2 Sheets--Sheet 1.

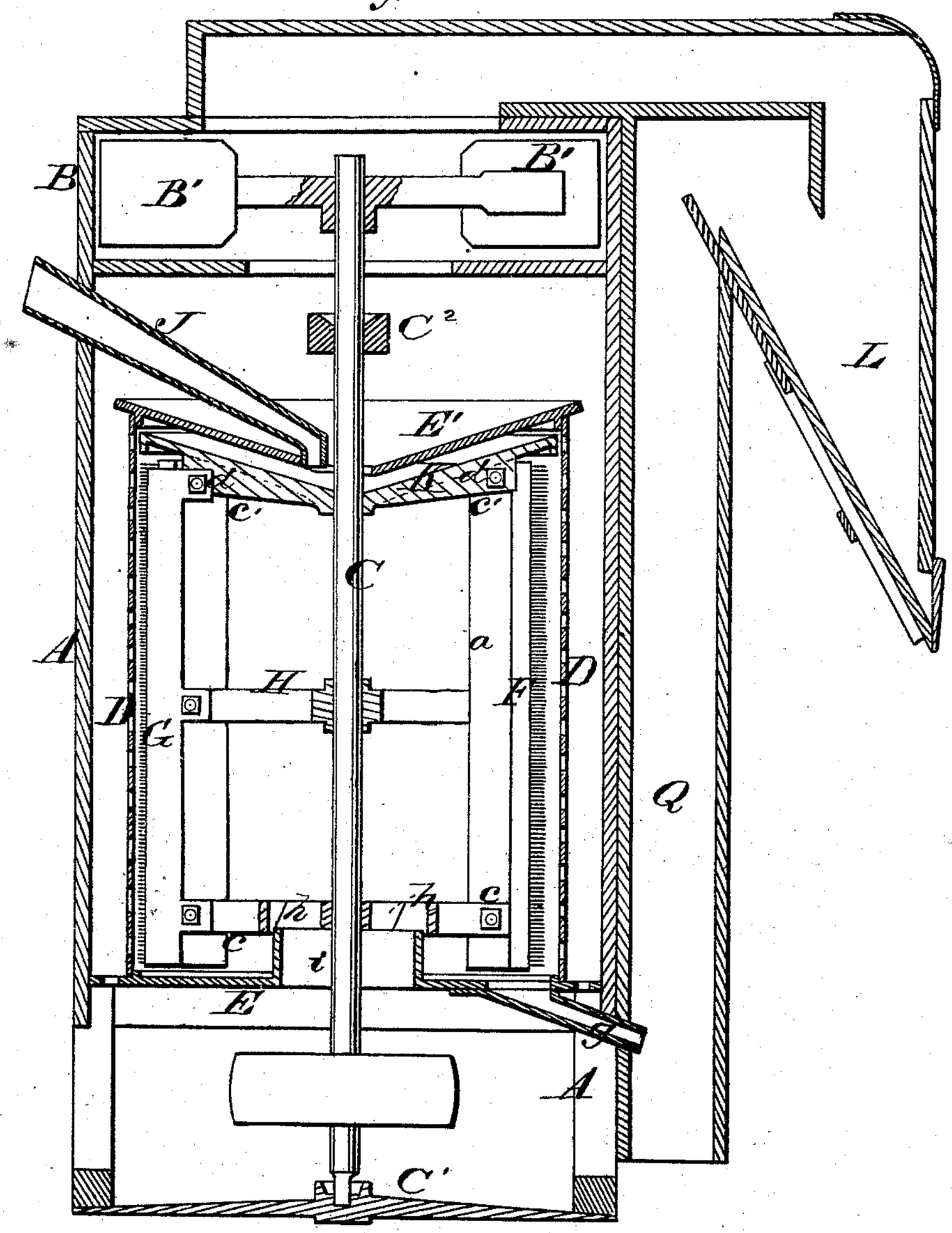
J. RICHMOND, dec'd.

