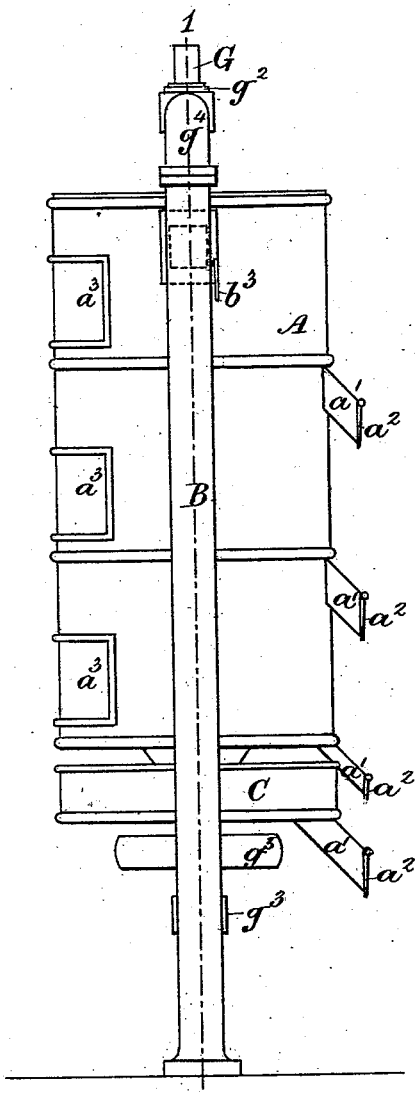
3 Sheets—Sheet 1.

C. HAGGENMACHER.

Machine for Cleaning and Sorting Semolino, &c.

No. 213,284. Patented Mar. 18, 1879.

Fig. 1



Witnesses
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Geo. Davis

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C. HAGGENMACHER.

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Fig. 2.

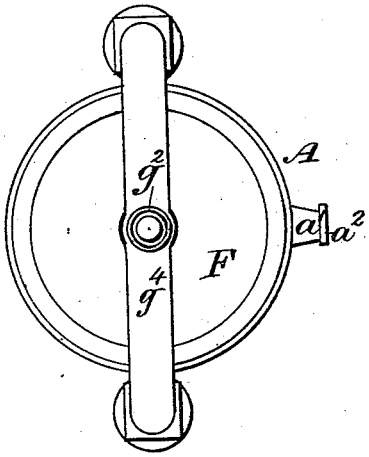

Fig. 4.

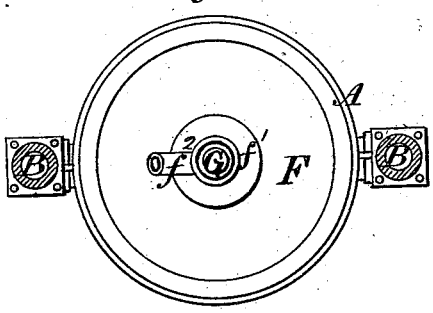

Fig. 5.

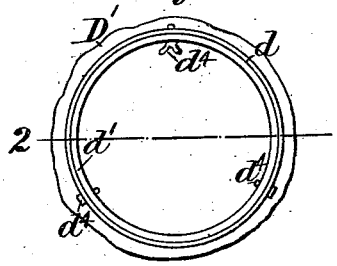

Fig. 6.

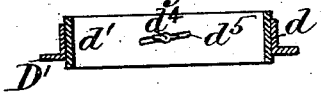

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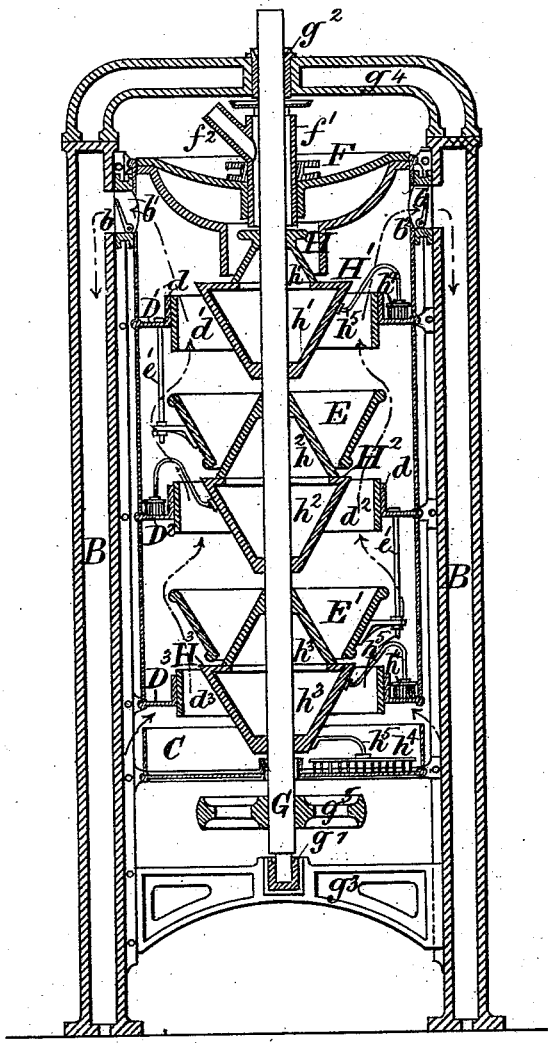
Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

CARL HAGGENMACHER, OF PESTH, AUSTRIA.

