2 Sheets—Sheet 1.

L. GATHMANN.

Apparatus for Scouring and Cleaning Grain.

No. 227,891. **Patented May 25, 1880.**

Fig 1.

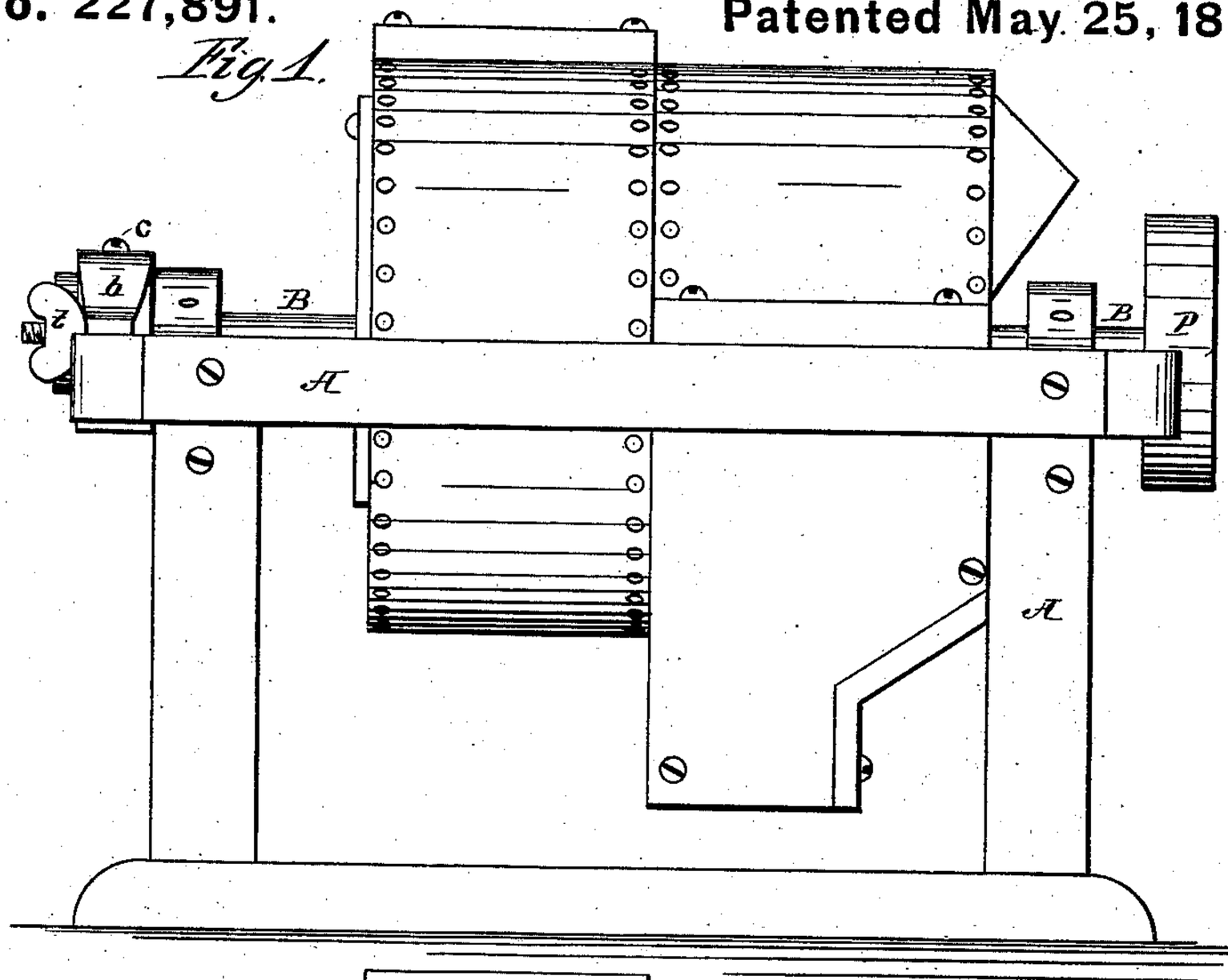
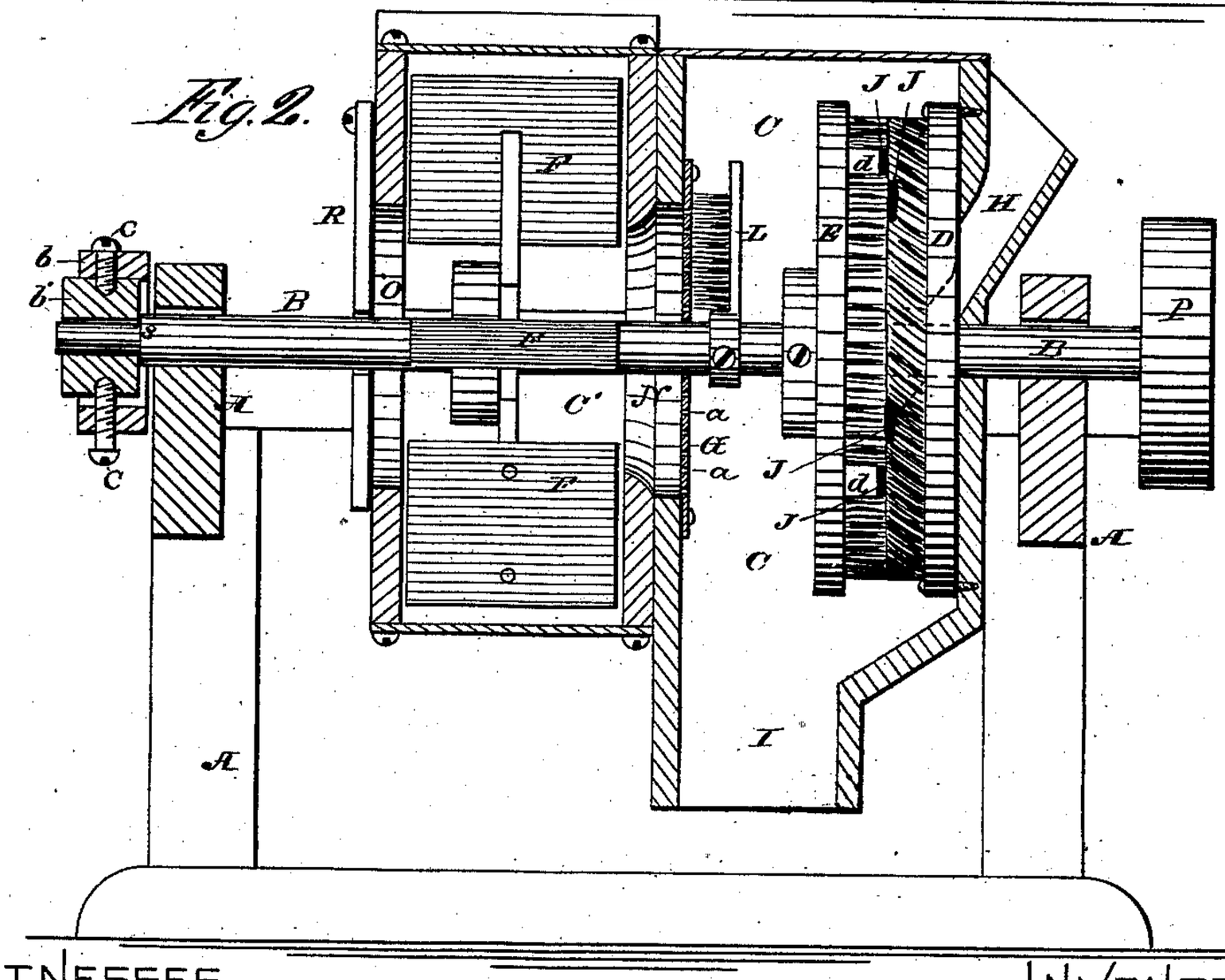


