

(No Model.)

J. R. BEYNON.
GRAIN SEPARATOR.

No. 407,052.

Patented July 16, 1889.

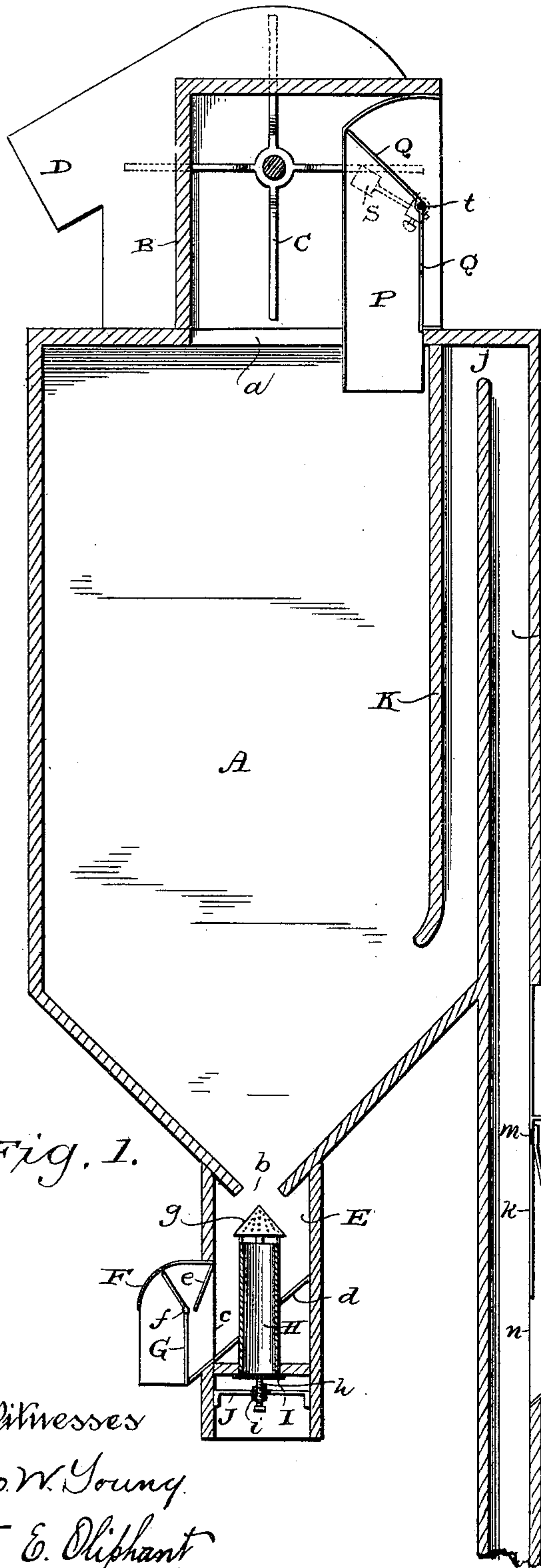


Fig. 1.

Fig. 2.

