

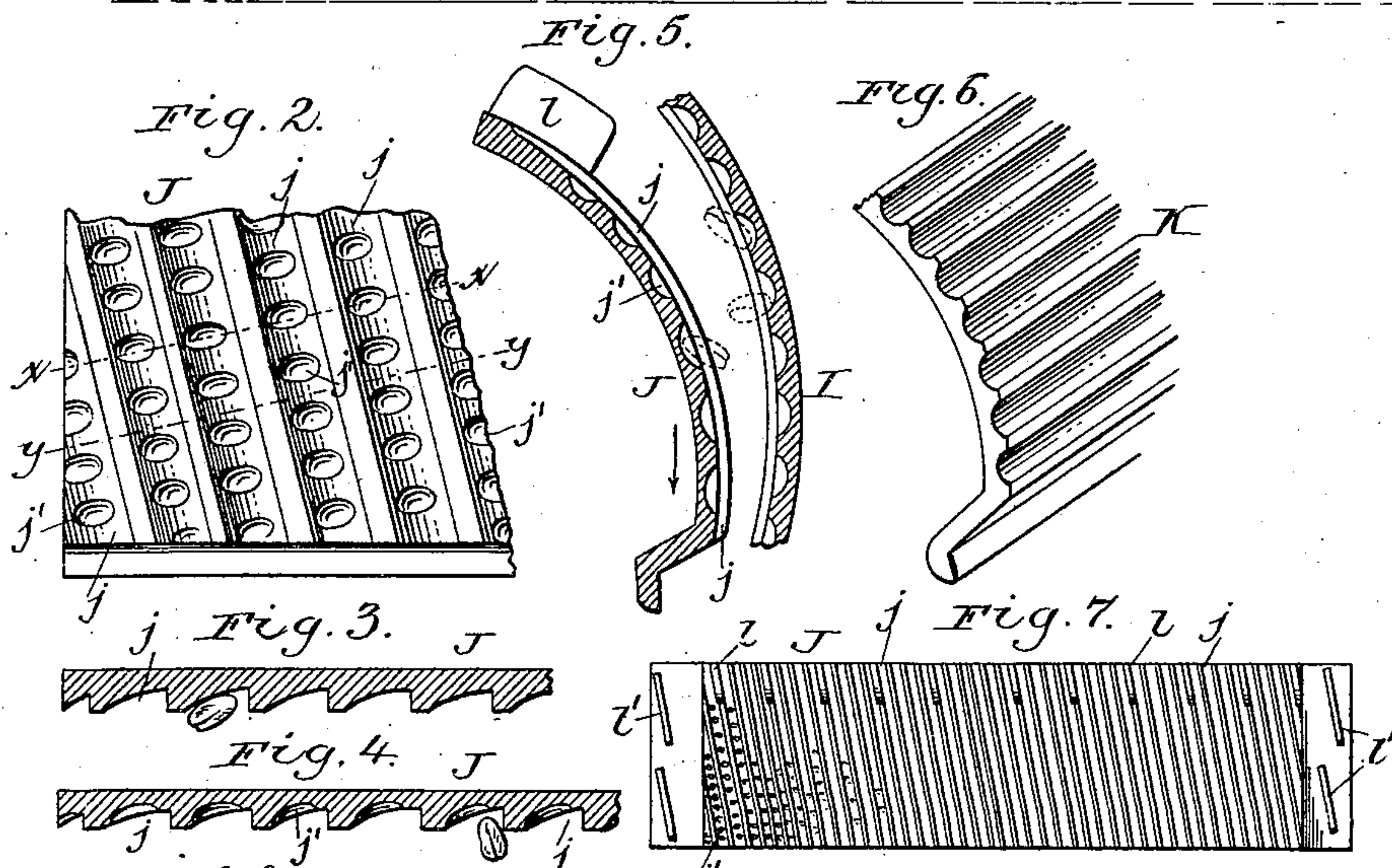
