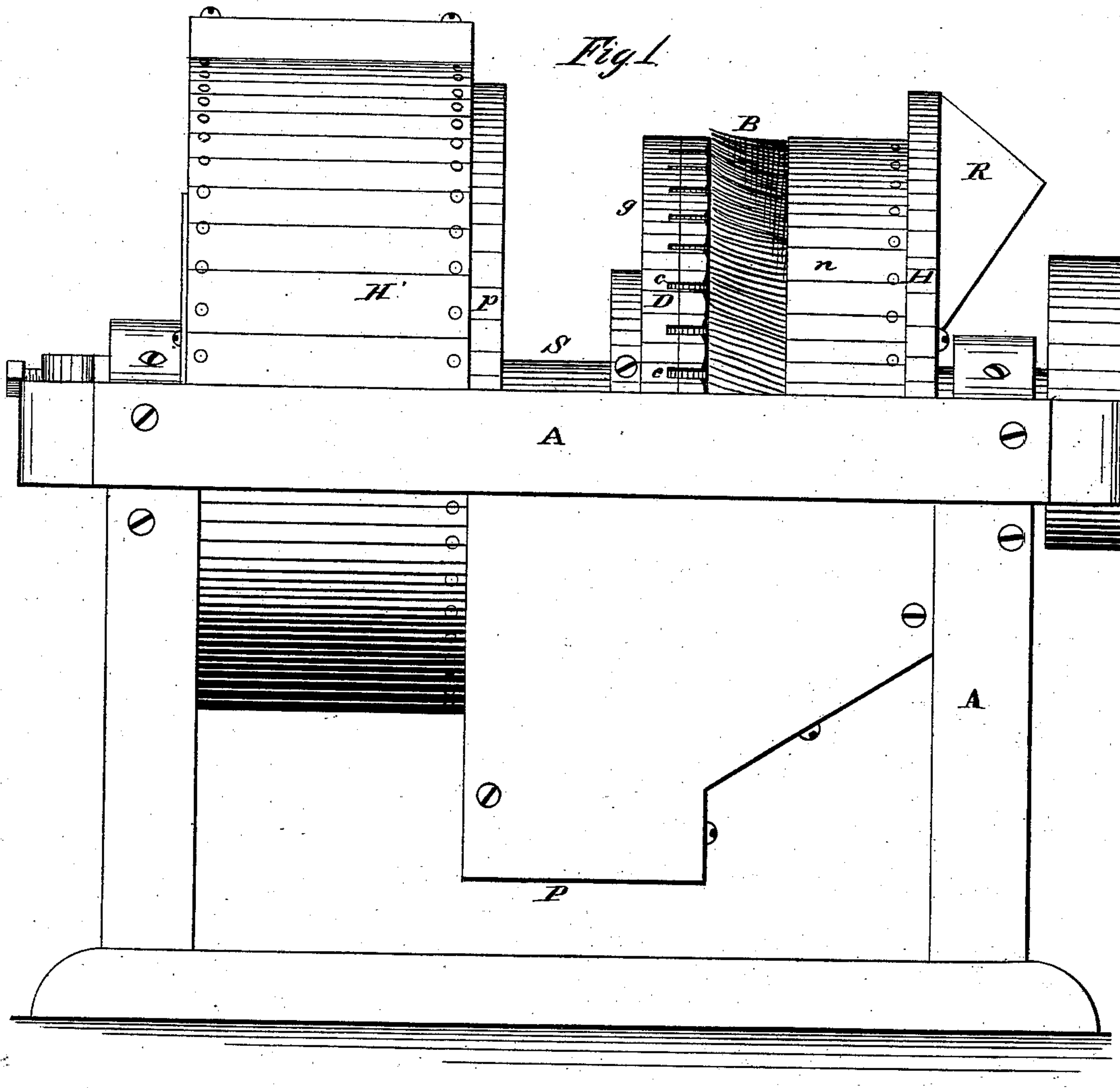


L. GATHMANN.  
Brush Grain-Cleaner.

No. 227,890.

Patented May 25, 1880.



