

Jan. 8, 1935.

A. KENDOFF

1,987,509

SORTING MACHINE

Filed April 25, 1932

2 Sheets-Sheet 1

Fig. 1

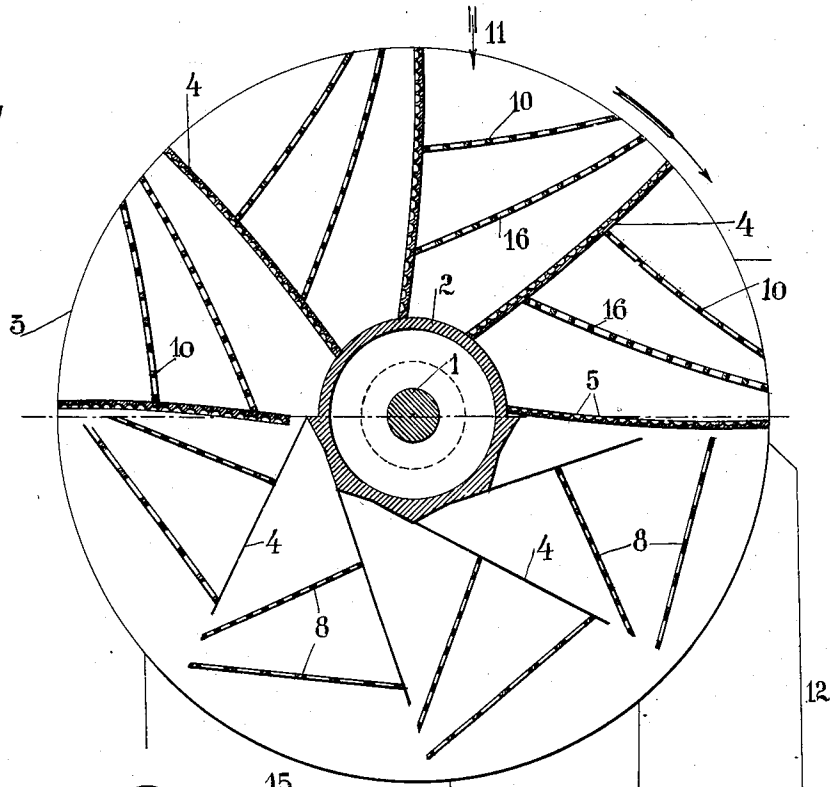
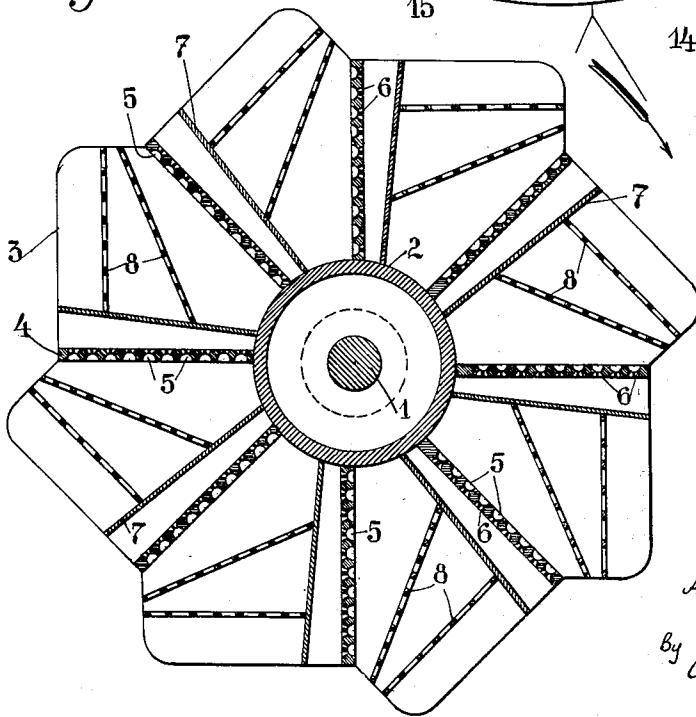


