HOWES & THROOP.

Smut Mill.

No. 19,637. Patented March 16, 1858.

Fig. 3

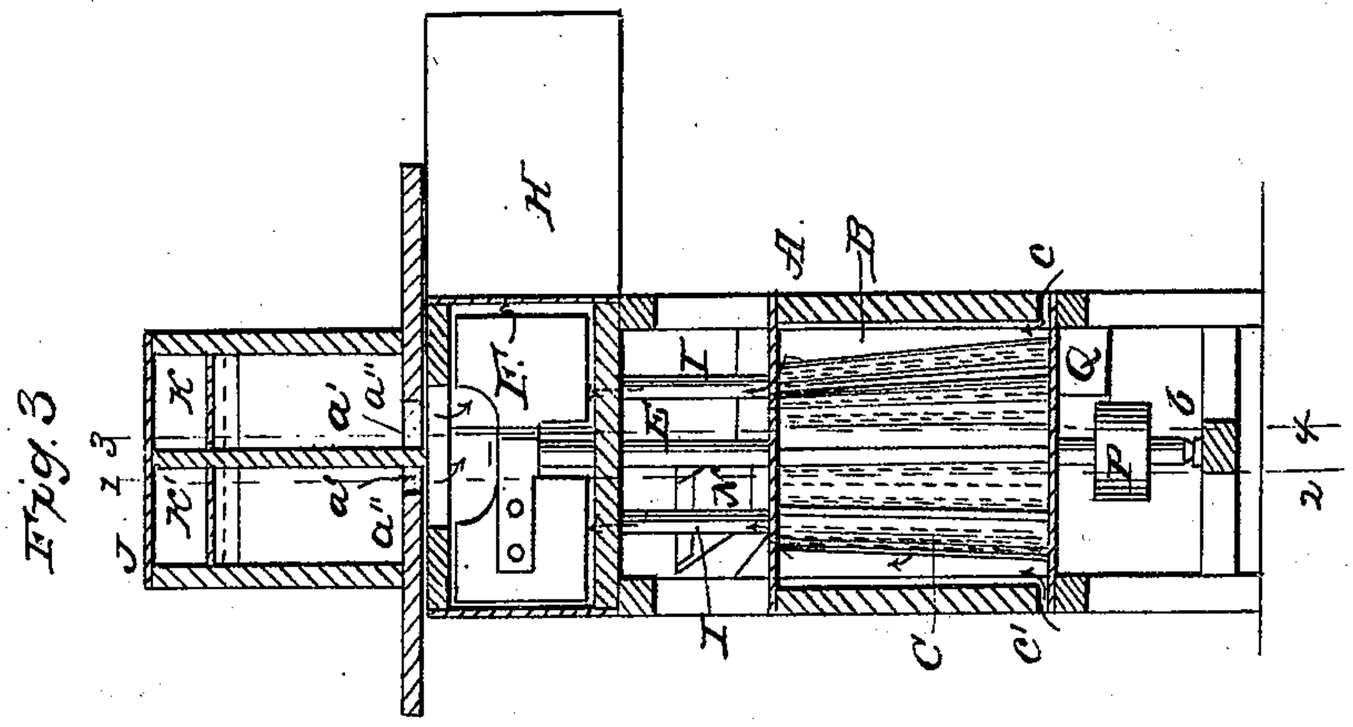
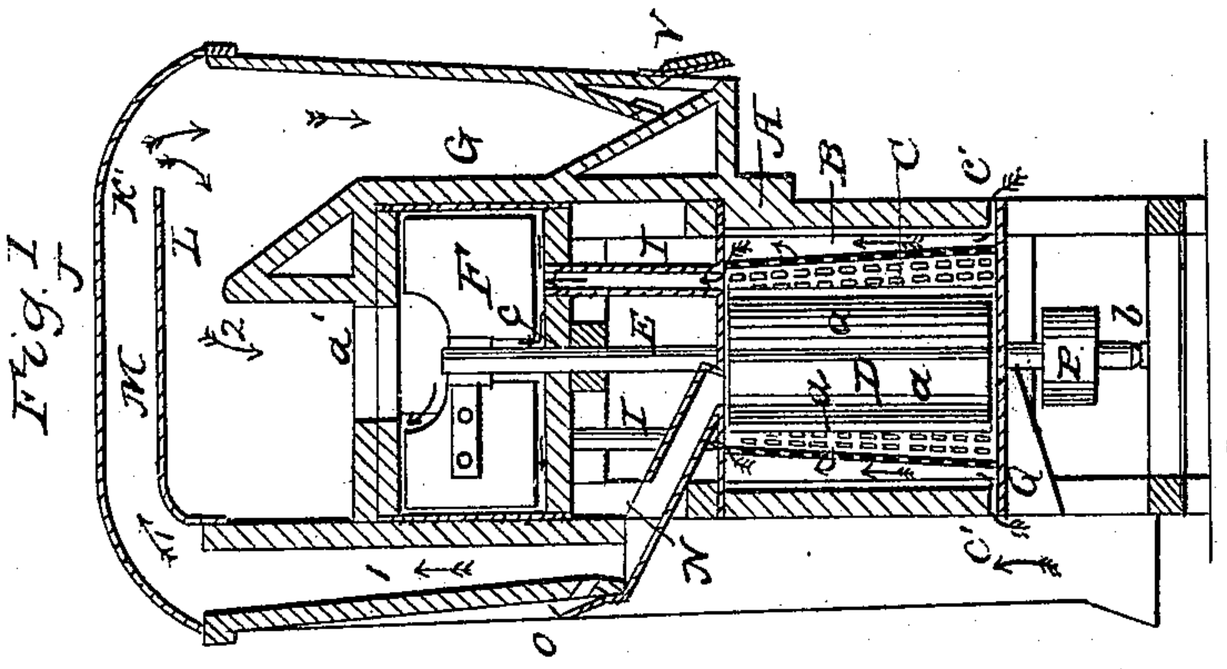


Fig. 2

Fig. 1



UNITED STATES PATENT OFFICE.

