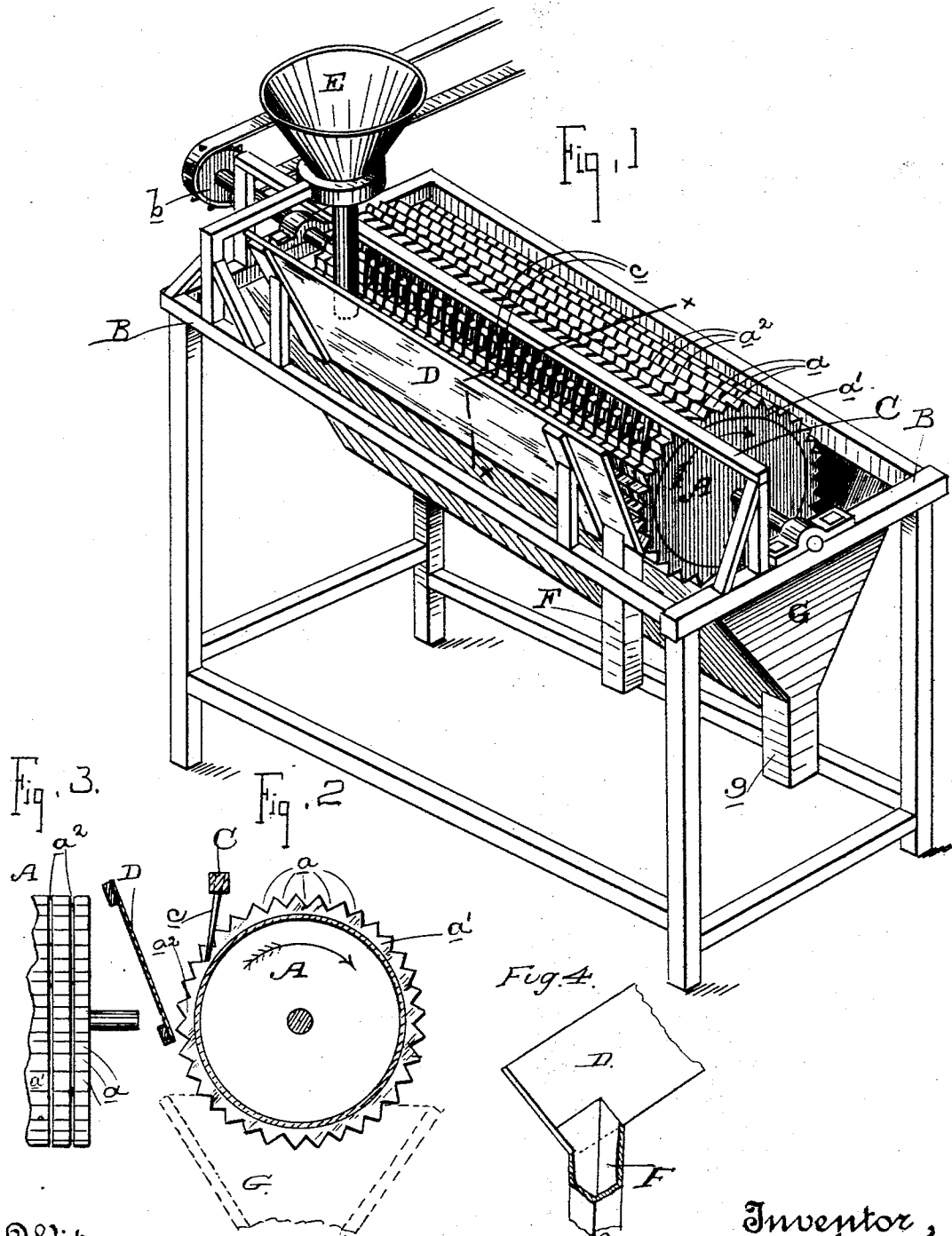


(No Model.)

F. H. WHEELAN.
SEPARATOR.

No. 498,597.

Patented May 30, 1893.



