Sheet 1.3 Sheets

JAMES A. MALONEY.

Improvement in Grain Cleaning, Scouring, and Decorticating Machine.

No. 120,987. Patented Nov. 14, 1871.

Fig. 1.

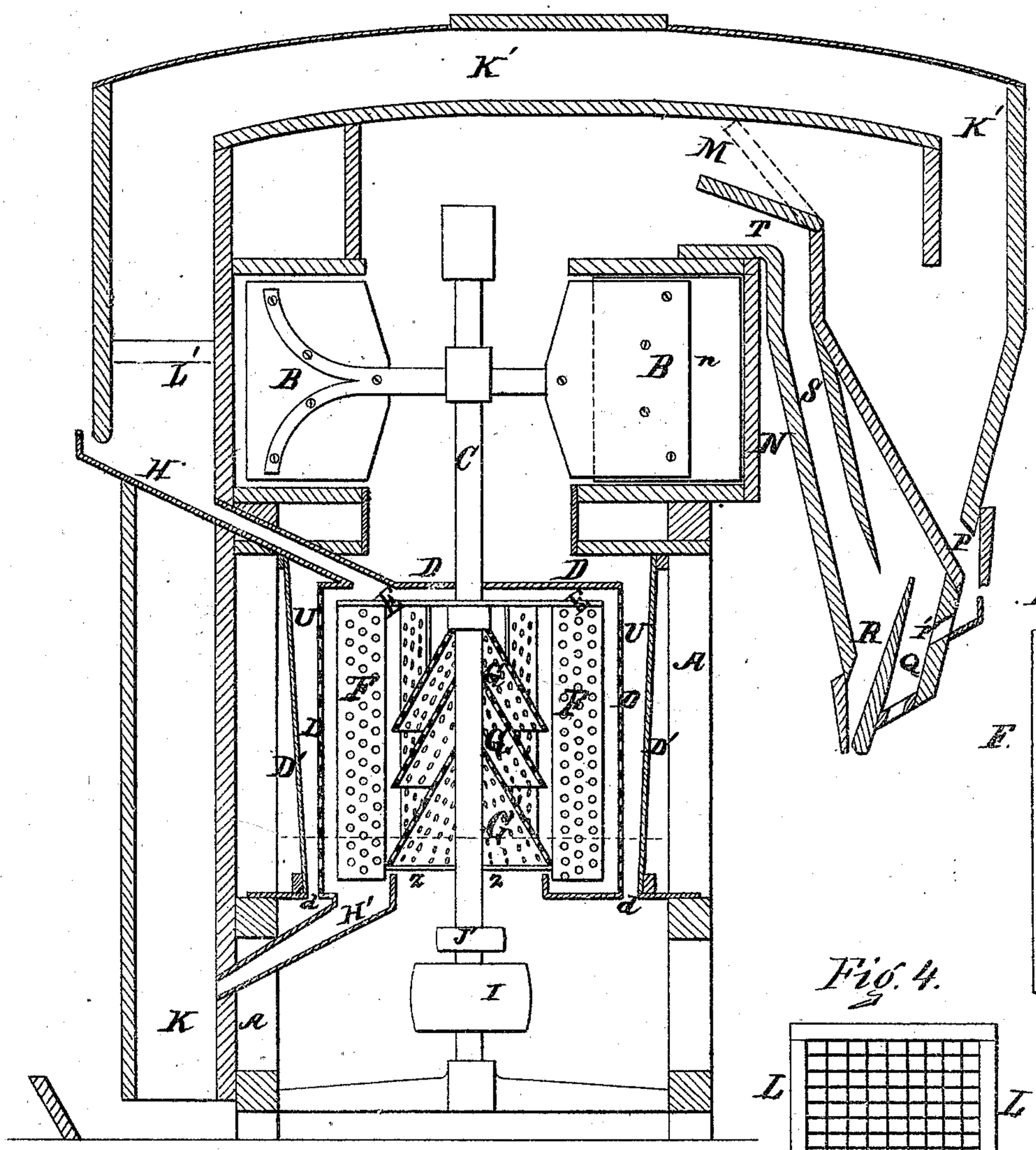
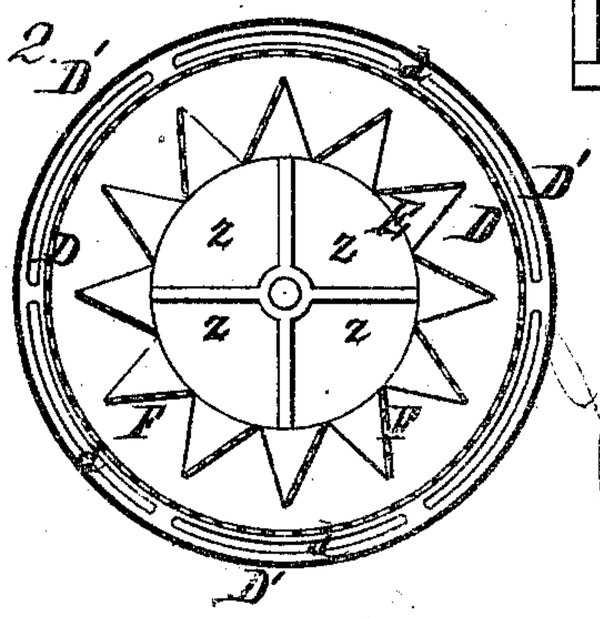


