June 27, 1933. L. H. GROSECLOSE 1,916,047

ROTARY GRAINARY STORAGE AND DRIER

Filed May 18, 1931 2 Sheets-Sheet 1

Fig. 1.

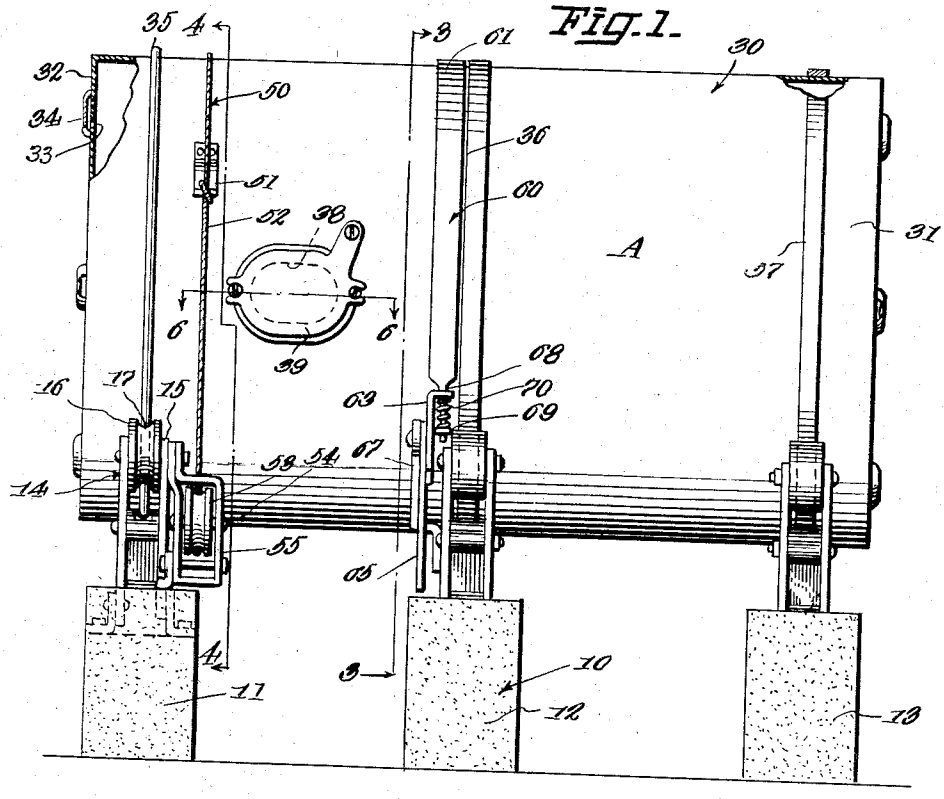
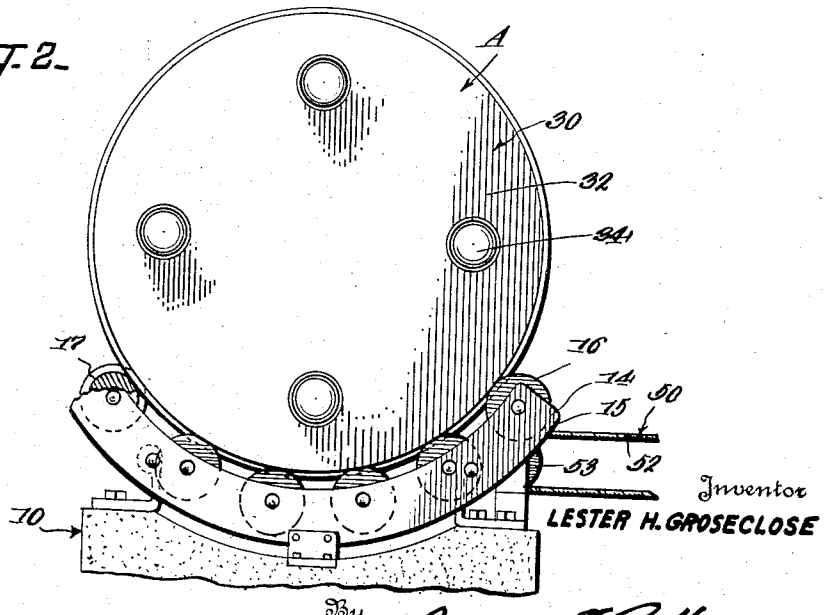


Fig. 2.



