2 Sheets--Sheet 1.

A. R. GUILDER.

Improvement in Middlings-Separators.

No. 127,413. Patented June 4, 1872.

Fig. 1.

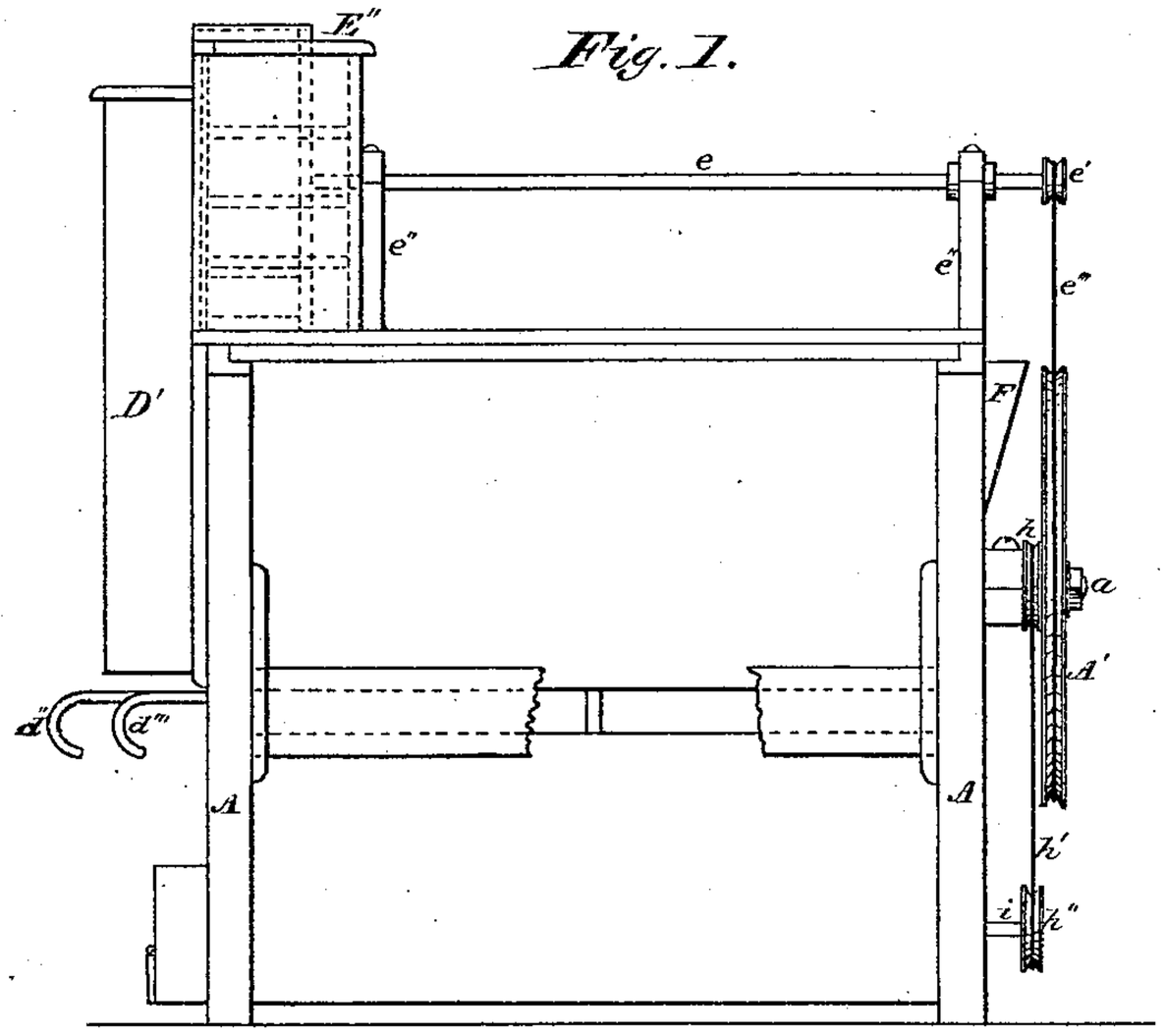
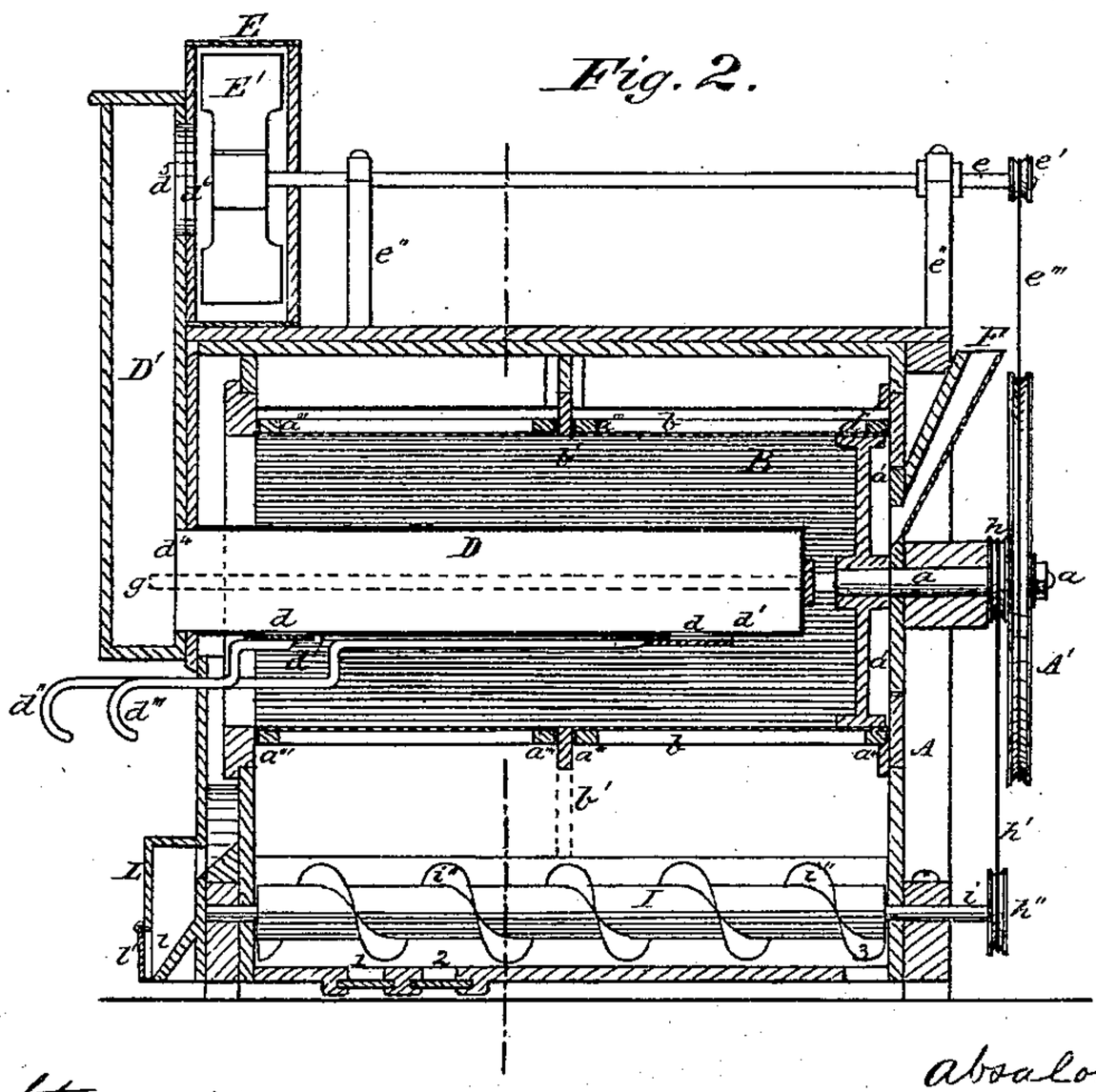