Fig. 3.

Fig. 4.

Fig. 2.



Witnesses.

James A. Mandeville.

Thos. Jewell

Inventor.

James A. Maloney

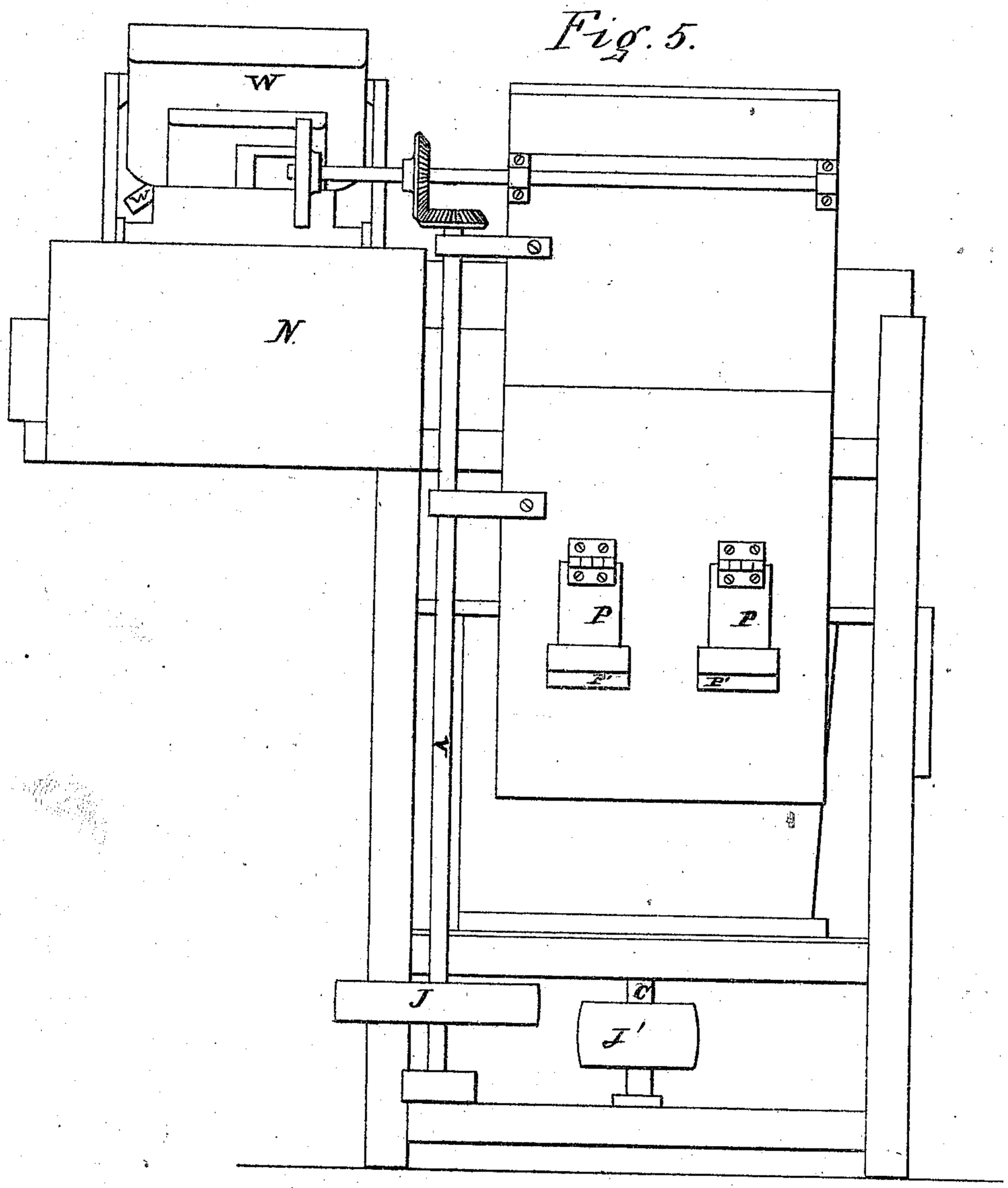
Sheet 2. 3 Sheets

JAMES A. MALONEY.

Improvement in Grain Cleaning, Scouring, and Decorticating Machine.

No. 120,987. Patented Nov. 14, 1871.

