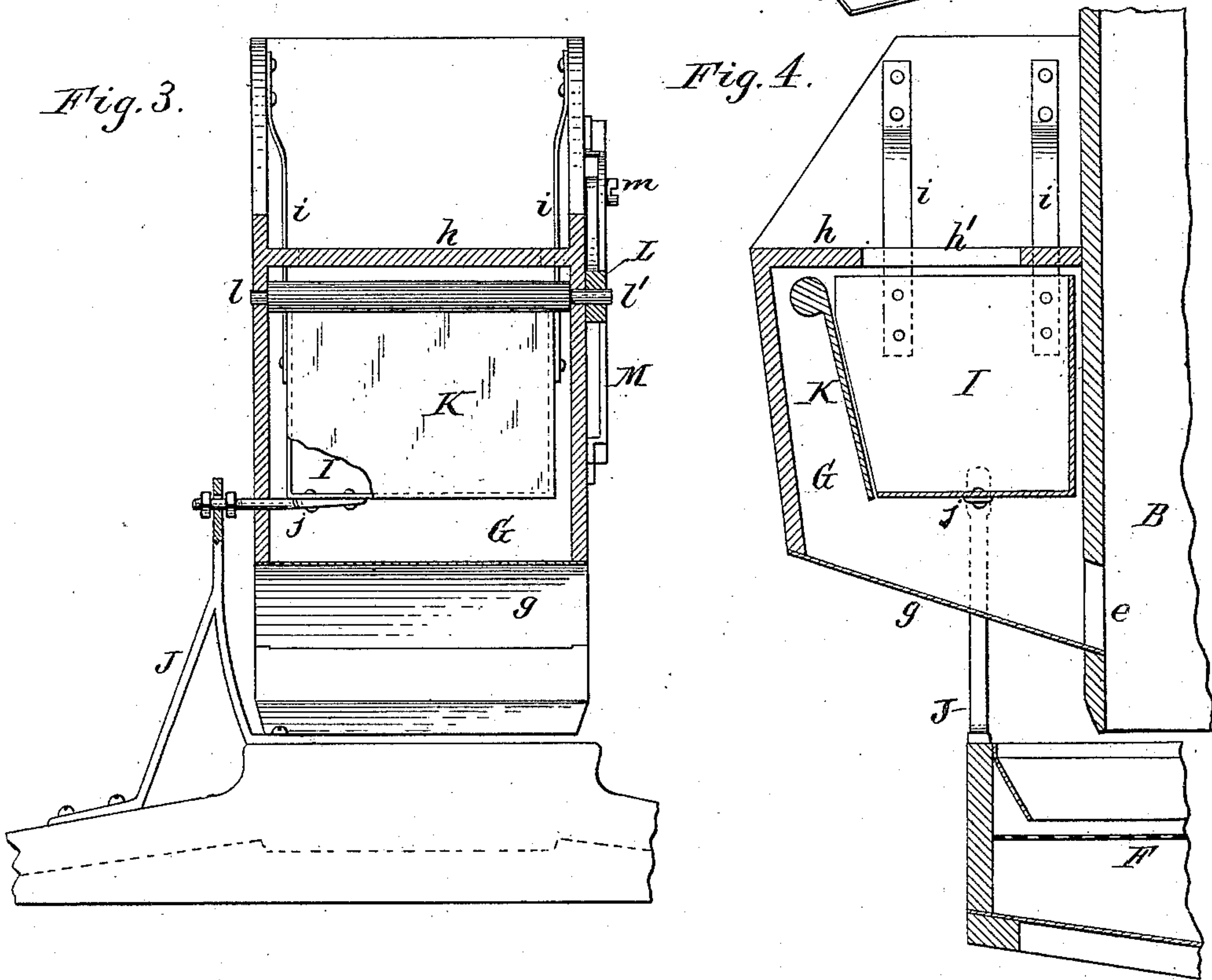
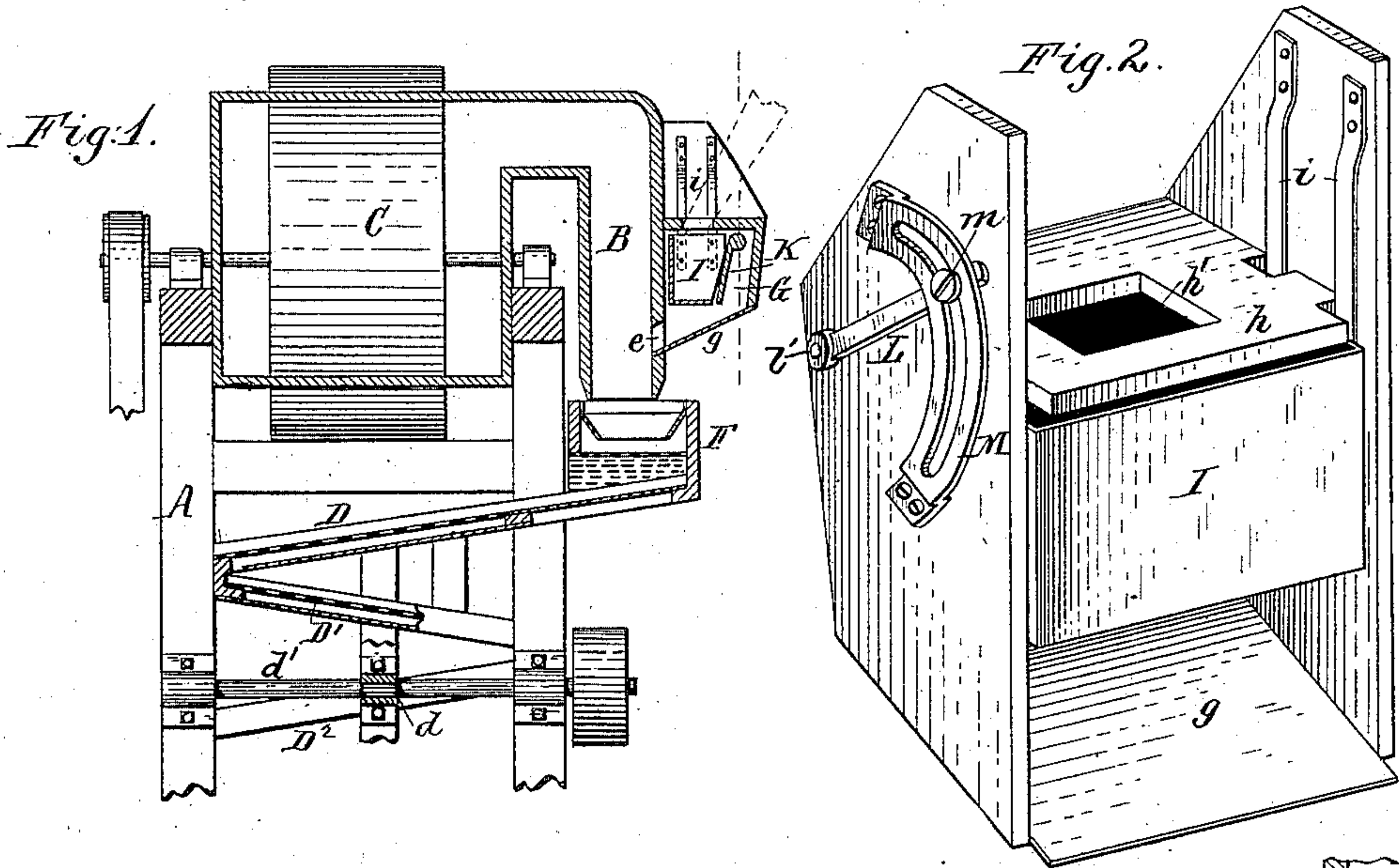


