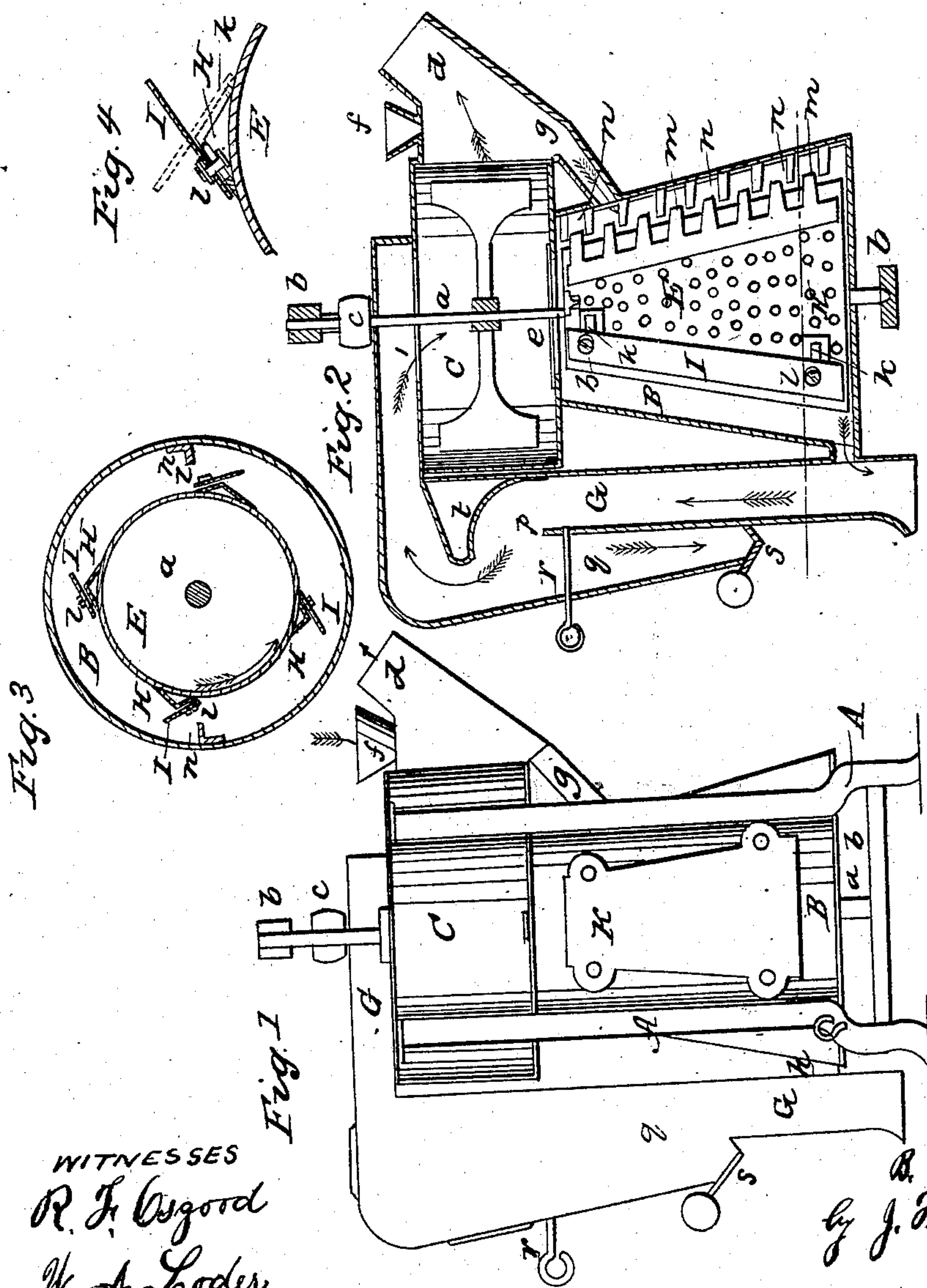


B. T. TRIMMER.

Smut Mill.

