No. 610,432. Patented Sept. 6, 1898.

C. E. CULVER.

GRAIN SEPARATING MACHINE.

(Application filed Jan. 11, 1898.)

(No Model.)

Fig 1

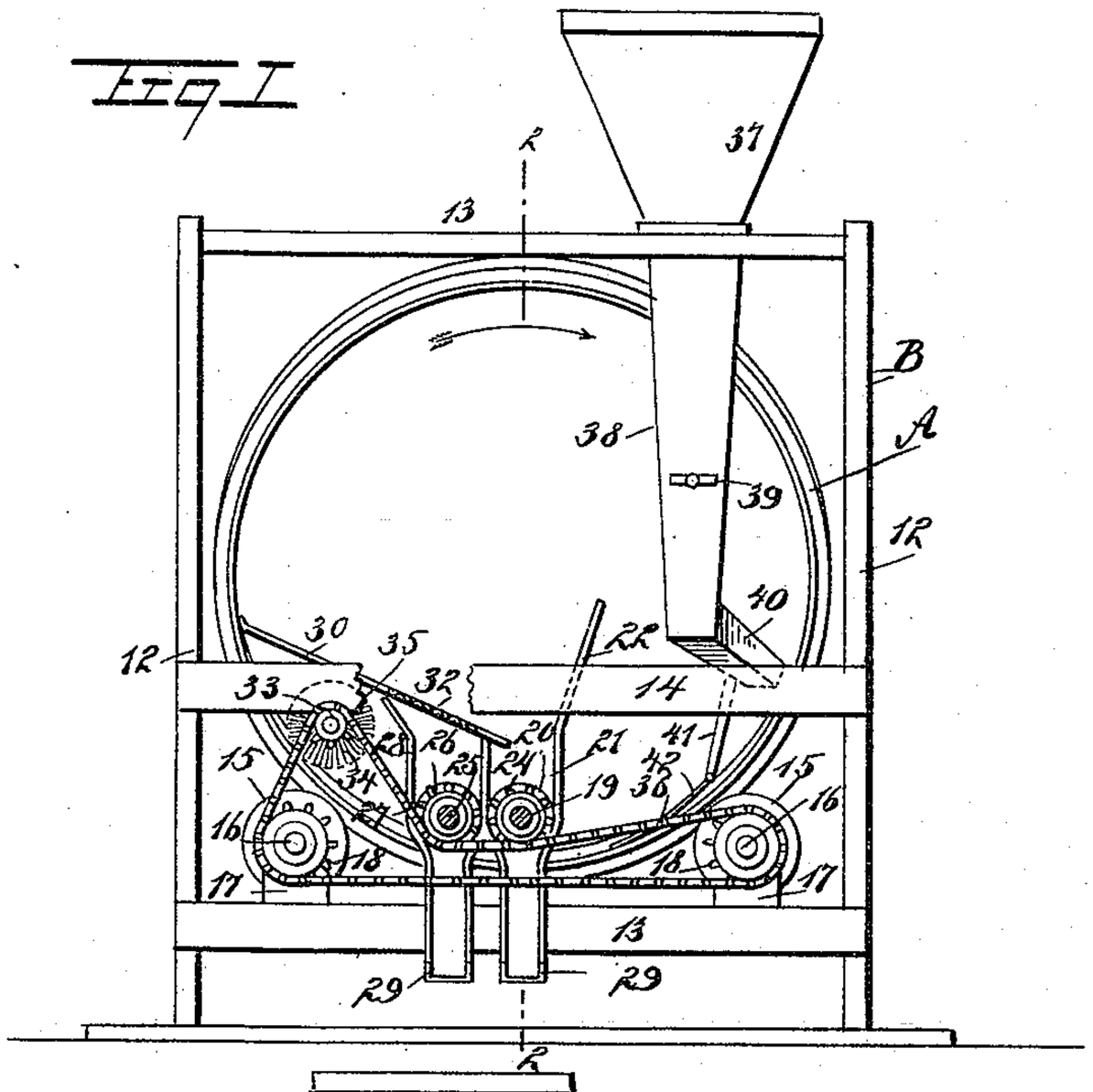


Fig 2

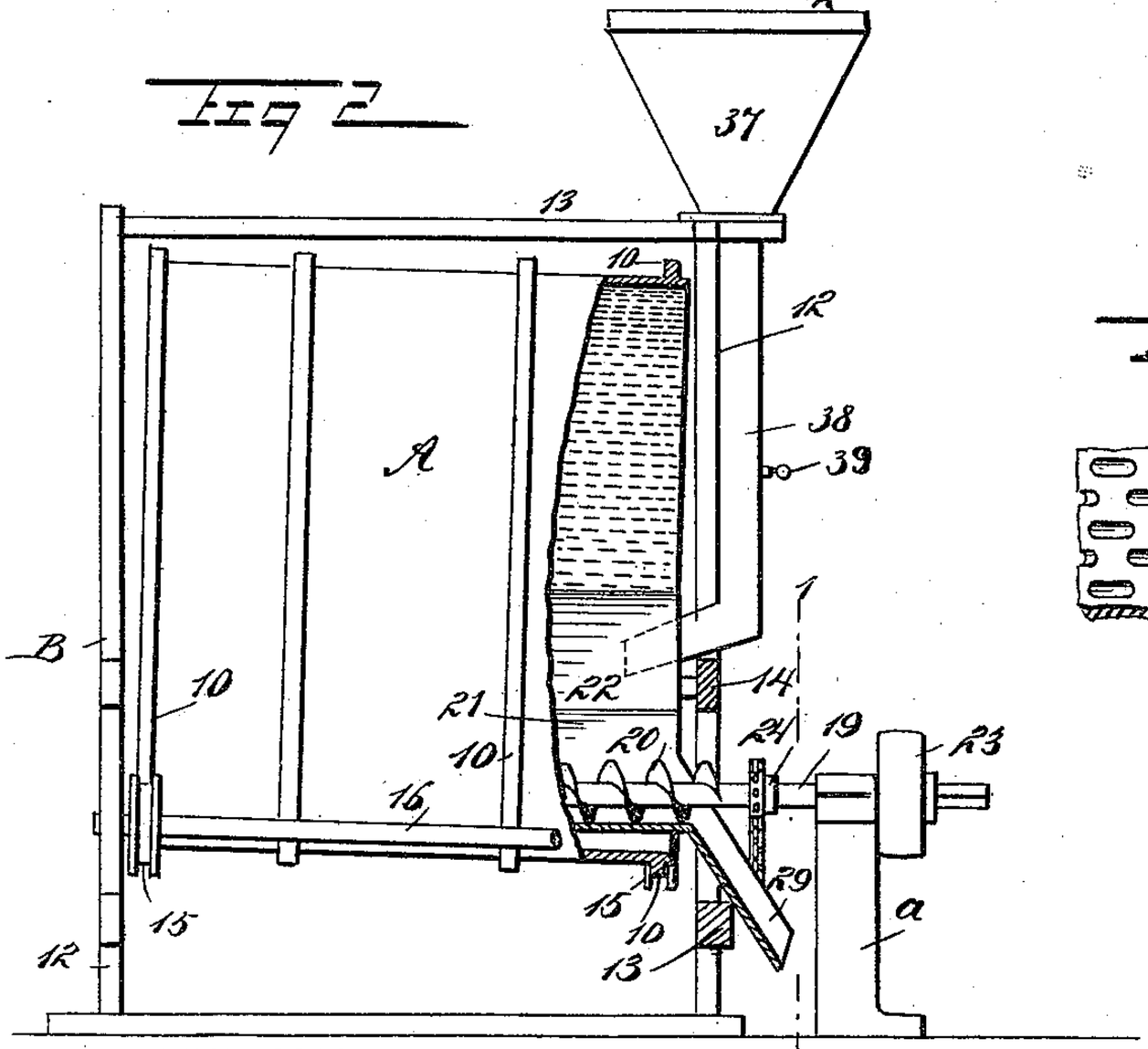
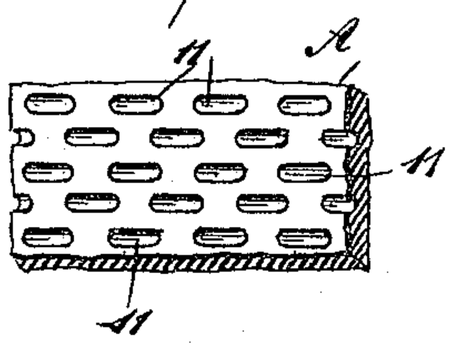


Fig 3



WITNESSES:

H. H. Walker

J. F. de Acker.

INVENTOR

C. E. Culver.

BY Munn & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

CLARENCE E. CULVER, OF CASHTON, WISCONSIN.

GRAIN-SEPARATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 610,432, dated September 6, 1898.

Application filed January 11, 1898. Serial No. 666,282. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE E. CULVER, of Cashton, in the county of Monroe and State of Wisconsin, have invented a new and Improved Grain-Separating Machine, of which the following is a full, clear, and exact description.