Fig. 2



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2 Sheets-Sheet 2

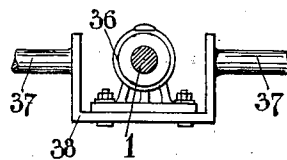
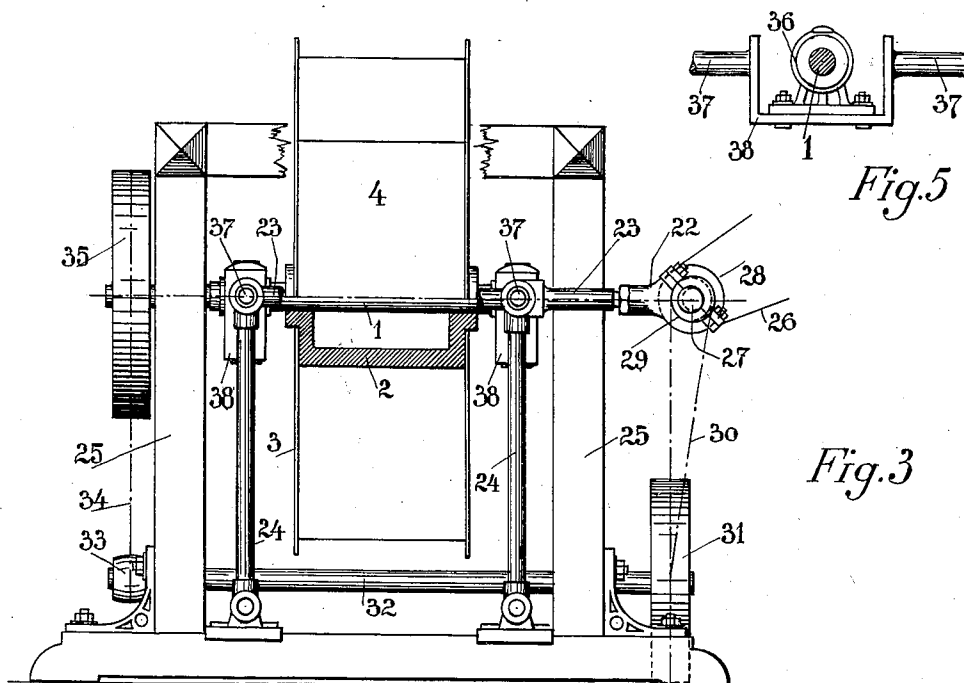
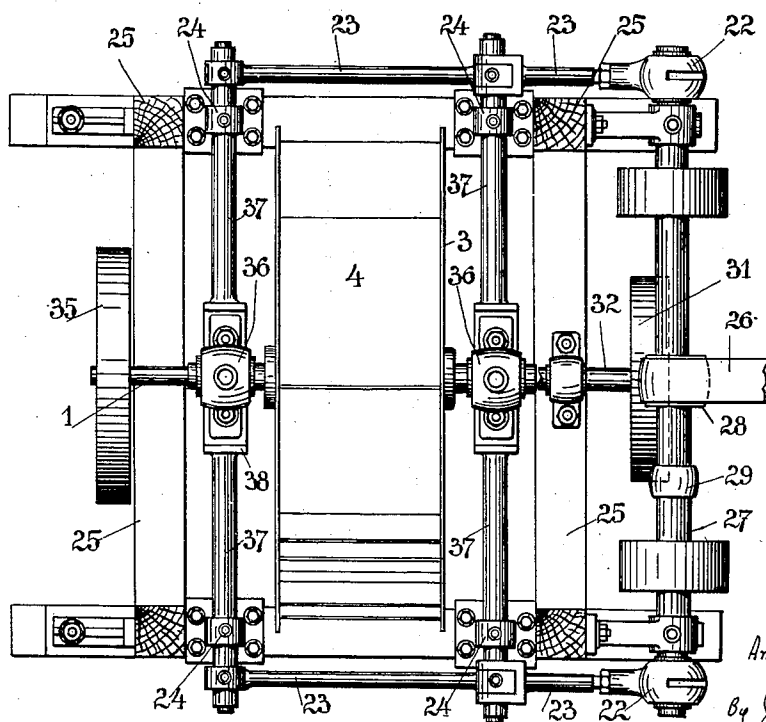


Fig. 5



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UNITED STATES PATENT OFFICE

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SORTING MACHINE

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2 Claims. (Cl. 209—350)

The invention relates to a sorting machine, effecting sorting according to sizes, suitable to be used either as a sieve or as a trieur, in which machine the sorting cells are arranged on the 5 periphery of a rotating cylinder.