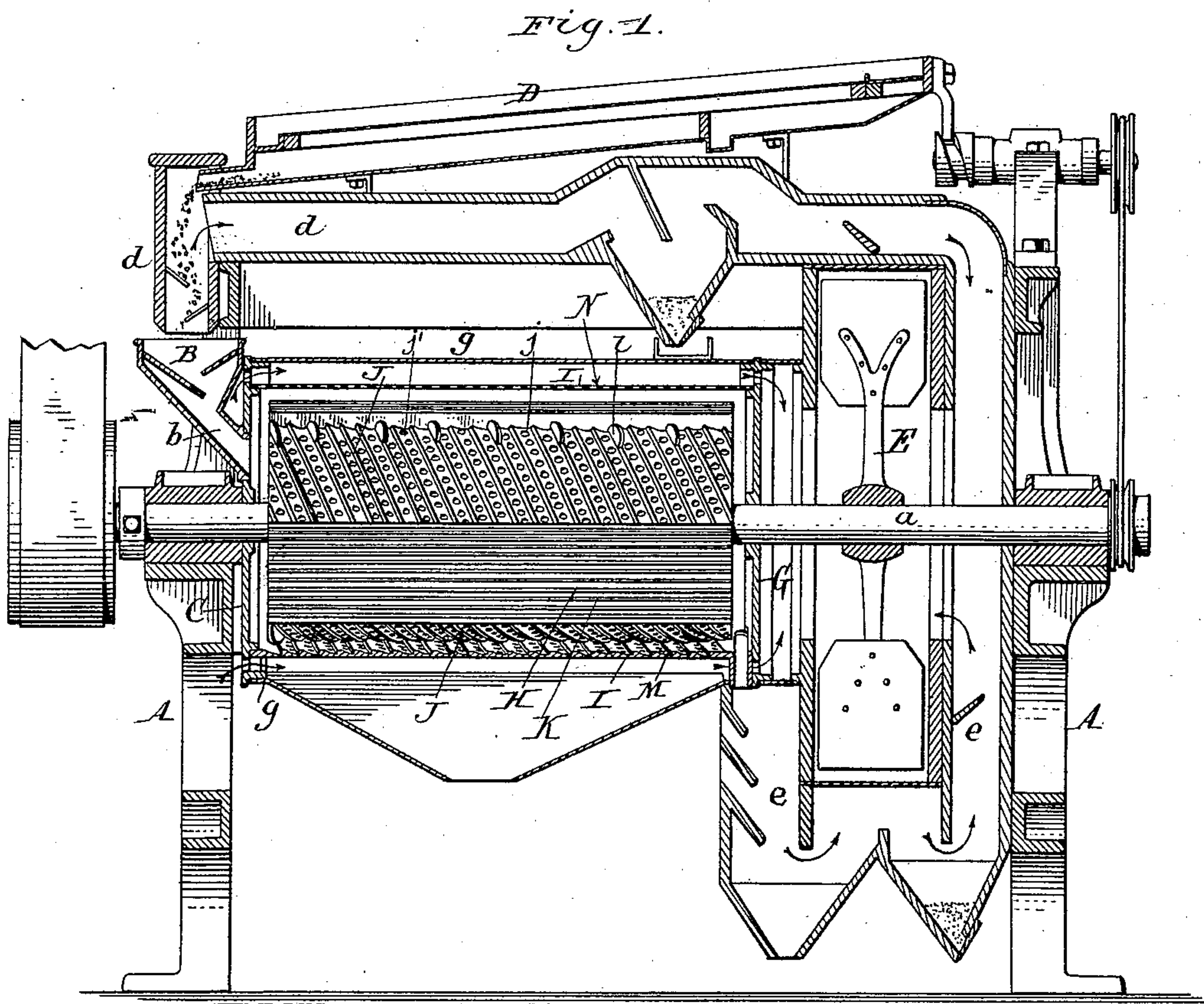
(No Model.)

