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HUNT & INGRAHAM.

Smut Mill.

No. 98,266. Patented Dec. 28, 1869.

Fig. 1

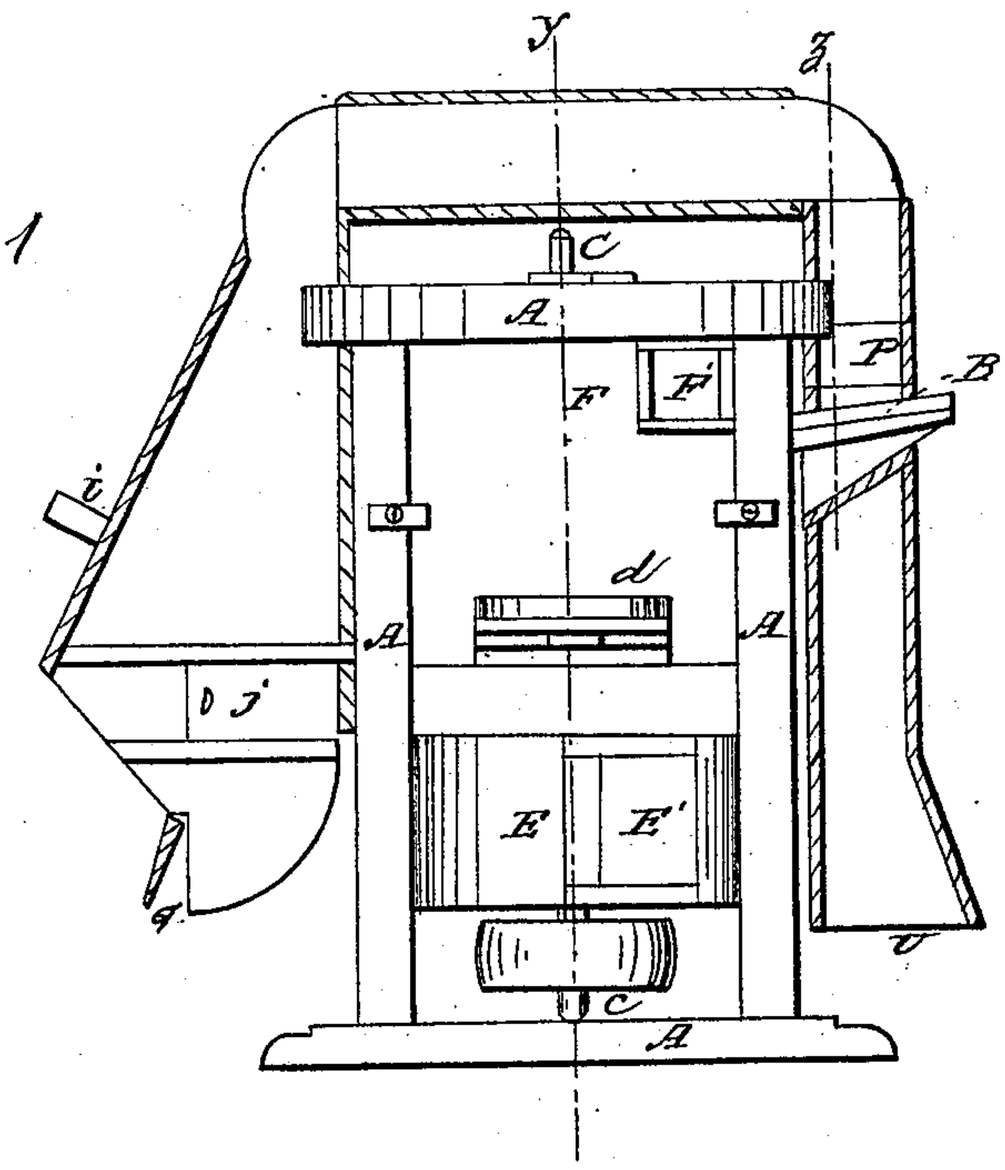
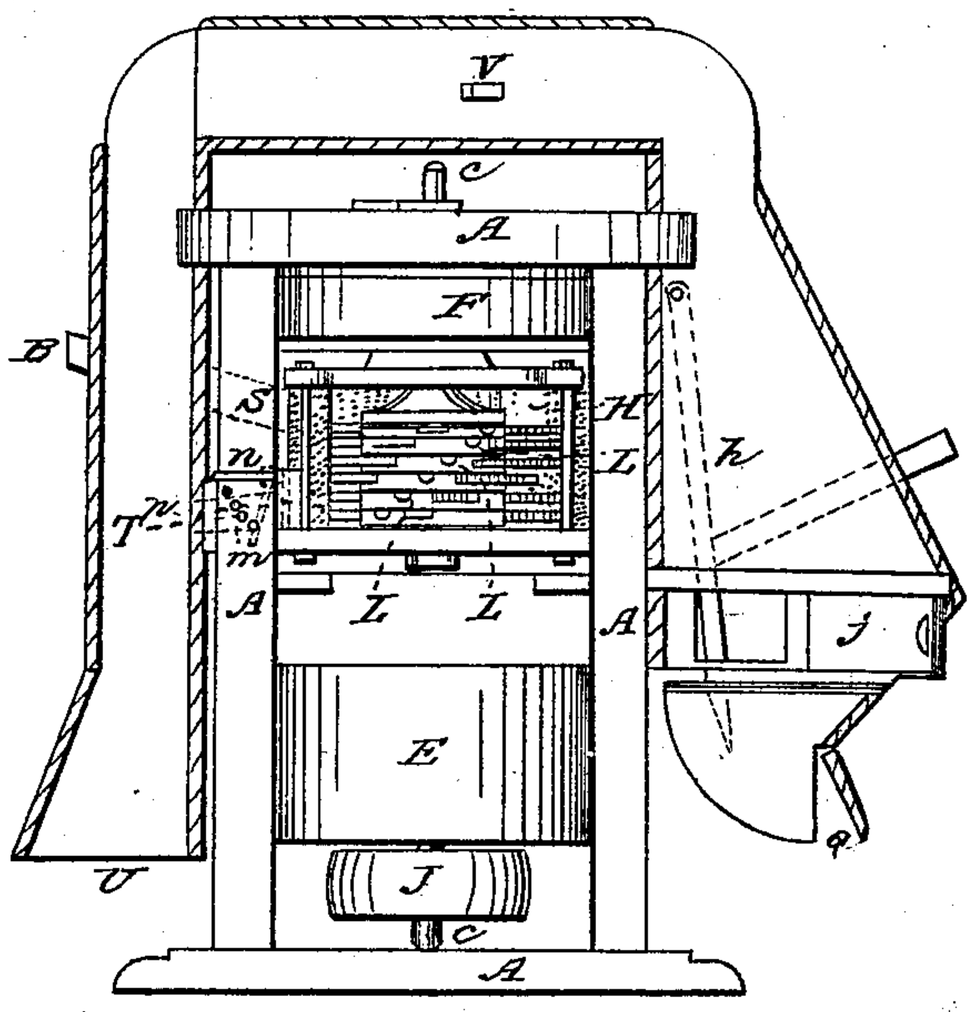