The invention consists substantially in a rotatably mounted cylinder comprising a series of cells or chambers open at one side and composed by means of preferably curved, partitions of substantially radial direction sieves parallel neither 10 to each other nor to the cell partitions being arranged in the said cells or chambers.

At the same time the angle of inclination formed with the horizontal by anyone of the 15 sieves of gradually decreasing size of mesh following each other in the direction of the inflow of the material is, according to the invention, smaller than that of the preceding one and larger than the angle formed with the horizontal by 20 that cell-partition on which the material falling through the sieve drops. Owing to the different angles of inclination each different size of material obtained by this process of sorting will during the rotation of the cylinder drop into a different one of the receptacles arranged on the 25 periphery of the said cylinder.

The cell partitions are either designed as solid plates or in the manner of trieur plates i. e. so as to contain catching cells. This design enables 30 to separate grains of entirely equal size from the material falling through the sieves.

In a further embodiment of the invention the cell-partitions on which catching cells are provided may, at the same time, also possess perforations like sieves. 35

Besides, it will be preferable to impart to the sorting machine by means of connecting rods driven from eccentrics an oscillating motion in the longitudinal direction of the axis of rotation, 40 in addition to its rotating motion.

Various embodiments of the invention, shown by way of example, are illustrated on the drawings annexed.

Fig. 1 is a section, taken at right angles to the 45 axis of rotation, through a sorting machine designed in part as trieur and in part as a sieve.

Fig. 2 is a cross-section through a machine of the kind in which the cell-partitions comprising catching cells constitute at the same time sieves. 50

Figs. 3 and 4 are, respectively, a side-elevation and a plan view of the sorting machine.

Fig. 5 is a detail.

From cylinder 2 rotating around the shaft 1 (Fig. 1) there issue radial, or substantially radial, 55 straight or curved partitions 4 which form open

cells bounded-in on one side by the side walls 3 arranged on the two front sides of the cylinder (Figs. 1 and 3).

In each of the cells there are arranged sieves which are not parallel either to the walls 4 or to each other and the sizes of mesh of which gradually diminish in the direction of the inflow of the material. According to Fig. 1 each cell contains two sieves 10, 16. 5

Into the walls 4 forming the boundaries of the cells there may be embossed catching cells 5 of equal size, in the manner known per se, to be employed in the case of trieur plates (upper side of Fig. 1), which enable grains of equal size to 10 to selected from the material falling through the last sieve 16. In the bottom part of the sieve shown on Fig. 1, the partitions 4 are smooth and solid. 15

Cylinder 2 together with the cells arranged on its periphery is rotating in the direction of the arrow shown on Fig. 1. The material to be 20 sorted arriving below the hopper in the direction of arrow 11 falls into the cells and on the sieves 10, 16 etc. situated one below the other, following which it falls on the cell bottom 4 into which, as mentioned above, catching cells are embossed 25 in the case of trieurs. The material which has not fallen through the sieves 10 falls in consequence of the rotation of the disc into the receptacle 12, whilst the material which has not 30 fallen through sieve 16 will owing to the different angles of inclination formed with the horizontal by the sieves only drop into the receptacle 13 during the subsequent progress of rotation.

The material of equal size of grain, which has 35 settled in the catching cells 5 of the cell wall 4 will drop into the receptacle 15, whilst the material which has fallen through sieve 16 but has not settled in the catching cells, will drop into the receptacle 14. In the case of a sieve, in which 40 case the cell wall 4 is smooth, the receptacle 15 is dispensed with, because the result of the treatment which has taken place in the machine consists in three sizes of material only.

