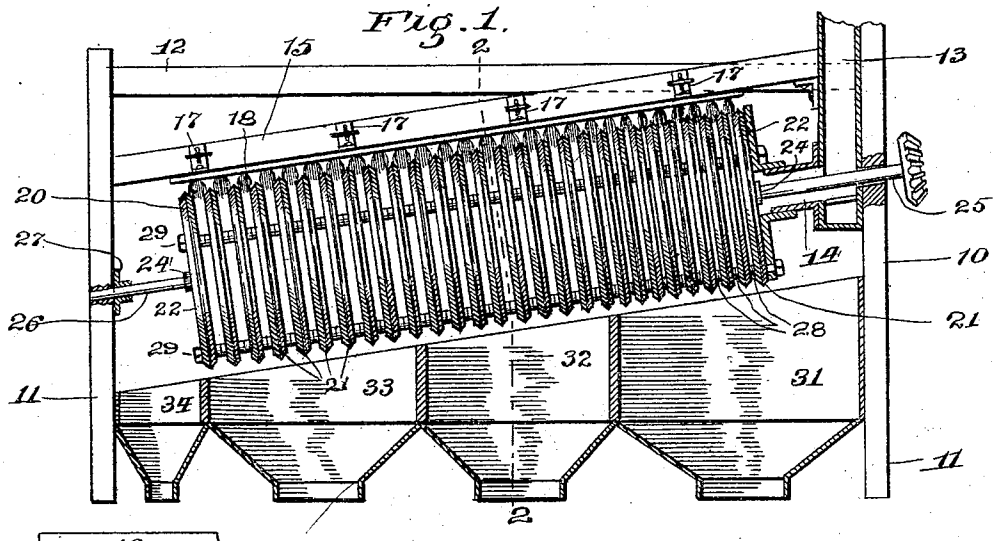
No. 855,981. PATENTED JUNE 4, 1907.

G. H. RICH.

GRAIN GRADER.

APPLICATION FILED SEPT. 24, 1906.

Fig. 1.



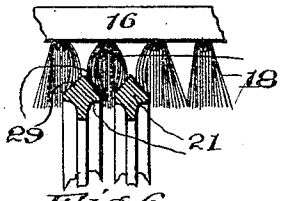


Fig. 6.

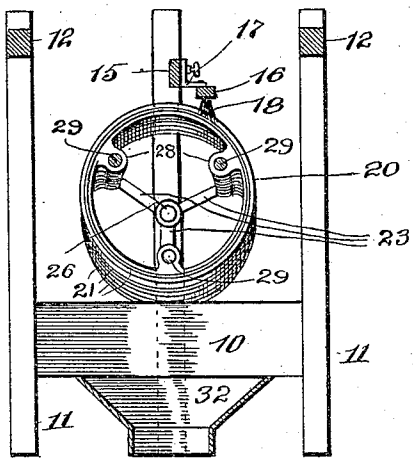


Fig. 2.

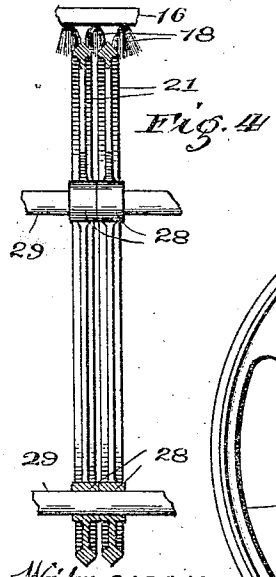


Fig. 4

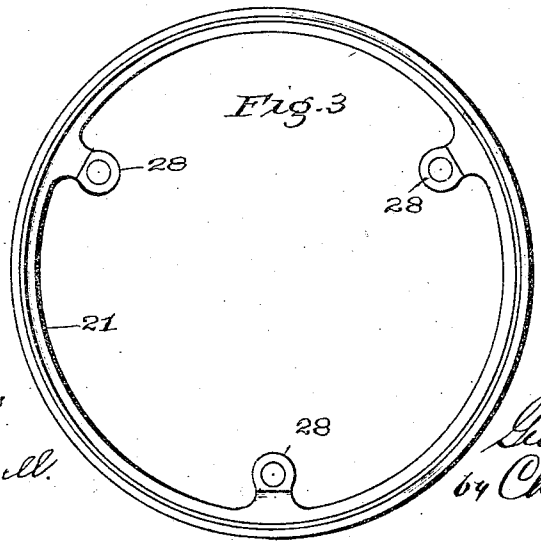


Fig. 3

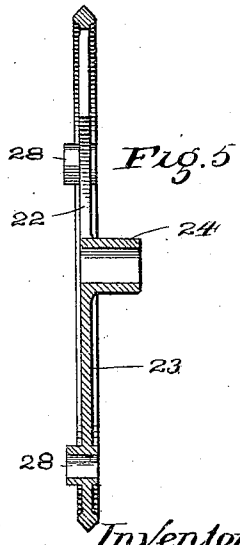


Fig. 5

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GEORGE H. RICH, OF CHICAGO, ILLINOIS.

GRAIN-GRADER.

No. 855,981. Specification of Letters Patent. Patented June 4, 1907.

Application filed September 24, 1906. Serial No. 335,853.

To all whom it may concern:

Be it known that I, GEORGE H. RICH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Grain-Graders, of which the following is a full, clear, and exact description.

My invention relates to certain new and useful improvements in grain graders, its object being to improve the operation of machines of this class by providing means whereby the slots in the periphery of the cylinder may be kept free and unobstructed in order that the material which is to be graded may escape through the openings in the cylinder.