Fig. 2



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2 Sheets—Sheet 2.

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Fig. 3

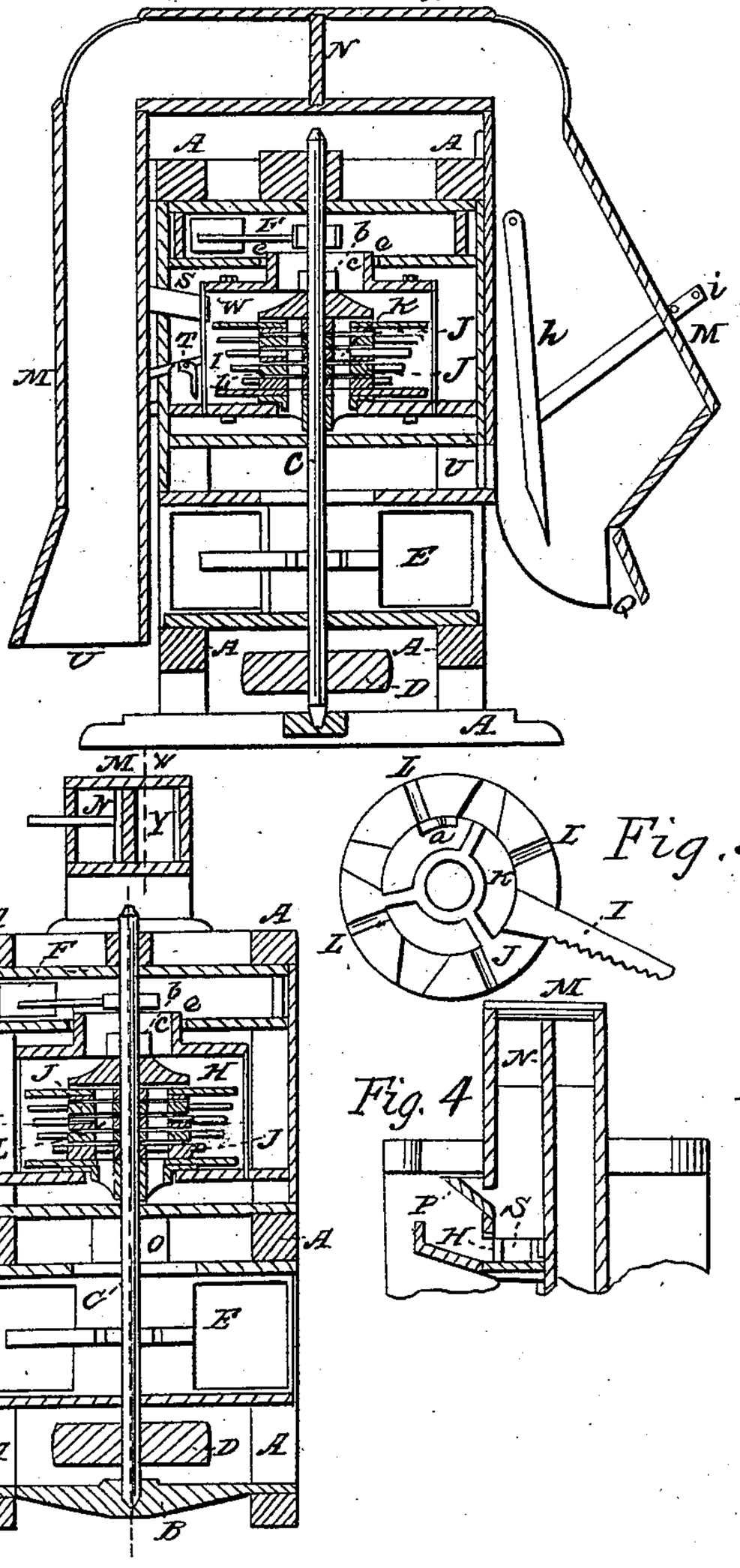

Fig. 5

Fig. 4

Fig. 6

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JOHN C. HUNT, OF TERRE HAUTE, INDIANA, AND WILLIAM W. INGRAHAM, OF CHICAGO, ILLINOIS.

Letters Patent No. 98,266, *dated December* 28, 1869.

IMPROVEMENT IN GRAIN-SMUTTER, SCOURER, AND SEPARATOR.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, JOHN C. HUNT, of Terre Haute, in the county of Vigo, and State of Indiana, and WILLIAM W. INGRAHAM, of Chicago, in the county of Cook, and State of Illinois, have invented a new and useful "Improved Grain-Smutter, Scourer, and Separator;" and we do hereby declare the following to be a full, clear, aud exact description of the same, reference being had to the accompanying drawings, and the letters and figures marked thereon, which form a part of this specification, and in which—

Figure 1 represents a side elevation of our improved machine;

Figure 2, an elevation of the other side of the machine, with a portion of the side and perforated drum removed;

Figure 3, a longitudinal vertical section at the line *x;*

Figure 4, a transverse vertical section at the line *y;*

Figure 5, a top view of one of the scouring knives, with one of the rings which hold the same; and

Figure 6, a section at the dotted line *z*.

The nature of our invention consists in the scouring-knives or beaters; the pile of rings, which hold the same in place and admit air through the grain; the combination of the two fans with the scouring-drum and spouts, as hereafter described; and also in the discharge-valve at the bottom of the scouring-drum.

To enable those skilled in the art to understand how to manufacture and use our invention, we will proceed to describe the same with particularity.

There is an ordinary substantial frame, A, across the bottom of which there is a cross-piece, B, in which there is a step for the shaft C.

There is a pulley, D, on the shaft C, by which it is driven; and there are also on said shaft two fans, E and F, for creating a blast of air to clean the grain, as hereafter described.

Between the fan-chambers there is a perforated drum, H, in which the grain is scoured by means of the notched beaters or scourers I, which are intended to be made of steel.

These scouring-knives are held in place by the rings J, which lay in a pile on the shaft C, as shown in the drawings, and are revolved with the shaft.

The scouring-knives or beaters are arranged spirally around the pile of rings, each one being placed in a mortise in a ring, the shape of which is clearly shown in fig. 5, and they are held down in the mortises by the next ring above.

By loosening the rings the beaters are readily removed.

The rings are made open at K, and there are air-passages, L, for the air to pass freely through the grain, and the rings are prevented from turning upon each other by the teeth or projections *a*, projecting into corresponding notches in the next adjacent ring.

The whole pile of rings is firmly held in place on the shaft by a nut, *b*.

There is an opening, *c*, from the top of the perforated drum H, into the chamber above containing the blast-fan F.

The fan F draws a current of air up through the openings K and L, taking all the dust that is scoured from the grain in the drum H, and drawing it up through the opening *c*, discharges it at the discharge-spout F'.