No. 39,598.

Patented Aug. 18, 1863.



WITNESSES
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UNITED STATES PATENT OFFICE.

B. T. TRIMMER, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN SMUT-MILLS.

Specification forming part of Letters Patent No. 39,598, dated August 18, 1863.

To all whom it may concern:

Be it known that I, B. T. TRIMMER, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Machines for Cleaning Grain; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Figure 1 is a side elevation of my improved machine; Fig. 2, a central vertical section of the same; Fig. 3, a transverse horizontal section of the case and revolving cone, in the plane of the red line, Fig. 2; Fig. 4, a view showing the manner of attaching the adjustable and shifting beaters to the revolving cone.

Like letters of reference indicate corresponding parts in all the figures.

My machine is of that class in which beaters secured to a cone or cylinder revolve within an outer conical or cylindrical case, by which means the grain is subjected to intense action, thereby cleaning it of all foreign matter, and in which, by the medium of a fan, the impurities are removed without being mixed with the separated grain.

A suitable frame, A, is provided, in which is mounted an outer case, B, preferably of conical shape, and of proper size, and above this, connected by an opening, *e*, is a fan-chamber, C, of suitable size and form. Centrally through these chambers passes a spindle, *a*, resting in bridge-trees, *b b*, above and below, and operated by means of a pulley, *c*. To this spindle, within the chamber C, is rigidly secured an ordinary fan, D, and also within the case B a revolving cone, E, of considerably smaller diameter. On one side of the fan-chamber is an escape-opening, *d*, for the blast, and at the proper position, opening into it, is the hopper *f* for the feeding of the grain to the machine, and directly below, from the bottom of the blast-opening, a conducting tube or spout, *g*, for leading the grain into the case, as shown most clearly in Fig. 2. From the floor of the case B, on the opposite side, is an eduction-outlet, *h*, for the escape of the cleaned grain, opening into an outer sucker or exhaust tube, G, leading up, around, and connecting with the top of the fan-chamber by an opening, *i*, Fig. 2, and whose construction and operation will presently be described.

To the periphery of the revolving cone E,

at the top and bottom, and intermediately, if necessary, or at any position desired, are secured a suitable number of sets of lugs or bearings, H H, four sets only being represented in the drawings, as indicated most clearly in Fig. 3. These bearings are, respectively, formed in the shape of obtuse angles, having two plain and equal sides opposite, and the apex projecting sufficiently from the periphery of the cone to give the proper inclination to the beaters, as will presently be described. Through both planes or faces of the bearings are made slots *k k*, Figs. 2 and 4, extending nearly their whole length, in which slots rest and adjust screw-bolts *l l*, passing likewise through the beaters I I and holding them in place against the bearings. These beaters extend from top to bottom of the revolving cone, and are of proper width for the purpose designed. A portion of them are provided at the outer edge with projecting teeth *m m*, as shown at the right hand in Fig. 2, and a portion provided with holes, as indicated at the left hand in the same figure. The teeth *m m* of the beaters intermatch with similar hook-teeth *n n*, projecting inward from the side of the outer case, as represented.

For the purpose of reaching and adjusting the beaters within, and for other purposes, the case B is provided with a closely-fitting removable door, K, Fig. 1, held by screws or in any convenient manner.