In the ordinary construction of grading cylinders the periphery or outer surface has usually been made in a single curved plane, and a brush mounted adjacent to the cylinder so that its bristles come in contact with the surface of the cylinder has been employed to brush back into the cylinder grain which might lodge in the slots and become fastened. It has been found that very frequently a brush was inadequate and a board or scraper was added which pressed upon the surface of the cylinder and forced back the grain which became lodged in the slots. With constructions of this kind it frequently happens that the grain is crushed or oftentimes wedged still more firmly in the slots and thereby clogging up the cylinder.

It is the aim of my invention to provide a cylinder in which the slots themselves are so formed that the bristles of the brushes will thereby be crowded into the slots so that any grain which may become lodged therein will be brushed back into the cylinder without danger of crushing the same.

To such end my invention consists in certain novel features of construction and arrangement, a description whereof will be found in the following specification, and the essential features thereof more definitely pointed out in the claims appended thereto.

The invention is clearly illustrated by drawings furnished herewith, in which

Figure 1 is a view of my grain grader, partly in side elevation and partly in central vertical longitudinal section. Fig. 2 is a vertical cross section taken on the line 2—2 of Fig. 1. Fig. 3 is a detail side view of one of the cylinder rings. Fig. 4 is a detail vertical section of two adjacent rings and showing a brush in its relation therewith. Fig. 5 is a similar view of an end ring, and Fig. 6 is an enlarged fragmental sectional view of two adjacent rings and the brush.

Referring to these drawings, 10 represents the frame work of an ordinary grain grader, such frame work comprising in general vertical supporting standards 11 and horizontal connecting members 12, the same providing a substantial frame work. A chute 13 is secured to the frame work in any suitable manner and contains an extension 14 which directs the grain into the grading cylinder 20. As shown, the grading cylinder is made up of a number of rings 21 placed side by side and separated by suitable spaces and bolted together. The end rings 22 differ from the intermediate rings in that they contain spokes 23 extending from the rim to the center of the ring, where they are provided with hubs 24 in which are secured shafts 25, 26, that are journaled in bearings 27 supported upon the frame 10. The shaft 25 is driven by any suitable mechanism, which not being important to this invention has not been illustrated.

Each of the rings is formed with inwardly projecting ears 28 that are somewhat wider than the width of the rings and furnish means both for spacing the rings apart and for connecting the rings together, bolts 29 being passed through said ears to connect them together. Below the grading cylinder are supported a number of hoppers 31, 32, 33, 34, into which the graded grain falls as the cylinder is rotated, and the grain may be conveyed away from the various hoppers by suitable chutes (not shown in the drawing). The cylinder extends at a slight inclination to the horizontal so that the grain may be gradually fed from the upper end of the cylinder to the lower end, and the rings near the upper end of the cylinder are placed closer together than the ones at the lower end so that the small grain will fall through the cylinder and into the hopper 31, while the larger grain will fall out through the large openings in the cylinder and into the respective hoppers. A longitudinally extending bar 15 is supported upon the frame work and lies directly above the cylinder 20 and supports a brush or brushes 16 by means of suitable brackets 17. The bristles 18 of the brushes press upon the surface of the cylinder and are intended to brush back into the cylinder any grain which becomes accidentally lodged between the adjacent rim of the rings.

So much of the invention is old and well known, but to facilitate the cleaning of the cylinder, I have constructed the rings 21 in a peculiar manner so that the bristles of the brush will be crowded in between the rings and into the slots, thereby compacting the brushes in the slots and insuring the perfect cleaning of the cylinders. This I accomplish by constructing the periphery of each ring in the form of a ridge or annular wedge so as to leave channels between the adjacent rings, having inclined outwardly flaring sides 29′ as clearly indicated in Fig. 6. By reason of these inclined faces the bristles of the brushes are crowded down into the narrowest portion of the channel between the adjacent rings, thus compacting the bristles at this point and causing them to travel through the narrow or the most restricted portion of the slot or space between the adjacent rings. It will be perfectly obvious when this occurs that any grain such as oats, wheat, barley or the like, which has become lodged in the slots, will be forced back into the cylinder without the danger of crushing. In a cylinder with rings whose peripheries are flat in cross section and set close together, very few of the bristles of the brush extend into the slots between the rings, while most of the bristles lie on the outer surface thereof and perform no useful function; while with the present device practically all of the bristles are crowded down and into the most restricted part of the slots.

To facilitate the action of the inclined faces 29′ upon the brush I have supported the rings upon the rods 29, by means of the ears 28 that extend in toward the center of the ring thus providing means whereby the entire slot or channel between the rings is unobstructed from end to end. The collection of particles which is ordinarily caused where the slots are obstructed in any manner, is thus avoided and the unobstruction of the slots makes it possible for the brush, when crowded down to the bottom of the slots by the inclined faces to keep the slots perfectly clear and thus insure the perfect operation of the mechanism.

I have found in practice that with a device of this kind the slots in the cylinder are kept free with greater ease, and consequently a more perfect separation or grading of the grain is obtained.

I claim as new and desire to secure by Letters Patent:

1. In a grain grader, the combination with a cylinder comprising a series of separating rings, having **V**-shaped rims and inwardly extending spacing lugs, and connecting rods extending through said lugs, of a brush mounted adjacent to the cylinder and having its bristles crowded down through the slots between the rings by the inclined exterior faces thereof.

2. In a grain grader the combination with a cylinder, comprising a series of separating rings having **V**-shaped rims and unobstructed channels between the rim portions, of means for connecting the rings together and a suitably mounted brush, the bristles of which are crowded down into the unobstructed channels by the inclined faces of the ring portions.

GEORGE H. RICH.

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