

(No Model.)

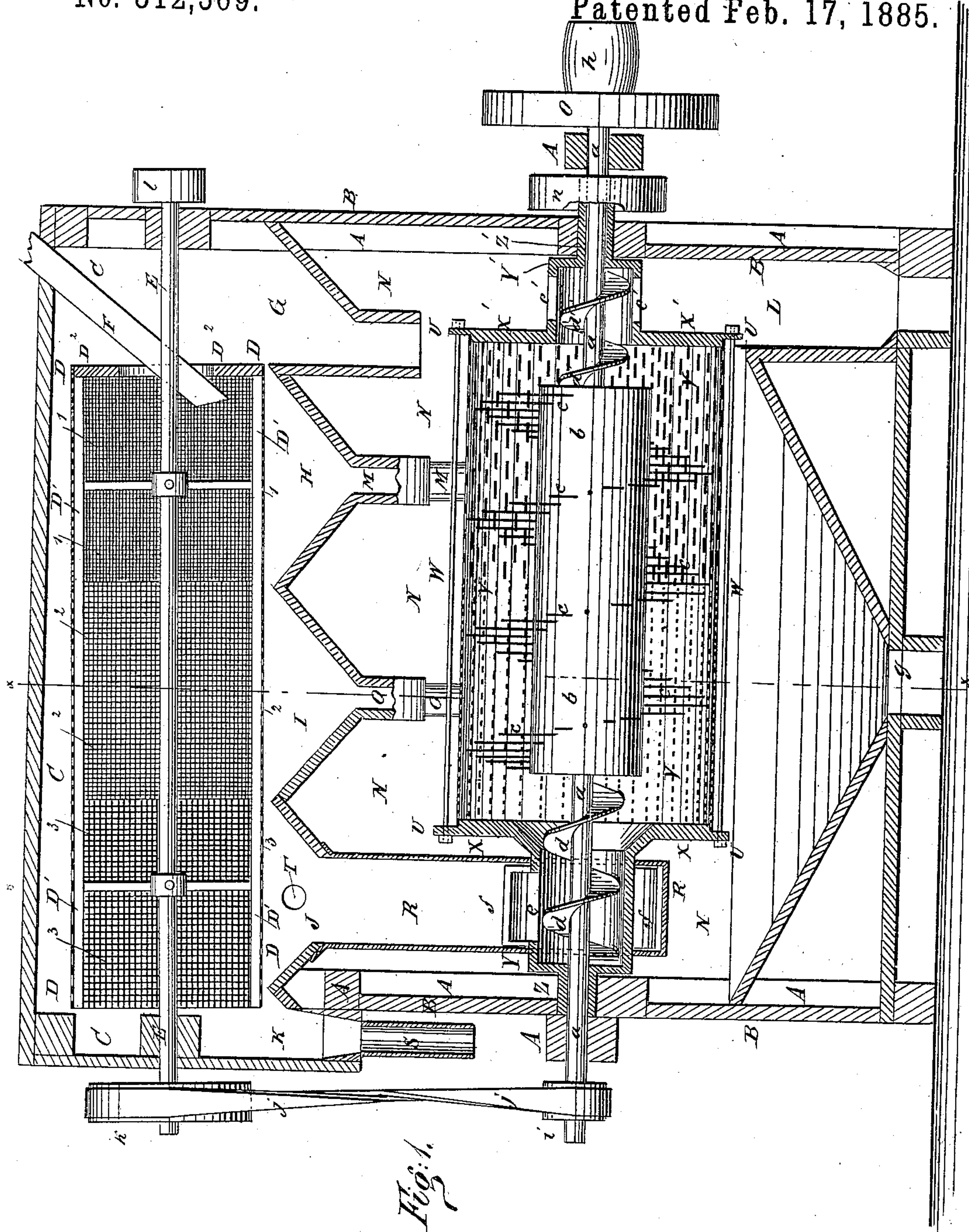
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H. L. MARTIN.