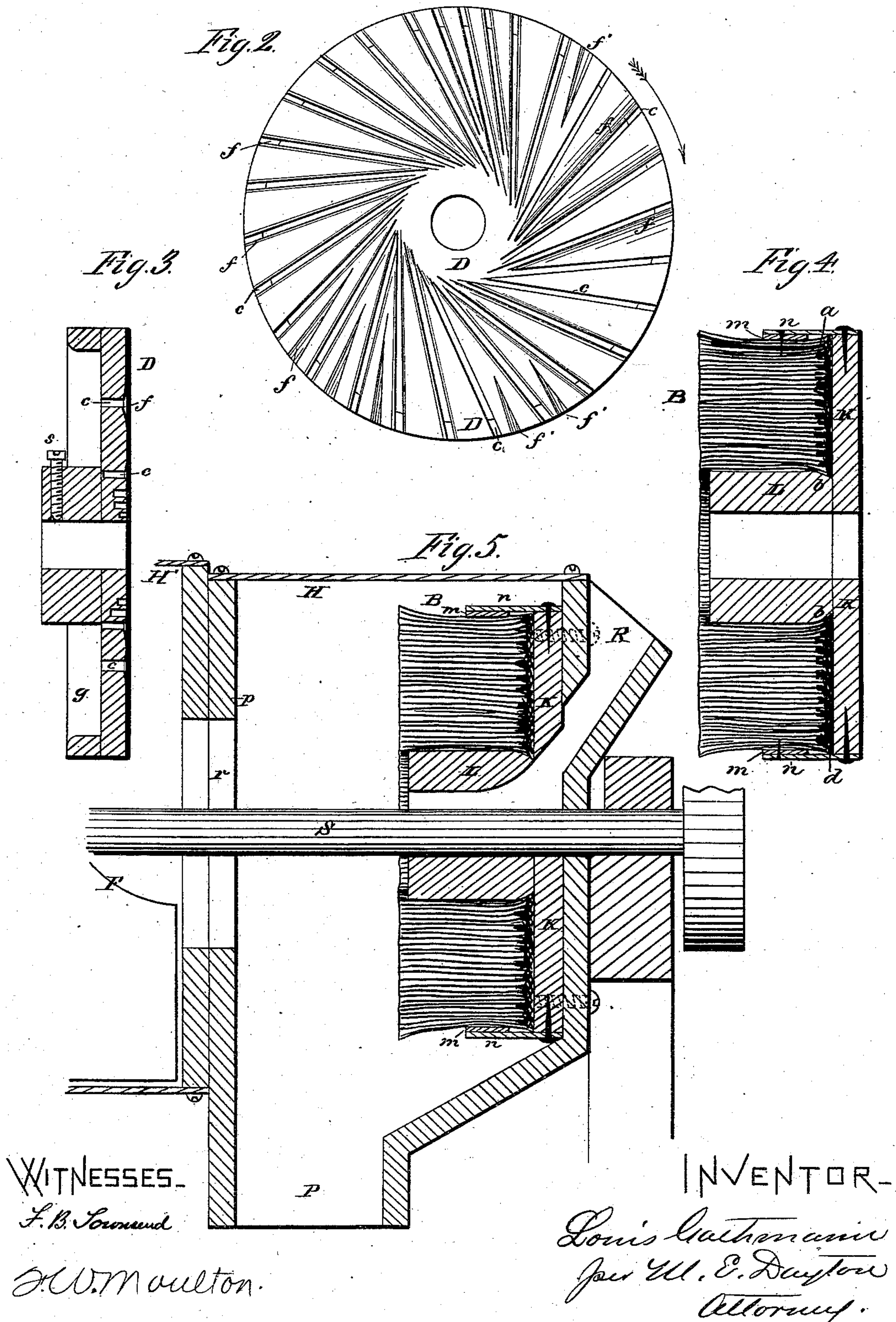
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# UNITED STATES PATENT OFFICE.

LOUIS GATHMANN, OF CHICAGO, ILLINOIS.

## BRUSH GRAIN-CLEANER.

SPECIFICATION forming part of Letters Patent No. 227,890, dated May 25, 1880.

Application filed January 23, 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 Brush 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.

It consists in a novel construction of a disk-brush for such cleaners, in the combination, with the brush, of a furrowed plate, and in other features of construction, hereinafter fully set forth, and pointed out in the claims.

Figure 1 is an elevation of the machine having a portion of the brush-housing removed. Fig. 2 is a plan view of the furrowed disk used in connection with the disk-brush. Fig. 3 is a central section of said disk. Fig. 4 is a central horizontal section of the disk-brush. Fig. 5 is a central vertical section of the disk-brush in position in the machine.

A is a frame sustaining the longitudinal drive-shaft S, on or about which the operative parts are located. These parts consist of the stationary disk-brush B, fastened to the end piece of the housing H, the furrowed metal disk D, secured to the drive-shaft in proximity or in contact with the brush, and the fan F, also secured to the drive-shaft.

The housings H and H' cover the cleaning-chamber and fan-chest, respectively, and the two inclosures connect through an aperture, *r*, about the shaft S through the partition *p*. Said aperture *r* may be covered by a perforated metal plate, and said plate may be swept by a brush upon an arm secured to the shaft S in proper position, as described in another application for patent filed by me January 16, 1880.

The cleaning or brush chamber discharges the cleaned grain through the passage P. The dust is carried off by the suction-fan F, whose discharge-flue is not in view in the drawings.

The grain to be cleaned is admitted from the hopper R through the center of the disk-brush, as clearly seen in the sectional Fig. 5.