2 Sheets—Sheet 1.

G. S. CRANSON.  
GRAIN SCOURER.

No. 407,578.

Patented July 23, 1889.



Chas. J. Buckheit.  
Theo. L. Poppo } Witnesses.

Giles S. Cranson Inventor.  
By Wilhelm Bonnet.  
Attorneys.

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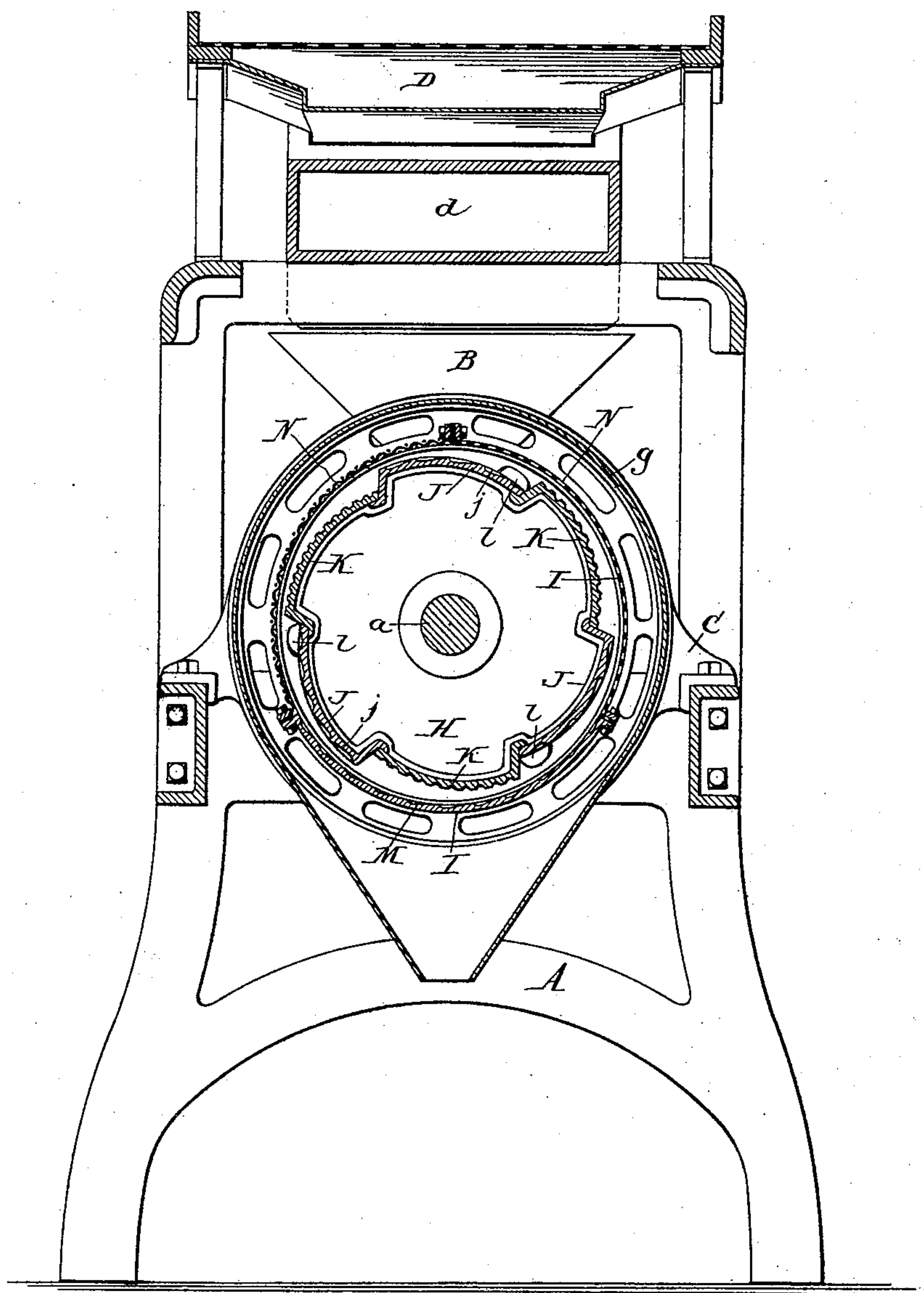
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*Fig. 8.*



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Giles S. Cranson Inventor.  
By Wilhelm H. Brown.  
Attorneys



# UNITED STATES PATENT OFFICE.

GILES S. CRANSON, OF SILVER CREEK, NEW YORK.

## GRAIN-SCOURER.

SPECIFICATION forming part of Letters Patent No. 407,578, dated July 23, 1889.

Application filed April 11, 1889. Serial No. 306,883. (No model.)

*To all whom it may concern:*

Be it known that I, GILES S. CRANSON, a citizen of the United States, residing at Silver Creek, in the county of Chautauqua and State of New York, have invented new and useful Improvements in Grain-Scourers, of which the following is a specification.

This invention relates to that class of grain-scourers which consist, essentially, of a scouring-case and a drum rotating in the same, and which scours the grain by rubbing the kernels against each other and against the scouring-surface of the case and drum, as distinguished from that class of machines in which rotating beaters are employed. In scouring grain, especially wheat, it is very desirable to remove the beard and fuzz which adhere to the ends of the kernels, and to remove from the kernels their outer or ripe cuticle and polish the live bran without such a violent action as would cut or abrade the live bran or break the kernels.

The object of my invention is to produce a scouring and polishing machine which shall effectually accomplish these results; and my invention consists of the improvements which will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 is a longitudinal sectional elevation of a grain-scourer provided with my improvements. Fig. 2 is a fragmentary face view of one of the scouring-plates. Figs. 3 and 4 are cross-sections in lines *x x* and *y y*, Fig. 2, respectively. Fig. 5 is a transverse section of a pair of scouring-plates of the scouring case and drum, the section being taken through the bottom of the groove in each plate. Fig. 6 is a fragmentary view of one of the corrugated scouring-plates. Fig. 7 is a plan view of one of the scouring-plates. Fig. 8 is a vertical cross-section of the machine.

Like letters of reference refer to like parts in the several figures.

A A represent the end frames of the machine, and *a* the horizontal shaft journaled in bearings in the end plates. B is the feed-hopper, and *b* the feed-spout secured to the head C, which closes one end of the scouring-case, and which is secured to the end frame A at the head of the machine. D represents

the separating-screen; *d*, the wind-trunk of the preliminary air-separator, from which the grain passes to the feed-hopper; E, the fan mounted on the shaft *a*, and *e* the wind-trunk of the subsequent air-separator, through which the grain passes after it has passed through the scouring-machine. G represents the head at the tail end of the scouring-case, and *g* the outer shell which surrounds the scouring-case and forms an annular air-passage around the same leading to the fan. All of these parts may be of any ordinary or well-known construction.