# COMBINED GRAIN SEPARATOR AND SMUTTER.

No. 312,369.

Patented Feb. 17, 1885.



WITNESSES:

Chas. Vida.  
C. Sedgwick

INVENTOR:

H. L. Martin

BY *Munn & Co*

ATTORNEYS.

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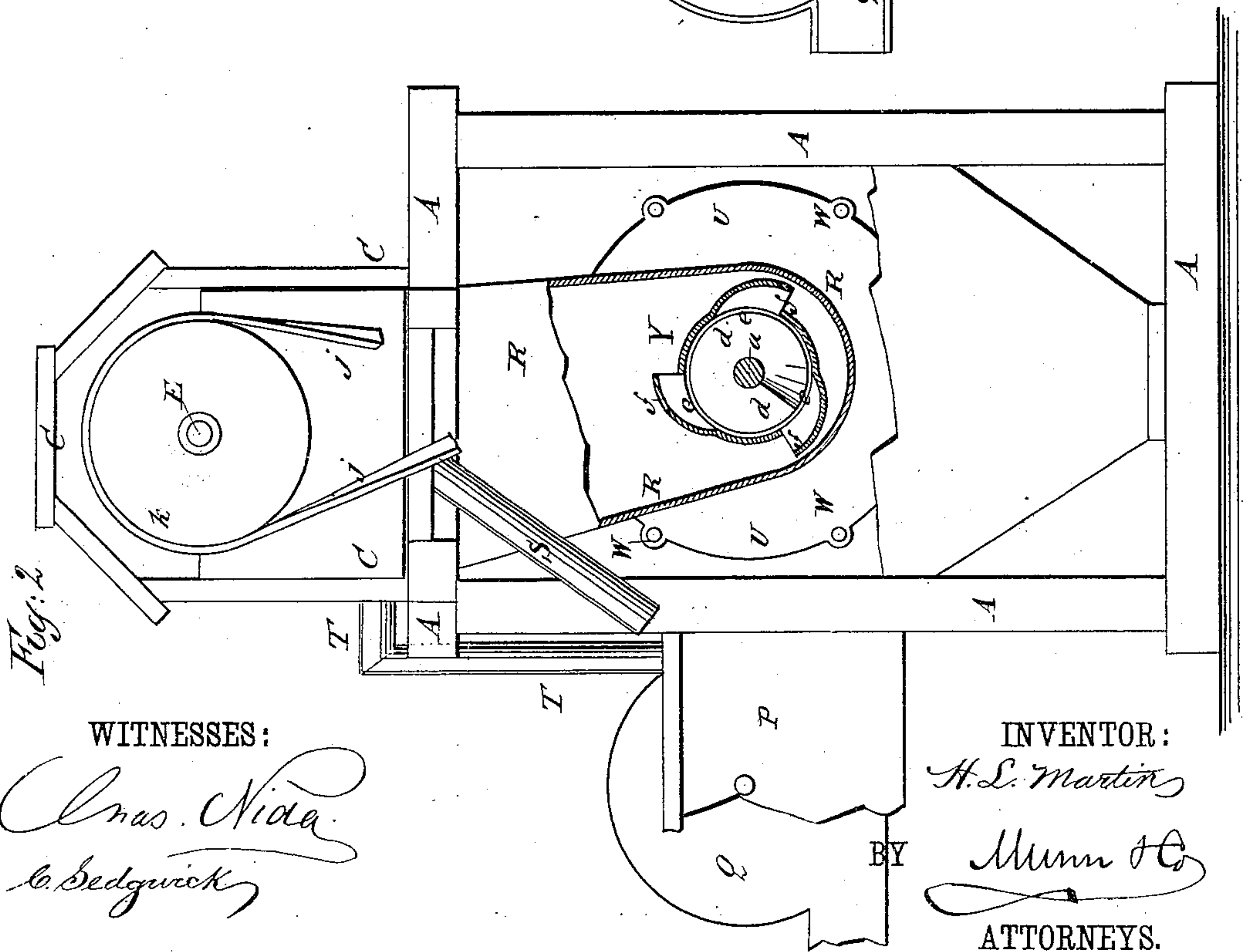
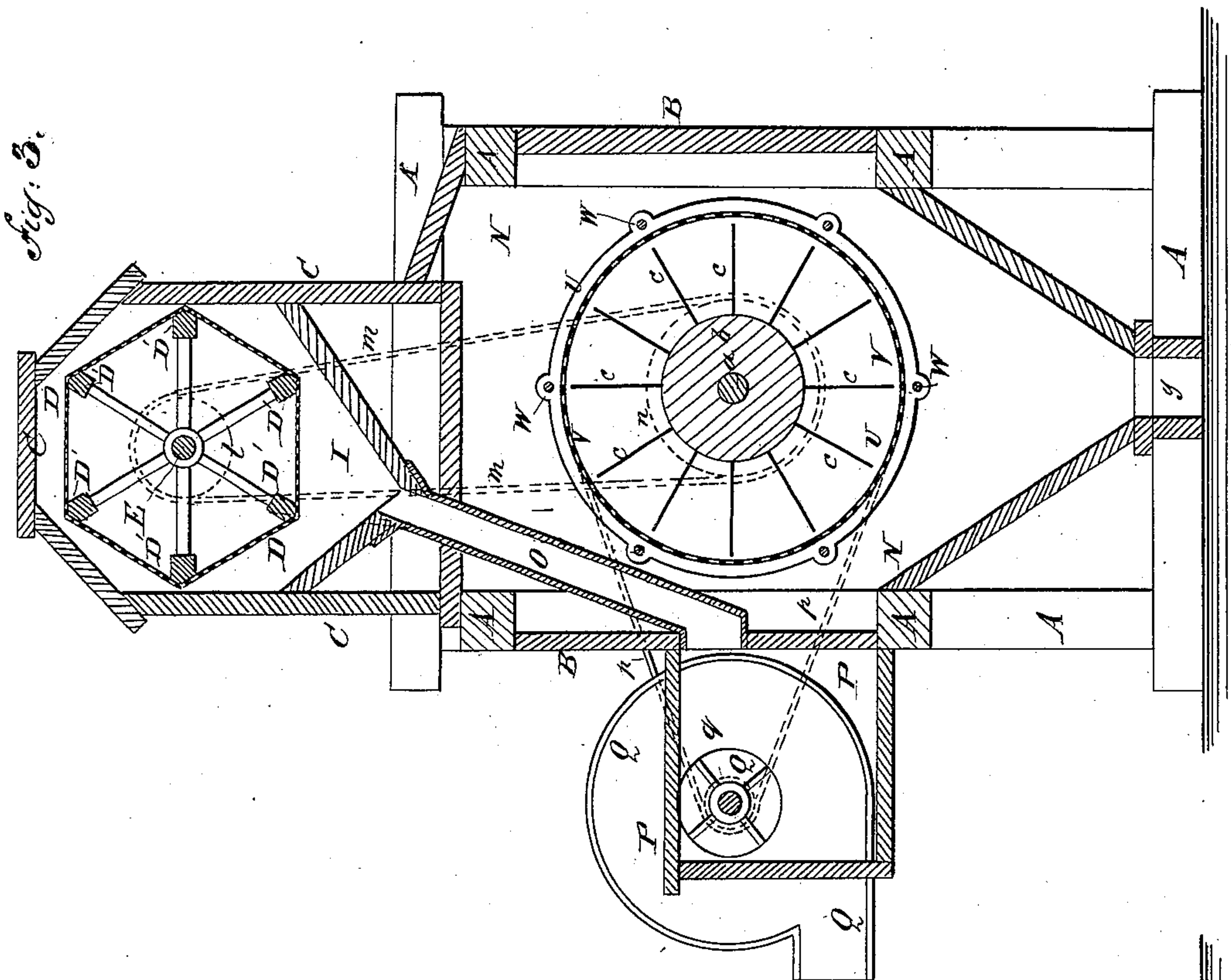
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# UNITED STATES PATENT OFFICE.