S. HOWES, OF SILVER CREEK, NEW YORK, AND G. E. THROOP, OF CHICAGO, ILLINOIS.

GRAIN SEPARATOR AND CLEANER.

Specification forming part of Letters Patent No. 19,637, dated March 16, 1858; Reissued March 5, 1872, No. 4,793.

To all whom it may concern:

Be it known that we, SIMEON HOWES, of Silver Creek, in the county of Chautauqua, in the State of New York, and GARDNER E. THROOP, of Chicago, in the county of Cook, in the State of Illinois, have invented certain new and useful Improvements in Grain Separators and Cleaners; and we hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 represents a longitudinal vertical section of the machine 1—2 in Fig. 3 showing the plane of section. Fig. 2 a longitudinal vertical section 3—4 in Fig. 3 showing the plane of section and Fig. 3 a transverse vertical section, the plane of section being through the center.

The letters of reference indicate the same parts in the different figures.

Our improvements relate to that class of machines which clean the grain, and also separate the heavy grain from light grain, cheat, &c. and remove from the various qualities the dust and other refuse, and thereby utilize much which would otherwise be wasted.

The machine is constructed and arranged as follows: A is a rectangular frame having a box or casing B within it, which surrounds a perforated concave or shell C which is permanently secured, concentric with the vertical shaft E and the cylinder D. This cylinder is fixed to the shaft E and is provided with several vertical radial projections or beaters *a*. The sides of the box B do not extend to the bottom board upon which the shell C is placed, but leave narrow openings *c′* for purposes to be hereinafter explained. The revolving shaft E is placed in the center of the machine supported in a box at *c*, and by a step *b*, it receives its motion through the driving pulley P to which the power is applied. Above the box B are placed two or more tubes which open a direct communication with the fan case G and the space in the box B outside of the shell C. Within the case G upon the upper end of the shaft E is placed a suction fan F, composed of any suitable number of leaves connected by arms with the shaft E.

J is a curved trunk or flue which extends over the fan case G. This is divided into two compartments, K and K′ by a vertical partition L. The upper part of the fan case G communicates with both compartments by openings shown at *a′*, where two slides *a″* are placed to regulate the size of the opening. It has also an outlet H which may be extended to another apartment or to the outside of the building to convey the dust and refuse ejected from the fan case.

M is a horizontal plate which extends over the fan case G within the trunk J and in both compartments K and K′. K extends downward at one side of A nearly to the floor while the opposite side extends downward about half way. K′ terminates at an inclined spout N which leads into the space between the cylinder D and the shell C and conducts the grain to be operated upon from the hopper O.

Q is an inclined spout leading from the bottom of the concave shell C to the lower part of the compartment or blast spout K, which is gradually narrowed down to that point.

The shaft E being put in motion in the proper direction and at the required speed, the fan produces powerful currents of air in the direction of the darts 1. The wheat or other grain passing from the hopper O through the spout N is subjected to the action of the upward current in K″. This takes up smut balls, chess, light grains, chaff dust &c., &c., carries them over the plate M, the dust and light refuse passes in the direction of the darts 2 into the fan, whence it is ejected through the outlet passage H, while the heavier portion descends by its gravity and passes out at the valve V which only opens when the accumulation overcomes the atmospheric pressure, which tends to keep it closed. The heavy but uncleaned grain passes by its gravity to the top of the revolving cylinder D which distributes it equally by centrifugal force as it falls into the mill. It is then subjected to the action of the beaters, which by their rapid motion not only rub the grains against each other and the perforated shell, but generate outward currents through the perforations, driving the smut and dust through, into the space between the shell and its casing B, whence it is immediately taken up through

the tubes I into the fan case and discharged through H without again mixing with the cleaned wheat. It is highly important that the smut should not again come into contact with the grain after it has been cleaned or scoured as much of it would again adhere, especially in damp weather or if the grain is not thoroughly dry. The openings *c'* admit a supply of air to create in connection with the fan the necessary draft.

The cleaned grain passes out of the mill through the inclined spout Q into the blast spout K, where it is met by an upward draft which carries up all light stuff and refuse which may have escaped the previous operations and treats it in a similar manner to that which passes through compartment K'.

What we claim as our invention, and desire to secure by Letters Patent is,

The combination of the tubes I, and the outer casing B when so constructed, and arranged in connection with the fan case G, as to prevent the smut &c. from coming in contact with the cleaned grain as herein specified.

In testimony whereof we have signed our names to this specification before two subscribing witnesses.

SIMEON HOWES.
GARDNER E. THROOP.

Witnesses:
E. M. MONTGOMERY,
JOHN C. INGERSOLL.

[FIRST PRINTED 1912.]