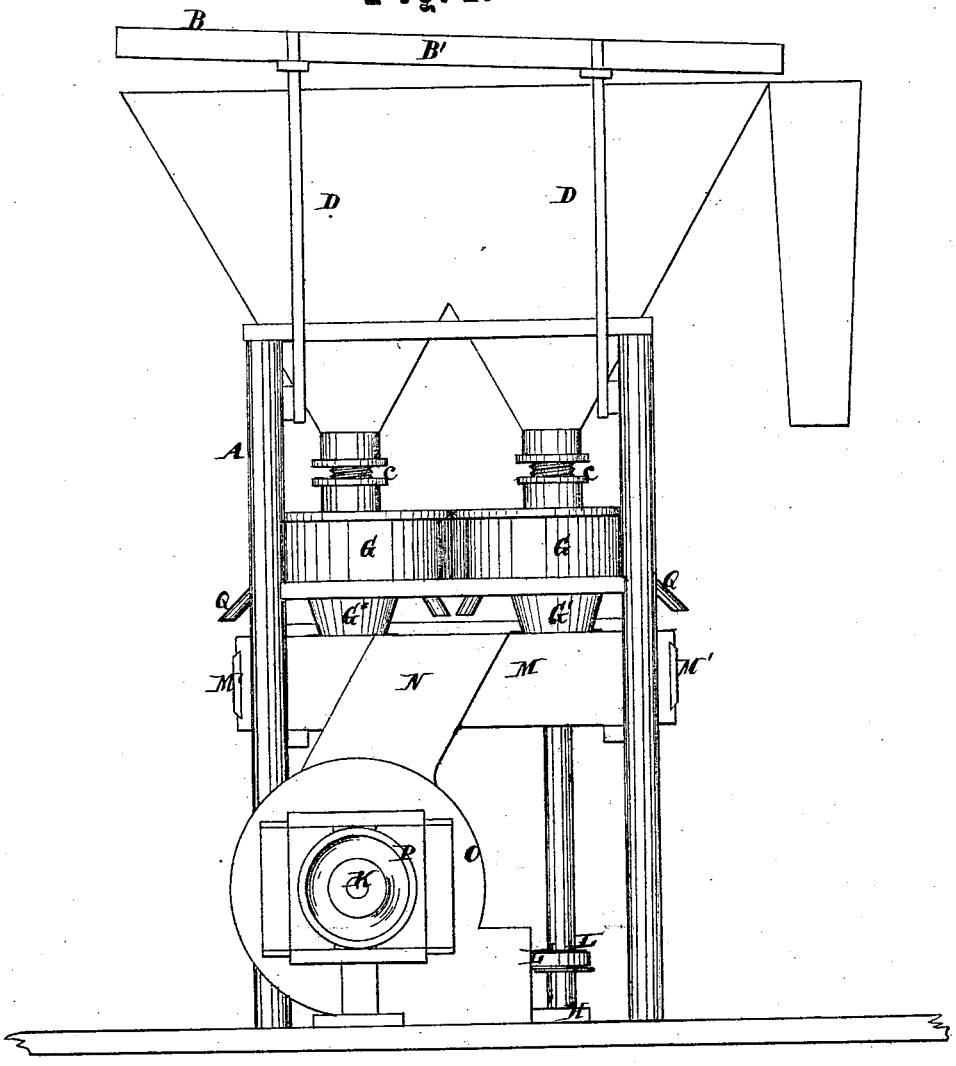
3 Sheets--Sheet 1.

T. BÜHLMANN.

Grain-Cleaner.

No. 167,297. Patented Aug. 31, 1875.

Fig. 1.



Witnesses.
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Chas. Wahlers.