The object of my invention is to provide a grain-separating machine by which oats and other lighter seed, together with dust, will be separated from wheat in an efficient and expeditious manner and by which the oat and wheat grains or kernels will be separately discharged from the machine and other smaller or lighter seed, together with the dust, will be discharged separately from the oat or wheat grains.

A further object of the invention is to construct a machine of the character above set forth which will be exceedingly simple, durable, and economic in its construction, providing for a thorough separation of oat, barley, or other desirable seed from the wheat and likewise acting to clean the wheat.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of the machine, parts being broken away and parts being in section, the section being taken on the line 1 1 of Fig. 2. Fig. 2 is a side elevation of the machine, partially in section, the section being on the line 2 2 of Fig. 1; and Fig. 3 is an inner face view of a portion of the cylinder.

The cylinder A is preferably open at both ends and is provided with exterior circumferential ribs 10, located usually one at each end and others between the ends. The inner face of the cylinder is provided, as shown in Fig. 3, with a series of indentations or depressions forming pockets 11, the pockets 11 being of such shape and of such depth as to receive in each a grain or kernel of wheat.

The cylinder is mounted in a frame B. As illustrated, the frame consists of uprights 12, connected by top and bottom cross-bars 13 and intermediate cross-bars 14. The cylinder is supported upon grooved pulleys 15, the pulleys receiving the end ribs 10 of the cylinder, and these pulleys are secured on shafts 16, journaled one at each side of the cylinder, and these shafts are given a forward pitch, whereby the cylinder A inclines downwardly and forwardly, as shown in Fig. 2.

The bearings 17 for the shafts 16 are secured usually upon the lower forward cross-bar 13, while the bearings for the rear ends of the shafts are placed upon a similar and higher cross-bar at the rear of the frame. Each shaft 16 is provided at its forward end with a sprocket-wheel 18, as shown in Fig. 1.

At the central portion of the machine a shaft 19 is carried through the cylinder at a predetermined distance from its lower surface, the shaft 19 being provided with a screw conveyer 20, as is particularly shown in Fig. 2, and this conveyer is of sufficient length to extend from end to end of the cylinder. The conveyer-shaft 19 is carried some distance out beyond the front of the cylinder and is journaled in bearings placed upon a standard *a*, the rear end of the conveyer-shaft being suitably journaled at the rear of the frame B. The pitch of the conveyer-shaft corresponds to the inclination of the cylinder.

The conveyer 20 is held to turn in the bottom portion of the trough 21, and the right-hand side of the said trough 21 is made to extend upward beyond the left-hand side, the extension 22 (shown in both Figs. 1 and 2) being given, preferably, an inclination toward the right. A driving-pulley 23 is secured upon the outer end of the conveyer-shaft 19, and near the outer end of the said conveyer-shaft a sprocket-wheel 24 is firmly secured. At the left-hand side of and parallel with the conveyer-shaft 19 a second shaft 25 is located, being passed likewise through the cylinder from end to end and journaled in bearings attached to the frame or located adjacent to said frame. A conveyer 26, similar to the conveyer 20, is formed upon or secured to the shaft 25, and the conveyer-shaft 25 is provided with a sprocket-wheel 27, preferably of the same size as the sprocket-wheel 24.

The conveyer 26 is located in the bottom

portion of a second trough 28, as shown in Fig. 1, and delivery-spouts 29 are located at the forward end of each of the said troughs. A table 30 is secured to the frame, as shown in Fig. 1, which table extends through the cylinder, and its left-hand end is brought quite close to the inner surface of the cylinder. The table 30 is given a downward and inward inclination, extending entirely across the left-hand trough 28 and partially over the right-hand trough 21. That portion of the table 30 which is carried over the left-hand trough is reticulated or perforated, the openings 32 therein being only sufficiently large to permit the passage through them of dust or small seed or grain, but not large enough to permit the passage of perfect grains of wheat. Therefore it is evident that when wheat mixed with other grain is delivered to the table 30 the grain will travel down the said table and the broken grains of wheat and the small seed, together with the dust, will drop into the left-hand trough 28 and be received by the conveyer in the said trough, while the perfect grains of wheat will slide over the perforated surface of the table and be delivered into the right-hand trough 21 and received by the conveyer in said trough.

