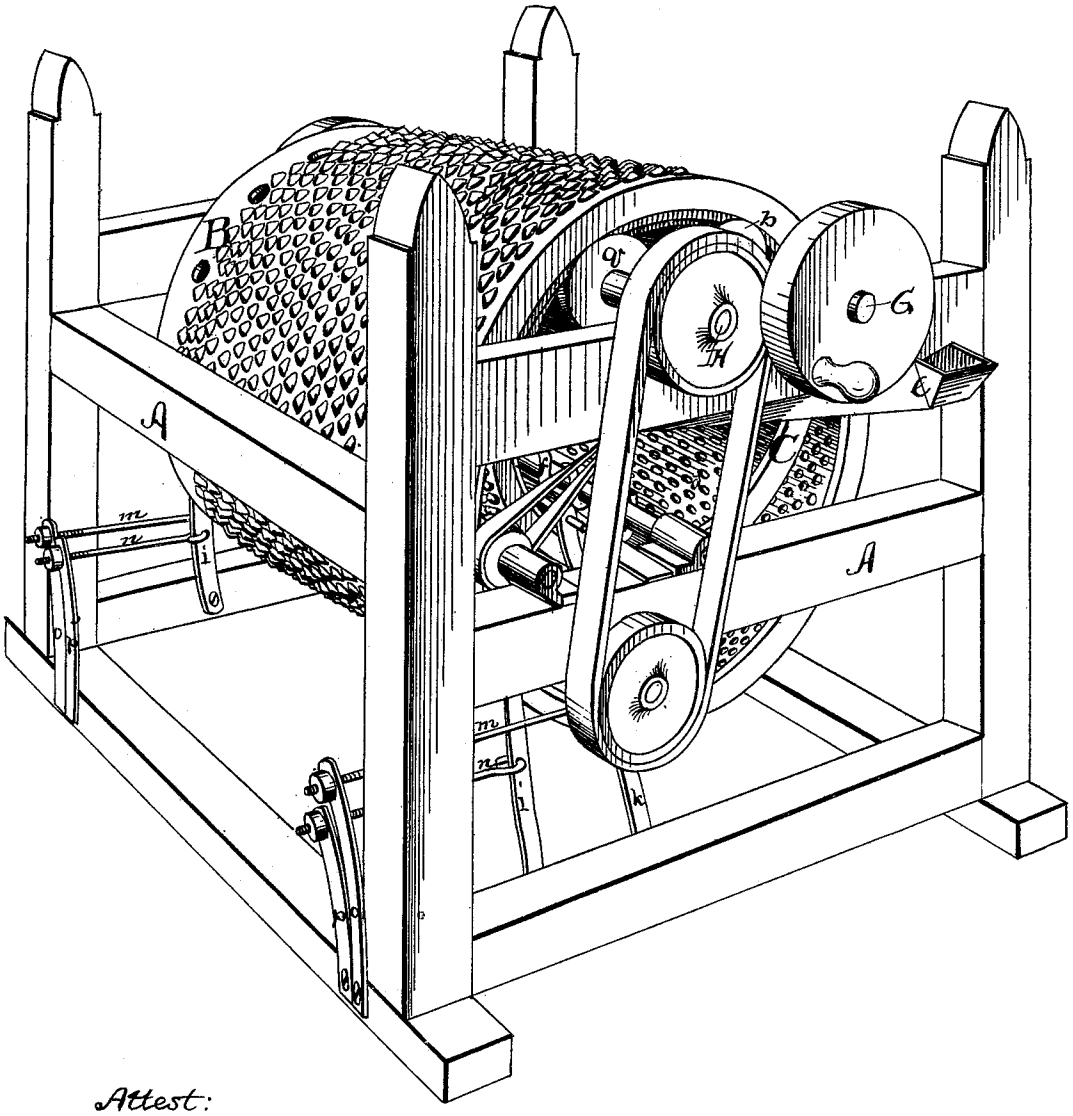
2 Sheets—Sheet 1.