Inventor.
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Attys

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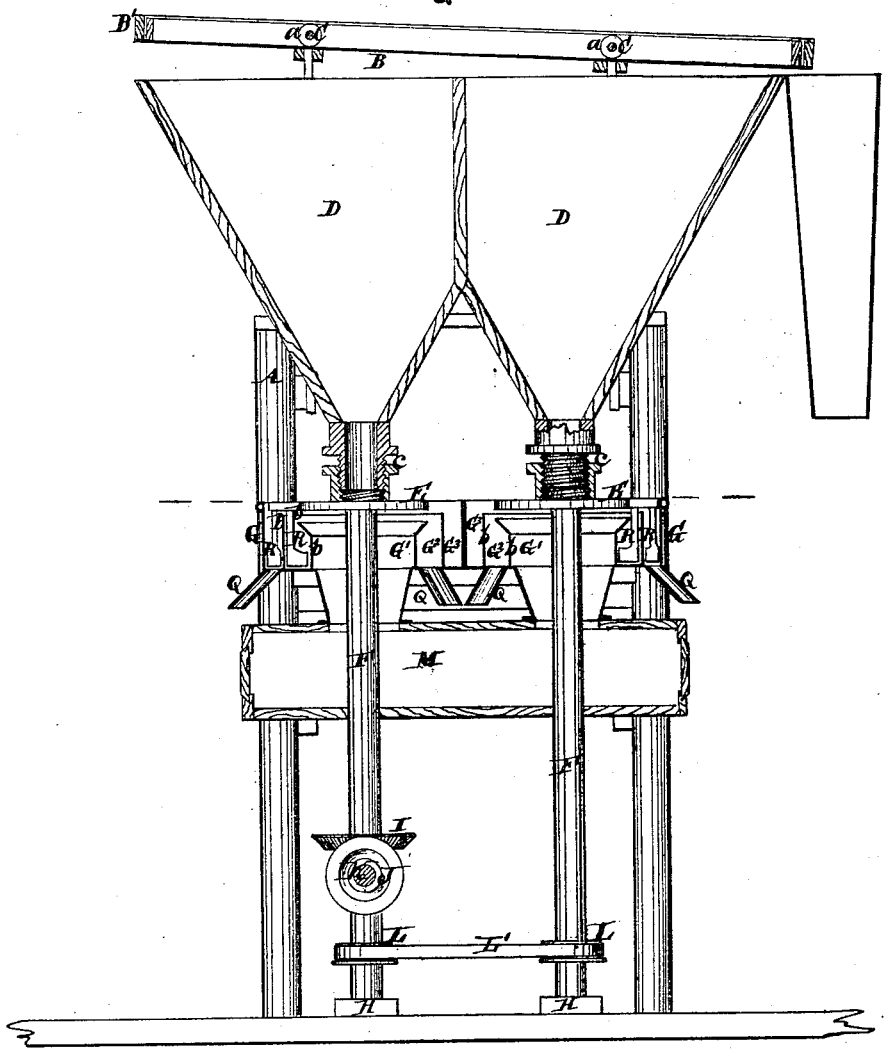
Fig. 2.



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T. BÜHLMANN.

Grain-Cleaner.

No. 167,297. Patented Aug. 31, 1875.

Fig. 4.