Fig. 2.



WITNESSES.

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2 Sheets—Sheet 2.

L. GATHMANN.

Apparatus for Scouring and Cleaning Grain.

No. 227,891. **Patented May 25, 1880.**

Fig. 3.

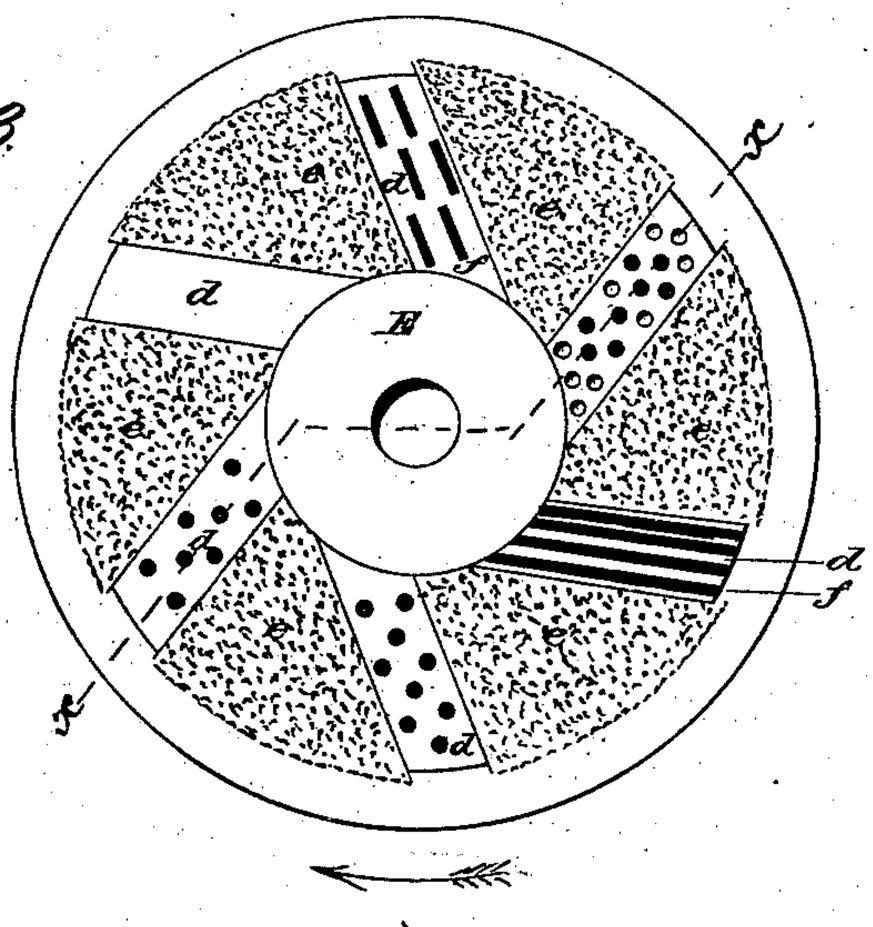


Fig. 4.

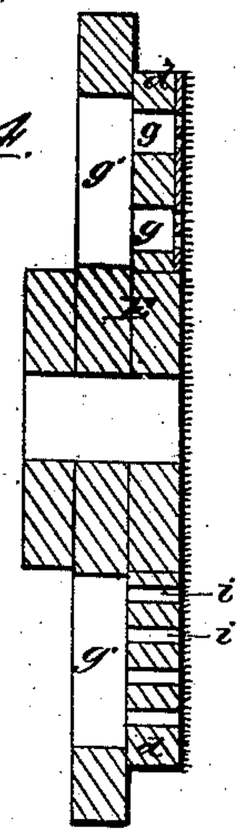


Fig. 5.