D. BUTGER.

GRAIN SEPARATOR.

No. 188,776. Patented March 27, 1877.

Fig. 1.



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2 Sheets—Sheet 2.

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Fig. 2.

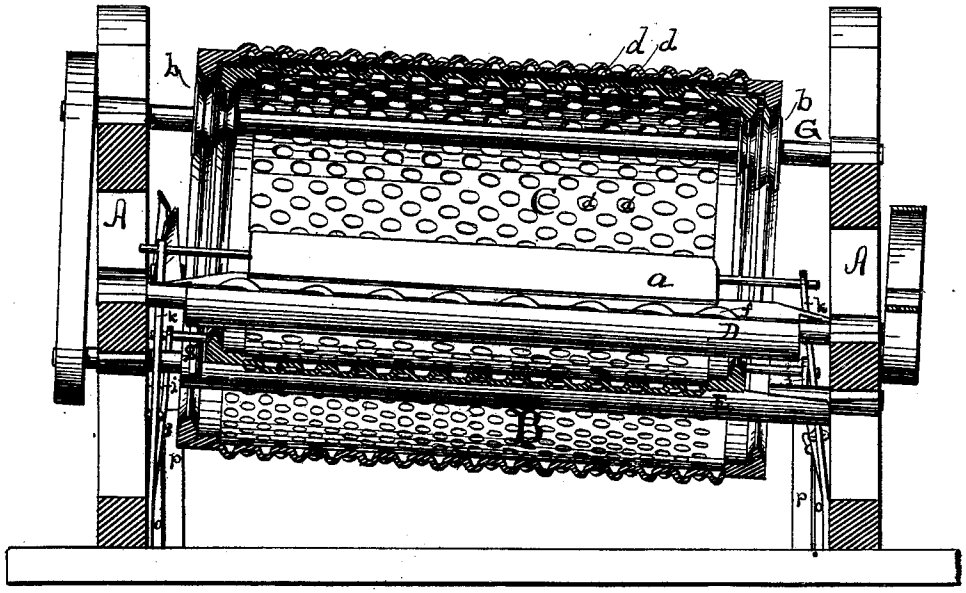
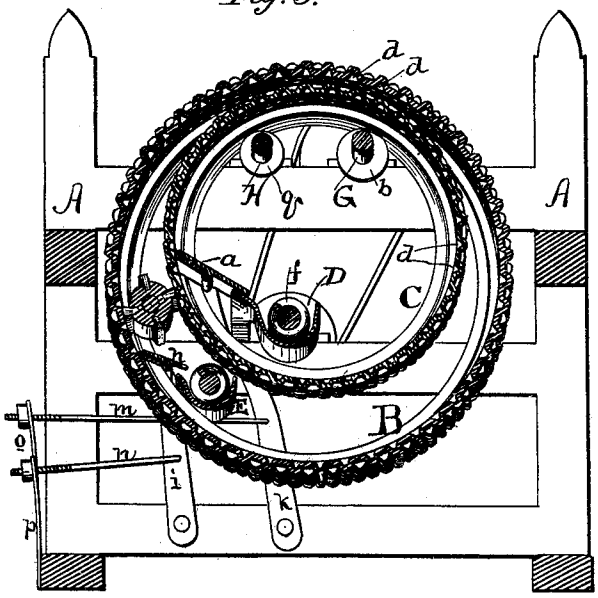


Fig. 3.



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UNITED STATES PATENT OFFICE.

DAVID BUTGER, OF MILWAUKEE, WISCONSIN.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. **188,776**, dated March 27, 1877; application filed September 9, 1876.

To all whom it may concern:

Be it known that I, DAVID BUTGER, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Cockle-Separators, whereof the following is a full and complete specification.