IMPROVEMENT IN MACHINES FOR CLEANING AND SORTING SEMOLINO, &c.

Specification forming part of Letters Patent No. **213,284**, dated March 18, 1879; application filed July 3, 1878; patented in England, March 3, 1876.

To all whom it may concern:

Be it known that I, CARL HAGGENMACHER, director of the First Ofen-Pesth Steam-Mills Company, at Pesth, in the Empire of Austria, have invented an Improved Machine for Winnowing, Cleaning, and Sorting Semolino and Middlings and Corn and Other Seeds, which invention is fully set forth in the following specification, reference being had to the accompanying drawings.

This invention consists of an improved machine for separating the different qualities of semolino, middlings, corn, and other seeds, the parts of which machine are so constructed and arranged that the matters to be treated, when fed into it at the upper part, pass downward by gravity, and are acted on during their passage by a current of air drawn or forced through the machine, the said current of air separating the semolino or other matters into different qualities, each of which passes from the machine by a separate chute. The parts of the machine are capable of adjustment according to the nature of the matter to be treated or the result required.

The said machine consists of a cylindrical casing supported by hollow columns, which communicate with the interior of the said casing by means of passages furnished with valves. In the interior of the casing are annular shelves, to which rings of metal are secured, so as to be capable of being adjusted vertically, the said rings being fixed as required by means of screws. These shelves are, for convenience of description, hereinafter termed the "first," "second," and "third" annular shelves. The upper part of the cylindrical casing is closed by a cover, through which passes a tube, hereinafter termed the "feeding-tube," which is capable of adjustment in the said cover. Below the lower part of the said casing (which is open) a circular tray is supported by the hollow columns hereinbefore referred to. In the axis of the said casing is mounted a vertical shaft, which is capable of rotatory motion in bearings supported by girders bolted to the said columns. The said vertical shaft passes through the tray hereinbefore referred to, and through the feeding-tube, and to it truncated cones are affixed, one above another. These cones are arranged base to base, and, the upper cone of each pair being smaller than the lower cone, circular shelves or ledges are formed at the junctions of the upper and lower cones, the level of each of which shelves is rather higher than that of the adjacent annular shelf. The topmost cone is also provided with a circular shelf formed on or by its truncated end. These shelves are, for convenience of description, hereinafter termed the "first," "second," and "third" feeding-shelves. The upper cone of each pair of cones is surrounded by a stationary hopper. Affixed to the lower cone of each pair are rods carrying brushes or scrapers, which, when the vertical shaft is caused to rotate, travel over the aforesaid annular shelves and circular tray, for the purpose hereinafter described.

The cylindrical casing is provided with doors or windows, through which the work done by the machine may be inspected when it is in action, and access may be gained for cleansing or adjusting the parts when necessary. Projecting from the outside of the said casing and communicating with the annular shelves are chutes or spouts, each of which is provided at the outer end with a flap-valve capable of yielding to pressure from within. The said circular tray is also provided with a similar chute or spout and valve.

Having now described the nature of this invention, I will proceed to describe the manner in which the same is to be performed, reference being had to the accompanying drawings, and to the letters and figures marked thereon.

Figure 1 is an elevation. Fig. 2 is a plan. Fig. 3 is a vertical section, taken on the line 1, Fig. 1; and Fig. 4 is a sectional plan of the aforesaid machine. Figs. 5 and 6 represent details of the machine, as hereinafter described.

The same letters and figures of reference indicate the same parts in the several figures.

A is the cylindrical casing, supported by hollow columns B B. b^1 b^1 are the passages which form the communications between the interior of the casing A and the columns B B. b^2 b^2 are the valves, furnished with handles outside the casing A, one of which handles is shown at b^3, Fig. 1. By means of the valves b^2 b^2 the said passages b^1 b^1 may be closed, or

partly closed. D^1 D^2 D^3 are the annular shelves. d d are flanges or rims formed thereon, and d^1 d^2 d^3 are the metal rings, which are secured to the rims d of the shelves D^1 D^2 D^3 by means of the screws d^4 d^4, which pass through inclined slots d^5 d^5 formed in the rings d^1 d^2 d^3. The said screws and slots are illustrated in Figs. 5 and 6, Fig. 5 being a plan of one of the annular shelves and of the ring screwed thereto, and Fig. 6 a section of the same parts, the section being taken on the line 2, Fig. 5.

When it is wished to adjust the height of the rings d^1 d^2 d^3, the screws d^4 d^4 are loosened and the rings partly turned, the said rings being thereby raised or lowered, according to the direction in which they are turned. They are then secured in the positions to which they have been brought by tightening the screws d^4.

