

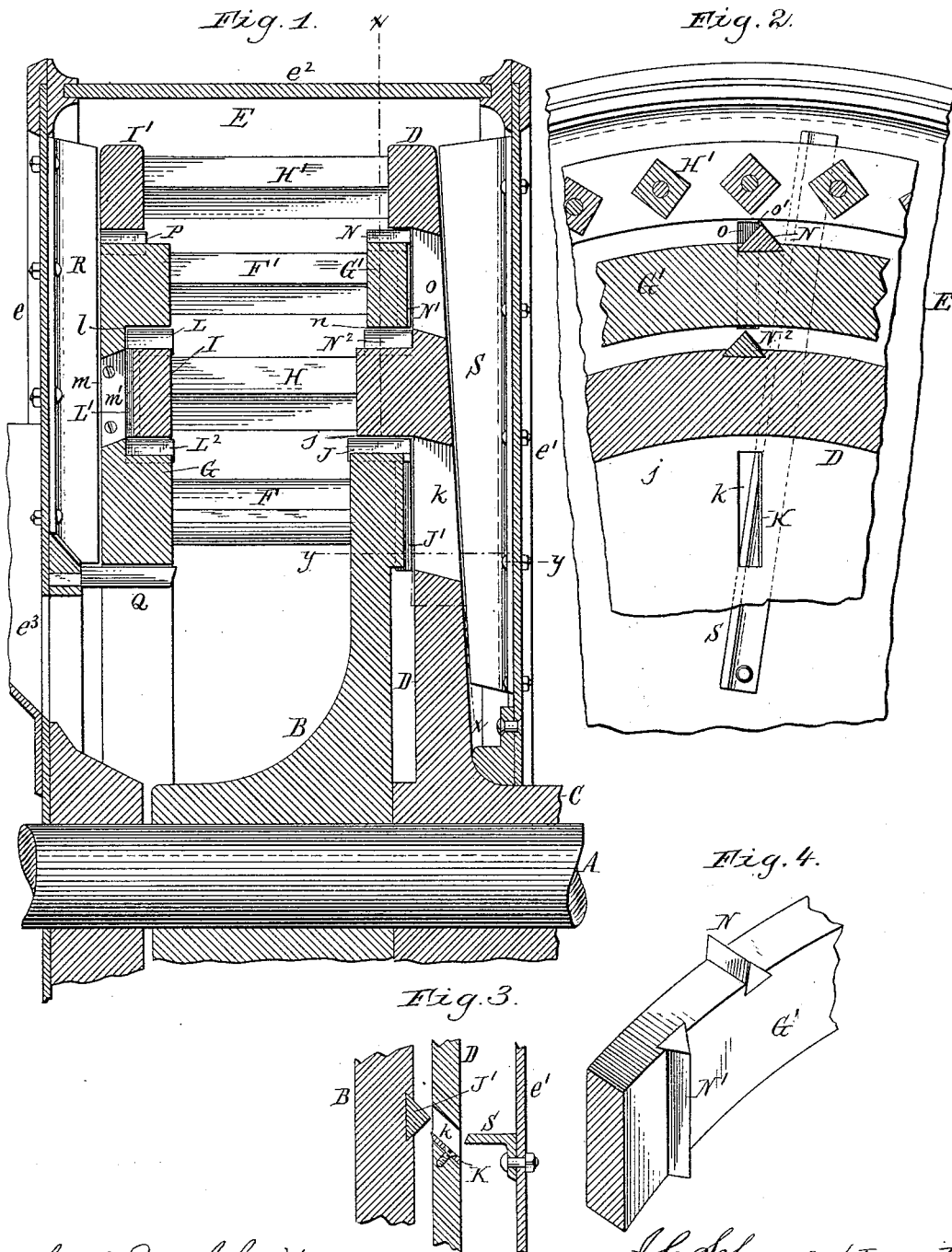
(No Model.)

