

# J. Ferguson. Smut Mill.

No 92,809.

Patented Jul 20, 1869.

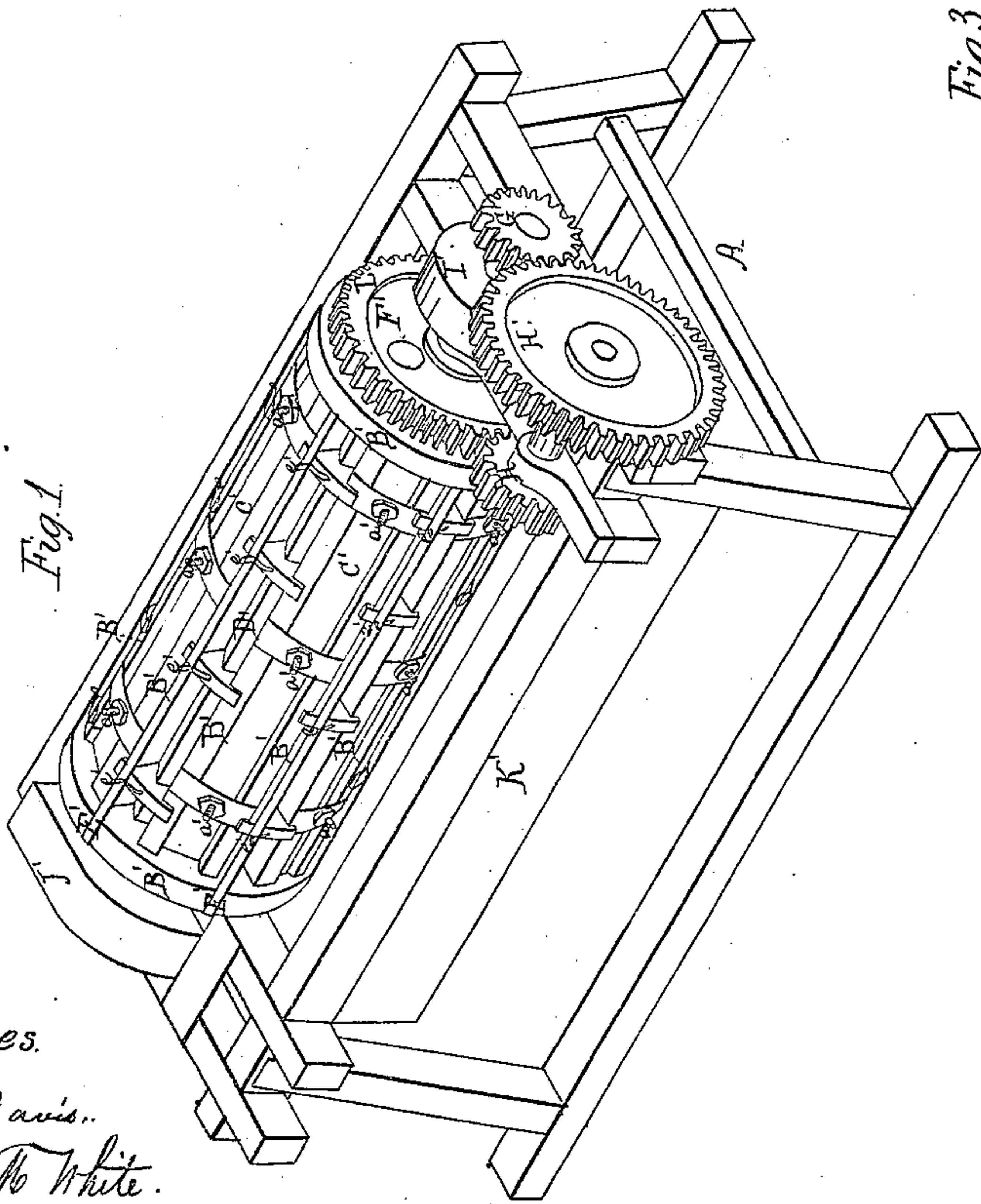
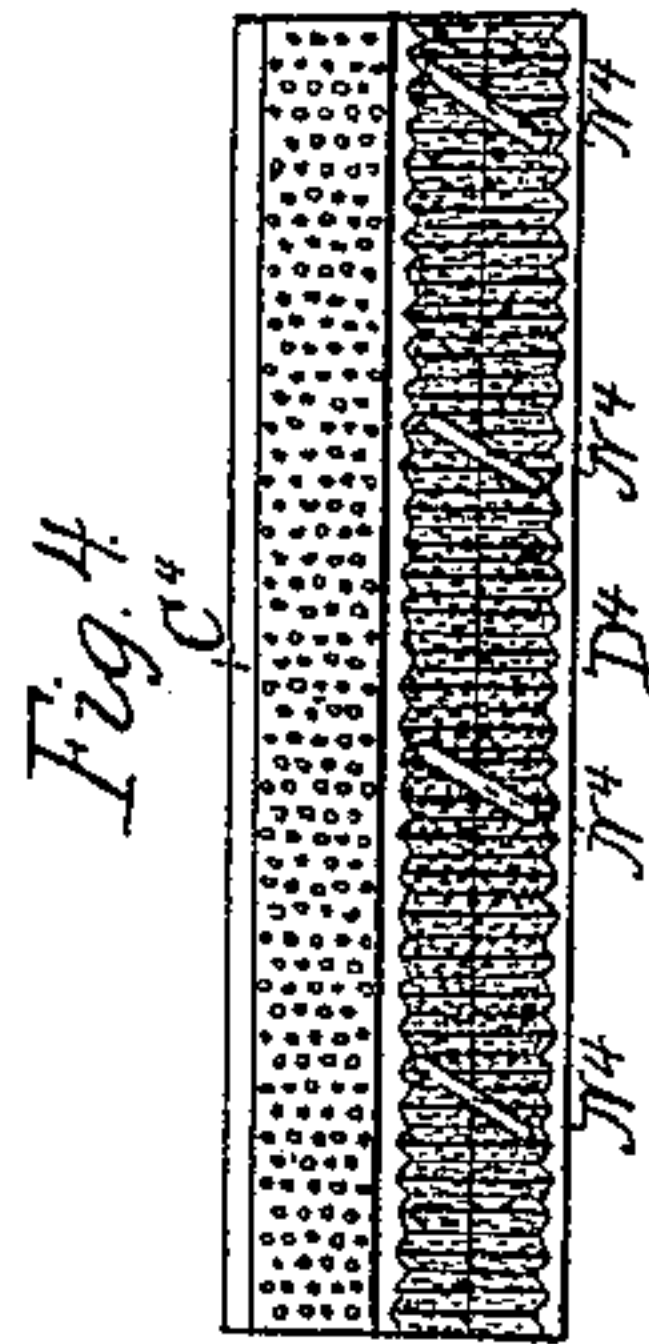