Fig. 5.



Witnesses.

James N. Mandeville

Thos. Jewell

Inventor:

James A. Maloney

Sheet 3. 3 Sheets

JAMES A. MALONEY.

Improvement in Grain Cleaning, Scouring, and Decorticating Machine.

No. 120,987. Patented Nov. 14, 1871.

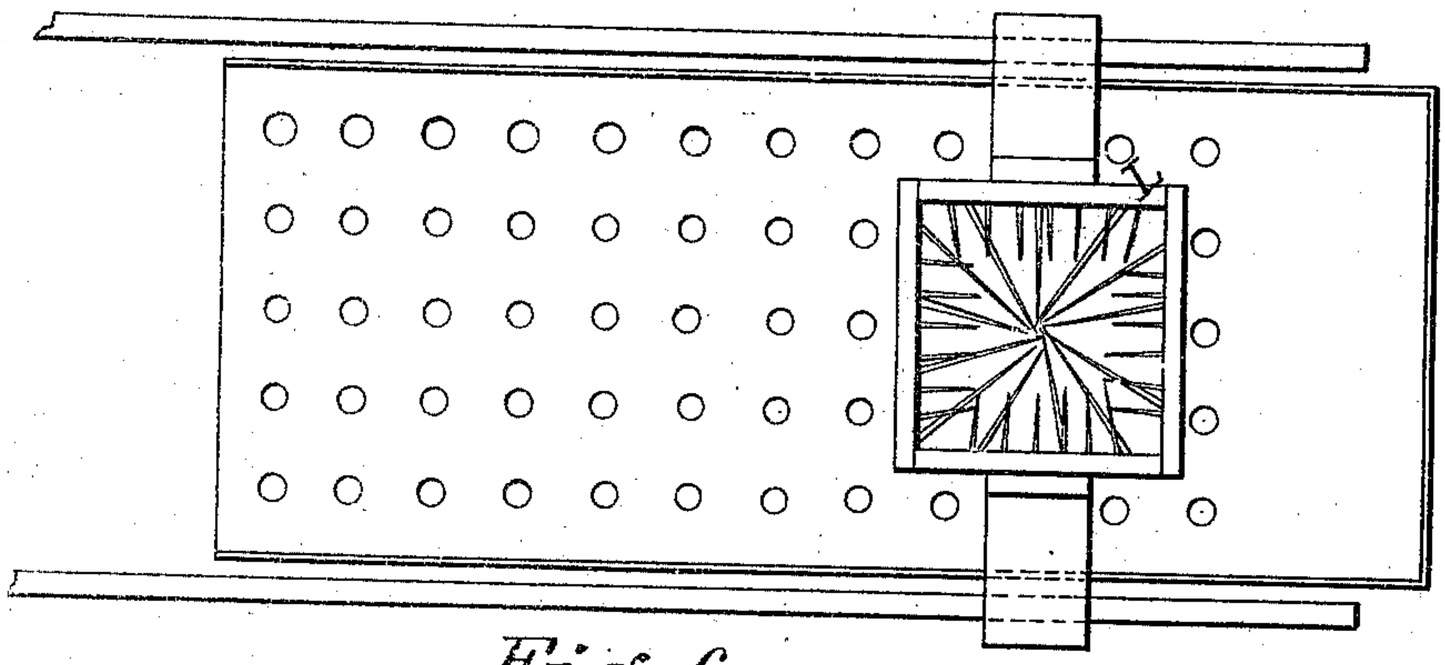


Fig. 6.

