DEVICE FOR SEPARATING COCKLE FROM GRAIN.
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To all whom it may concern:

Be it known that I, JOHN AUGUST EKLUND, a citizen of the United States, residing at Verndale, in the county of Wadena and State of Minnesota, have invented a certain new and useful Device for Separating Cockle from Grain, of which the following is a specification.

The objects of my invention are to provide a machine for separating cockle and other foreign substances of a similar nature from wheat and other grains by simply feeding the grain and the foreign substances, which are of necessity mixed in threshing, into the machine, which will allow the grain to pass into one receptacle and will cause the foreign material to be transmitted into other receptacles.

A further object is to provide a feeding-hopper the opening in which through which the grain passes is easily controlled from the exterior of the hopper.

A further object is to provide rollers bearing an adhesive material, such as rubber, which coact with each other and allow the grain and cockle to pass between them in such a way that the grain will be allowed to fall from between them, as it will not adhere to the adhesive material of the kind used, while the cockle and other similar foreign substances will adhere by the pressure which is brought to bear upon them by the rollers and will be carried to a point of discharge which is outside of the point where the grain is discharged from the rollers, and this cockle will be at its point of discharge be scraped by a brush or other scraping mechanism from the rollers and be allowed to drop into a chamber or chambers separate and apart from the chamber for receiving the grain. By this method of operation the difficulty which has been experienced in separating the cockle, which is so prevalent in various parts of the United States, from the grain will be obviated to a very large extent, and the grain which is passed between the rollers of my device will be almost entirely free from such substances as cockle.

A further object is to provide a machine of this class which can be driven either by hand or by power transmitted to it from an engine.

My invention consists in certain details in the construction, arrangement, and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a rear elevation of the upper portion of my device, showing the exterior of the hoppers and the adjustable features for use in connection with the brushes and with one of the rollers. Fig. 2 is a plan view of the device. Fig. 3 is a vertical sectional view showing the operation of separating cockle from the grain, and Fig. 4 is a front elevation of the device.

Referring to the accompanying drawings, I have used the reference-numeral 10 to indicate the rear end of the frame, the numeral 11 to represent the front end of the frame, and the numerals 12 and 13 to represent the sides of the frame, and the numeral 14 the bottom of the frame. This frame as thus constructed forms a box which is divided into three compartments—the wheat-receiving compartment 15 and the two cockle-receiving compartments 16 and 17. The wheat-receiving compartment 15 is separated from the cockle-receiving compartments 16 and 17, respectively, by the partitions 18 and 19, which partitions are substantially parallel with each other and inclined toward each other at their upper ends to form the inclined portions 20 and 21, as shown clearly in Fig. 3 of the drawings. The frame above described may be made of any desirable size or shape and it may be made with simply one compartment, so that the wheat may be saved and the cockle which is separated from it by my device can be accumulated in a pile at the exterior of the wheat-compartment, or it may be constructed in any other desirable way, so long as the separation of the cockle from the grain is accomplished and the grain is preserved.

Mounted on top of and extending longitudinally of the frame and rotatably mounted in the supports 22 and 23 is the shaft 24, having mounted thereon the roller 25, made of wood or other substance and having rubber or other adhesive material 26 encircling it, thus forming what, for the sake of convenience, I shall term an "adhesive roller." Whenever the adhesive roller 25 is referred to, it is used to designate the shaft 24, the roller 25, and the adhesive material 26 combined.

In each of the supports 22 and 23 I have provided a slot 27, and slidingly mounted in these slots 27 and extending longitudinally of
the frame and outside the adhesive roller 25 is the brush-holder 28, having bristles 29 extending from the brush-holder into engagement with the adhesive material 26 of the roller 25. Extending through each end of the brush-holder 28 and through the ends 30 of each of the supports 22 and 23 is a screw 31, each of which has mounted on it the nuts 32 and 33, so arranged and constructed that by adjusting these nuts 32 and 33 the brush may be adjusted relative to the roller with which it is designed to coact in operation. At the opposite ends of the supports 22 and 23 from the openings 27 are the openings 34.

Slidingly mounted in each of these openings is a block 35. Extending longitudinally of the frame and having its ends mounted in the blocks 35 is the shaft 36. Mounted on the shaft 36 is a roller 37, which is encircled by a rubber or other adhesive material 38. For the sake of convenience when I refer to the adhesive roller 37 I mean the roller 37, the shaft 36, and the adhesive material 38 combined.

By mounting the adhesive roller 37 in the blocks 35 this adhesive roller 37 may be moved toward or away from the adhesive roller 25 by adjusting the screws 38, which enter the blocks 35 and pass through the ends 39 of the supports 22 and 23. Extending longitudinally of the frame and entering the slots 34 in the supports 22 and 23 is the brush-holder 40, having the bristles 41 extending inwardly from it into engagement with the adhesive roller 37. The screw 38 passes through the brush-holder 40, and I have provided nuts 41* and 42 outside of the brush-holder, so as to adjust it toward or away from the adhesive roller.