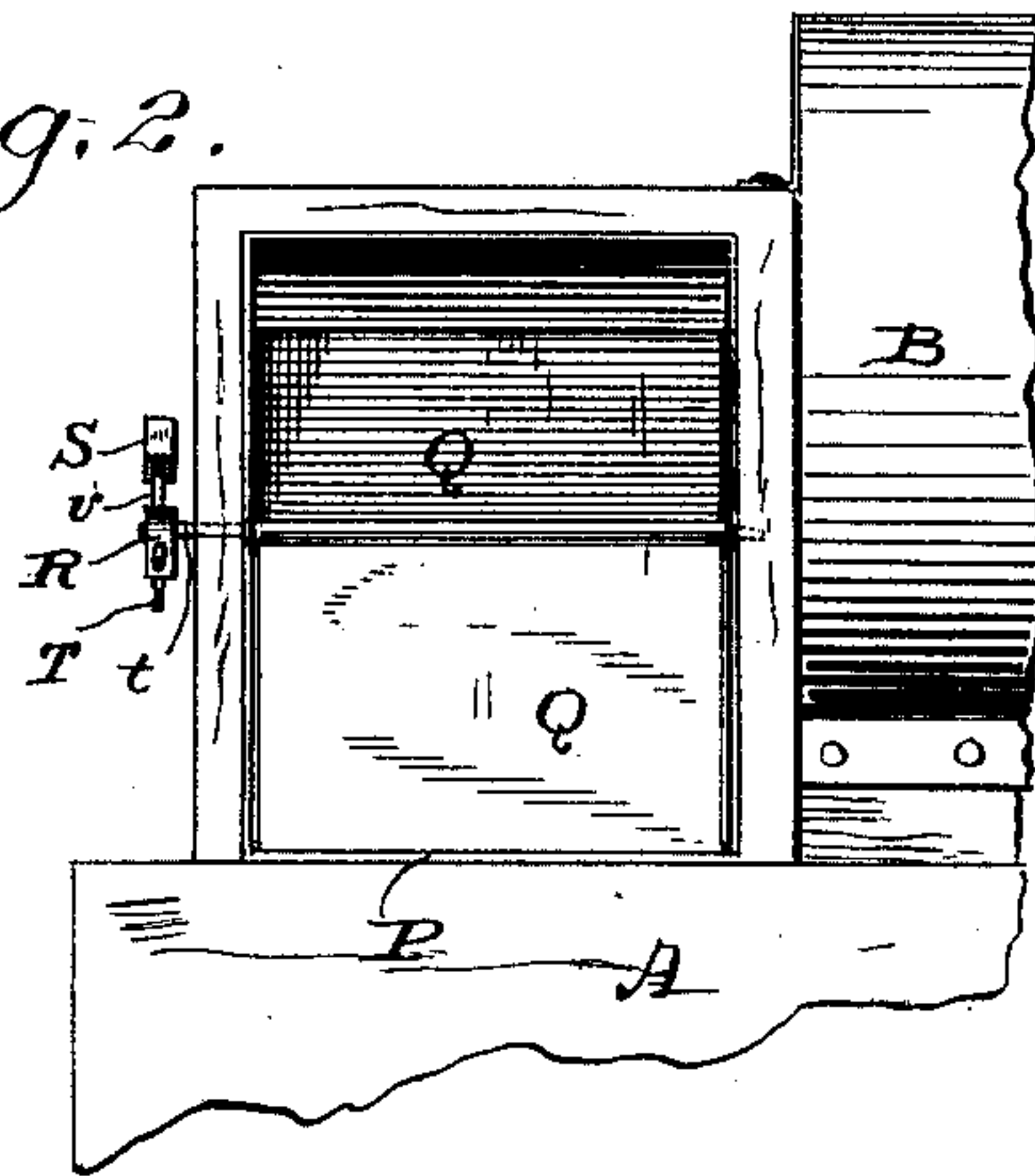


Fig. 3.

