J. WHITE.

Smut Mill.

No. 30,171. Patented Sept. 25, 1860.

Fig. 2

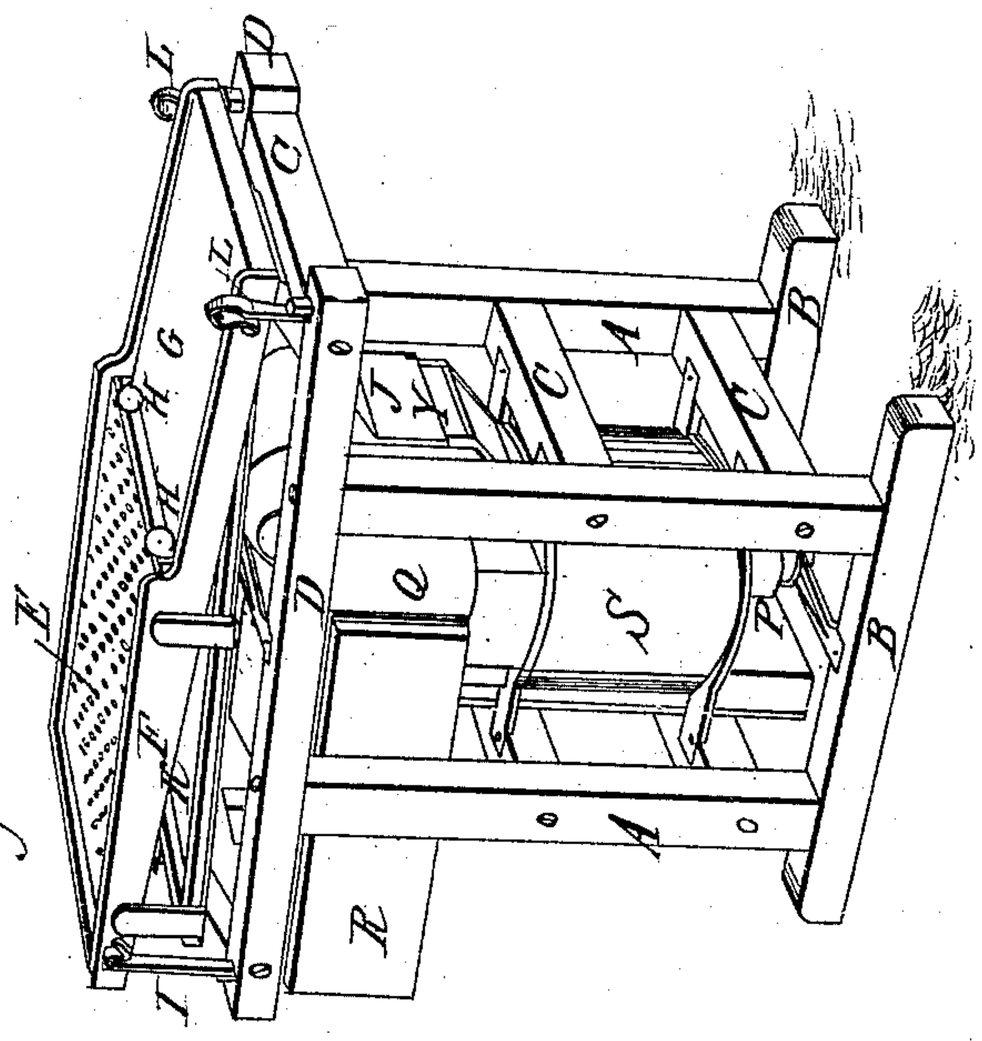


Fig. 7

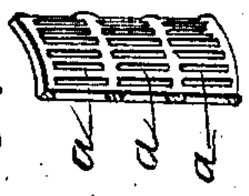


Fig. 1.

