(No Model.)

B. T. BOOMER.

GRAIN SEPARATOR.

No. 423,304. Patented Mar. 11, 1890.

Fig. 2.

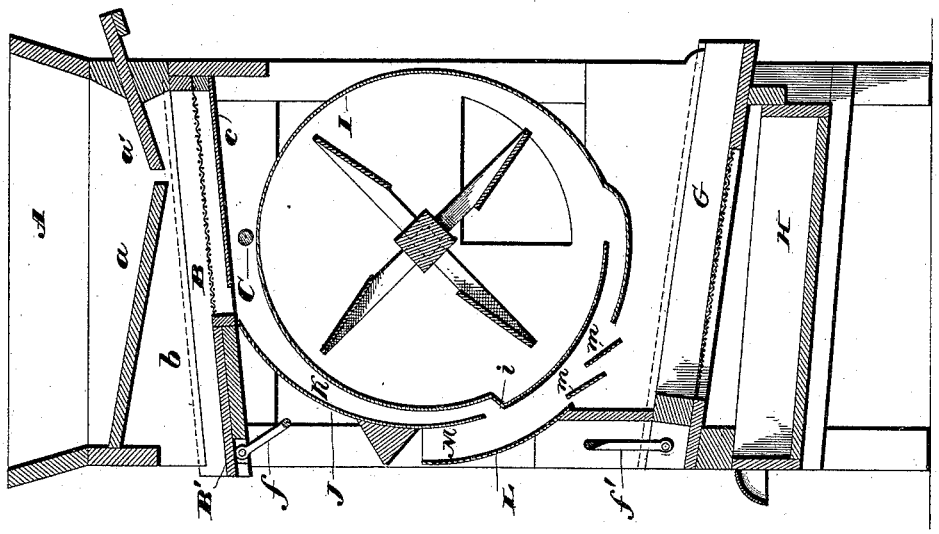

Fig. 1.

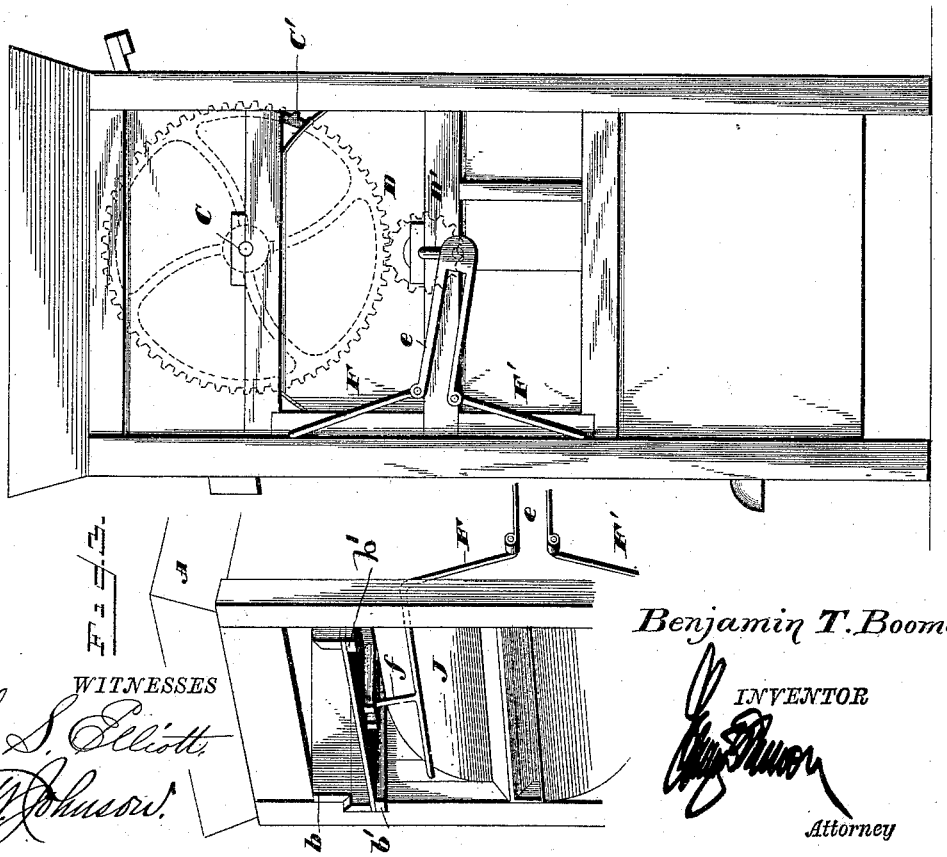

Fig. 3.

WITNESSES

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BENJAMIN T. BOOMER, OF BUNCOMBE, ILLINOIS.

GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 423,304, dated March 11, 1890.

Application filed September 9, 1887. Serial No. 249,263. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN T. BOOMER, a citizen of the United States of America, residing at Buncombe, in the county of Johnson and State of Illinois, have invented certain new and useful Improvements in Grain-Separators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to certain new and useful improvements in grain-separators, the object of my improvement being to provide a device for cleaning grain which will be simple and durable in construction and not liable to get out of order, the parts being organized or located one above another vertically, so as to occupy but little floor-space.

In the accompanying drawings, which illustrate my invention, Figure 1 is a side view of a grain-separator or wheat-fan constructed in accordance with my improvement. Fig. 2 is a vertical sectional view, and Fig. 3 is a detail perspective view.