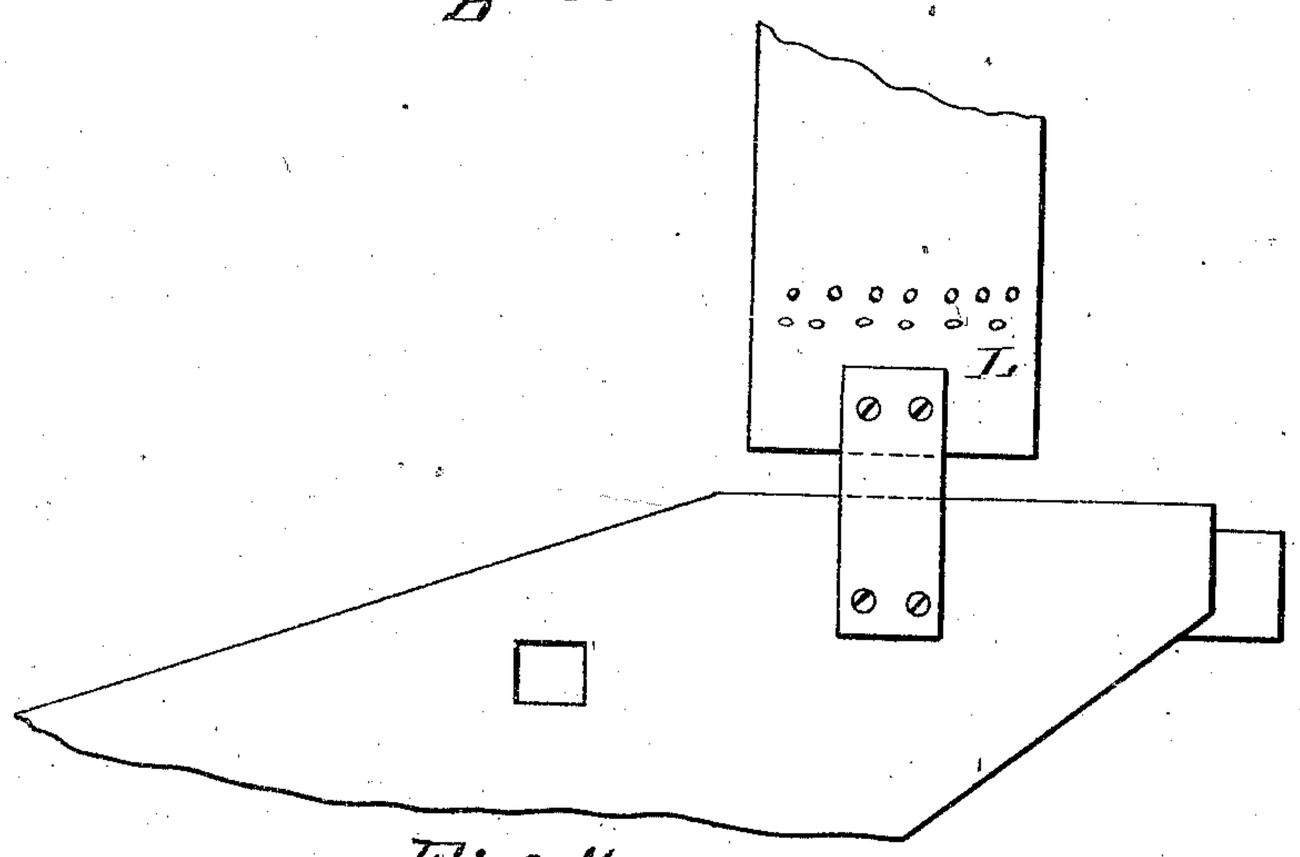
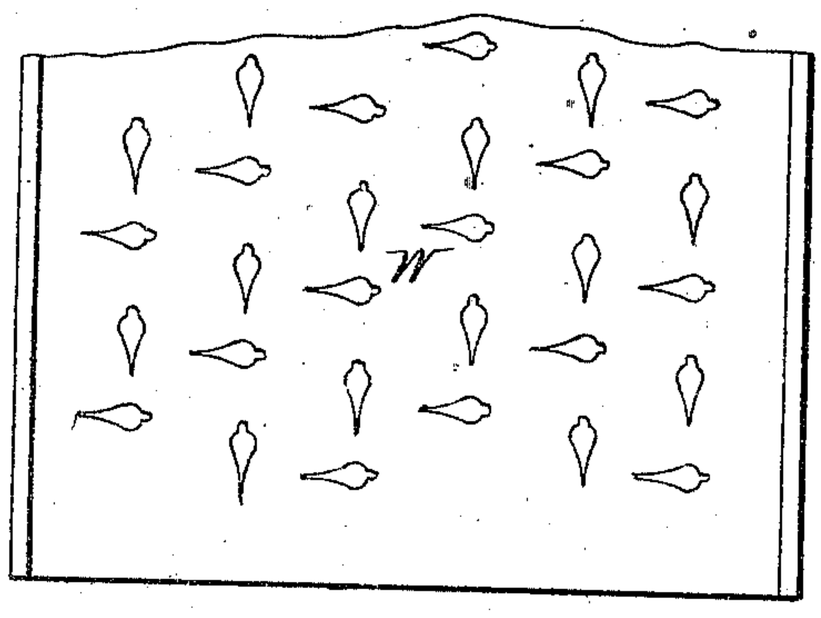