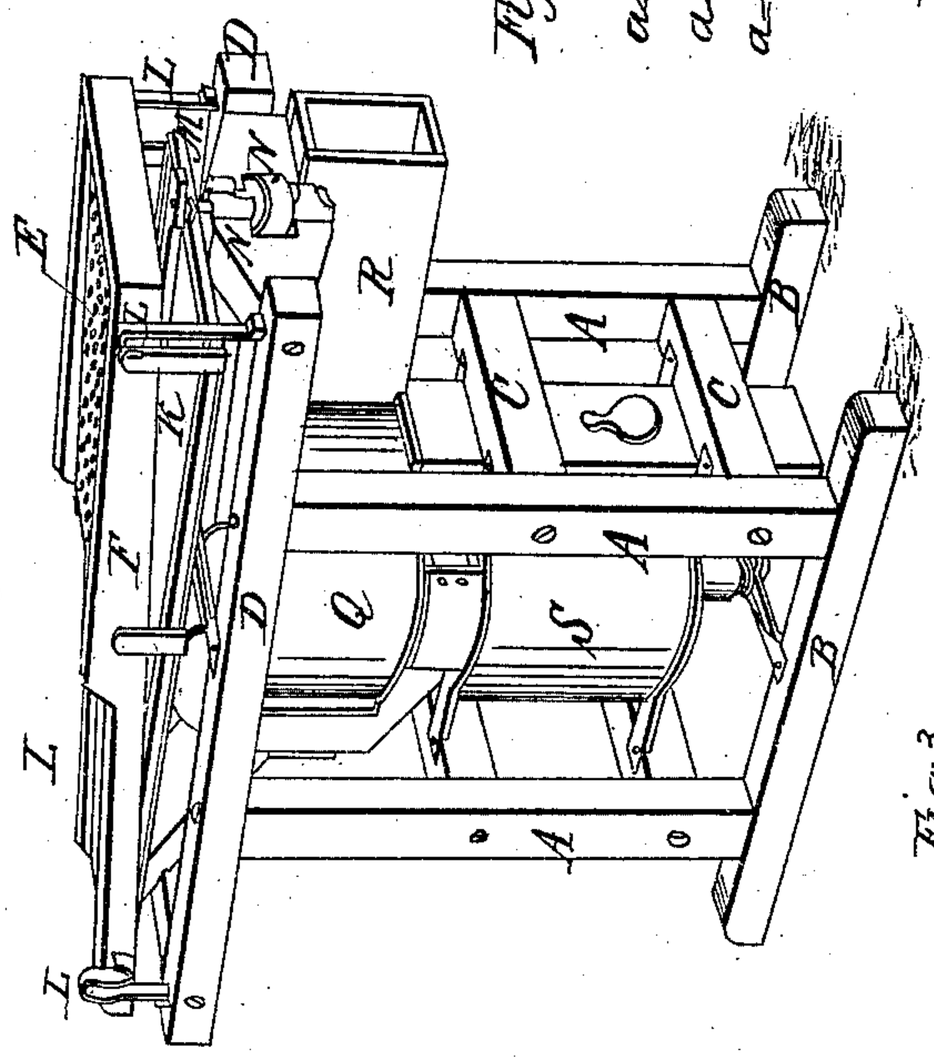


Fig. 5.

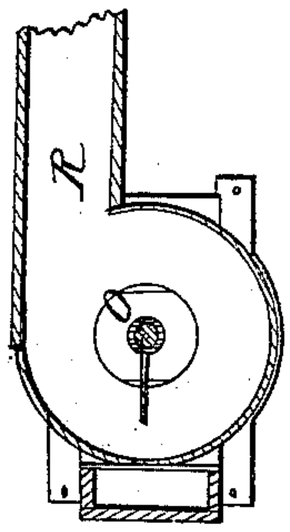


Fig. 6.

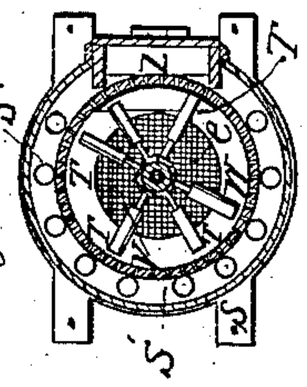


Fig. 4.