E E′ are the conical hoppers, secured to and supported by brackets e' e', which are affixed to the shelves D^1 D^2.

F is the cover of the casing A. f^1 is the feeding-tube, which passes through and is capable of vertical adjustment in the cover F. f^2 is a short branch tube, through which and the tube f^1 the matters to be treated enter the machine.

C is the circular tray, supported by the columns B B. G is the vertical rotatory shaft, mounted in the axis of the casing A. g^1 g^2 are the bearings in which the said shaft G works, and g^3 g^4 are the girders, which support the bearings g^1 g^2. g^5 is a band-pulley, keyed to the shaft G, by means of which pulley motion is communicated to the said shaft.

h^1 h^1 h^2 h^2 h^3 h^3 are the pairs of truncated cones, affixed to the shaft G. H is the shelf, formed on the topmost cone h^1, and H^1 H^2 H^3 are the circular feeding-shelves, formed by the junctions of the said pairs of cones. h^4 h^4 are the brushes or scrapers, and h^5 h^5 are the rods to which the said brushes or scrapers are affixed, one of which rods is carried by the lower cone of each pair.

a^3 a^3 are the doors or windows, which cover openings in the casing A, through which the working of the machine may be inspected or access gained to the interior when it is required to clean or adjust the parts thereof. a^1 a^1 are the exit-spouts or chutes, and a^2 a^2 are the valves by which the ends of the said spouts or chutes are closed.

The said machine is used and acts as follows: The hollow columns B B being connected to the suction-pipe of a fan, currents of air are caused to pass through the machine in the directions indicated by the arrows, the force of the said currents varying in the different parts of the machine, according as the sectional area of the air-passages is greater or less.

The rotatory shaft G is set in motion, and the semolino or other matters to be treated which have been sorted according to the size of the grains by means of an ordinary grain-sorter or cleansing-sieve passes or pass from an ordinary elevator or from a hopper mounted above the machine through the feeding-tubes f^2 f^1 onto the first circular shelf, H, thence into the current of air passing the second circular shelf, H^1, the said current separating the heavier particles (the semolino) from the lighter particles, (the refuse semolino,) the latter passing over the adjustable ring d^1, and the former falling into the hopper E and onto the third circular shelf, H^2, whence it again passes into the ascending current of air, which, being stronger at this part of the machine, owing to the space between the ring d^2 and shelf H^2 being smaller than that between the ring d^1 and shelf H^1, again separates the lighter from the heavier particles, which pass in the same manner onto the second annular shelf, D^2, and into the hopper E′, respectively, the heavier particles being again acted on in like manner in passing from the fourth circular shelf, H^3, part falling on the third annular shelf, D^3, and part onto the circular tray C.

The particles falling on the said tray and on the annular shelves D^1 D^2 D^3 are swept round by the brushes or scrapers h^4 h^4 and pass down the chutes a^1 a^1, pushing open the flaps a^2 a^2 in their passage. The lightest particles of bran or offal pass from the machine with the current of air drawn through it.

By increasing or decreasing the number of shelves, the semolino or other matters may be divided into as many different qualities as may be desired without increasing the number of revolutions of the fan or the power required to drive it.

The amount of air passing through the machine is regulated by means of the valves b^2 b^2 in the passages b^1 b^1, and the strength of the current passing the circular shelves H^1 H^2 H^3 is regulated by raising or lowering the adjustable rings d^1 d^2 d^3, to which access may be gained by opening the doors or windows a^3 a^3 of the casing A. The said parts being once adjusted for a particular kind of semolino or other matter, it is only necessary to alter them when another kind has to be treated.

The following are the advantages attending the use of this machine: First, by one operation the semolino is cleaned and the refuse divided into as many different qualities as may be required, free from the lightest and most worthless offals, thus greatly simplifying the process as ordinarily performed; second, very little power and skilled labor are required to work the machine; third, the machines occupy but little space.

Having thus described the nature of the said invention and the manner in which the same is to be performed, I wish it to be understood that I do not limit myself to the precise details described, as such details may be varied without departing from the nature of the said invention; and I do not here claim the principle of causing one and the same current of air to act on the same semolino or middlings or other matters, that principle being shown applied to

a winnowing-machine for which I obtained a patent for the United States of America dated the 19th day of December, A. D. 1876; but

I claim as the said invention—

1. The general construction, combination, and arrangement of parts constituting the improved machine hereinbefore described, and illustrated in the accompanying drawings, for winnowing, cleaning, and sorting semolino and middlings and corn and other seeds—that is to say, a cylindrical casing furnished with conical hoppers, exit-chutes, a receiving-tray, and annular shelves having adjustable rims, in which casing revolves a vertical shaft carrying guide-cones and shelves and brushes or scrapers, the various parts operating essentially as and for the purposes described.

2. The construction or arrangement of the annular shelves furnished with adjustable rings, as and for the purposes described.

CARL HAGGENMACHER.

Witnesses:

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GEORG DAÜR.