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Fig. 3.

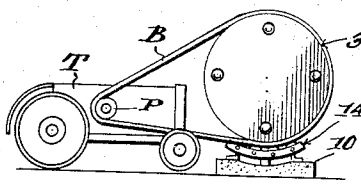


Fig. 7.

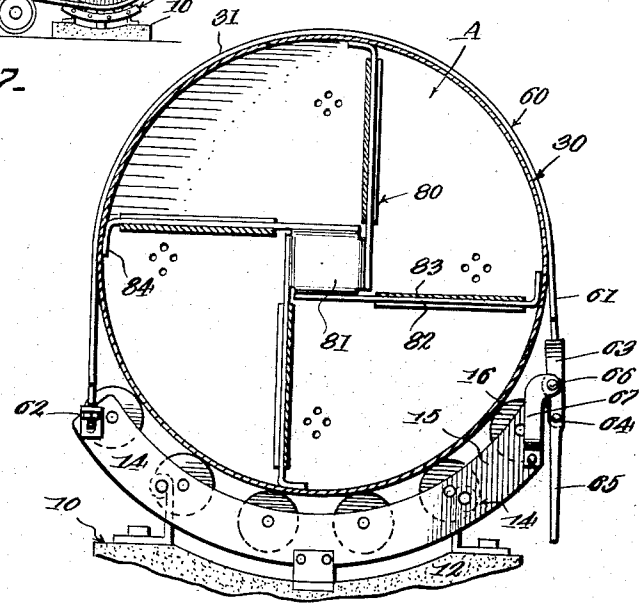


Fig. 5.

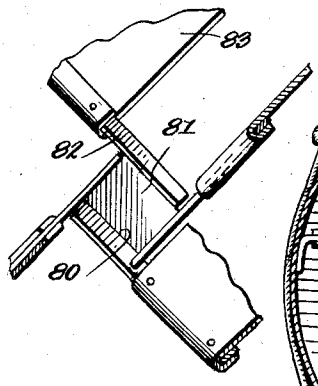
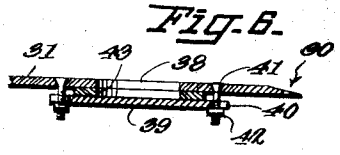


Fig. 4.

Fig. 6.



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UNITED STATES PATENT OFFICE

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ROTARY GRAINARY STORAGE AND DRIER

Application filed May 18, 1931. Serial No. 538,333.

This invention appertains to the handling of grain and more particularly to a novel grain bin or elevator.

One of the primary objects of my invention is the provision of a novel device for receiving and storing grain, so arranged and constructed, that the grain can be readily agitated at the desired times to prevent spoiling of the grain.

Another salient object of my invention is to provide a rotary grain bin with means for oscillating the bin and with means located inside of the bin for agitating the grain, the entire device forming an efficient means for initially aerating and drying the grain as the same is placed within the bin.

A further important object of my invention is the provision of novel means for mounting the bin on the base, whereby the bin can be readily turned, and at the same time efficiently supported, with novel means connected directly to the bin for permitting the turning of the bin first in one direction and then in the opposite direction.

A further important object of my invention is the provision of novel means associated with the base for engaging and holding the bin against accidental turning movement after the grain has been dried and agitated.

A further important object of my invention is the provision of a novel stirrer arranged within the bin for facilitating the agitating of the grain during the turning of the bin.

A still further object of my invention is to provide an improved grain drier and agitator of the above character, which will be durable and efficient in use, one that will be simple and easy to manufacture, and one which can be placed upon the market at a reasonable cost, whereby the same can be readily used and purchased by relatively small grain men who cannot afford large expensive elevators.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed, and illustrated in the accompanying drawings, in which drawings:—

Figure 1 is a side elevation of my improved device, showing parts thereof broken away and in section.

Figure 2 is a fragmentary end elevation of my improved device.

Figure 3 is a transverse section through the same taken on the line 3—3 of Figure 1 looking in the direction of the arrows illustrating the brake band for holding the bin against accidental turning movement.

Figure 4 is a transverse section through the improved device taken on the line 4—4 of Figure 1 looking in the direction of the arrows illustrating the means for rotating the bin first in one direction and then in the opposite direction.