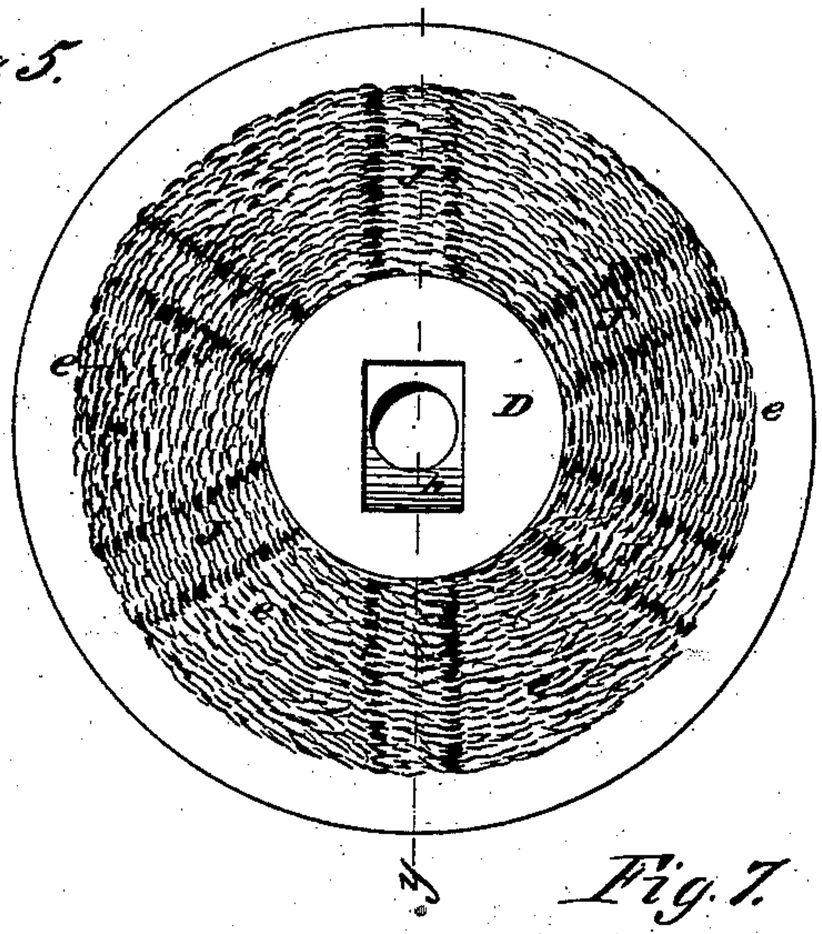


Fig. 6.

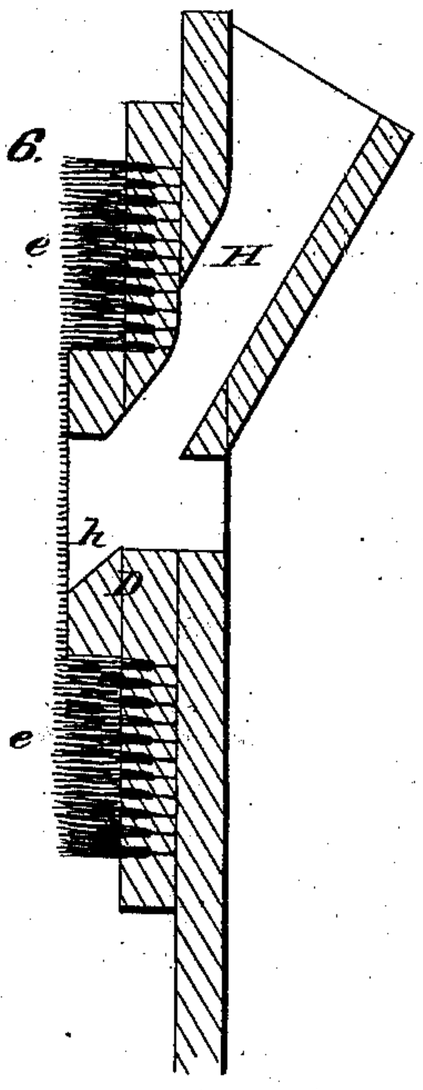
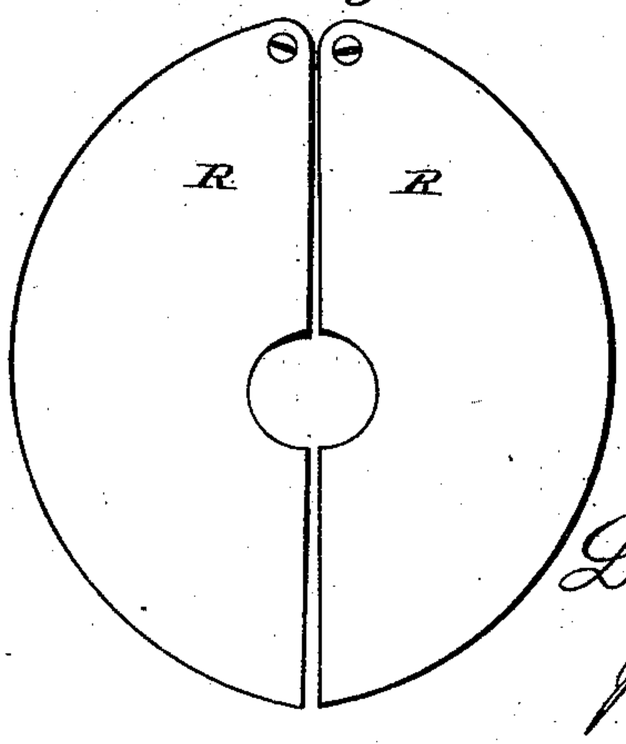