On one end of the shaft 24 and outside of the support 22 is the gear 43. Mounted on the shaft 36 and outside of the support 22 is the gear 44 in mesh with the gear 43, so that as the gear 44 is driven to drive the adhesive roller 25 the gear 43 will be driven to drive the adhesive roller 43 in the opposite direction. Mounted on the shaft 36 and outside of the gear 44 is a pulley 45, over which a belt 46 passes, which drives the shaft 36, and hence drives the adhesive rollers 25 and 37.

In this connection it might be said that a hand-wheel may be used in place of the pulley 45 with good results.

Mounted above the adhesive rollers 25 and 37 is a hopper 46, having the inclined bottom 47 therein and an opening 48, leading from the lower portion of the inclined bottom to a point above the point of contact between the adhesive rollers 25 and 37. This hopper is supported from the frame by means of a number of supports 49. I have provided a slide 50 for controlling the opening 48, which slide is designed to be operated by a rod 51, attached to it, which rod in turn is attached to the lower end of a pivotally-mounted lever 52. This lever 52 is held in position by the ordinary rack 53 and a hand-lever-actuated pawl connected with the lever 52 and designed to coact with the teeth in the rack 53 in maintaining the lever in various positions to regulate the amount of flow of grain and foreign material through the opening 48.

Leading through the front 11 of the frame into the wheat-chamber 15 is an opening which is controlled by a slide 54. Leading through the front 11 of the frame and into the refuse or cockle chambers 16 and 17 are openings which are controlled by the slides 55 and 56, so that easy access may be had to the interior of these chambers to remove the wheat and foreign substances. A chute or other mechanism would convey the wheat and refuse from the chambers may be provided, so that these materials will be carried to another point of discharge, if desirable.

In practical operation, and assuming that the parts are assembled as above described, and that the adhesive rollers are being rotated in such a way that the material fed to them will be forced downwardly and between the rollers and that the slide 50 is placed in the desired position, the operator pours the grain, in which there are considerable cockle and other similar substances, into the hopper 46, so that this grain will be fed through the opening 48 and to the adhesive rollers 25 and 37. The grain will pass between these rollers and into the grain-chamber 15, which is immediately beneath the point of contact between the rollers, owing to the fact that the grain will not adhere to the rollers as it passes between them. The cockle, however, when it passes between the rollers will be forced into the adhesive material slightly and, owing to the nature of it, will be retained by the adhesive material and carried by the opening leading into the wheat-chamber, as shown clearly in Fig. 3, around to the brushes at the exterior of the rollers, where these brushes will remove the cockles from the adhesive material and will cause the cockle to be forced downwardly into the chambers 16 and 17, as also shown clearly in Fig. 3. In this way the cockle and other foreign substances of a similar nature will be separated from the grain thoroughly, and when it is desired to remove the grain or the cockle from the chambers in which it is deposited it can be easily done in the manner heretofore mentioned.

I claim—

1. In a device of the class described, the combination of a supporting-frame, bars, at each end of the frame, provided with slots 27 and 34, an adhesive roller mounted between the said bars, a brush-holder movable in the slots 27 of the bars, screws extending through the ends of the bars and the said holder, nuts mounted on the screws, at the inner sides of the outer end walls of the slots 27, blocks...
movable in the slots 34 of the bars, an adhesive roller mounted in said blocks, a brush-holder also movable in said slots 34, screws extending through the outer end walls of the slots 34 and the brush-holder and connected to the blocks, nuts mounted on said screws at the outer side of the brush-holder, and other nuts mounted on the screws and disposed at the inner sides of the outer end walls of the slots 34.

2. A device of the class described, comprising a supporting-frame, a hopper having an inclined bottom and a discharge-opening leading from the lower portion of the inclined bottom, a slide for controlling the said discharge-opening, a lever fulcrumed at an intermediate point of its length on the hopper, a rod connecting the slide and the lower arm of the lever, a segmental rack fixed on the hopper, means on the upper arm of the lever for engaging said rack, bars, at each end of the supporting-frame, provided with slots 27 and 34, an adhesive roller mounted between the said bars, a brush-holder movable in the slots 27 of the bars, screws extending through the ends of the bars and the said holder, nuts mounted on the screws, at the inner sides of the outer end walls of the slots 27, blocks movable in the slots 34 of the bars, an adhesive roller mounted in said blocks, a brush-holder also movable in said slots 34, screws extending through the outer end walls of the slots 34 and the brush-holder and connected to the blocks, nuts mounted on said screws at the outer side of the brush-holder, and other nuts mounted on the screws and disposed at the inner sides of the outer end walls of the slots 34.

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Witnesses:
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