The embodiment according to Fig. 2 differs from 45 that shown in the upper half of Fig. 1 substantially in so far only, that the cell walls 4 provided with catching cells 5 at the same time also constitute sieves, because on the wall 4 there are provided, in addition to the catching cells 5, perforations 6 as well, through which the dust falls 50 through. The dust falling through the perforations 6 drops on the bottom 7 consisting of a solid plate, which bottom is not parallel either to the walls 4 of the cell or to the sieves 10, 16. 55

The dust falling on the wall 7 will drop into some receptacle corresponding to its angle of inclination. These receptacles have not been shown on Fig. 2.

5 The embodiment according to Fig. 2, besides, also differs from that according to Fig. 1 in the fact, that in view of ensuring better utilization of space occupied, the periphery of the cylinder is not circular, but polygonal. Whilst the length
10 of the cell walls 4 remains unchanged, there joins on each of the cells, at their side, a part having substantially the shape of a rectangular triangle.

In addition to its rotating motion, an oscillating motion as well can be imparted to the sorting machine according to the invention.

15 The driving mechanism of the sorting machine is described in what follows with reference to Figs. 3-5; it should be noted that in addition to its rotating motion, an oscillating motion taking
20 place in the direction of the shaft 1 of the cylinder must also be imparted to the cylinder carrying on its periphery the cells 4.

The shaft 1 of the cylinder, which shaft is supported in the bearings 36, is driven in the following manner.

25 The pulley 29 keyed on shaft 27 driven in any desired manner by means of belt 26, drives, by means of the crossed belt 30, the horizontal shaft 32 running lengthways below the cylinder comprising cells, the transmission being such as to
30 reduce the number of revolutions per minute, whilst the driving of shaft 32 is being effected through pulley 31 keyed on one end of the said shaft; a smaller pulley 33 keyed on the other end
35 of the said shaft 32 drives the cylinder shaft 1 by means of belt 34 and pulley 35, transmission being in this case likewise effected so as to reduce the number of revolutions per minute, as a result of which arrangement uniform rotating movement will be imparted to the cylinder 4 comprising
40 cells.

The parallel shafts 37 running in a direction perpendicular to that of shaft 1 and supported in four points by the oscillating rods 24 are arranged
45 on the two sides of the cylinder.

These shafts serve for providing the shaking motion of the cylinder taking place in a direction parallel to the cylinder shaft 1. The shafts 37 (Fig. 5) are interrupted at the middle by the fork
50 38, to the bottom of which the bearings 36 of the cylinder shaft 1 are fixed. These connecting rods 23, act on the end of the shaft 37. The connection rods are, by means of the eccentric 28 keyed on shaft 22, keeping the shafts 37 and with it

the cylinder 2 comprising cells in a shaking motion taking place in the direction on the cylinder part 1, in which movement the bearings 36 of course also take part.

25 is the machine frame which also supports the hopper,—not shown on the drawing,—through which the material to be sorted is fed into the cylinder.

The advantage of the sorting machine according to the invention is its extremely small size and weight, as well as its very high output capacity as compared with sorting machines of known types in which the sieves are arranged one above or one behind the other.

Example.—The output capacity of a new machine of 1 meter cubic capacity, having a diameter of 100 cm. and blades of 35 cm. width, amounts in the case of a gravel sorting machine to 10000-20000 kg. per hour. In order to obtain an output of this magnitude from the cylindrical sorting
20 machines of the usual type, machines of ten times this cubic capacity would be required.

Sorting machines according to the invention can be employed in the most various kinds of industries, for instance in the flour milling industry, in the chemical industry, in the sorting of gravel, in the cement industry, in paper factories etc.

The invention is not limited to the embodiments described above and represented in the
30 drawings.

What I claim is:—

1. In a sorting machine, the combination of a cylinder, side walls extending outwardly from said cylinder, partitions provided with catching
35 cells between said side walls and bearing at their inner ends against said cylinder, each partition at each catching cell provided with a perforation, each two contiguous partitions and portions of said side walls producing a cell, and sieve means
40 in each cell.

2. In a sorting machine, the combination of a cylinder, side walls extending from said cylinder, partitions between said side walls and on the outer surface of said cylinder, each partition
45 provided with catching cells and with perforations, a plate-like wall between each two contiguous partitions and near the outlet of said perforations, and sieves connected at their inner ends to said plate-like wall and having their outer
50 ends extending to the outer edges of said side walls,

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