Fig. 7.



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UNITED STATES PATENT OFFICE.

LOUIS GATHMANN, OF CHICAGO, ILLINOIS.

APPARATUS FOR SCOURING AND CLEANING GRAIN.

SPECIFICATION forming part of Letters Patent No. 227,891, dated May 25, 1880.

Application filed January 16, 1880.

To all whom it may concern:

Be it known that I, LOUIS GATHMANN, of Chicago, State of Illinois, have invented certain new and useful Improvements in Grain-Cleaners; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to brush grain-cleaners; and it consists, primarily, in certain improvements in the construction of the brushes, whereby, with other advantages, they are made to pass the grain more readily and at the same time to clean it more thoroughly.

It also consists in providing a perforated diaphragm as a separator between the scouring-chamber and the fan-chest or suction-flue, all substantially as hereinafter more fully set forth, and pointed out in the claims.

Figure 1 is an elevation of the machine. Fig. 2 is a central longitudinal vertical section of the frame and housings, revealing the interior arrangement of the parts. Fig. 3 is a face view of the rotating brush detached, having some of my improvements. Fig. 4 is a section of the brush illustrated in Fig. 3 through the indirect lines *x x*. Fig. 5 is a face view of the stationary brush of Fig. 2, showing furrows cut in the brush-face itself. Fig. 6 is a central vertical section of the stationary brush and feed-spout. Fig. 7 shows the register of the fan-chest detached.

The frame A supports the drive-shaft B, upon which the operative parts of the machine are mounted. These parts are inclosed in two chambers or compartments, C and C′. Chamber C contains the grain-cleaning brushes D and E, and chamber C′ incloses the fan F. The two compartments communicate through the perforated diaphragm G.

Grain fed through the spout H enters through the stationary brush D at the center, as seen in Figs. 2 and 6, and passing outward between the brushes falls through the passage I.

The dirt detached from the grain in its passage between the brushes is drawn through the diaphragm G by the action of the suction-fan F. Smaller and lighter grains may be carried off with the dirt by giving sufficient power to the fan for the purpose.

The brushes are adjusted by the bar *b*, provided with the bearing-collar *b′* and the screws *c c*, said bar being arranged to bear upon a shoulder, *s*, thereon.

My principal improvement in the construction of the brushes consists in providing the face of one or both brushes with furrows J, leading from the center to the periphery, somewhat like those of a millstone. Said furrows may be made by inserting blocks *d d*, Figs. 2, 3, and 4, between segments *e e* of the brush, the surfaces of said brush-segments rising somewhat higher than the blocks, as seen clearly in Figs. 2 and 4. Said furrows may also be made by introducing rows or sections of shorter bristles between the segments *e e*, or by cutting depressions in the face of a solid brush, as seen in Figs. 5 and 6.

The object and effect of such furrows is to permit more rapid passage of the grain outward between the brushes, while also permitting more close adjustment to be given to the working-faces of the brushes, and thereby to at once more thoroughly clean the grain and give greater capacity to the machine.

Too rapid discharge of the grain, or discharge without proper cleaning, is avoided by making the furrows so shallow as to hold the grain therein subject to slight action of the opposite brush.

The furrow-blocks *d* may be advantageously made with their upper faces inclined, or higher at one side than the other, so as to give a transverse contour like that of an ordinary millstone-furrow having a feather-edge, and for the same purpose—namely, the more ready passage of the grain from the furrow to the land or working face of the brush.