J. C. SCHUMAN.

DISINTEGRATOR FOR THE REDUCTION OF GRAIN IN THE MANUFACTURE  
OF STARCH, &c.

No. 346,320.

Patented July 27, 1886.



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# UNITED STATES PATENT OFFICE.

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DISINTEGRATOR FOR THE REDUCTION OF GRAIN IN THE MANUFACTURE OF STARCH, &c.

SPECIFICATION forming part of Letters Patent No. 346,320, dated July 27, 1886.

Application filed April 21, 1886. Serial No. 199,587. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN C. SCHUMAN, of Akron, in the county of Erie and State of New York, have invented new and useful Improvements in Disintegrators for the Reduction of Grain in the Manufacture of Starch, &c., of which the following is a specification.

This invention relates to an improvement in that class of disintegrators which is used for the reduction of grain in the manufacture of starch, and for other purposes, and which are provided with concentric rows of beaters or pins revolving at a high speed in opposite directions within a casing.

My invention has for its object to prevent the accumulation of material on the rotating disks or rings, to which the disintegrating beaters or pins are secured. In the ordinary use of these machines it happens frequently that the material accumulates on these disks and rings by reason of oil becoming mixed with the material, or by reason of the material being damp or adhesive. These accumulations throw the machine out of balance, which is very objectionable at the high speed at which these machines are run.

My invention is designed to overcome these difficulties; and it consists to that end of the improvements in the construction of the machine, which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a fragmentary vertical section of a disintegrator provided with my improvements. Fig. 2 is a fragmentary section in line *x x*, and at right angles to Fig. 1. Fig. 3 is a fragmentary horizontal section on line *y y*, Fig. 1. Fig. 4 is a fragmentary perspective view of one of the rings.

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

A represents the solid driving-shaft, and B the disk secured to the same.

C represents the hollow driving-shaft surrounding the shaft A, and provided with the disk D.

The two shafts A and C are rotated in opposite directions in a well-known manner.

E represents the casing, consisting of annular side plates, *e e'*, and a peripheral plate, *e''*.

The side plate, *e*, is provided with a feed-opening, *e'*.

F represents the pins or beaters secured to the disk B, and connected at their opposite ends to an annular plate, G, which carries near its outer edge another row of pins or beaters, F', connected at their opposite ends to a ring, G'. These pins or beaters may be round, square, or of any other suitable cross-section.

H represents a row of beaters or pins secured to the disk D, and arranged between the rows F and F'. The beaters H are connected at their opposite ends to a ring, I. H' represents a similar row of beaters secured to the disk D, outside of the beaters F', and connected at their opposite ends to a ring, I'.

The outer or marginal portion of the disk B runs in a recess, *j*, formed in the inner face of the disk D. In order to prevent the material from accumulating in this recess the disk B is provided on its periphery with a scraper, J, and on its outer side with a radial or side scraper, J', which sweep both sides of the angular recess *j*, and keep the same clear.

K represents one or more radial slots formed through the disk D, in the recess *j*, for the purpose of forming an outlet or outlets for the detached material. Each slot is preferably provided with a knife, K, similar to a planer-knife, for facilitating the removal of the material.

The ring I revolves in a recess, *l*, formed in the inner side of the annular plate G. The ring I is provided on its outer face with a peripheral scraper, L, and on its outer side with a radial or side scraper, L', for clearing the recess *l*.

The plate G is provided with one or more radial slots, *m*, in the recess *l*, through which the detached material passes outward, and these slots are provided with knives *m'*, as above described. The plate G is provided on the inner side of the recess *l* with a scraper, L<sup>2</sup>, which clears the inner cylindrical face of the ring I from any adhering material.

The ring G' revolves in a recess, *n*, formed in the inner face of the disk D, and is provided with a peripheral scraper, N, and an outer radial or side scraper, N'. The disk D is provided with one or more slots, *o*, armed with knives *o'*, and the inner side of the recess is provided with a scraper, N<sup>2</sup>.