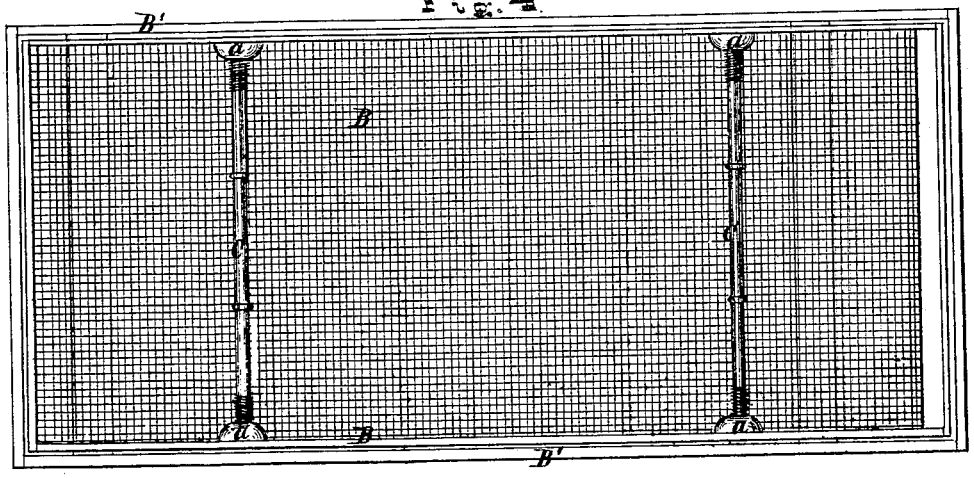
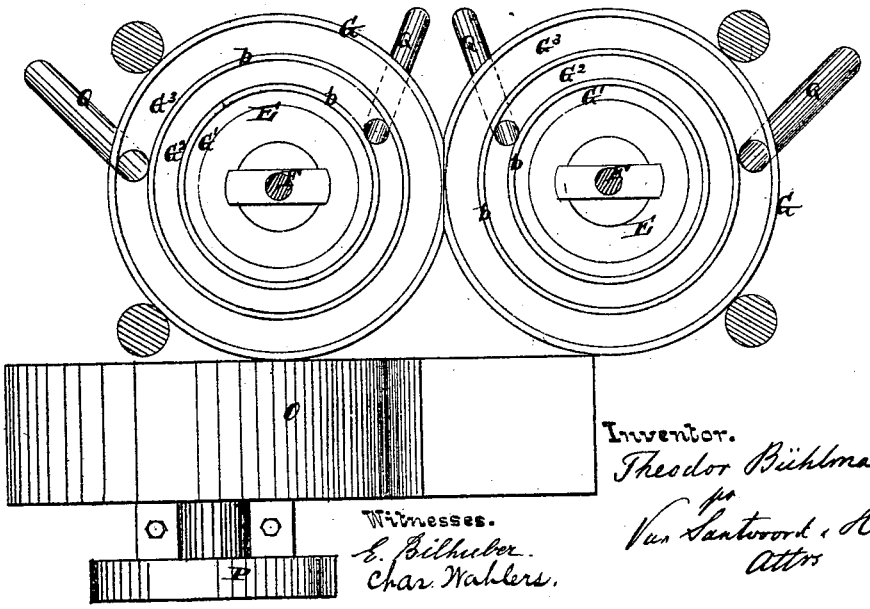


Fig. 3.



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UNITED STATES PATENT OFFICE

THEODOR BÜHLMANN, OF CHAM-ZUG, SWITZERLAND.

IMPROVEMENT IN GRAIN-CLEANERS.

Specification forming part of Letters Patent No. **167,297**, dated August 31, 1875; application filed April 23, 1875.

To all whom it may concern:

Be it known that I, THEODOR BÜHLMANN, of Cham-Zug, Switzerland, have invented a certain new and useful Improvement in Machines for Separating and Cleaning Grain and other substances, of which the following is a specification:

This invention is illustrated in the accompanying drawing, in which—

Figure 1 represents a side elevation. Fig. 2 is a vertical central section. Fig. 3 is a horizontal section in the plane *x x*, Fig. 1. Fig. 4 is a plan view of the sieve detached.

Similar letters indicate corresponding parts.

My invention relates to machines for separating the heavy from the light particles of grain, grits, bran, &c., as well as for separating therefrom any dust or dirt that it may contain.

My machine is constructed of a sieve, and of two or more chutes, combined with rotary disks, which are situated within casings divided into a series of concentric annular compartments, in such a manner that, as the grain discharges from the chutes, it is deposited on the disks, and if a rotary motion is imparted to the disks the grain is scattered by centrifugal force, and its particles are received in one or the other of the compartments of the casings according to the specific weight of the particles. The compartments of the casings are provided with spouts, and with the compartments are combined agitators, whereby the grain is conveyed to the spouts.

With the casings are combined a dust-receptacle and an exhaust-fan, in such a manner that when the fan is set in motion the dust or dirt intermingled with the grain is conveyed to the receptacle.

The sieve used in my machine is of an improved form, the frame thereof being provided with stretchers, whereby the tension of the sieve admits of being regulated.

In the drawing, the letter A designates the frame-work of my machine, which is so constructed as to form, in its upper part, a support for the frame of the sieve B. This latter consists of an outer or supporting-frame, B′, within which is placed the frame of the sieve proper B. The sieve is made of gauze, and I prefer to use a number of sieves, the meshes of which are of different size. In order that the sieve may preserve the necessary tension, or may be slackened, if desired, the frame B is constructed with two or more cross-bars, C, one or both the ends of which rest in a pillow-block, *a*, and is provided with a screw-thread. Thus, if the cross-bars C are turned in the one or the other direction, the distance of the two longitudinal sides of the frame from each other is either increased or diminished, and by this means the tension of the sieve may be regulated.

