C. G. & W. STOLL.

Grain Separator.

No. 54,263. Patented April 24, 1866.

Fig. 1

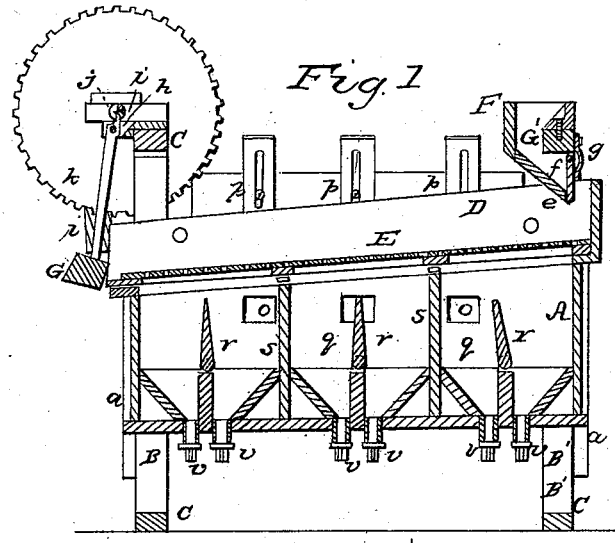


Fig. 2

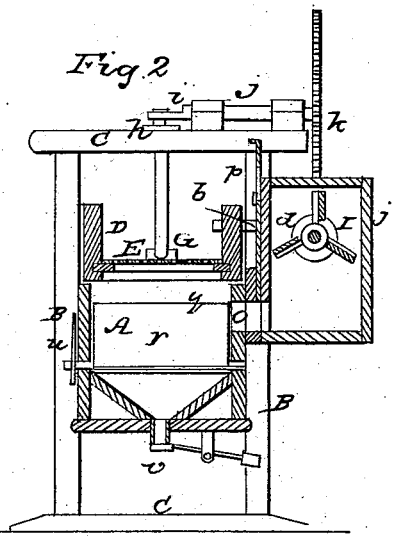
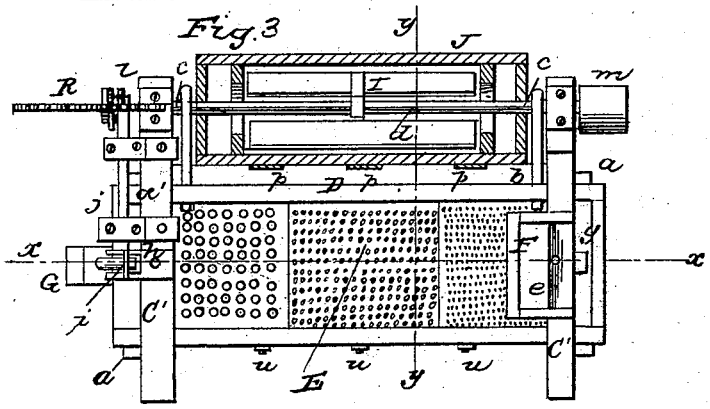


Fig. 3



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# UNITED STATES PATENT OFFICE.

CHARLES G. STOLL AND WILLIAM STOLL, OF EAST NEW YORK, N. Y., ASSIGNORS TO CHARLES G. STOLL, OF SAME PLACE.

## IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. **54,263**, dated April 24, 1866.

*To all whom it may concern:*

Be it known that we, CHARLES G. STOLL and WILLIAM STOLL, of East New York, in the county of Kings and State of New York, have invented a new and Improved Machine for Separating Grain, &c.; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a longitudinal vertical section of this invention, the line *x x*, Fig. 3, indicating the plane of section. Fig. 2 is a transverse vertical section of the same, the line *y y*, Fig. 3, indicating the plane of section. Fig. 3 is a plan or top view of the same, partly in section.

Similar letters of reference indicate corresponding parts.

This invention consists in arranging the fan which serves to throw air under the separating-sieve in a closed box, to which the air passes from below in such a manner that the air thrown into the separator is comparatively pure and free from the dust which contaminates the air above the separator. Said fan-box communicates with the space below the separating-sieve through a series of openings which are opened or closed by suitable gates, and which lead into closed compartments under the sieve, intended to receive the grain or other material as the same discharges from the sieve, said compartments being provided with adjustable loaded or spring valves, which do not allow the contents thereof to discharge until the air has attained a certain pressure suitable to produce the desired effect on the grain or other material to be separated. Each compartment is provided with an adjustable partition, the position of which is indicated by an index and scale on the outside of the box containing the sieve. By adjusting these partitions the material discharging into each compartment can be separated according to the difference in its specific gravity, the heavy parts passing through the sieve quicker than the light parts. A hammer, which is caused to impart blows to the end of the sieve at certain intervals, serves to shake up the material on said sieve and to prevent it from choking, and a spring-valve in the side of the hopper prevents the material from choking up the discharge-opening and insures an even and uniform discharge in a narrow flat stream.