The ring I' revolves on

the outer side of the annular plate G, and its inner cylindrical face is kept clear by a scraper, P, secured to the periphery of the annular plate G.

- 5 Q represents a stationary scraper secured to the side plate, e, of the casing and extending along the inner cylindrical face of the annular plate G.

R represents a scraper secured to the inner  
10 side of the side plate, e, of the casing, for the purpose of keeping the outer or rear sides of the annular plate G and ring I' clear of material. This scraper extends from the inner edge of the plate G to the outer edge of the  
15 ring I', and is preferably arranged at an angle to the radial line, so as to deflect the detached material downwardly. S is a similar scraper secured to the inner side of the side plate, e,  
20 for the purpose of clearing the back or outer side of the disk D of accumulated material. These scrapers and outlets keep the revolving disks and rings free of adhering material, and prevent the machine from being thrown out  
25 of balance, thereby insuring a quiet and steady running of the machine.

I claim as my invention—

1. In a disintegrator, the combination, with the beaters or pins and their revolving supports, of a scraper attached to one of said supports and sweeping the other support, sub-  
30 stantially as set forth.

2. In a disintegrator, the combination, with the beaters or pins and their supports revolving in opposite directions, of scrapers each se-  
35 cured to one of said supports and sweeping the opposite support, substantially as set forth.

3. In a disintegrator, the combination, with the beaters or pins, of revolving supports, to which the pins or beaters are secured, and a  
40 scraper secured to one of said supports to sweep the other support, which is provided with an outlet for the detached material, sub-  
stantially as set forth.

4. In a disintegrator, the combination, with  
45 the beaters or pins and their revolving supports, of a scraper secured to one of said supports, and sweeping the other support, an outlet for the detached material formed in the other support, and a knife secured in said out-  
50 let, substantially as set forth.

5. In a disintegrator, the combination, with the disk B, provided with a scraper, J', of a

disk, D, provided with an opening, k, substan-  
tially as set forth.

6. In a disintegrator, the combination, with  
55 the disk B, provided with a scraper, J', of the disk D, provided with an opening, k, and a knife, K, secured in said opening, substan-  
tially as set forth.

7. The combination, with the disk D, pro-  
60 vided with the pins H, and the ring I, having a scraper, L', of the annular plate G, provided with an opening, m, substantially as set forth.

8. The combination, with the pins or beat-  
65 ers and their revolving supports, of a radial or side scraper, and a peripheral scraper secured to one of said supports, and sweeping the other support, substantially as set forth.

9. In a disintegrator, the combination, with  
70 the disk D, provided with a recess, j, or the disk B, provided with a peripheral scraper, J, and a side scraper, J', substantially as set forth.

10. In a disintegrator, the combination, with  
75 the ring I, provided with a peripheral scraper, L, and a side scraper, L', of the annular plate G, provided with a recess, l, and a scraper, L<sup>2</sup>, secured in the inner face of said recess, sub-  
stantially as set forth.

11. In a disintegrator, the combination, with  
80 the disk D, provided with a recess, n, carrying a scraper, N<sup>2</sup>, of a ring, G', provided with a peripheral scraper, N, and a side scraper, N', substantially as set forth.

12. In a disintegrator, the combination, with  
85 the disk D, pins H', and ring I', of the annular plate G, provided with a peripheral scraper, P, sweeping the inner cylindrical side of the ring I', substantially as set forth.

13. In a disintegrator, the combination, with  
90 the casing E and the disk D, of a scraper, S, secured to the casing, and sweeping the back of the disk D, substantially as set forth.

14. In a disintegrator, the combination, with  
95 the casing E and the annular plate G, of a scraper, R, secured to the casing, and sweeping the back of the plate G, substantially as set forth.

Witness my hand this 14th day of April,  
1886.

J. C. SCHUMAN.

Witnesses:

WM. H. CARR,  
AUSTIN TYLER.