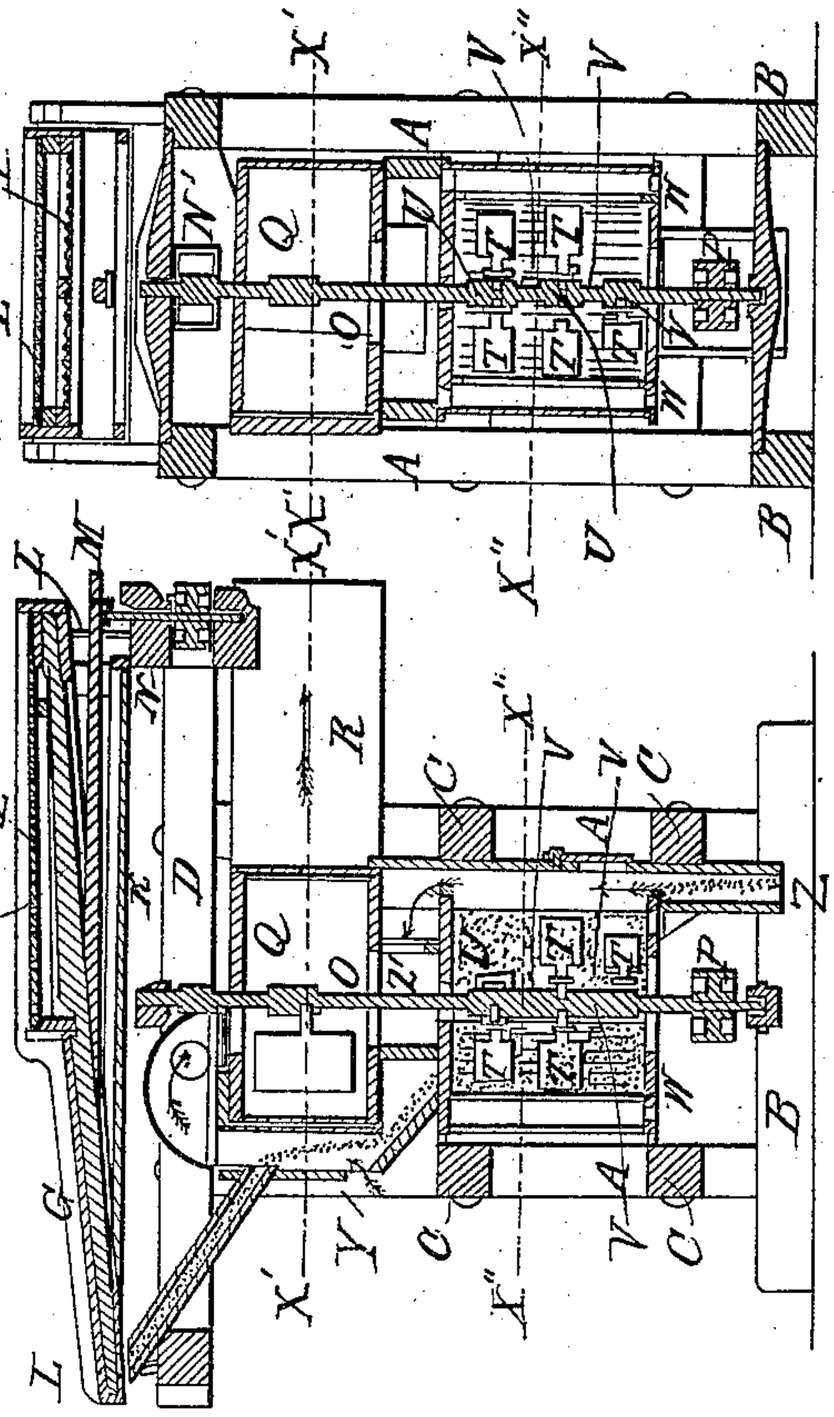
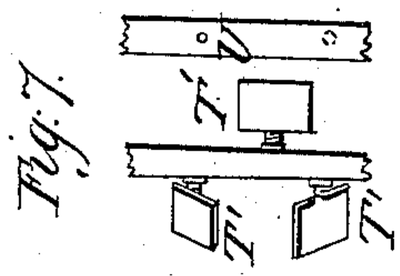


Fig. 3.

Fig. 1.



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Inventor:
James White

UNITED STATES PATENT OFFICE.

JAMES WHITE, OF CLEVELAND, OHIO.

SMUT AND SCOURING MACHINE.

Specification of Letters Patent No. 30,171, dated September 25, 1860.

To all whom it may concern:

Be it known that I, JAMES WHITE, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Combined Smut-Mills and Scourers; and I do hereby declare that the following is a full and complete description of the construction of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, is a front perspective view; Fig. 2 is a perspective view of the opposite side seen in Fig. 1; Fig. 3, is a vertical, longitudinal section; Fig. 4, is a vertical transverse section; Fig. 5, is a longitudinal transverse section on the line *x'*; Fig. 6, is a transverse section on the line *x''*; and Fig. 7, is a section of the stave that forms the beater cylinder.

Like letters refer to like parts in the several figures.

My invention embraces two points of novelty—1st, the adjustable metallic perforated screen, in combination with the wire cloth, cockle and chess screen, embracing also the motion of the screen frame, and mode of suspending the same; 2nd, in relation to the adjustable beaters, which can be radially expanded or contracted, and adjusted vertically or inclined at any desirable angle, by means hereinafter set forth.

The frame consists of four posts A, the bottom pieces B, the girths C, and plates D. The top of the frame is rectangular in form, but the body is nearly square, as seen in the several drawings.

In this description, I shall describe minutely, only those parts that relate to my improvement, the other parts being constructed in the ordinary mode.

1st, E, represents a perforated metallic plate, which is placed upon the front end of the oscillating screen frame, F, and extending about half its length, and terminating at the upper end of the inclined plane G, Figs. 2 and 3. The perforated plate E, is made adjustable at its lower end, vertically, by means of the cams H, H, seen in Figs. 2 and 3. The opposite end rests upon the screen frame. The perforations in the plate E, are of sufficient size to admit the passage of grains of wheat.

The change of inclination which can be effected in the plate E, by means of the cams H, H, is designed to retard or facilitate the passage of the coarse materials over the plate, and thus regulate the separation of the grain. All the coarse material that will not pass through the perforations of the plate E, are deposited upon the upper end of the inclined plate G, and discharged at the tail end of the machine.