Figure 5 is an enlarged fragmentary detail view illustrating the construction of the stirrer arranged within the bin.

Figure 6 is an enlarged detail section taken on the line 6—6 of Figure 1 looking in the direction of the arrows showing the removable hand hole plate.

Figure 7 is a side elevation of a modified form of the invention wherein the bin is rotated through the medium of a belt cooperating with a tractor.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates my improved device, which comprises a suitable supporting base 10, a novel bin structure 30, a means 50 for rotating the bin, a means 60 for holding the bin against movement, and a means 80 for stirring the grain during the rotation of the bin.

The base can be constructed in any desired way, but I prefer to provide equi-distantly spaced transversely extending supporting blocks or columns 11, 12, and 13, which can be formed of concrete or other cementitious material, if desired. The upper faces of these blocks 11, 12, and 13 have anchored or otherwise secured thereto transversely extending arcuate cradle supports 14, and each of these arcuate cradle supports may include a pair of spaced arcuate metallic plates 15. Rotatably mounted between the plates 14 are anti-friction supporting

rollers 16, which are also arranged in an arc of a circle. The set of rollers 16 carried by the block 11 have their peripheries provided with grooves 17, for a purpose, which will be later set forth. It is to be noted that the other sets of rollers carried by the blocks 12 and 13 have their peripheries plain and smooth.

The bin 30 is of a novel construction and includes a cylindrical outer side wall 31, closed by end heads 32, one of which can be made removable, if so desired. Each of these heads 32 are provided with sets of ventilating openings 33 which are covered by suitable protecting plates 34, so as to prevent the direct entrance of the elements into the bin or cylinder. One end of the bin is provided with an annular circumferentially extending rim 35, and this rib is received in the grooves 17 of the first set of rollers 16 as clearly shown in Figures 1 and 2. This prevents longitudinal shifting movement of the bin or cylinder on the base. The bin likewise, at spaced points, is provided with annular wear tracks 36 and 37, which are adapted to be engaged by the other two sets of rollers.

The bin is provided at its side wall 31 with a hand hole 38, which is closed by a suitable plate 39. As disclosed in Figure 6 of the drawings the plate 39 at its opposite ends can be provided with pairs of spaced ears 40 for receiving therebetween the holding stud bolts 41, and these bolts have threaded thereon nuts 42 for impinging against the plate 39 for firmly securing the plate in position. If desired, a gasket 43 can be interposed between the side wall 31 of the bin and the closure plate 39. The provision of the plate 39 forms an efficient means for permitting the introduction of the grain within the cylinder or bin and also the efficient withdrawal of the grain from the bin.

When it is desired to move the grain from the bin, the plate 39 is removed and the cylinder is rotated so as to position the hand hole 38 lowermost, and suitable receptacles can be placed below the bin to receive the grain as the same pours out of the said opening.

From the description so far, it can be seen that I have provided a cylindrical grain bin mounted upon a base for free turning movement in either direction.

In conjunction with my device I employ a novel means for first turning the bin in one direction and then turning the bin in the opposite direction and this means, as stated, is generally indicated by the reference character 50.

This means 50 includes a bracket 51, rigidly secured to the outer face of the side wall 31 of the bin 50 and connected to this bracket intermediate its ends is a suitable rope or flexible cable 52. This cable is brought around the opposite sides of the bin and over the opposite sides of an idle pulley wheel 53, which is rotatably mounted upon a suitable pivot pin 54 carried by a pulley bracket or casting 55. This pulley bracket or casting 55 is rigidly secured to one of the plates 15, carried by the first block 11 of the base 10. The free ends of the rope 52 are brought outward from my improved device and by first pulling on one end of the cable and then on the other, the bin can be first turned in one direction and then reversely turned in the other direction. I can, of course, employ any desired type or mechanism for pulling on the ends of the cable at desired times.

