the conveyer to the shoe, from which latter it passes to the grain-spout, while the chaff and tailings are driven by the blast from the fan to the rear end of the shoe and pass through the slot U² into the tailings-spout. The grain-spout is hung at its ends from pivoted rods X² X², and is preferably provided with a centrally-pivoted bottom board, Y², by which the grain can be deflected to either end of the said spout. The latter is reciprocated transversely by means of a rock-rod, Z², journaled at the side of the casing, and provided with lateral arms A³ B³, respectively, at the top and bottom, and projecting at right angles to each other. The arm B³ is pivotally connected by a rod, C³, with the grain-spout T², while from the top arm, A³, extends a forwardly-projecting pivoted rod, D³, to the lower end of the rock-arm I². The tailings-spout is reciprocated in like manner by means of a rock-rod, E³, having corresponding top and bottom arms, F³ G³, pivotally connected to the said spout, and connected to the bottom end of the other arm I² by a pivoted rod, H³, as shown, by which the spouts T² V² are counterbalanced. The tailings-spout V² opens into the casing H³ of the inclined elevator-belt I³, which latter works around a pulley, J³, on the end of the shaft F², and around a top pulley, K³, fixed on a shaft, L³, that is journaled at the top of the casing H³ and has its end projecting therefrom. The casing H³ is provided at the sides of its mouth M³ with lateral lugs or flanges N³, having perforations O³, through which slide curved rods P³ P³, projecting from the rear end of the trough Q³, which latter comes under the mouth M³ and extends forward to the hopper J. The trough Q³ is pivotally connected by a pitman, R³, with a crank-wheel, S³, on the end of the shaft L³, and as the said shaft revolves the said trough is reciprocated on the rods P³ P³ to convey the chaff and tailings from the elevator-belt to the hopper J. The trough is provided with a longitudinally-extending guide-rod, T³, on its under side, which works in a guide-block, U³, secured on top the feeding-cylinder chamber.

The operation and advantages of my invention are obvious. It is very simple and efficient in operation, and its different reciprocating parts have a general counterbalanced movement by which the machine will work much more easily and satisfactorily and with less wear upon the parts.

I claim as my invention—

1. As an improvement in separators, the combination of the casing, the transverse shaft T, journaled in the sides of the casing, at its rear end, and formed with the counterbalanced cranks U, the riddle-bars arranged one on each crank and comprising two parallel strips, V V, fingers W, secured down between said strips, and securing cross-pins X, by which the strips V V are bound together, and the transverse guide-rack Y, comprising the horizontal parallel strips Z Z, and the vertical pins uniting the said strips, the strips V V of each riddle-bar being arranged to embrace a pin of this series and be guided thereby, substantially as and for the purpose set forth.

2. As an improvement in separating-machines, the combination of the casing having the segmental guide-slots L² and R², the grain-conveyer G², swung on the pivoted rods H², the shoe O², swung under the rear end of the conveyer on rods P², the pivoted arms I² I² at the sides of the casing, having the inwardly-projecting arms K² at the top and Q² at the bottom, passing through slots L² and R², and respectively secured to the grain-conveyer and shoe, the riddle-bar crank-shaft T, having end crank, N², and the pitman M², extending from the latter to the top of arm I², the grain-conveyer being swung at its forward end and connected to the rock-arms at its rear end, while the shoe is swung at its rear end and is connected to the rock-arms at its front end, all arranged and operating substantially as and for the purpose set forth.

3. As an improvement in grain-separators, the combination of the casing having the seg-

mental slots R^2, the shoe O^2, having the slot U^2, the rock-arms I^2 I^2, pivoted to the sides of the casing, and having arm Q^2 passing through slots R^2 and connected with the shoe, the transverse grain-spout T^2, swung from the pivoted rods X^2, the rock-rod Z^2, having end arms, A^3 B^3, projecting at right angles to each other, the connecting-rod C^3, extending from arm B^3 to the spout, the pivoted rod D^3, extending from arm A^3 to rock-arm I^2, and the transverse tailings-spout, correspondingly connected with the operating-arm I^2 at the other side of the casing, substantially as and for the purpose set forth.

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

JAMES BOWER.

Witnesses:

PHILLIP BOWER,

JOHN J. FLETCHER.