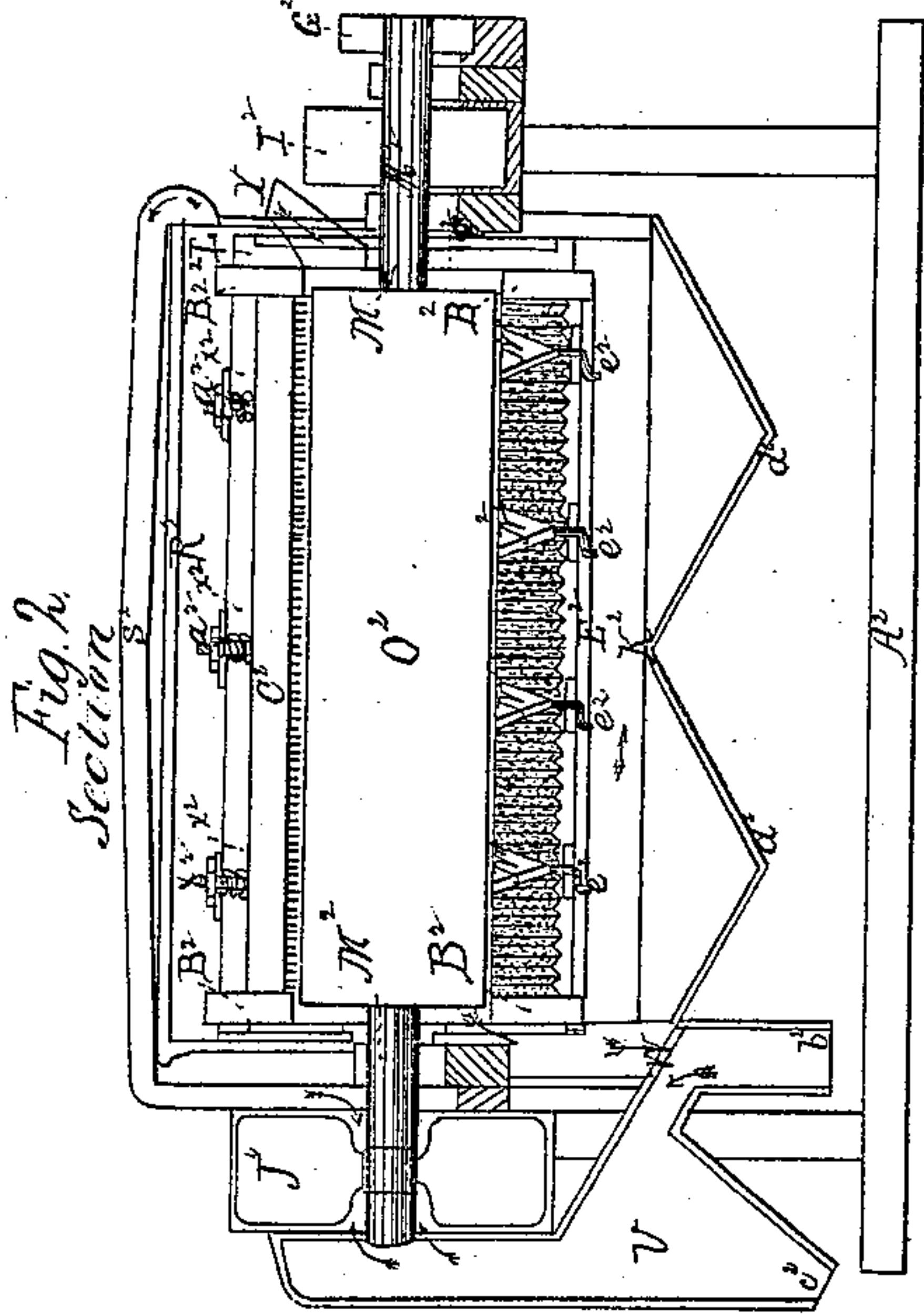
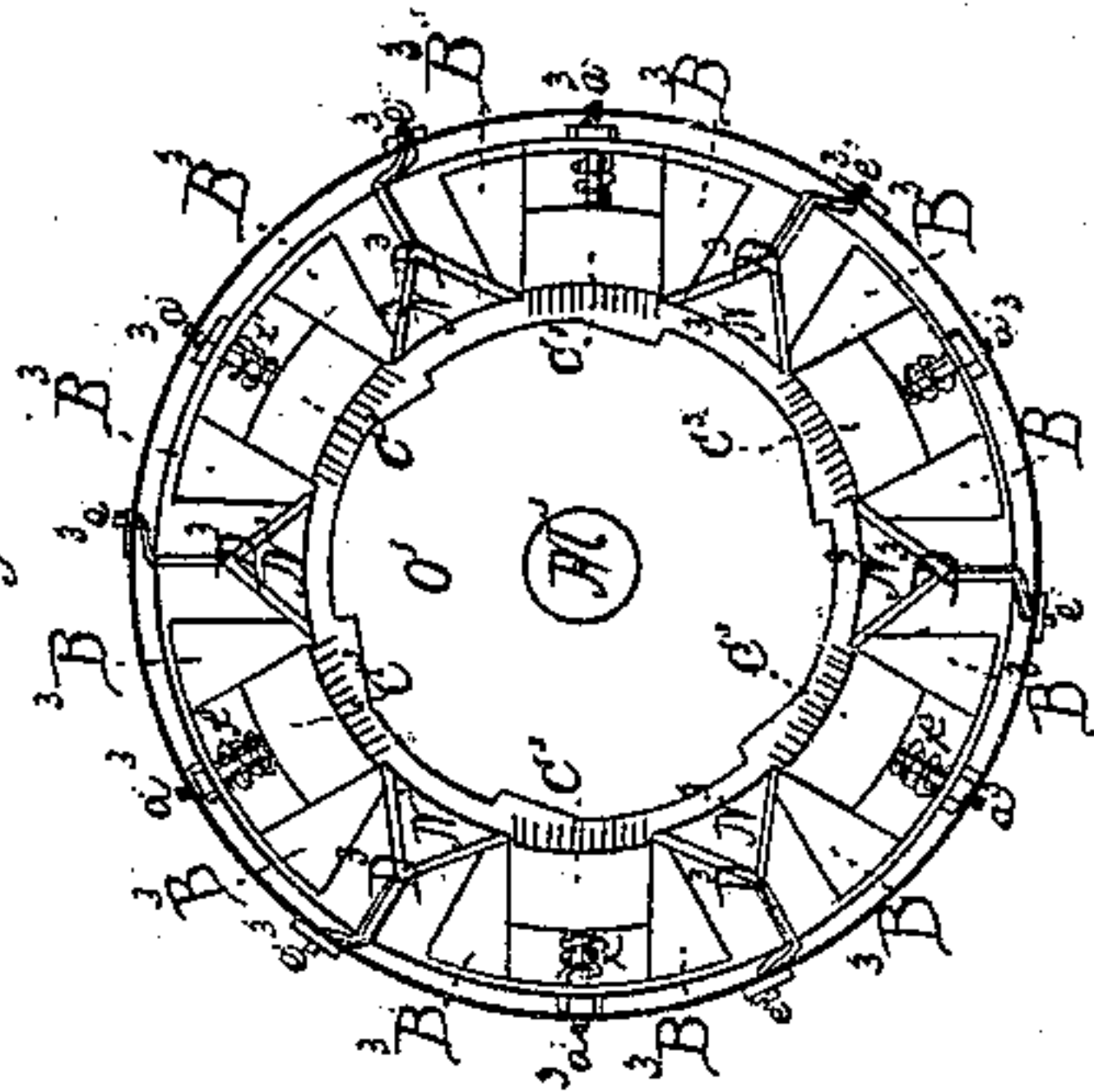