W. RICHMOND, Exct'r

Smut-Mills.

No. 158,524. Patented Jan. 5, 1875.

Fig. 1.



WITNESSES

E. H. Bates

Geo. E. Upham,

Wm. Richmond,
Executor to estate of
James Richmond dec'd

INVENTOR.

Chipman & Bowen & Co

ATTORNEYS

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

2 Sheets--Sheet 2

J. RICHMOND, dec'd.

W. RICHMOND, Exct'r

Smut-Mills.

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Fig. 2

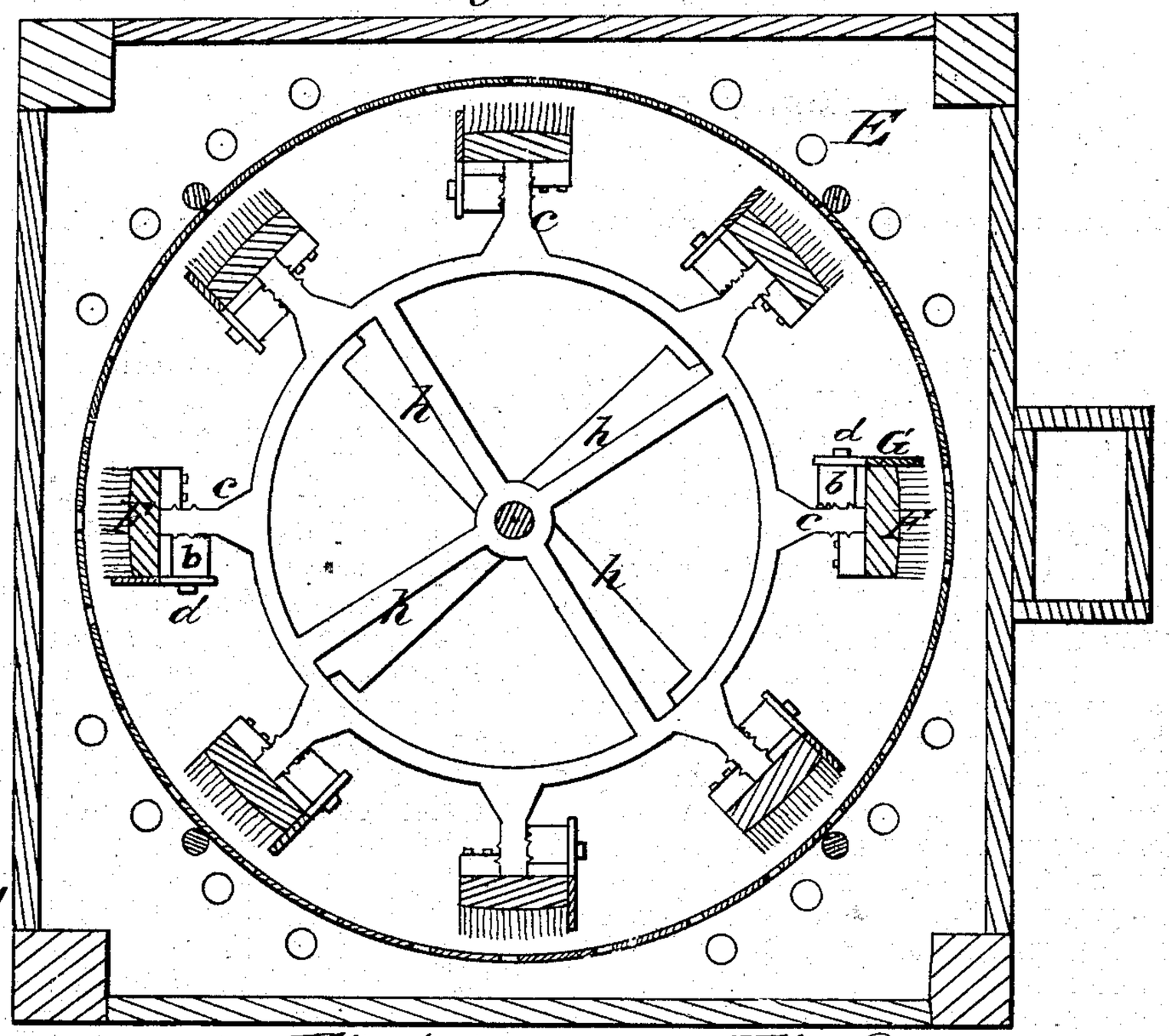


Fig. 6

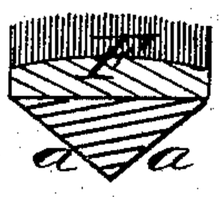


Fig. 4

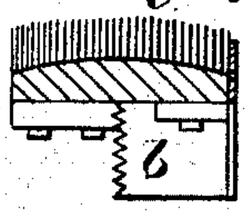


Fig. 3

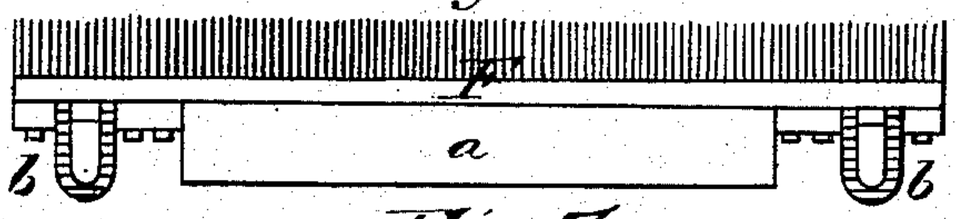
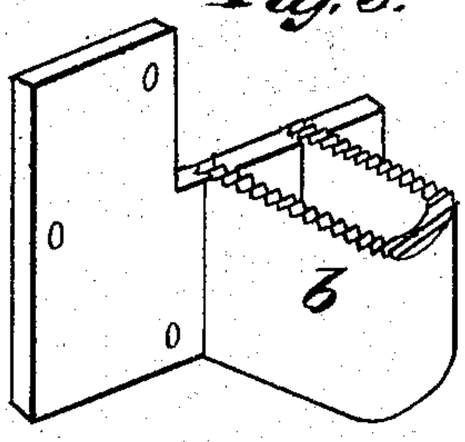
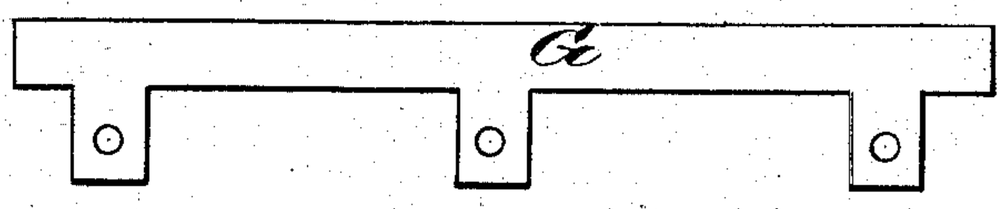


Fig. 7.

Fig. 5.





Witnesses

George E. Upham,

A. A. Kane

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Executor to estate of
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INVENTOR dec'd.

Chipman Fosmer & Co

ATTORNEYS

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

WILLIAM RICHMOND, OF LOCKPORT, NEW YORK, EXECUTOR OF JAMES RICHMOND, DECEASED.

IMPROVEMENT IN SMUT-MILLS.

Specification forming part of Letters Patent No. **158,524**, dated January 5, 1875; application filed December 5, 1874.

To all whom it may concern:

Be it known that JAMES RICHMOND, deceased, did invent a new and valuable Improvement in Brush Smut-Mills; and that I, WILLIAM RICHMOND, of Lockport, in the county of Niagara and State of New York, executor of the last will and testament of the above-mentioned JAMES RICHMOND, deceased, do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a vertical longitudinal section of the brush smut-machine; Fig. 2, horizontal sectional view of the same; Figs. 3, 4, 5, 6, and 7 are detail views.