Immediately below the plate E, and plane G, is placed at an angle of about 5° from a horizontal line, a wire cloth screen I shown only in Figs. 3 and 4. The grain, and all smaller substances, pass through the perforated plate E, and fall upon the wire screen I. Here a separation takes place between the grain and the tares; the latter, as cockle, chess, grass seed &c. passes through the screen I, while the grain passes on to the lower end, and falls through an opening into the spout J, Figs. 1, 2 and 3.

Below the screen I is placed a plate K, having a slight inclination in the direction opposite to that of the screen I, and upon this, falls all the matter that is separated by the screen I, and finding its way to the tail end of the machine, drops through an opening in the corner of the plate, into a vessel placed underneath to receive it.

The screen frame F, is suspended at its four corners, upon the springs L, the lower ends of which are set into the plates D. The screen frame is caused to have a short, quick reciprocating motion, in the direction of its longest diameter, by means of the connecting rod M, and crank shaft N. The shaft N, receives its motion by means of a band from the pulley N', upon the main shaft O. In consequence of suspending the screen frame upon the springs L, the sudden strain that would otherwise be communicated to the boxes, is taken away, and the screen receives a more steady, reciprocating motion, thus greatly facilitating the separation of the grain from the tares.

2nd, O, represents the shaft, upon which the wind-wings and beaters are placed. The pulley which gives motion to this shaft is seen at P, Figs. 1, 2, 3 and 4. The chamber in which the wind-wings are placed, is shown at Q. The pipe for the exit of the draft, is shown at R. The beaters are secured to the shaft within the chamber S. The beaters consist of a square or rectangular plate of iron, with a shank or rod extending from one side, as seen at T, Figs. 3, 4 and 6. Each of these rods has a screw thread cut upon the end, and by this means, they are screwed into an enlarged portion

of the shaft O, which is fitted to receive them. Three sets, of four beaters each, may be used and placed one above another either in line or in a spiral form, as shown at U, in Figs. 3, 4 and 7. Before the shanks of the beaters are screwed into the shaft, a jam nut V is screwed upon the shank, and by this means, the blade of the beaters can be secured at any desired angle from a vertical position, as shown at T the faces inclining either upward or downward, and in this manner, the grain can be retarded in its passage through the chamber S, by being constantly thrown upward, by the upward inclination of the blades when its progress downward will be retarded, or by placing them with their faces vertical, the grain will descend by its own gravity; or by inclining the faces downward, the passage of the grain through the chamber will be facilitated. By this means, the grain can be subjected to a longer or shorter action of the beaters as may be found desirable or necessary to effect the necessary degree of scouring. A further use of the jam nuts V, is found in the means they afford, to adjust the beaters outward, or inward, as necessity may require. When a machine is new, and consequently, all the angles sharp, there should be more space between the ends of the beaters and the staves, than when the parts become worn smooth.

The staves, Fig. 7, are of cast iron, and made in sections, so that they can be removed and replaced at pleasure. The lower end stands in the groove W, seen in Figs. 3, 4 and 6. The upper end is secured in a similar groove. The vertical slits *a*, in the staves, are so close upon the inside, as to prevent the grain from passing through, but will admit the passage of dust.

The floor of the space or chamber inclosed by the staves, (the same being the beater chamber) is open around the shaft O, to the extent of six or seven inches from the shaft. This open space is covered with wire cloth *e*, sufficiently fine to prevent the passage of grain, but admits a current of air to pass upward, through the opening, when the shaft is in motion. This current of air passes outward through the slits *a* and carries with it, the dust scoured from the grain. The staves are inclosed by a sheet of metal S, Figs. 1, 2 and 6. From this inclosure, a current of air, with the smut and dust passes upward, and in part, supplies the fan with air, aided also, by a series of holes S′ inside of the sheeting S, as seen in Fig. 6. Another portion of air, which can be regulated by a slider, passes through the opening Y, Fig. 3, the grain, in its passage from the screen to the beaters passing through this draft.

Having thus described the leading features of my invention, I will proceed to show its manner of operation.

The grain is admitted upon the perforated plate E, through which the grain and finer matter falls upon the screen I, where another separation takes place, the cockle and chess falling upon the plate K, and discharged as described. The wheat passes into the spout J, and falls through a strong current of air passing in at Y. Thence the grain passes into the scouring chamber where it undergoes the action of the beaters, T, and finally passes out, through a strong current of air through the spout Z, Z′ all the dust and smut, being carried upward as described, and finding its exit at the spout R.

What I claim as my improvement and desire to secure by Letters Patent, is—

1. The frame F, springs L, perforated adjustable plate E, wire screen I, and plate K, these several parts being arranged and operated as described.

2. The adjustable beaters T, constructed, arranged and operated substantially as and for the purpose specified.

JAMES WHITE.

Witnesses:

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