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UNITED STATES PATENT OFFICE.

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To all whom it may concern:

Be it known that I, FAIRFAX H. WHEELAN, a citizen of the United States, residing at Santa Barbara, Santa Barbara county, State of California, have invented an Improvement in Separators; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of separators in which the separation is dependent upon the different sizes of the particles to be separated, enabling them to pass through apertured barriers, or to be arrested thereby, according to their dimensions.

My invention consists in a traveling carrier having its surface provided with grooves, corrugations or channels at an angle to its direction of travel, said grooves, corrugations or channels being adapted to receive and carry the material to be separated, and a fixed apertured barrier operating transversely in the grooves, corrugations or channels of the carrier in such a manner as to allow the particles of material of a given size and under to pass through with the carrier, and to arrest those of a larger size.

My invention also consists in the novel details of construction, arrangement and combination of the several parts of the machine essential to its full and perfect operation, and which will be hereinafter fully described and specifically pointed out in the claims.

The object of my invention is to provide a simple and effective separator of this class which, while adapted for the separation of any material, according to the different dimensions of its particles, is especially adapted for separating barley and oats from wheat. Wheat, barley and oats differ from one another more in their length than in other separating characteristics, the barley and oats being generally longer than the wheat. This distinguishing feature is utilized in my machine by allowing the shorter wheat to pass the apertured barrier while the longer grains of barley and oats are arrested.

Referring to the accompanying drawings for a more complete explanation of my invention,—Figure 1 is a perspective view of my separator. Fig. 2 is a cross section of the carrier cylinder, barrier and feed guide board,

taken on the line $x-x$ of Fig. 1. Fig. 3 is an elevation of a small portion of the carrier cylinder. Fig. 4 is a detail showing the junction of the chute with the feed board.

A is my carrier. This may be of any suitable general form, such as an endless traveling belt, though I prefer as here shown, a cylinder or roller. This cylinder is mounted upon a suitable frame B, and is adapted to be rotated by any suitable means, such, for example, as power transmitting connections applied to a sprocket pulley b on the shaft of the cylinder. The surface of this cylinder is provided with grooves, channels or corrugations a extending at an angle to the line or direction of travel of the cylinder. In the present case they are in the direction of the length of the cylinder. These grooves, corrugations or channels may be formed directly in the surface of the cylinder, but preferably they are formed in a sheathing or covering a' of the cylinder, said covering or sheathing being of rubber.

Supported by the frame B above the cylinder is the barrier. This consists of any suitable apertured or spaced frame, here shown as made up of a bar C provided with the series of separated and downwardly extending pins c . These pins extend down to the cylinder, and enter its grooves, corrugations or channels, their lower ends being fitted in slits made in the cylinder surface in the line of its movement. These slits a^2 are here shown as circumferential, and thus by the rotation of the cylinder the pins traverse its grooves, corrugations or channels. These pins are located with respect to the circumference of the cylinder at what may be termed its uprising portion; that is, at a point between the extremities of its horizontal and vertical diameters, in its first quarter of revolution, reckoning from the point of material feed, and preferably somewhat nearer to the extremity of the horizontal diameter than that of the vertical diameter, so that the barrier is thus situated in position to cause the material which it arrests to fall fully back to its initial point.

Supported by the frame B is a feed guide board D, the lower end of which approaches close to the surface of the cylinder near the

extremity of its horizontal diameter, and below the series of pins. This feed guide board extends the whole length of the cylinder and is for the purpose of holding the material to the cylinder, so that its corrugations or grooves will pick said material up and elevate it to the pins.

The cylinder A is mounted at a slight inclination as shown, and the feed guide board D has a similar inclination.

The supply hopper E is so located as to feed the material into the space between the feed guide board and the cylinder, near the upper end thereof; and at the lower ends of these parts is a discharge chute F.

Under the cylinder is a hopper or trough G having a discharge spout *g*.