This invention relates to that class of cockle-separators wherein the separation is effected by means of a hollow cylinder having cells in its inner surface, said cells being of proper size to admit the grains of cockle and reject the grains of wheat; and it principally consists in two cylinders, the one inside of the other, and one with larger cells than the other, to enable it to separate the cockle and small wheat from the larger wheat, and thereby cause the apparatus to operate as a grader as well as a separator.

That others may fully understand my improvement I will particularly describe it, having reference to the accompanying drawing, wherein—

Figure 1 is a perspective view of my apparatus. Fig. 2 is a longitudinal section of the same. Fig. 3 is a transverse section of the same.

A is a frame-work, of wood or other suitable material, to sustain and support the operative parts of my machine. B is the outer or principal cylinder, and C is the inner or grading cylinder. These cylinders are supported and driven by the traction-rollers *b b* and *q q*, which are mounted upon the main shaft G and the counter-shaft H, respectively. The rollers *b* and *q* are made double, the outer traction periphery being larger in diameter than the inner. The cylinder B rests upon and is driven by the outer roller, and the inner cylinder C is driven by the inner or smaller roller, and therefore said cylinder C moves at a less surface speed than the outer cylinder B. These cylinders have, in their inner surfaces, numerous cells, *d d*, preferably made by indenting the metal with suitable punches and dies.

The grain is received from the spout *e* into the inner cylinder C, where it is subjected to the action of the large cells, which receive not only the cockle, but the smaller wheat also, leaving the larger grains to be discharged by themselves at the tail of said cylinder into a receptacle appropriated to their reception. The smaller wheat and the cockle is taken up by the several cells, and when elevated by the revolution of the cylinder C to, or nearly to, the horizontal quadrature of said cylinder, they fall out of said cells upon the catch-board *a*, down which they slide into the conveyer-trough D, and are moved along said trough by the conveyer-screw *f* to the discharge-spout *g*, through which they are discharged into the larger or outer cylinder B at its front end. The revolution of the cylinders causes the grain to become gradually distributed and moved toward the discharge end of the cylinder, and during this movement the smaller grains, such as cockle-seed, find their way into the cells, and are carried up until the inclination of the cell becomes so great that the seeds fall out upon a catch-board, *h*, which delivers them into a conveyer-trough, E, from which they are discharged outside of the machine.

It is required that the catch-boards should approach nearly to the inner surfaces of the cylinders, so that cockle which falls out of the cells will not pass down again between the catch-board and the cylinder, and it is also required that the catch-board shall be yielding, so that seeds if caught may not be crushed. I therefore guard the edges of the catch-boards *a* and *h* with a projecting strip of india-rubber, or some other suitable elastic material. This elastic edge projects far enough to rest lightly against the inner surface of the cylinder, and not only prevent the return of every seed which goes upward past it, but it will yield to permit the passage of any seed caught in but projecting slightly from a cell. The catch-boards *a* and *h* have each an axis rod or bearing mounted in the upper ends of the swinging arms *i k*, the lower ends of which are jointed to the frame A, and are kept up in contact with the cylinder by connecting-rods *m n* and springs *o p*, and the pressure of said springs may be regulated by screw-nuts. A revolving brush, F, is located between the cylinders B C, above the catch-board *h*, to clear the cells of the cylinder B of dust and impurities.

The revolving operative shafts are all driven by belts and counter-belts from the main driving-shaft.

Having described my invention, what I claim as new is—

1. A cylinder, B, provided with cells in its interior surface, combined with a similar, though smaller, cylinder, C, located within said cylinder B, for the purpose set forth.

2. A cylinder, B, provided with circular indented cells, suitable in size to receive grains of cockle-seed, combined with a similar, though smaller, cylinder, C, provided with elongated indented cells sufficiently large to receive small grains of wheat, for the purpose set forth.

3. The cone or step traction-rollers to support and rotate the cylinders B C, one within the other, and at different rates of speed, combined with said cylinders.

DAVID BUTGER.

Witnesses:

JAS. M. PEEELES,

FERDINAND SCHLEINGLE.