The brush B is about twenty-four to thirty inches in diameter. In its construction I surround the center block, L, resting on a table face upward, with a mass of bristles or other suitable filaments to form the brush, set on end, and compress the same inwardly about the block by means of a band, *m*. The ends of the band overlap and are fastened together in any sufficient manner. In compressing the band about the bristles it is sustained a short distance above the table, so that the bristles bulge beneath it, as shown at *a*, Fig. 4. A similar bulging or flaring of the inner ends of the bristles is provided for around the block L by making the block beveled at *b*. The whole is then turned over and a mixture of glue, shellac, or other adhesive substance or molten sulphur is poured upon the back, entering the interstices of the bristles a short distance, and forming, preferably, a complete and solid covering of the brush-back, (shown at *d*.)

In the construction of this class of brushes it is customary to secure the bristles in tufts drawn or forced into a back. Such a brush will obviously have open spaces between the tufts, and will be more or less open or loose at its face.

Made as I have above proposed and described, on the other hand, the brush is without spaces within the body of bristles, and is nearly equally compact throughout its entire depth, making it difficult for grain-kernels or dust to lodge therein.

The brush may be secured to the housing by means of any suitable fastening connecting the housing with the band *m*; but I prefer to add a wooden back, K, secured to the brush or band *m* by means of the finishing band or hoop *n*, and to fasten the brush to the housing by screws entering the wooden back K.

The block L is centrally apertured to receive the shaft S passing through it, and to admit the grain from the hopper R, as shown in Fig. 5.

The disk D is preferably of metal, and is secured adjustably on the shaft S by the set-screw. On its face the disk is provided with furrows or depressions *f*, leading from the center, or near the center, to the circumference. Some of them may be shorter, as seen at *f'*.



These furrows may be radial; but, their object being to facilitate the discharge of the grain from the brush, as well as to assist in rotating the grain beneath the action of the brush, the furrows are preferably set on a draft, as shown in the face view of Fig. 2. Instead of being straight, said furrows may be either curved or volute.

The disk D is provided with perforations *c*, by which the dust is drawn directly from between the disks as soon as it is separated from the grain, and the operation of cleaning thus made more thorough and complete—that is to say, after loosening or once detaching the dust from the grain there is no possibility of its again adhering thereto, and thereby possibly resisting the action of the air-blast when at length discharged at the margin of the brush.

The perforations through the disk are, of course, made too small to admit the passage of the whole grain. I prefer to make them in the form of slits and to cut them by a suitable milling-tool, so as to make them accurate and uniform, and I also prefer to locate them in the bottom of the furrows *f* when the latter are straight.

The disk has a marginal flange, *g*, not severed by the slitted perforations *c*, to maintain suitable strength and rigidity in the disk.

A suitable disk may be made by riveting a number of segmental or tapering plates upon a cast frame, leaving sufficient space between the plates to provide for the ventilation required; or a sheet-metal plate may be punctured and furrowed by pressure and secured to a proper supporting-frame.

It is not necessary that the faces of the brush and disk D be plane. They may, on the other hand, be conical or party-spherical, one being raised and the other depressed to properly meet throughout their working areas.

The disk will be adjusted toward or from the brush by the usual device of set-screws at the ends of the shaft, or otherwise in any effective way.

It is obvious that the disk may be made stationary and the brush revolved; but the arrangement shown is, in practice, found to be more simple and otherwise desirable.

While the machine is shown to have its shaft horizontal, it is plain that it may be arranged with a vertical shaft. In that case I would preserve the same arrangement of the parts about the shaft as that herein shown, and would have the disk D beneath the brush. I would also preferably make the disk convex or conical on its working-face. The passage *r* to the fan-chest would need to be covered

with the perforated plate and a sweeping-brush or arm applied to the shaft in order to clear the said plate, as described in my afore-said pending application. This plate might also be advantageously made conical, the grain-discharge being located near its margin.

In the use of a metal disk, D, in combination with a disk-brush, it is found to be very desirable that the bristles of the brush should incline from the vertical in the direction of motion of the disk D, since, being itself unyielding, said disk otherwise has a tendency to force the grain into the face of the brush. This is specially the case when the brush is of the ordinary open construction. By inclining the bristles as described, this tendency is obviated, the bristles readily yielding or bending beneath the passing grain, and thereby assuming a position which prevents the admission of the grain into the brush under the motion of the disk described.

I am aware that paint brushes are commonly made of a compact mass of bristles, and I do not therefore claim, broadly, such a construction of a brush.

The brush herein contemplated is constructed with a relatively broad face of comparatively short and rigid bristles or filaments, in a mass substantially as close or compact in the face as at their bases. Such a brush is adapted to give the frictional action required in a grain-cleaner, and has the advantage over the tufted brushes heretofore used in grain-cleaners of preventing the grain from entering the brush and thus escaping between tufts only partially cleaned.

I claim as my invention—

1. A brush grain cleaner provided with a brush, B, consisting, essentially, of a broad compact mass of relatively short and rigid bristles or filaments clamped together by a surrounding band, so as to be substantially close and compact in the face thereof, to prevent the grain from entering the brush, substantially as described.

2. In combination with the unyielding disk D of a brush grain-cleaner, the brush B, having its bristles or filaments secured in place to form a close compact mass, substantially as described, 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,  
JESSE COX, Jr.