The operation of the machine is as follows: The material being fed in at the upper end of the guide board is caught by the upwardly rising grooves or corrugations of the carrier cylinder, and is carried upwardly; the direction of rotation of the cylinder being shown by the arrow. When the material reaches the barrier pins the shorter grains, which as a rule are wheat, will pass through between the pins and be carried by the cylinder up over the top and discharged into the hopper G below from which they are delivered by the spout *g*. The longer grains which are generally the barley and oats, are caught by the pins, being too long to pass between them and are thereby arrested; and on account of the position of the pins with respect to the circumference of the cylinder, they are forced out of the grooves thereof and fall back again into the general feed in the space between the cylinder and the feed guide board. The operation continuing, the feed material constantly tends toward the lower end of the feed guide board and cylinder, being continually raised to the barrier and a portion forced back. It results that as the lower end is approached, the proportion of barley and oats is greater than that of wheat for the reason that the wheat is constantly finding a passage by the pins, while the barley and oats are being constantly arrested and thrown back; and, therefore, if the feed be regulated according to the capacity of the machine but little or no wheat is left when the material reaches the discharge end; thus the separation is completed. It is obvious that the space between the pins must be regulated to suit the requirements of the material being operated upon. In this operation the wheat has a better chance to get through between the pins than have the barley or oats. These latter must certainly strike one or more pins while the wheat can go between them. If a grain of barley should happen to light at a point where its ends will strike two pins, it will, of course, be forced out of the corrugation and will fall back. If, on the other hand, it should lie so as to strike only one pin, it will strike that pin so squarely

that it will be forced out of the corrugation anyhow, and fall back. The barley and oats thus kept back will work down as before mentioned to the lower end of the guide board, and will be delivered into the chute F.

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

1. In a separator, the combination of a traveling carrier having its surface provided or formed with a series of grooves, corrugations, or channels extending at an angle to the direction of travel of the carrier, and adapted to receive and advance the material, and an apertured barrier fixed above said carrier and extending down into its grooves, corrugations, or channels, whereby the shorter particles will pass the barrier while the longer ones will be arrested thereby, substantially as herein described.

2. In a separator, the combination of a traveling carrier having its surface provided or formed with a series of grooves, corrugations, or channels at an angle to its direction of travel for carrying and advancing the material and with spaced slits in the line of said travel, and a series of fixed pins separated from each other and extending down into the slits of the carrier, and forming an apertured barrier past which the shorter particles may be carried, and by which the longer particles are arrested, substantially as herein described.

3. In a separator, the combination of an upwardly traveling carrier, the surface of which is provided or formed with a series of grooves, corrugations, or channels at an angle to its direction of travel for carrying and elevating the material, and with a series of separated slits in the line of said travel, a series of fixed separated pins having their lower ends extending down into the slits of the carrier to form an apertured barrier to separate the shorter from the longer particles, and a fixed feed guide board opposite the carrier for holding the material to the grooves, corrugations, or channels of the carrier whereby it may be advanced to the barrier, substantially as herein described.

4. A separator consisting of the inclined rotating cylinder or roller provided or formed with the longitudinal grooves, corrugations, or channels, and the series of separated circumferential slits, the fixed series of separated pins, the lower ends of which extend down into the slits of the cylinder or roller on its uprising portion, and the correspondingly inclined feed guide board opposite said uprising portion to supply the material to the cylinder below the pins, substantially as herein described.

5. A separator consisting of the inclined rotating cylinder or roller provided or formed with the longitudinal grooves, corrugations, or channels, and the series of separated circumferential slits, the fixed series of separated

rated pins, the lower ends of which extend down into the slits of the cylinder or roller on its uprising portion, the correspondingly inclined feed guide board opposite said uprising portion to supply the material to the cylinder below the pins, the supply hopper E for feeding the material at the upper end of the cylinder and guide board, the chute F at the lower end and the underlying receiving trough G, substantially as herein described. 10

In witness whereof I have hereunto set my hand.

FAIRFAX H. WHEELAN.

Witnesses:

GEO. E. COLEMAN,
E. C. TALLANT.