Fig. 2.



Witnesses:

T. C. Brecht.

H. A. Daniels

Inventor:

Absalom R. Guilder

By N. Crawford

Atty.

2 Sheets--Sheet 2.

A. R. GUILDER.

Improvement in Middlings-Separators.

No. 127,413. Patented June 4, 1872.

Fig. 3.

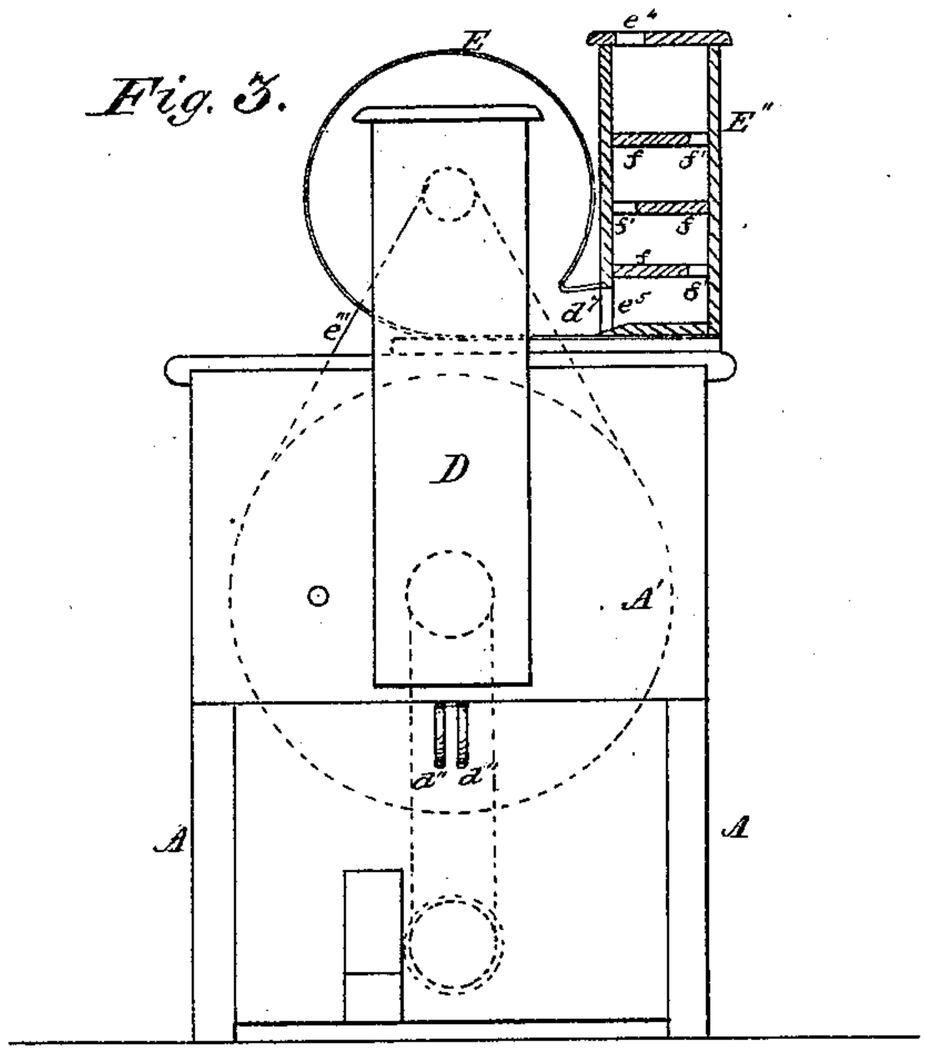
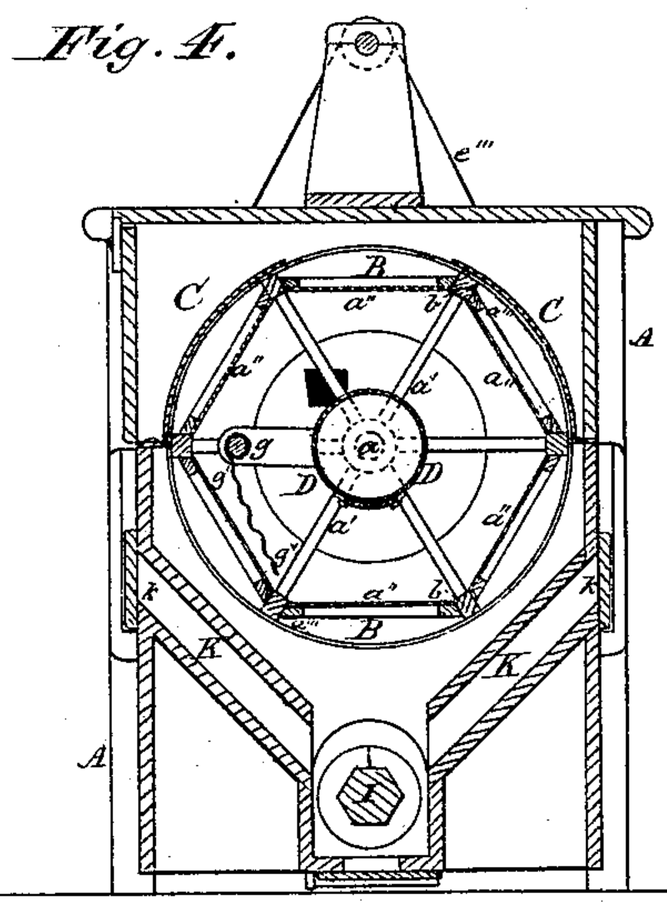