A shaft 33 is journaled in the frame below the table 30 and at the left of the left-hand trough 28. A brush 34 is carried by this shaft, the brush extending from end to end of the cylinder, and the said shaft 33 is provided with a sprocket-wheel 35, and a chain belt 36 is passed in engagement with the sprocket-wheels of the conveyer-shafts, the sprocket-wheels of the supporting-shafts of the cylinder, and the sprocket-wheel on the brush-shaft 33, the chain receiving its motion from the conveyer-shaft 19, which is the drive-shaft. The brush 34 serves to separate the oats from the wheat and small grain and serves likewise to separate a great quantity of the dust from the wheat, since the kernels of wheat will find lodgment in the pockets 11 and will be taken up to the table 30, together with any small seed and dust that may likewise find lodgment in said pockets. The cylinder revolves in direction of the arrow shown in Fig. 1, and when the pockets 11 are above the table 30 a slight distance the contents of these pockets will drop out and fall on said table 30, where the separation above spoken of will take place. The oats and any dust that may be mingled with them will be discharged at the front portion of the cylinder, where a suitable chute may be provided to receive the oats.

A hopper 37 is mounted at the top of the frame B, and the hopper is provided with a delivery-spout 38, having a cut-off 39, and the lower or delivery end of the said spout is carried within the cylinder at its right-hand side as far as may be necessary for the proper distribution of the grain on the inner surface of the cylinder.

In order to insure the grains of wheat entering the pockets in the cylinder, a strip of canvas or other flexible material 42 is made to engage with the cylinder at its lower right-hand side, as shown in Fig. 1, the said strip being supported at its upper end by rods 41, attached to the frame, which rods hold the upper portion of the strip out of engagement with the cylinder, and the grain discharged from the spout will strike the inner face of the cylinder at the right-hand side above the strip 42 and will be compelled to travel downward between the strip and the opposing face of the cylinder.

In the operation of the machine the supporting-shafts 16 are driven from the conveyer-shaft 19, and the supporting-rollers 15 on the supporting-shafts tend to revolve the cylinder in the direction shown by the arrow. The conveyer-shaft 35 and the brush-shaft 33 are likewise driven from the shaft 19. The grain as it is delivered to the rotating cylinder passes between the flexible strip 42 and the pocket or inner face of the cylinder, the strip serving to pack the grains of wheat in the pockets of the cylinder. When the grain carried by the cylinder reaches the brush 34, the brush will brush back the oats and dust, but will have no action whatever on the grains of wheat in the pockets 11. Thus while the grains in the pockets are carried upward on the cylinder the brush will keep the mass of oats separated from the wheat agitated and the inclination of the cylinder will compel the oats and the dust mingled with them to pass out at the front, and when the pockets carrying the grains of wheat have reached a point above the table 30 the contents of said pockets will drop upon the table and the separation will occur, as heretofore stated, between the wheat, the small grain, and the dust.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a machine for separating grain, the combination, with a cylinder mounted to rotate and having pockets formed in its inner face, a hopper provided with a delivery-spout, one end of which extends within the cylinder; and a packing-strip supported below the delivery end of the spout, the grain being adapted to be received between the packing-strip and the pocket-face of the cylinder, of a stationary trough located within the cylinder, a conveyer located within the said trough, an inclined table extending from a point near the inner face of the said cylinder into the said trough, a portion of the table being perforated or reticulated, a brush mounted to revolve below the said table and near the inner surface of the cylinder, and means, substantially as described, for driving the brush and conveyer, as and for the purpose specified.

2. In a machine for separating grain, the combination, with a cylinder mounted to rotate and having pockets formed in its inner

face, a hopper provided with a delivery-spout, one end of which extends within the cylinder, and a packing-strip supported below the delivery end of the spout, the grain being adapted to be received between the packing-strip and the pocket-face of the cylinder, of stationary troughs located within the said cylinder, a screw conveyer mounted to revolve in each trough, a table extending from a point near the inner face of the cylinder over one of the troughs into the second trough, the said table being provided with a reticulated or perforated surface where it passes over the first trough, a brush mounted to revolve below the said table and adjacent to the inner face of the cylinder, and means, substantially as described, for communicating motion to the brush and the said conveyer-shafts, as and for the purpose specified.

3. The combination with a frame or mount of a cylinder having pockets formed in its inner face carried to turn thereon, two stationary troughs projected into the cylinder and arranged in close proximity and parallel with each other, and a stationary table mounted in the cylinder and having one edge in close proximity with the inner surface of the cylinder, the table being inclined downward toward the troughs and being extended over the one trough so that the lower edge of the table discharges into the second trough and the table being perforated adjacent to the said first trough so that fine material may pass through the table into said first trough.

CLARENCE E. CULVER.

Witnesses:
C. H. CREMER,
PETER CREMER.