H represents the scouring-drum, which is secured to the shaft *a* between the heads C and G, and I represents the scouring case or cylinder, which is secured with its ends to the heads C and G.

The scouring-drum is preferably composed of alternating transversely-grooved scouring-plates J and longitudinally corrugated or grooved scouring-plates K. The front or advancing end of each plate in the direction of its rotation is nearer the center of rotation than its retreating end, so that the space between the drum and the scouring-case gradually decreases from the entering to the retreating end of each plate and the action upon the grain gradually increases in intensity as the sheet of grain passes between each plate and the scouring-case. The transverse grooves *j* in the plates J are preferably made slightly inclined or spiral, so as to assist in moving the grain from the feed toward the discharge end of the scouring-case. The grooves *j* are provided in or near their bottoms with recesses, depressions, or indentations *j'*, which cause the kernels in passing through each groove to change their position frequently by entering these depressions head on and turning over instead of retaining their position in moving through each groove. The kernels also whirl or turn with their ends in these recesses, whereby the beard or fuzz at the ends of the kernels is removed. The advancing side of each groove, which receives principally the pressure of the grain, is made inclined, while the retreating side is made abrupt, as clearly represented in Figs. 2, 3, and 4. This causes the kernels to turn over as they pass over the abrupt rear edge of each groove in being forced longitudinally through



the scouring-case toward the discharge end thereof, and affords more room for the reception of grain in each groove.

The transversely-grooved scouring-plates are preferably provided at their low entering ends with inclined flights *l*, which move the grain toward the tail end of the scouring-case, and, if desired, each of these plates may be provided at its front and rear ends with such flights *l'* of still greater length, as represented in Fig. 7.

The longitudinally-corrugated plates *K* alternate, preferably, with the transversely-grooved plates *J*. These plates *K* elevate the grain and distribute it around the circumference of the scouring-cylinder, and they also cause a thorough change of position of the kernels between every two transversely-grooved plates. The grooves of these longitudinally-grooved plates may also be provided with recesses or pockets like those formed in the grooves of the transversely-grooved plates.

The scouring-case *I* is preferably composed of a lower imperforate section *M* and an upper perforated or ventilated section *N*. The imperforate section is composed of a transversely-grooved concave plate having its grooves provided with recesses like those of the plates *J* of the scouring-drum. The grooves in the plate *M* are preferably inclined in an opposite direction to the grooves in the plate *J*, so as to cross these grooves, as represented in Fig. 1, in order to retard the motion of the grain and to give the kernels a whirling motion and cause a more thorough and more frequent change of position of the kernels.

The upper perforated or ventilated section *N* of the scouring-case may be constructed of perforated sheet metal, or of wire-cloth made of flat wire, or of both of these materials, as shown in Fig. 8. Although the grain is distributed over the entire circumference of the scouring-case by centrifugal force it is densest at the bottom of the scouring-case, and I therefore locate the imperforate section at the bottom, where the best scouring and polishing effect is obtained, while the best ven-

tilating effect is obtained at the top, where the grain is less dense and the dust and air can more readily escape. The grain in passing through the scouring-machine is rubbed and polished. The outer ripe cuticle of the grain is detached without cutting or abrading the live bran or breaking the kernels, and the beard and fuzz adhering to the ends of the kernels are also removed in a satisfactory manner.

I claim as my invention—

1. The combination, with a scouring-case, of a scouring-drum provided with transverse grooves and recesses or depressions in said grooves, substantially as set forth.

2. The combination, with a scouring-drum provided with grooves and recesses or depressions in said grooves, of a scouring-case provided with grooves and recesses or depressions in said grooves, substantially as set forth.

3. In a grain-scourer, a scouring-plate provided with transverse grooves having inclined advancing sides and abrupt retreating sides, and recesses or depressions in said grooves, substantially as set forth.

4. The combination, with the scouring-case, of a drum having a scouring-plate provided at its entering end with inclined flights and with transverse grooves having recesses or depressions, substantially as set forth.

5. The combination, with the scouring-case, of a drum composed of alternating plates having transverse grooves with recesses or depressions, and plates having longitudinal grooves, substantially as set forth.

6. The combination, with a scouring-drum, of a scouring-case provided with a tight bottom plate having transverse grooves and recesses or depressions in said grooves, and with a ventilated top section, substantially as set forth.

Witness my hand this 1st day of April, 1889.

GILES S. CRANSON.

Witnesses:

JNO. J. BONNER,  
FRED. C. GEYER.