Fig. 4.



Witnesses:

T. C. Brecht.

H. A. Daniels.

Inventor:

Absalom R. Guilder

By N. Cranford

atty.

127,413

UNITED STATES PATENT OFFICE.

ABSALOM R. GUILDER, OF MINNEAPOLIS, MINNESOTA.

IMPROVEMENT IN MIDDLINGS-SEPARATORS.

Specification forming part of Letters Patent No. 127,413, dated June 4, 1872.

I, ABSALOM R. GUILDER, of Minneapolis, in the county of Hennepin, in the State of Minnesota, have made certain Improvements in Middlings-Separators, of which the following is a specification:

The object of this invention is to completely separate the middlings from the fine bran or other light substance that has been ground in passing through between the millstones and into a bolt for such purpose, or for preparing the middlings for regrinding, as is often done; and it consists in the construction and arrangement of the parts forming the device by which the result aimed at is accomplished, as is more fully hereinafter described.

In the drawing, Figure 1 is a side view of the separator. Fig. 2 is a sectional upright view of Fig. 1. Fig. 3 is an end view, and Fig. 4 is a sectional view of Fig. 3.

A represents the framing that supports the separator and its operating parts. A′ is the main driving-pulley on a horizontal longitudinal shaft, *a*, and on which shaft is the bolt or separator B, supported thereon in the usual way by radial arms from the shaft *a*, extending out to the longitudinal ribs *b* of the bolt-reel. B is the revolving bolt or separator, the frame of which is constructed in the usual way, and consists of the shaft *a*, radial arms *a′*, ribs *b*, and having a partition or partitions, *b′*, that divide it into two or more sections, as may be desired, in its length, while the bolt-cloth *a″* is attached to a removable frame, *a‴*, that fills the space between the ribs and the ends of the bolt and the partition, or between the partitions, if more than one is used to divide the bolt or separator longitudinally. The bolt-cloth being attached, the removable sectional frames allow of its being easily removed from the bolt-reel whenever it is necessary for repairing it or for other purposes, as sometimes some hard or sharp substance accidentally gets into the bolt and makes holes through the cloth, and when this is the case only such sections as are so injured need to be removed, thus saving much of the cloth that in ordinary bolts must be lost in taking out a width to repair rents or wear. C C are circular shields or wind-stops, with an opening between them at their tops sufficient to insert or remove a section of the bolt-cloth on a sectional frame, *a‴*, of the bolt, and prevents anything from coming in contact with the bolt. Or the opening above the bolt may be closed by a removable shield when necessary. These shields or stops prevent the air from coming in contact with the bolt at its upper half, causing all the air that may be forced through the bolt to come from below, which will have a better effect upon the operation of separating the flour from the middlings, or the middlings from the bran. D is a metal tube of nearly the length of the bolt, and placed in the center of said bolt, and of a diameter large enough to receive the air that may be drawn from the inside of the bolt, and surrounding the tube through openings, *d d*, that are regulated by sliding valves or gates *d′ d′*, that are operated by handles *d″ d‴*, that extend to the outside of the bolt-chest. The tube D is open at that end which communicates with the upright air-flue D′ at d^4. Air-flue D′ is upright and extends above the top of the bolt-chest, and is air-tight except at the opening d^4 and opening d^5, where it communicates with the exhaust-fan E′ in case E. E is a circular case, which surrounds an exhaust-fan, and is made to be air-tight except at the inlet-opening d^6 and passage d^7. E′ is a fan on shaft *e*, put in revolution by the main driving-pulley A′, band *e‴*, and pulley *e″* on shaft *e*, that revolves in bearings on uprights *e″ e″*. The fan E′ operates to draw or exhaust the air that is within the inner diameter of the bolt, which is made warm in consequence of the warm meal that is continually passing into the bolt by the hopper F from the millstones through the openings *d d* in the tube D into flue D′; thence to the fan E′, where it is forced through passage d^7, openings e^5, into an air or eddy-chamber, E″, having partitions or divisions *f f f* with openings *f′ f′ f′* on alternate opposite sides, and opening or exit e^4 on the top of chamber E″. If any of the fine flour chances to be drawn with the air from within the bolt up the air-flue D′ into the fan-case, and then forced into chamber E″, and up through the zigzag openings *f′* in the partitions of the chamber E″, such flour will fall and be left upon the upper sides of said partitions, where it can be saved or secured at convenient seasons.