Fig. 3. Section



Witnesses.

Geo. Davis.

Th. C. White.

Inventor

John Ferguson



# United States Patent Office.

JOHN FERGUSON, OF FALL RIVER, MASSACHUSETTS.

Letters Patent No. 92,809, dated July 20, 1869.

## IMPROVED GRAIN-CLEANER AND SMUT-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOHN FERGUSON, of Fall River, of the county of Bristol, of the State of Massachusetts, have invented a new and useful or improved Machine for Pearling and Cleansing of Wheat or other grain capable of being treated thereby; and I do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings.

Of such drawings—

Figure 1 is a perspective view of the machine, as it appears with the upper half or portion of its cylinder-case removed from the remainder thereof.

Figure 2 is a longitudinal and vertical section of the machine.

Figure 3, a transverse section of the cylinder and its rotary stone.

In figs. 1 and 2, A' denotes the frame of the machine, there being extended through it lengthwise, and sustained by it in suitable boxes, a shaft, which, in fig. 2, is represented at M<sup>2</sup>, and in fig. 3 at M<sup>3</sup>.

This shaft carries a grinding-cylinder or stone, (shown at O<sup>2</sup> in fig. 2, and at O<sup>3</sup> in fig. 3,) whose periphery is fluted or suitably grooved, the same being as shown in section in fig. 3.

The stone is concentric with and revolved by the shaft when in operation, and is arranged within what is termed the hollow cylinder, (marked B<sup>1</sup> in fig. 1, B<sup>2</sup> in fig. 2, and B<sup>3</sup> in fig. 3,) which is a frame inserted in the said shaft, so as to be capable of being revolved freely thereon, and in a direction opposite to that in which the stone is revolved.

A driving-pulley, I<sup>2</sup>, is fixed on the shaft M<sup>2</sup>, to enable such shaft to be put in revolution by an endless belt, driven by a suitable motor.

Furthermore, a train of gears, G', H', H', and F', arranged as represented in fig. 1, serves to transmit rotary motion from the driving-shaft to the hollow cylinder.

Within the said hollow cylinder, and arranged about the stem, in manner as shown in fig. 3, is a series of brushes, (each being marked C<sup>1</sup> in fig. 1, C<sup>2</sup> in fig. 2, and C<sup>3</sup> in fig. 3,) they being movable in radial directions, and supported against springs, as shown at x<sup>3</sup> in fig. 3.