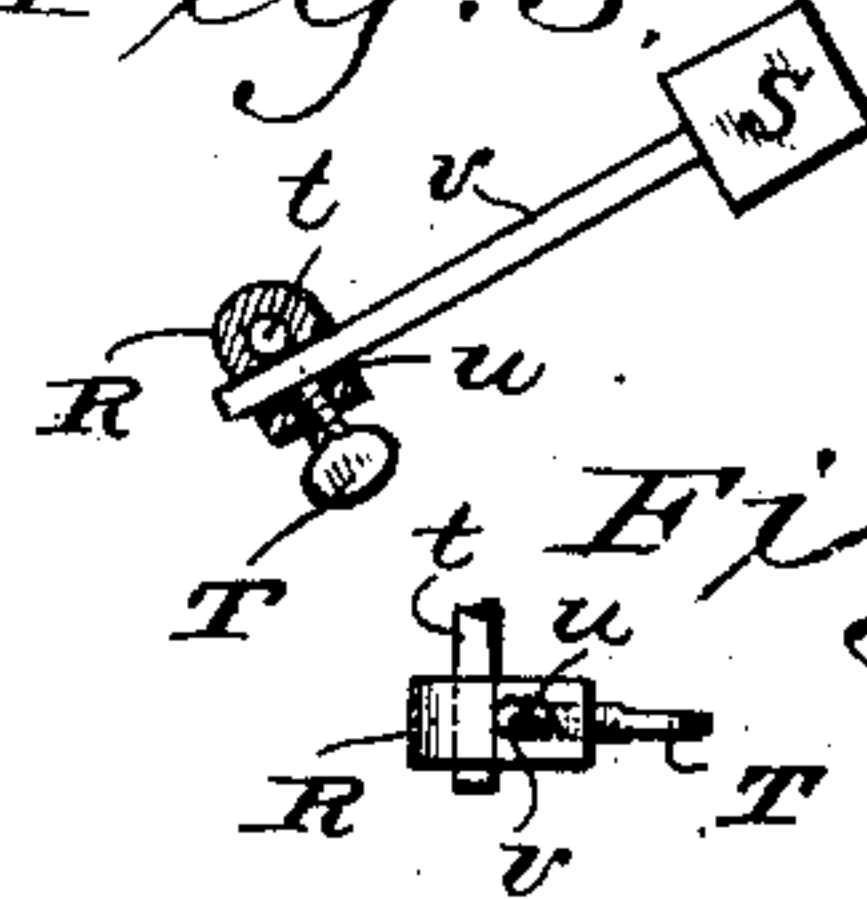
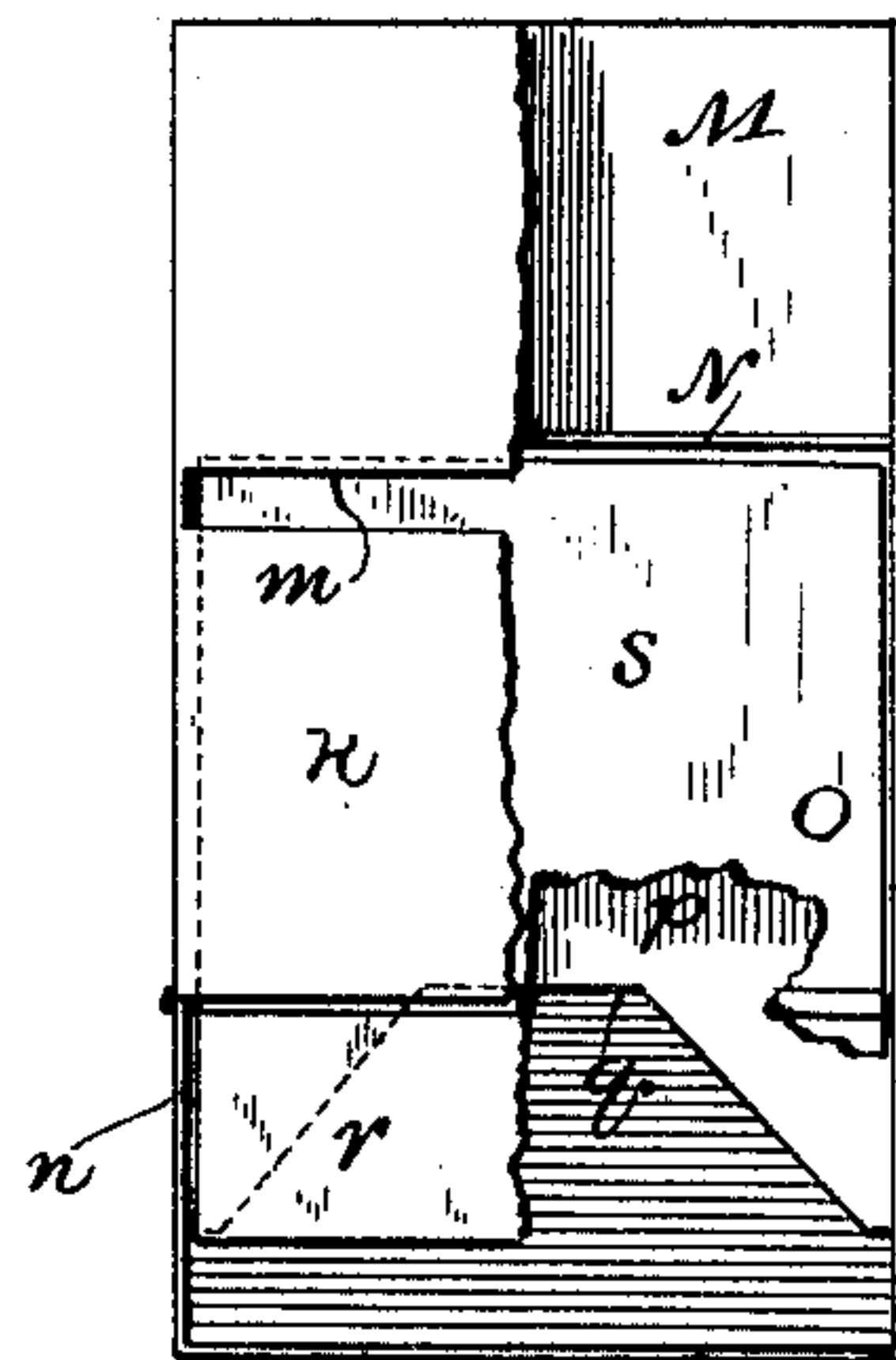