HARRY LEONARD MARTIN, OF LANCASTER, PENNSYLVANIA.

## COMBINED GRAIN SEPARATOR AND SMUTTER.

SPECIFICATION forming part of Letters Patent No. 312,369, dated February 17, 1885.

Application filed April 30, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY LEONARD MARTIN, of Lancaster, in the county of Lancaster and State of Pennsylvania, have invented a new and useful Improvement in Combined Grain Separator and Smutter, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of my improvement. Fig. 2 is an end elevation of the same, parts being broken away. Fig. 3 is a sectional end elevation of the same, taken through the line *x x*, Fig. 1.

The object of this invention is to facilitate the cleaning of wheat and other grain, and to promote thoroughness in such cleaning; and to this end it consists in the peculiar construction and arrangement of parts, as hereinafter fully described, and pointed out in the claims.

A represents the frame of the machine, to which is attached the casing B. To the top of the frame A is attached a box or casing forming a chamber, C, for the rotating screen D, the shaft E of which revolves in bearings in the ends of the chamber C. The screen D is formed with six (more or less) ribs, D', and its covering is made of wire-cloth or perforated sheet metal, and in three sections, 1 2 3. The upper or head section, 1, is made with such a fineness of mesh or perforation as to allow only the dust and fine sand to pass through. The middle section, 2, is coarser, so as to allow cockle-seed and other fine seeds to pass through. The lower or tail section, 3, is the coarsest, and is designed to allow the grain to pass through. The tailings escape from the open lower end of the screen D. The screen D is made with an annular head, D<sup>2</sup>, through the open center of which passes the feed-spout F, through which the grain is introduced into the said screen. The bottom of the screen-chamber C is made with five hopper-shaped recesses, G H I J K. The recess G is at the head of the screen D, and is designed to receive the scatterings from the feed-spout F and the screen D and discharge them into

the grain-discharge-chamber L in the lower part of the head end of the machine. The recess H is beneath section 1 of the screen D, and receives the dust and sand that escape through the said section, the said dust and sand passing through the spout M into the chamber N in the lower part of the machine. The recess I receives the screenings from the middle section, 2, of the screen, which screenings pass through the spout O into the small chamber P, attached to the side of the casing of the exhaust-fan Q, and opens into the said exhaust-fan, as shown in Fig. 3. The recess J receives the grain from the tail sections 3 of the screen, which grain falls into the well R, and is removed therefrom in the manner hereinafter described. The recess K receives the tailings from the screen D, which tailings pass through the spout S into some suitable receiver.

From the recess J of the screen-bottom a spout, T, leads to the dust-chamber P, so that the exhaust-fan Q will withdraw the dust from the screen-chamber C and well R.

To the casing B, at the other side of the exhaust-fan Q, is attached a dust-chamber, P, and which opens into the said exhaust-fan Q and into the chamber N, so that the said exhaust-fan Q can withdraw the dust from the said chamber N.

Within the chamber N is placed a hollow cylinder, U, the shell V of which is perforated at its head part with small holes or slots, and at its tail part with larger slots, as shown in Fig. 1. The ends of the shell V are secured by long bolts W against the heads X X', the said bolts passing through lugs formed upon the edges of the said heads. The heads X X' are formed with projecting cylindrical chambers Y Y' upon their middle parts, and upon the ends of the said chambers are formed hollow gudgeons Z Z', which revolve in bearings in the frame A, and serve as journals to the cylinder U. The hollow gudgeons Z Z' serve as bearings to the shaft *a*, which passes through them through bearings in the frame A, and to which, within the cylinder U, is attached a cylinder, *b*.