This process of exhausting the warm air from the inside of the bolt, through a tube having adjustable openings, keeps the bolt cool and tends to cool the meal or middlings, and

facilitates the operation of separating the fine flour from the middlings.

In order to keep the fine flour from adhering to the bolt-cloth a shaft, *g*, is placed horizontally and longitudinally through the inside of the bolt, and extending at one end through the bolt-chest, (as seen in dotted line in Fig. 2,) around which shaft is wound a cloth or other flexible material, *g'*, that when the cloth hangs down it will strike against the inner side of the bolt-cloth, and by its contact therewith will tend to brush off and keep the bolt-cloth clear from adhering flour or dust. The cloth *g'* can, by turning the shaft *g*, be made to fall less or more, thus regulating the amount of the cloth that shall come in contact with and against the inside of the bolt-cloth. This is a simple and sure means of brushing the bolt-cloth and keeping it clear. On the shaft *a* is a band-pulley, *h*, around which goes a band, *h'*, that goes around and turns pulley *h''* on horizontal shaft *i*, upon which is the conveyer I, having a screw-wing, *i'*, wound around it to force the fine flour to openings 1, 2, and 3 into chutes in the bottom of the chest, and where the quality of the flour is finally determined upon and the division made. These openings are closed by sliding gates, so that any one or all can be closed, or all can be left open as desired.

In order to provide for the admission of air around the outside of the bolt, and to be drawn through it by the fan, exhaust-openings K K are made, one in each side of the bolt-chest. These openings are closed or regulated by boards *k k*, so that any required amount of air may be admitted to pass through the bolt that may be desired. Between the wall of the chest and the circle in which the tail of the bolt revolves there is a space that receives the bran or tailings, and as it falls therein it is conducted by an inclined bottom to pass out through an opening, *l*, in box L, which opening is covered by a hinged valve that is free to swing open and let the substances pass freely out of box L.

Having thus described my improvement, what I claim, and desire to secure by Letters Patent, is—

1. The combination of the partitions *b'* with the removable sectional bolt-cloth frames *a'''* of the bolt-reel B, in the manner and for the purpose described.

2. The internal tube or cylinder D, having openings *d* and valves *d'*, air-flue D', and air-openings d^4 and d^5, in combination with the exhaust-fan E' and air-chamber E'' having divisions or partitions *f f f* with openings *f'' f'' f'* and e^4, in the manner and for the purposes shown and described.

3. The sliding gauge-boards *k k* and openings K K, in combination with the tube or cylinder D, air-flue D', and fan E', constructed in the manner and for the purpose described and shown.

4. The wind stops or shields C C, in combination with the bolt-reel B and exhaust device, in the manner described and shown.

5. The adjustable brush-cloth *g'*, arranged within the bolt-reel B, when used in the manner and for the purpose described.

ABSALOM R. GUILDER.

Witnesses:
CHAS. H. WOODS,
GEO. W. CHOWEN.