The grain, grits, or other substances to be separated and cleaned by my machine is deposited on the sieve B, and in falling therefrom is caught in chutes D situated beneath the sieve, and which are supported by the frame-work A. Below the discharge end of the chutes D are located horizontal disks E, which are respectively mounted on spindles F, and are surrounded by casings G. These casings are provided with vertical partitions *b*, whereby they are each divided into a number of concentric annular compartments, G^1 G^2 G^3. The partitions *b* are made to terminate below the disks E. The spindles F have their steps in blocks H, and on one of the spindles is mounted a bevel-wheel, I, which is engaged by a similar wheel, J, mounted on a horizontal or driving shaft, K. The driving-shaft K forms the axis of a rotary fan, hereinafter referred to. Both the spindles F are provided with pulleys L, so that the motion of one may be communicated to the other of the spindles through a band, L′. When a rotary motion is imparted to the spindles, and through them to the disks E, and at the same time grain falls from the chutes D upon the disks, the grain is thrown therefrom by centrifugal force, so that the heaviest particles of the grain are received and accumulate in the outer compartment G^3 of the casings, and the lighter particles in the next compartment G^2. Various assortments of grain as to size and weight are thus obtained, and the number of assortments depend on the number of compartments with which the casings are provided.

The innermost partition *b* of the casing extends through a hole formed in the bottom thereof, and is connected to and surrounds a hole formed in a box, M, which constitutes

the dust-receptacle of my machine. The central compartment G^1 is thus brought in direct communication with the dust-receptacle. From the side of the receptacle M extends a flue, N, Fig. 1, which is connected to the casing of a rotary fan, O, on the axis of which is mounted a pulley, P, whereby the fan may be given a rotary motion.

When a rotary motion is imparted to the fan O a suction is created within the central compartment G^1, whereby any dust or dirt intermingled with the grain is attracted as it is scattered from the disks E, the dust being by this means conveyed to the receptacle M. The dust-receptacle is provided with doors M′, whereby it may be emptied of its contents.

From the casing G the assorted grain is intended to be discharged into sacks, and to this end the casings are provided with spouts Q, which are secured to the respective compartments G^2 G^3. In order to convey the grain to the spouts Q, I attach to the disk E one or more agitators or spades, R, for each of the compartments. These agitators partake of the motion of the disks E, and traverse the annular compartments G^2 G^3 of the casings.

It should be stated that the suction-fan O works simultaneously with the disks E, and the two are preferably so arranged with respect to each other that the fan performs one revolution to two revolutions of the disk.

In the present example I have shown the parts of my machine, such as the chutes D, disks E, casings G, and spindles F, arranged in pairs, but a greater number may be used, or they may be arranged singly, if seen fit.

The necks of the chutes D are provided with a screw-thread, and contain, respectively, a nut, *c*, so that the distance of the chutes from the disks E can be increased or diminished.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, substantially as described, of the hopper D, the rotary disk E, and casing G, divided into a series of concentrict annular compartments, as and for the object specified.

2. The combination of the rotary disks E, having the agitators R attached thereto, with the casings G, divided into concentric annular compartments, and provided with spouts Q, substantially as and for the object hereinbefore described.

3. The combination of the horizontal rectangular supporting sieve-frame B′, the sieve B, and the transverse screw cross-bars C, resting at their ends against the sides of the sieve-frame B, and constructed to be adjusted for moving the longitudinal sides of the frame toward or from each other, substantially as described.

4. The combination, with the rotary disks E and the casings G, constructed with a series of compartments, of the dust-box M, arranged below, and communicating with the said disks and casings, and the fan O, connected with the dust-box by the vertical flue N, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 10th day of February, 1875.

THEODOR BÜHLMANN.

Witnesses:
D. F. BRÜN, *Lucerne*,
D. S. PAGE.