I provide the means 60 for holding the bin against accidental turning movement and this means 60 embodies a brake band 61, which partially encircles the side wall 31 of the bin 30. One end of this brake band can be anchored to a suitable bracket 62 carried by the arcuate support 14 of the intermediate block 12 of the base. The opposite end of the brank band 61 is connected with a bracket 63, and this bracket 63 is rockably mounted at its lower end as at 64 on an operating lever 65. As shown, the bracket 63 is pivotally connected to the operating lever 65 intermediate the ends of the lever and the inner end of the lever is rockably mounted on a pivot pin 66 carried by a bracket 67 which can be rigidly secured to the arcuate support 14 carried by the intermediate block 12. It is obvious that by manipulating the lever 65 that the brake band can be tightened or loosened around the bin 30 for holding the same turning movement. I prefer to have one end of the brake band reduced as at 68 and passed through the arc of the bracket 63 and have a suitable adjusting nut or the like 69 threaded on this reduced portion, with an expansion spring 70 coiled about the reduced portion and disposed between the arm of the bracket 63 and the nut 69.

Arranged within the cylinder or bin 30 is the novel stirrer 80, which forms an important part of my invention. This stirrer is mounted within the bin or cylinder so as to efficiently act against the grain and the stirrer embodies end axially disposed hub plates 81, having connected thereto the outwardly extending arms 82. These arms 82 are connected together by the longitudinally extending agitating blades 83.

As shown, the ends of the arms 82 are provided with laterally disposed feet 84 for engaging the inner face of the side wall 31 of the bin 30, so that the stirrer at all times can be held centrally within the bin, and securely fastened thereto by means of rivets.

It is obvious that I have provided a device in which grain can be readily stored and that by rotating the bin first in one direction and then in the opposite direction, that the grain will be effectively aerated and dried.

By considering Figure 7 it will be seen that a modified form of the invention is illustrated wherein a tractor T is illustrated having a driving pulley P over which a belt B passes, the belt B also passes around the exterior of the bin 30 for the purpose of driving the bin in a proper rotary motion. The belt B may pass around the bin 30 at any desired or convenient point without interfering with the other equipment of the bin.

Changes in details may be made without departing from the spirit or the scope of this invention, but:—

What I claim as new is:

1. A grain storage bin and drier comprising a cradle-like base having a plurality of supporting rollers mounted within the length thereof, a cylinder for receiving grain rotatably mounted upon said rollers, means engaging the cylinder intermediate the ends thereof for turning the cylinder first in one direction and then in the opposite direction on said rollers, a releasable band fixedly secured to one end of said cradle and extending vertically and then over the top of said cylinder, and a yieldable operating means connected to the opposite end of said releasable band for facilitating the gripping of said band upon the exterior of said cylinder to permit said band to constitute an efficient braking means, and said yieldable operating means being adapted to absorb the shock due to the sudden application of the band in engagement with said cylinder.

2. A grain storage bin and drier comprising a base consisting of a substantially cradle-like structure having a plurality of supporting rollers mounted within the length thereof, a cylinder for receiving grain rotatably mounted upon said rollers, the length of said cradle-like base extending transversely of said cylinder, a brake band anchored to one end of said cradle in spaced relation to the exterior of said cylinder and extending in a vertical direction and also extending over and around the top of said cylinder, a bracket carried by the opposite end of said cradle having an outturned end, an operating lever pivotally secured to said outturned end whereby said lever may normally hang in a vertical position, said lever having a bent terminal, said band having a reduced extension at one end passing through said terminal of said lever, an expansion spring carried by said reduced extension and engaging said terminal for yieldably connecting said reduced extension with said terminal, and an adjusting nut carried by said reduced extension for facilitating the adjustment of the tension of said spring, said lever and connecting means with said brake band constituting a shock absorbing medium for the purpose of absorbing the shock due to the sudden application of the brake band to the rotatable cylinder when applied by an operator swinging said operating lever upon its pivot.

3. A grain storage bin and drier comprising a base, a grain-receiving cylinder rotatably mounted upon the base, agitating means arranged within the cylinder, and means engaging said cylinder for turning the same first in one direction and then in the opposite direction, including a bracket having an offset terminal arranged in spaced relation to said cylinder and located to one side of the vertical axis of said cylinder, a flexible cable secured intermediate its ends to said bracket and extending around said cylinder in opposite directions, and an idle pulley secured to said base and mounted to extend partially under said cylinder and in close proximity thereto for receiving said cables and causing the same to produce a maximum gripping action around the exterior of said cylinder.

In testimony whereof I affix my signature.

LESTER H. GROSECLOSE.