Fig. 7.



Witnesses.
Wm Howard
Wm J Burke

Inventor.
James A. Maloney.

120,987

UNITED STATES PATENT OFFICE.

JAMES A. MALONEY, OF GEORGETOWN, DISTRICT OF COLUMBIA, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO J. Q. LARMAN AND RILEY A. SHINN.

IMPROVEMENT IN GRAIN-CLEANING, SCOURING, AND DECORTICATING-MACHINES.

Specification forming part of Letters Patent No. 120,987, dated November 14, 1871.

To all whom it may concern:

Be it known that I, JAMES A. MALONEY, of Georgetown, District of Columbia, have invented certain new and useful Improvements in a Machine for Cleaning and Scouring Grain, consisting of a combined separator, decorticator, and smut-mill, of which the following is a clear and exact description:

My improvement consists: First, in the combination, with a grain-cleaning and decorticating machine, of an improved grain-spout, which has spikes driven through the same at right angles to each other, or which has long sharp metal strips, or both irregularly arranged alternately thereon, supported by the sides of the spout, so that the falling of the grain upon these sharp surfaces may break or whip off the beard from the same. Second, in a scouring-cylinder, consisting of a series of cones built close around the cylinder-shaft of a smut-mill, one above the other, and so perforated that burred or ragged projections are provided on both the inner and outer surfaces of said cones, and a series of perforated vertical beater-blades all arranged within and combined with the scouring-case of the machine.

Referring to the drawing, Figure I, Sheet I, represents a vertical section of the smut-mill with the accessories of decorticator and suction-fan, the latter being arranged above the smut-mill and revolved by the cylinder-shaft. Fig. 2 represents a plan view of the smut-mill or scourer. Fig. 3, a perforated vertical beater; Fig. 4, a plan view of the decorticating spout; Fig. 5, Sheet II, a side elevation of Fig. 1. Fig. 6, Sheet III, shows the improved grain-spout; and Fig. 7, the improved garlic-sieve employed in the machine.