There is one opening, *d*, in the side of the machine, for admitting air freely through the scouring-drum, as above described.

There is also an opening, *e*, from the space outside of the scouring-drum in the chamber containing the blast-fan F, through which all the dust which passes through the perforations in the drum H is drawn, to be discharged as above described.

There is a double spout, M, extending over the top of the machine, the partition N dividing them their entire length, and there is an opening from each of said spouts at O, through which the air is drawn into the blast-fan E.

The blast-fan E is so arranged as to draw its air through the openings O, and discharge it at E'.

The grain to be cleaned is poured into the hopper P, and falls through a strong blast of air, which is drawn through one side of the double spout M by the blast-fan E, which takes out all the straw, chaff, oats, &c., carrying them over and discharging them at the other end of the spout, either at Q or through the fan at E.

The heavy grain falls into the hopper R, and passes through the spout S into the scouring-drum H, where it is stirred and scoured by the scourers I, there being a blast of air drawn through it all the while by the blast-fan F, as above described.

The air-ports or holes L being arranged spirally in the pile of rings, as shown in fig. 2, the motion of the pile of rings serves also to produce a current of air through them, and the rings are held a little distance apart, as shown, so that the air passes between them through the grain.

There is a valve, T, over an opening at the bottom of the scouring-drum, through which the grain is discharged into the other part of the double spout M, through a blast of air being produced therein by the blast-fan E, as above described.

This blast of air takes out all the remaining dust or dirt, carrying it over to be discharged either at Q, (there

being an opening, Q, on each division of the spout M,) or through the blast-fan, as hereafter described, while the cleaned and scoured grain falls down and is discharged at U.

The blast of air that is drawn through the double tube or spout M, is regulated by the slide V, which can be drawn so as to close either side of the spout, or partially close either side, as may be desired.

There are also swinging-valves, *h*, which serve to carry the coarser material that is drawn over in the spouts M down to pass out at Q, instead of being drawn through the blast-fan E with the air.

They can be raised and lowered by the pins *i*, as desired.

There are also slides, *j*, on each side of the spout M, that can be opened or closed to admit air, or not, directly to the blast-fan, without its being drawn through the spouts M. Opening these slides more or less regulates the force of the draught of air through the spouts, so as to take more or less heavy material from the grain, as above described.

When it is desired to make a heavy draught of air or suction through the grain, before it passes into the scouring-drum, which may be desirable when there is a good deal of straw or other foreign material among the grain, the slides *j* are closed, and the slide V is drawn so as to turn all the suction of the fan E through that side of the spout M, or if it is desired to draw a strong current of air through the scoured grain as it passes from the machine, the slide V may be drawn so as to turn the entire suction of the fan through that side of the double spout.

The suction of air through either or both legs of the spout may be entirely regulated by the slides *j* and V.

The rapidity of the passage of grain through the scouring-drum H is regulated by the valve T. The scouring-drum H is kept full of grain, which is scoured and cleaned by the notched beaters or scourers I constantly rubbing and stirring it, consequently the grain is not broken as in other machines where the grain falls from one side of the machine to another, or is thrown about in the machine; and if it is desired to scour the grain a good deal, or to polish the grain, the valve T is fastened down either by a weight, a spring, or by a pin, placed in the holes *m*, over the handle of the valve, so that the grain escapes very slowly.

If it is desired to scour the grain but little, the valve T is opened, so as to allow the grain to escape more rapidly.

The drum H is always kept full of grain, and the supply-hopper thereto is so arranged that the grain will always flow into the drum as fast as it passes out.

Our machine differs from other machines in the fact that our machine should always have the scouring-hopper full of grain, while other machines will not operate when it is full.

We do not wish to limit ourselves to placing the escape-valve T at the bottom of the drum H, as the spiral arrangement of the scourers I will cause the grain to pass through the scouring-hopper if the grain is fed at the bottom, and passes out at or near the top thereof.

In the annexed drawings, *n* represents the handle of the valve T, and *m*, pin-holes in the frame of the machines, for placing pins so as to fasten the valve more or less closed, as above described.

The valve may be weighted for the same purpose, or be operated by a spring, if desired.

Having fully described the construction and operation of our machine,

What we claim, and desire to secure by Letters Patent, is—

1. The scouring-knives or beaters I, when constructed and arranged substantially as and for the purposes herein specified and shown.

2. The rings J, when constructed and operating substantially as and for the purposes described.

3. The scouring-drum, provided with an inlet and outlet, and scourers or beaters for scouring the grain, when they are so constructed and arranged that the scourers or beaters revolve in a mass of grain in the drum, substantially as and for the purposes specified and shown.

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W. W. INGRAHAM.

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