The nature of this invention consists in certain improvements in brush smut-machines, as hereinafter more fully set forth.

In the annexed drawing, A designates the frame of the mill, which frame is properly housed in. B designates a fan-case, in which are applied fan-blades B′, the arms of which are made fast on a vertical shaft, C, which is stepped in a bridge-tree, C^1, and guided by a cross-bar, C^2. D designates a cylindrical case, which may be made of slotted or perforated sheet metal, or of any other suitable material. This case is confined between a bottom plate, E, and a dished top plate, E′, inside of the frame A. Between this case D and the walls of the frame A is a space having for its bottom a perforated portion of the plate E, through which matters which are too heavy to be carried off by the draft of the fan will escape freely. Inside of the perforated case D are the brushes F, the backs of which are angular or double-beveled, as shown in Fig. 6, and designated by the letters *a a*. The object of thus constructing the backs of the brushes is to prevent the accumulation of dust, &c., on them when the mill is in motion. The brushes having flat backs are very objectionable on account of the accumulation of dust on them, which frequently causes smut-mills to run untrue, and perform bad work. To the end of each brush lugs *b b* are rigidly secured, which lugs have serrations in their edges, shown in Figs. 2, 3, 4, and 5, which receive teeth on arms *c* and flanges or ribs *c′*, and thus, with the aid of bolts *d*, hold the brushes firmly. By removing the bolts *d* the brushes can be detached from the said arms and ribs, and adjusted one or more notches toward the cylindrical case D, and again rigidly secured in their places as before. G G designate beater-blades, which are secured to the notched lugs *b b* by means of the bolts *d*, and which are also secured at the middle of their length to the arms of a spider, H, which is fastened on the vertical shaft C. This spider will prevent the beater-blades G from bowing out in the center when the mill is in rapid motion. These blades G are intended for protecting the brushes against the wearing action of the grain. Motion being given to the vertical shaft C the grain to be cleaned is let into an inclined spout, J, and passes to the center of the plate E′, and flows through the eye of this plate upon a dished plate, K, on which flanges *c′* are formed. This plate K is fixed on the shaft C, and throws from it the grain, which strikes against the inner side of the case D, and is acted on by the brushes and beater-blades, which beat and scour it thoroughly. The cleaned grain falls upon the bottom plate E, and is discharged through a spout, *g*, into the lower end of a vertical trunk, Q. The dust, &c., which is forced through the case D, is carried up and discharged from the fan-case by strong ascending currents of air. The plump grain which falls from the spout *g* is subjected to a strong ascending current of air, which will separate from it any remaining dust and screenings, &c. L designates a chess-hopper at the upper end of the trunk Q, which may be constructed in the usual manner. The bottom plate E has a central passage, *i*, through it, and directly above this passage are arms *h*, which form a connection between the ring of arms *c* and the shaft C. The arms *h* are feathered or obliquely set so that when the mill is in operation they will induce strong

currents of air to rush up through the passage *i*, which will greatly assist in the cleaning operation of the brushes.

What I claim as new, and desire to secure by Letters Patent, is—

1. The brushes F F, provided with serrated lugs *b b*, which engage with corresponding serrations on the arms *c* and flanges *c'*, in combination with the beater-blades G attached directly to the brush-heads by the bolts *d*, and spiders H, substantially as described, and for the purpose set forth.

2. The brushes F, beater-blades G, oblique arms *h*, and air-passage *i*, combined and arranged with case D in the manner and for the purposes described.

3. The notched lugs *b b* and the brushes F, combined with teeth on arms C and flanges C', and with bolts *d* for adjusting the brushes, substantially as described.

4. Smut-mill brushes F, having angular or double-beveled backs *a a*, for the purpose described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM RICHMOND,
Executor.

Witnesses:
E. C. HART,
MORRIS S. BURNETTE.