A A, Fig. 1, represent the frame-work of the machine; B B, the suction-fan attached to the revolving cylinder-shaft C, and arranged thereon in a fan-case, N, above the smut-mill. The interior of the scourer or revolving portion thereof is shown at E, Fig. 2. It is made of metal, of star-shape at the bottom, and has a series of inwardly and outwardly-perforated cones, G, and a series of perforated beaters, F, Fig. 3, arranged vertically therein from top to bottom of the cylinder. The case of the smut-mill D′ is solid, but within this case is another case, D, which is perforated, an open air-space, *d*, existing between the two cases. On the first entrance of grain into the cylinder it is met by the revolving vertical beaters F. These throw the wheat against the cones G, and in turn the cones throw the wheat back against the vertical beaters. This process tends thoroughly to scour the wheat, after which it makes its egress from the machine. Arranged close around the revolving-shaft C, and within the cylinder-case D, is the series of perforated cones G, Fig. 1, referred to above, arranged one above the other. Three cones are shown in the drawing, but any desired number may be used. These perforated cones are burred both on their inside and outside surfaces, so as to increase their scouring properties, and the apex of the cones is closed on the cylinder-shaft, so as to prevent any waste of grain through the opening *z*. A rapid revolution of the cylinder will force the grain up in under the upper cones, which, being burred on their inside surfaces, aid in scouring the wheat. The lower cone has smaller perforations than the upper cones to prevent the grain falling through, but so that air may be admitted from the opening *z* through perforations into the cylinder, drawn in by the suction-fan B, for the purpose of forcing out the dust from the perforated case D into the open air-chamber U, and thence upward, until it is blown out through the opening *n* in the fan-case N. The bottom of this air-chamber U communicates with the open air at *d*, so as to obtain a sufficient air-current to carry off all dust. Before the wheat reaches the hopper L′ from the grain-bin it passes through my improved spout, L, a section of which is shown in Fig. 6 of the drawing. Although the spout is shown attached to the machine above the sieves, it may be placed below the sieves and so that the grain shall have such a fall upon and between the spikes and cross-bars that the beard will be whipped off thoroughly before the said grain finally enters into the scouring-machine. It is also designed to arrange sieves near the grain-bin, and remote from but operated by the machine, so that when the grain leaves the sieves it may fall a considerable distance, striking upon the spikes or metal strips, as stated. These spikes and metal gratings are arranged alternately in the spout, the spikes being at right angles to each other, and in clusters, but they may be inserted in any irregular manner which will effect the breaking off of the

beard from the grain. After an intervening space of a few feet, so that the grain may gain a sufficient impetus, another cluster of "beard-whippers" may be used. A sieve is distinctly disclaimed, the spikes and strips being only used for breaking off the grain-beard and not for screening purposes. It will be understood that not enough of such spikes and strips are used to impede the flow of grain through the chute, but only enough to attain this one end, namely, to break off the beard. Use and experience will determine how many should be employed, and at what location they should be placed in the chute so that the grain may have a sufficient fall or impetus to break off the beard. When the grain leaves the cylinder it is carried by the egress-spout H′ to the chute K. The heavy grain descends into any desired receptacle; but the lighter grain, chaff, and other deleterious matter are drawn upward, by means of the suction-fan B, into the upper section K′ of the chute, and thence downward into the openings P P′ and Q. The heavier portion of the refuse substances here falls out of the machine, while the lighter portion thereof is deposited in another receptacle, R. Any dust yet remaining in this waste material is met by a lighter draught of air at the intersection of the receptacle R with the air-duct S, and carried upward through the duct T into the fan-case, where it is expelled from the machine. In this way different qualities of screenings are obtained. I have shown combined with this machine an arrangement of one, two, or more metallic sieves, W, for the purpose of separating garlic and cockle from wheat. These sieves are of the construction shown in Fig. 7, and are fully described in the Letters Patent granted to me October 3, 1871, and numbered 119,626. The mechanism for operating these sieves, as shown in Fig. 5, Sheet II, consists principally of a belt and pulleys, J J′, the pulley J being on the shaft V and J′ on the shaft C. The garlic and cockle fall from the sieves into the waste-spout *w*, while the wheat passes over the surface of the sieves into the scouring-chamber or the improved beard-breaking spout, as the case may be.

I claim—

1. In combination with a grain-cleaning and separating-machine, the grain-spout L, when constructed and arranged to operate in the manner described, and for the purpose set forth.

2. In combination with the scouring-shell D of a smut-machine, the scouring-cylinder described, when composed of the series of outwardly and inwardly burred and perforated cones G and the burred and perforated vertical beater-blades F, substantially as and for the purpose described.

3. In combination with a grain-cleaning and decorticating machine, constructed substantially as herein described, the sieve or sieves W, as and fot the purpose specified.

JAMES A. MALONEY.

Witnesses:

JAMES H. MANDEVILLE,

EDM. F. BROWN. (57)