Fig. 4.

Fig. 5.



Witnesses
Geo. W. Young
N. E. Oliphant

Inventor
John R. Beynon
By Stout & Underwood
Attorneys

UNITED STATES PATENT OFFICE.

JOHN R. BEYNON, OF WATERTOWN, WISCONSIN, ASSIGNOR OF ONE-HALF
TO JAMES B. MURPHY, OF SAME PLACE.

GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 407,052, dated July 16, 1889.

Application filed December 11, 1888. Serial No. 293,259. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. BEYNON, of Watertown, in the county of Jefferson, and in the State of Wisconsin, have invented certain new and useful Improvements in Grain-Separators; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to mill appliances; and it consists in a peculiar construction and arrangement of valve with relation to a forced current of air, and also in certain combinations of parts, to be hereinafter described with reference to the accompanying drawings and subsequently claimed.

In the drawings, Figure 1 represents a sectional view of an elevator and separator, and illustrates three applications of the valve that forms part of my invention; Fig. 2, a rear elevation of the upper portion of the device shown by Fig. 1; Figs. 3 and 4, detail views of an adjustable weight, and Fig. 5 an elevation of a hopper that forms part of the device shown by Fig. 1.

Referring by letter to the drawings, A represents a hopper-shaped receptacle that communicates through an opening *a* with a casing B for a fan C, this casing being supported on said receptacle and provided with a delivery-spout D. Depending from the receptacle A and communicating therewith through an opening *b* is a chamber E, the latter having an outlet *c* and an inclined delivery-guard *d*, that is preferably extended a certain distance outside of said outlet. Projecting from the chamber E, to cover the outlet *c* therein, is a hood F, provided with an inclined back piece *e*, and pivoted in the hood is a valve G, that closes said outlet by coming against the outer edge of the delivery-guard *d*. That portion of the valve G above its pivot *f* extends outward at an angle to a vertical line and presents a surface of less area than that portion of said valve below the pivot.

Fitted in the bottom of the chamber E is the lower end of a tube H, having its upper end provided with a perforated cap *g*, a space being left between the said upper end of the tube and the lower rim of the cap for the escape of air. To regulate the admission of air

to the tube H, I provide a disk I, having a screw-threaded stem *h*, that works in a bearing *i* in a brace J, arranged within the chamber E, said stem being turned by hand to adjust the disk.

Extending from the top to within a certain distance of the slanting bottom of the receptacle A is a partition K, and at its upper end the adjacent wall of said receptacle is cut away to form an opening *j*, that communicates with a flue L, the latter being of any desirable length. Secured to the flue L and communicating therewith is a hopper M, the latter being provided with a casing N for a pivoted valve O, similar in general construction to the valve G described in connection with the chamber E, that depends from the main receptacle. The inner wall *k* of the valve-casing is provided with two openings *m n*, that communicate with the flue L, and the outer wall *p* of said casing has an opening *q* in its lower end that is in line with said opening *n*, the area of opening *q* being gradually diminished in an upward direction.

The valve O is so arranged that the vertical portion *r* thereof normally closes the opening *q* in the outer wall of the valve-casing N and is of less area than the angular portion *s*, the latter serving to normally close the opening *m* in the inner wall of said valve-casing.

Arranged within the fan-casing B, to depend into the receptacle A, is a short flue P, normally closed at its upper end by a pivoted valve Q, similar in form to the ones G O, above described.

As best illustrated by Figs. 2, 3, and 4, a block R is slipped on the pivot *t* of the valve Q, and this block is provided with a slot *u* for the shank *v* of a weight S, and by means of a set-screw T said block and shank are rigidly secured to said pivot. By the construction just described it will be readily seen that the block R is capable of rotary adjustment to vary the angular position of the weight S with relation to the pivot *t* of valve Q and that the shank *v* may be longitudinally adjusted to vary the leverage of said weight.