The sucker or exhaust tube G, into which the eduction outlet *h* of the case opens, extends upward to the point *p* at a proper height, about as represented in Fig. 2, where the opening or passage is enlarged and a chamber, *q*, formed beneath, outside the main passage, having a suitable cut-off slide or damper, *r*, near its top and a discharge outlet at its bottom, covered by a weighted cover, *s*, for the purpose of retaining the seed that gathers therein and to more perfectly cut off the ingress of air to obstruct the draft in the main passage. At a little distance above the point *p* is situated, in the angle formed by the bend of the exhaust-tube, a deflector or stop, *t*, substantially of the shape represented—that is, with its lower side shelving over the chamber *q* in such a manner and to such an extent that the grains that are carried up by the exhaust-draft will strike against it and be turned from their course. It will be readily

perceived that as the grain falls from the hopper *f* through the blast-opening into the conducting-spout *g* below, it will be cleaned of the loose dirt by the direct action of the fan, and after being acted on in the case B the foreign matter separated from it will be drawn up through the opening *e*, connecting the case and fan-chamber, while a still further effect will be produced by the drawing up of the impurities by the exhaust-draft that escapes through the outlet *h*. This universal action of the fan is most effectual in removing the extraneous matter, and it is only necessary to subject the grain further to the proper beating action, which is best accomplished by the peculiar construction, arrangement, and adaptation of the beaters and their connecting parts. By securing the beaters to the cone, through the medium of the bearings H H, they can not only be adjusted forward and backward in the slots *k k*, but can also be shifted from one side or face to the other of the bearings, so as to stand in opposite directions, as indicated by the outline in Fig. 4. This is of the greatest importance, as the machine is thus adapted to running in either direction by merely changing the position of the beaters, which can be easily done through the door K. It is very desirable that the machine should be adapted to running in either direction, from the fact that the position in which it is worked is frequently such that it is very inconvenient, and sometimes impossible, to cross the driving-band to give the proper motion, and it is sometimes necessary, from the position in which it is placed, or from the circumstances connected with operating it, that the machine should run in one particular direction, while, if removed to another position, it is equally necessary that it should run in the opposite direction. By this arrangement it is perfectly adapted to either motion, while the effect is the same. By means of the forward and backward movement in the slots *k k*, the beaters are adjusted nearer to or farther from the outer case, as the nature of the grain may require. Thus, very moist or very dirty grain would require a more intense action, while very dry or comparatively clean grain would require a gentler action. It is frequently necessary, in order to produce a perfect discharge at the outlet *h*, that the bottom of the beaters should run near the outer case, while at the same time, to produce the proper action, that the top should be adjusted inward, thus placing them at an angle or in an inclined position.

This action is allowed by the peculiar adjustment described. By means of this adjustment the intermatching teeth *m m* and *n n* are separated to a greater or less extent, so as to leave the passage open, or fitted together more closely to produce a more intense action on the grain, as necessity may require. By the use of these teeth the efficacy of the machine is increased in a great degree, and a much less speed required than if all the beaters were made plane and the sides of the case were made unobstructed and unbroken. By the employment of the sucker or exhaust tube G all dirt and light particles—such as grass seed and blighted grains—are drawn upward as soon as they escape from the discharge-outlet *h*. The heavier particles—such as seeds of all kinds—by striking the deflector *t* and being turned from their vertical course rebound downward, or strike the back side of the tube, and fall into the chamber *q*, while the lighter ones pass on through the opening *i* into the fan-chamber, whence they are discharged. The abrupt turn around the deflector effectually separates the substances without interfering in the least with the draft, and the whole arrangement is in the most compact and effective form for the purpose for which it is designed.

I do not claim, broadly, adjusting the beaters forward and backward, nor obliquely, as I am aware that such an effect has before been produced, but I am not aware that such adjusting beaters have ever been capable of being shifted to run in opposite directions by the means I employ. Therefore,

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

1. The double-faced bearings or lugs H H, provided with the slots *k k*, or their equivalent, in combination with the beaters I I, for attaching, adjusting, and shifting said beaters, and adapting the machine to be run in either direction, substantially as herein described.

2. In combination with the beaters, thus attached and adjusted and provided with teeth *m m*, the intermatching teeth *n n*, arranged and operating substantially as and for the purposes herein specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

B. T. TRIMMER.

Witnesses:

W. A. LODER,
R. F. OSGOOD.