A represents a box, made of wood or any other suitable material, and supported by uprights B B′, which are united at top and bottom by cross-bars C C′. The top edge of the box is cut off in an inclined direction, and it supports the shoe D, in which the sieve E is fastened. This sieve is made of three (more or less) sections of different fineness, that section on the upper end being the finest, so that grain or other material rolling down over the same is separated, according to the difference in the specific gravity of its parts, the finest and heaviest being discharged first and the lightest last. Said shoe is supported by four springs, *a*, of wood or any other suitable material, which are securely fastened to the uprights B B′, and it (the shoe) connects by rods *b* with cranks *c* in a shaft, *d*, so that by turning said shaft a reciprocating or lateral shaking motion is imparted to the same.

The grain or other material to be separated is conducted to the sieve through a hopper, F, which has a long narrow discharge-opening, *e*, causing the grain or other material to flow on the sieve in a broad narrow stream extending clear across said sieve, or nearly so. One side of this hopper forms a valve, *f*, which is held closed by a spring, *g*, thus allowing it to yield, if a thick lump or some impurities should come opposite the opening *e*, and by these means a choking up of said discharge-opening is prevented.

A hammer, G, is arranged opposite the lower end of the sieve, being suspended from a pivot in a bracket, *h*, secured to one of the cross-bars C.

A cam, *i*, which is secured to the end of a shaft, *j*, and which on being revolved with said shaft comes in contact with a nose at the upper end of the helve of the hammer, causes said hammer to rise at certain intervals and to descend with considerable force, thereby producing an end shake of the sieve, which prevents the grain or other material from choking. The shaft *j*, to which the cam *i* is attached, receives its motion by a large worm-wheel, *k*,

which gears in a worm, *l*, on the blower-shaft *d*, said blower-shaft being caused to revolve by a belt stretched over a pulley, *m*, which is mounted on its end, and to which motion is imparted by a steam-engine, horse-power, or any other suitable motor.

The blower I, which is mounted on the shaft *d*, is inclosed in a box, J, to which access is had through a covered channel, *n*, from below, in such a manner that all the air which passes to the blower is taken from below, the air above being saturated with dust that rises from the machine, and by the action of the comparatively pure air thus injected into the box A the separation of impurities from the grain or other material is facilitated.

The box I communicates with the box A by three (more or less) apertures, *o*, which are adjustable, or which can be opened or closed by means of gates *p*. Each of the apertures *o* communicates with one of the compartments or chambers *q* into which the box A is divided up by partitions *s*. Each of these compartments corresponds in size and position to one of the sections of the sieve E, and each compartment is also provided with an adjustable valve or partition, *r*, secured to a rock-shaft which has its bearings in the sides of the box A. On the outer end of each rock-shaft is mounted an index, *u*, which travels over a suitable scale, by means of which the position of the partition or valve can be determined without opening the box A. The object of these movable partitions is to separate the grain or other material passing into one of the compartments, according to its fineness or specific gravity. If the adjustable partition in one of said compartments is placed in a vertical position, the quantity of grain or other material collecting in this particular compartment is divided in two equal parts, that portion in the upper half of the compartment being somewhat finer than that in the lower compartment. If it is desired to obtain a larger quantity in the upper part of the compartment, the adjustable partition is turned down toward the lowest end of the sieve, and if it is desired to obtain the largest quantity in the lower part of the compartment, the adjustable partition is inclined upward toward the highest part of the sieve. By this arrangement the operator is enabled to obtain six different grades of fineness if the box A is divided into three compartments, and the quantity collecting in each portion of the several compartments can be regulated at pleasure.

Each of the compartments or chambers *q* of the box A is provided with two valves, *v*, one on either side of the movable partition, and these valves are closed by weights or springs, which are so adjusted that they do not open until a certain quantity of material has accumulated on them. By this arrangement the air acting on the grain or other material to be separated preserves a certain pressure and its full benefit is obtained. By adjusting the weights or springs acting on the valves the pressure of the air obtaining in the chamber can be regulated to suit the material to be separated, the sieve being placed on the box A, so that the air forced into said box is compelled to pass through the apertures in the sieve to act with its full force on the material which passes down over said sieve.

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

1. The combination of the sieve E with the closed box A and fan-blower I, or other equivalent device, substantially as described, so that the air forced into said box has no way to escape except through the apertures in the sieve, and it is compelled to act on the material placed on said sieve with its full force.

2. The yielding spring-valve *f*, in combination with the long narrow discharge-opening in the bottom of the hopper, and with the sieve E, constructed and operating substantially as and for the purpose set forth.

3. The closed box J, to which the air has access from below, in combination with the fan I, box A, and sieve E, constructed and operating substantially as and for the purpose described.

4. The adjustable valves or partitions *r* in the compartments *q* of the box A, in combination with the sieve E, constructed and operating substantially as and for the purpose set forth.

5. The air-valves *v v* in the bottom of the box A, in combination with the blower and sieve, constructed and operating substantially as and for the purpose described.

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Witnesses:
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