The main frame of the machine is supported in four vertical corner-posts, which are connected to each other by suitable horizontal beams and side boards.

To the top of the frame, so as to be supported by the posts, is attached a stationary hopper A, which is provided with a rigid inclined bottom *a* and an adjustable gate *a'*. Beneath the hopper A are located inclined strips *b* and *b'*, which serve to support a reciprocating screen B, said screen being provided with vertical side pieces, which are beveled, so as to lie under the beveled edges of the strips *b*. The upper portion of the reciprocating screen B is provided with a screen of wire fabric, and at its lower portion with a board and the lower rear portion of the transverse board B', as shown. Beneath the wire screen or sieve of the reciprocating frame B is a transverse board *c*, which terminates near the lower edge of the wire-gauze.

Upon suitable transverse beams attached to the corner-posts is journaled a shaft C, which carries on one side a large gear-wheel C', which may be operated by a crank-handle, said gear-wheel meshing with a pinion D, which is journaled on one end of the fan-shaft, the opposite end of said fan-shaft terminating in a crank-arm D', which carries a bifurcated pitman *e*, which has spring-arms, and to the end of each arm are pivotally attached crank-arms F and F', which reciprocate the upper and lower screens, as will be hereinafter set forth.

Beneath the fan-casing is located a reciprocating screen G, which is inclined in an opposite direction from the upper screen, and the wire-cloth attached thereto is of a finer mesh than that carried by the screen B, and beneath the screen G is located a drawer H. The crank-arms F and F' are of similar construction, and are journaled to the main frame in any suitable manner, and are provided with members *f* and *f'*, which are pivotally attached to the screens, so that when said crank-arms are rocked by the bifurcated pitman the screens will be reciprocated. The sides of the fan-casing are of ordinary construction. The circular casing I commences at a point below the fan-shaft and continues upwardly for a short distance, when it takes a bend *i* inwardly abruptly toward the fan-shaft, and then continues substantially concentric with the fan-shaft until it reaches a point beyond the opposite end of the fan-casing, so as to provide a passage-way for the blast. A shield or casing J is attached to the main frame at one side of the fan-casing I, the same extending from a point under the reciprocating screen B to a point slightly above the abruptly-bent portion *i* of the fan-casing, so as to provide a passage-way or channel K.

L refers to a solid screen or shield, which is attached to the main casing so as to be substantially concentric with the fan-shaft and provide a passage-way M, and beneath this passage-way are secured stationary deflecting-plates *m m*, which are inclined as shown.

When the large cog-wheel C' is rotated, it will communicate motion through the pinion D to the fan, so as to cause the same to rotate at a high rate of speed, and at the same time will operate the bifurcated pitman E, so as to reciprocate the screens B and G. The

grain as it comes from the thrashing-machine is placed in the hopper A and falls upon the reciprocating screen immediately beneath the same, the chaff or larger impurities—as straw, &c.—will fall from the lower end of said screen, while the grain, with the finer impurities, will pass through the wire screen and fall upon the board *c*, so as to be fed into the channel K, and will pass down said channel partially around the fan-casing until it falls into the channel M, when the dust and finer particles of dirt will be caught by the blast of air and carried out of the channel M, while the grain descends and is deflected by the plates *m m* upon the reciprocating screen G, the good grain falling from said screen into a receptacle, while the small seed will pass through the wire screen and be collected in the drawer H.

The grain cleaner or separator hereinbefore described is very compact in construction and will occupy but little floor-space, and by providing a pitman E, having two arms which are capable of a slight spring movement to and from each other, there is but little lost movement of the parts necessary to reciprocate the screen.

The specific novel features and novel combinations of parts constituting my invention are specified in the following claims, to wit:

I claim—

1. In a grain-separator, the combination, with the frame having a fan centrally mounted therein, with oppositely-inclined screens arranged above and below the same, of the fan-casing I, having a lower depressed bend to form a blast-opening and constructed with an indentation on one side thereof to form a shoulder *i*, and the passages K and M, the bottom of the said passage K, together with the shoulder *i* in the fan-casing, having an opening into the passage M, and the passage M formed with an upper opening, with a deflector thereover above the opening of the passage K thereinto, and with a lower opening adjacent to the blast-opening in the fan-casing and having deflectors *m m* mounted therein, substantially as described.

2. In a grain-separator, the combination of the fan, the casing inclosing the same, having a lower blast-opening and a shoulder formed in one side thereof, the grain-passages arranged on one side of the fan and merging into each other, the upper passage having a shielded opening communicating with the lower passage, which is constructed by the shoulder in the fan-casing and the lower end of the outer wall of said passage, and the deflectors in the lower opening of the lower grain-passage adjacent to the blast-opening in the fan-casing, substantially as described.

3. The combination, with the centrally-mounted fan having a casing provided with a bottom blast-opening and an indentation forming a shoulder on one side thereof, of the passage K and blast-passage M, leading down to said shoulder, as set forth.

4. The combination, with the fan having a casing with a shoulder on one side thereof and a lower blast-opening, of a passage K, formed by a wall or shell J, the said passage converging toward the lower opening thereof, and the passage M, formed by a wall or shell L, in connection with the lower end of the wall J and the fan-casing, and having a top exit-opening for chaff and a lower grain-exit opening adjacent to the blast-opening of the fan-casing, and deflectors *m m* mounted in said opening, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

BENJAMIN T. BOOMER.

Witnesses:

GEO. B. GILLESPIE,

THOS. M. GORE.