A second improvement in the construction of the brush consists in perforating the brush-back, whereby dirt disengaged from the grain may be drawn directly through the brush into the suction-flue.

In the case of a brush having the furrow-blocks *d d*, I prefer to make the apertures through the blocks, as clearly seen in Figs. 3 and 4, larger apertures *g′* being made in the brush-back beneath the blocks. In Fig. 3 sev-

eral forms of apertures are shown, a preferable form being the long slits *f f*, which may be cut in metal plates and secured to the tops of the blocks provided with larger openings *g g*. (Seen in Fig. 4.)

A third improvement consists in setting the bristles in the inclined position shown in the stationary brush D, Fig. 2, the inclination being in the direction of relative motion of the opposite brush. This mode of setting the bristles will be advantageous in the ordinary form of brush used in grain-cleaners; but it is particularly useful when the opposite brush is furrowed, for the following reasons: First, the closer contact contemplated in the use of the furrowed brushes is thereby made practicable; and, second, the resilient bristles, bent or still farther inclined under such closer contact of the brushes, more readily react when brought opposite the furrows of the other brush, to gently and properly retard the grain therein from too rapid escape.

As a further improvement in the machine having the working parts arranged on a common driving-shaft, I have provided the apertured diaphragm G, covering the passage N between the two compartments C and C′, whereby dirt and smaller and lighter grains are permitted to pass out with the air current through the holes *a a*, while larger grains are prevented from passing. The brush L, fixed to the drive-shaft, as shown, is arranged to sweep the diaphragm for the purpose of keeping the passages *a* open and free.

In the use of the apertured diaphragm G and the brush L it is found to be practicable, as it is desirable, to use a strong suction, sufficient to sometimes raise kernels of grain not small enough to pass the holes *a a*. These kernels, as well as chaff, are often held by the strong suction over the holes *a*, so as to obstruct them. The sweep-brush L moves such obstructing kernels out of reach of the more forcible draft, and they fall through the weaker air-current near the wall of the passage I.

I prefer that the apertures *a* through the diaphragm G be in the form of long slits, so that chaff or fragments of straw may pass through them, being ultimately brought into the proper position to do so by the action of the brush L.

The discharge-opening from the fan-chest is on the farther side of the machine, as shown in the drawings, and is not, therefore, in view. The side opening, O, provided with the pivoted registers R, is intended for the regulation of the suction.

While I have shown the cleaner with its drive-shaft horizontal, it is obvious that it may be constructed with said shaft vertical. In that case I would preserve the same general arrangement of the parts shown in the drawings and would have the fan below the brushes, as is shown by turning Sheet 1 on its side to the left. The brush or sweep L would be necessary in that case to prevent the accumulation of a mass of grain upon the diaphragm G and to force the grain out of the chamber. The grain-discharge would, of course, in that construction be preferably somewhat differently arranged to facilitate the outward passage of the cleaned grain.

I claim as my invention—

1. The brush of a brush grain-cleaner, provided with furrows extending across the face of the brush from the point at which the grain is admitted to the margin thereof, whereby the grain is more freely discharged, substantially as set forth.

2. In a brush grain-cleaner having disk-brushes, which receive the grain centrally between them, the furrows or depressions J in the working-face of one or both brushes, and extending from the center to the circumference thereof, substantially as described, and for the purposes set forth.

3. The brush E, provided with the blocks *d*, set between sections *e* of the brush-surface, and a little lower than said surface, forming the bottoms of furrows, giving freer outward passage to the grain, while supporting the same within reach of the opposite brush, substantially as described.

4. The brush of a brush grain-cleaner, wherein the acting brush-surface is substantially coextensive with the brush-back, having apertures through the brush-back for the direct escape of the dust, substantially as and for the purposes set forth.

5. In a grain-cleaner having the scouring-chamber C, into which the grain and impurities pass from the brushes, and fan-chamber C′, from which the grain is to be excluded, the apertured diaphragm G, arranged substantially as shown, and for the purposes set forth.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

LOUIS GATHMANN.

Witnesses:
M. E. DAYTON,
WILLIAM M. STANLEY.