Screw-rods, projecting from each brush, and provided with nuts, as shown at a<sup>1</sup> in fig. 1, a<sup>2</sup> in fig. 2, and a<sup>3</sup> in fig. 3, serve to adjust the brushes at their proper distances from the stone.

Between the several brushes, there is on the hollow cylinder a series of foraminous troughs or chambers, (marked D<sup>2</sup> in fig. 2, and D<sup>3</sup> in fig. 3,) each being triangular in cross-section, and corrugated lengthwise.

In each of these troughs there are placed several triangular deflectors, pivoted to the trough, and provided with cranks, pivoted to a bar.

In fig. 1, the bar is shown at E<sup>1</sup> and the cranks at e<sup>1</sup>. In fig. 2, the bar is represented at E<sup>2</sup>, the cranks at e<sup>2</sup>, and the deflectors at N<sup>2</sup>. In fig. 3, the bar is shown at E<sup>3</sup>, the cranks at e<sup>3</sup>, and the deflectors at N<sup>3</sup>.

In Figure 4, a trough is seen at D<sup>4</sup>, the deflectors thereof at N<sup>4</sup>, and a next adjacent brush at C<sup>4</sup>.

By means of the bar and the series of cranks of the deflectors, each set of them may have their oblique portions within the trough changed or varied, as circumstances may require, to cause the grain to be moved slower or faster from end to end of the machine, as circumstances may require.

The rotary hollow cylinder, with its brushes and foraminous and corrugated troughs, and their several series of deflectors, is disposed within a suitable case, R, (see fig. 2,) against one end of which there is arranged a fan-blower, (shown at J<sup>1</sup> in fig. 1, and at J<sup>2</sup> in fig. 2.)

The grain enters the case at its opposite end, through a spout, shown in fig. 2, with an arrow upon it.

A conduit, S<sup>2</sup>, (see fig. 2,) opening out of the said end of the case, extends over the case, and opens into that of the fan-blower, at or near its centre.

The lower part of the case R<sup>1</sup> is arranged as hoppers, having openings d<sup>2</sup> through their lower parts.

These openings may be provided with traps or valves, to open downwards.

An air-box or conductor, U, formed as shown in fig. 2, is arranged against the case R<sup>1</sup> and the fan-blower, in manner as shown in fig. 2.

The case R<sup>1</sup> and the conductor U communicate by an opening, V, which is situated directly over the air-induct b<sup>2</sup> of the conductor.

The said conductor has an educt or discharging-spout, c<sup>2</sup>, to whose lower end a flap-valve, to open downward, may be applied.

The conductor leads air into the fan-blower case.

The operation of the machine may be thus explained:

The grain, on entering the machine through the spout X, (see fig. 2,) will pass into the space within the hollow cylinder, and thence into the foraminous troughs, which, as the said cylinder revolves, will carry up the grain and deposit it on the stone.

By the conjoint action of the said stone and the series of brushes, the grain will be pearled, and much of the loose particles and dust will escape through the fine holes of the trough.

The current of air produced through the case by the fan-blower will cause the dust to be discharged therefrom.

The grain, after being operated on, will drop through the opening V, where it will meet the inrushing current of air passing into the conductor.

The smut and extraneous matters will be separated



from the grain by this current, and the most of such will be drawn into and discharged from the fan-blower, the heavier parts passing off through the educt  $c^2$ .

What I claim as my invention in the said machine, is as follows, viz:

1. I claim the arrangement and combination of the series of foraminous troughs and the series of brushes of the hollow cylinder with the rotary stone, all constructed as herein described, and so disposed within a case, provided with a fan-blower, as to operate therewith, substantially as hereinbefore specified.

2. The series of deflectors within the foraminous troughs and the series of brushes of the hollow cylin-

der, all constructed as herein shown, and combined with a rotary stone, as described, the whole being arranged to operate together within the case R, provided with a fan-blower, substantially as set forth.

3. The arrangement and combination of the conduit  $S^2$  (fig. 2) with the case  $R^2$ , the fan-blower  $j^2$ , the stone  $o^2$ , and the hollow cylinder  $B^2$ , furnished with brushes and foraminous troughs, with their deflectors, all constructed and operating as herein specified.

JOHN FERGUSON.

Witnesses:

JNO. DAVIS,

TH. E. M. WHITE.