To the cylinder *b* are attached radial arms or teeth *c*, which are arranged in a spiral row, as shown in Fig. 1, and are made of such a



length that their outer ends will be close to the inner surface of the shell V, as shown in Figs. 1 and 3.

To the shaft *a* are attached spiral flanges *d d'*, extending from the ends of the cylinder *b* to the outer ends of the cylindrical chambers Y Y', the flange *d* being designed to feed the grain into the cylinder U, and the flange *d'* being designed to feed the grain out of the said cylinder.

In the wall of the cylindrical chamber Y, which passes through the well R, are formed three (more or less) openings, *e*, which are covered by cups or buckets *f*, which, as the cylinder U revolves, take up the grain in the bottom of the well R, and cause the said grain to pass through the openings *e*, so that it will be fed by the spiral flange *d* into the said cylinder U.

In the wall of the cylindrical chamber Y' are formed two (more or less) openings, *e'*, through which the grain as it is fed into the said chamber by the spiral flange *d'* falls into the discharge-chamber L, and escapes through the opening in the bottom of the said chamber. The dust beaten from the grain by the teeth *c* escapes through the holes or slots in the cylinder-shell V, the heavier particles escaping through the opening *g* in the hopper-shaped bottom of the chamber N, and the lighter particles being drawn out by the exhaust-fan Q.

To one end of the shaft *a* is attached a small pulley, *h*, to receive the driving-belt, and to the other end of the said shaft *a* is attached a small pulley, *i*, around which passes a belt, *j*. The belt *j* also passes around a larger pulley, *k*, attached to the end of the screen-shaft E. To the other end of the screen-shaft E is attached a small pulley, *l*, around which passes a belt, *m*, which also passes around a larger pulley, *n*, attached to the projecting end of the hollow gudgeon Z'. By crossing one of the belts *j m* the cylinder U will be driven in the opposite direction from the shaft carrying cylinder *b*. By making both the belts *j m* straight the cylinder U and the shaft carrying cylin-

der *b* will be driven in the same direction, and by regulating the relative sizes of the pulleys the cylinder U and the shaft carrying cylinder *b* can be driven at the same speed, or at different speeds, as may be desired.

To the shaft *a* is attached a large pulley, *o*, around which passes a belt, *p*, which also passes around a small pulley, *q*, attached to the shaft of the exhaust-fan Q, so that the said exhaust-fan will be driven from the shaft *a*, but at a greater speed.

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

1. In a grain separator and smutter, the combination, with the hollow cylinder U, having a perforated and slotted shell, and provided with the end chambers, Y Y', having openings *e e'* and buckets *f*, of the cylinder *b*, arranged within the cylinder U, and provided with the spirally-arranged teeth *c* and the spiral flanges *d d'* on its shaft *a*, substantially as herein shown and described.

2. In a grain separator and smutter, the combination, with the cylindrical chamber Y, having side openings, *e*, and the buckets *f*, of the grain-receiving well R, substantially as herein shown and described, whereby the grain will be fed into the smutter, as set forth.

3. In a grain separator and smutter, the combination, with the screen-chamber C and the smutter-chamber N, of the exhaust-fan Q, the dust-chamber P, and the spouts O T, substantially as herein shown and described, whereby the dust and screenings will be withdrawn from the machine, as set forth.

4. A grain separator and smutter comprising the screen-case C, the recesses G H I J K, the revolving screen D, the cylinder U V, provided with the chambers Y Y', the cylinder *b*, provided with the spirally-arranged teeth *c* and the spiral flanges *d d'* on its shaft *a*, and the exhaust-fan Q, all arranged and combined substantially as herein shown and described.

HARRY LEONARD MARTIN.

Witnesses:

CHAS. RINE,  
JNO. E. RATHFON.