With the exception of the valves and hopper, the general construction and arrange-

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ment of parts above described is the same as that shown in my Patent No. 394,813, December 18, 1888, and the operation is as follows:

In case the device is employed for elevating grain, the bottom of the tube H is closed by the disk I, and the fan is started. The grain is spouted into the hopper M and falls down against the lower end of the valve O, the latter being held closed by the suction of the fan through openings *m* against its angular extension, because of the latter being longer above the pivot than the valve proper below it. At any time the grain rises above the opening *q* in the outer wall *p* of the valve-casing N the suction will be cut off from said angular extension of the valve and exerted entirely upon the remaining portion of the latter in concert with the weight of the grain, thereby causing it to open and allow the accumulated grain to escape through the openings *q n* into the flue L, where it is taken by the current from the fan and carried up through the opening *j* in the adjacent wall of the receptacle A, from whence it falls between this wall and the partition K down into the chamber E, the light particles being carried off by said fan. The suction of the fan against the greatest area of the valve G keeps the latter in its closed position; but as grain accumulates on the inclined delivery-guard *d* of the chamber E and against the valve the area of the vertical portion of the latter to the air-current is gradually decreased, and the power of said suction comes more and more upon the angular extension of said valve until the latter opens to permit the escape of the grain.

To separate impurities from germ-stock, the fan is run slower than during the above-described operation of elevating and cleaning grain, and the disk I is run down away from the bottom of the tube H. As the stock from the hopper M enters the flue L, its best quality, being too heavy for the draft, will fall down through said flue into a suitable receptacle, while the lighter stock will be carried on into the receptacle A, the second or best of the remaining stock falling into the chamber E, to be discharged through the valved outlet *c*, while at the same time the current of air drawn through the tube H carries off the fuzzy material and other light impurities.

The valve Q in the short flue P is for the purpose of securing an automatic regulation of the exhaust, and operates as follows: Supposing it is designed to run the fan C a certain number of revolutions per minute and the speed increases, the resistance of the valve Q to the suction will be overcome and said valve will open to supply more air to the receptacle A, and thereby compensate for the increased speed of said fan. By adjustments of the block R and weight S the resistance of the valve Q can be varied at will to suit dif-

ferent speeds at which it may be desirable to run the fan.

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

1. The combination of a pivoted valve, a rotary adjustable block arranged on the valve-pivot, and a longitudinally-adjustable weight connected to the block, substantially as set forth.

2. The combination, with a hopper and air-flue, of a casing arranged within the hopper, the inner wall of the casing provided with upper and lower openings and the outer wall with a lower opening only, a valve pivoted in said casing and having two surfaces of different areas and planes, and means, substantially as described, for producing a forced current in said air-flue, as and for the purpose set forth.

3. The combination, with a chamber having an outlet-opening, of a hood surrounding the same and provided with a back piece, a valve pivoted in the hood and having two surfaces of different areas and planes, and means, substantially as described, for inducing a forced draft against the valve, as and for the purpose set forth.

4. The combination, with a fan and its casing, of a flue arranged in said casing, and a valve pivoted in the flue and having two surfaces of different areas and planes, substantially as set forth.

5. The combination, with a fan and its casing, of a flue arranged in the casing, a valve pivoted in the flue and having two surfaces of different areas and planes, and a weight adjustably connected to the valve, substantially as set forth.

6. The combination of the receptacle A, provided with the depending chamber E and partition K, the tube H, having the cap *g*, the adjustable disk I, the valve G, flue L, hopper M, provided with the casing N, the valve O, the casing B, provided with the flue P, the weighted valve Q, and the fan C, all arranged to operate substantially as and for the purpose set forth.

7. The combination of an air-flue having a side thereof provided with an opening, a fan having its casing communicating with the air-passage, and a pivoted valve for the opening having two surfaces of different areas and planes, whereby the suction created by the fan is normally exerted to maintain the closure of the valve, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand at Watertown, in the county of Jefferson and State of Wisconsin, in the presence of two witnesses.

JOHN R. BEYNON.

Witnesses:

S. G. ROPER,
S. S. WOODARD.