(No Model.)

J. B. MARTIN.
GRAIN SEPARATOR.

No. 309,394.

Patented Dec. 16, 1884.



Theo. L. Popp
Geo. E. Pitman } Witnesses.

J. B. Martin Inventor.
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UNITED STATES PATENT OFFICE.

JOSEPH B. MARTIN, OF SILVER CREEK, NEW YORK, ASSIGNOR TO HOWES
& EWELL, OF SAME PLACE.

GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 309,394, dated December 16, 1884.

Application filed April 19, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH B. MARTIN, of Silver Creek, in the county of Chautauqua and State of New York, have invented new and useful Improvements in Grain-Separators, of which the following is a specification.

This invention relates more particularly to an improvement in that class of grain-separators in which the grain is first freed from the lighter impurities by an air-current in an air-trunk, and then sifted or subjected to a screening action, whereby the grain is separated, according to form and size, into different grades.

The object of my invention is the construction of a feed mechanism which shall deliver the grain to be separated in a stream of uniform thickness, and which will permit the feed to be easily regulated, and is not liable to become clogged by stones, straws, &c.

With these ends in view my invention consists of the improvements which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional elevation of a separator provided with my improvements. Fig. 2 is a perspective view of the feed-box removed from the air-trunk. Figs. 3 and 4 are vertical sections, at right angles to each other and on an enlarged scale, of the feed mechanism.

Like letters of reference refer to like parts in the several figures.

In Fig. 1 my improvement is illustrated as being applied to a zigzag separator—that is to say, a separator containing a number of screens or sieves arranged in zigzag form one above the other.

A represents the stationary frame of the separator; B, the air-trunk, through which the grain passes before it is delivered to the screens; and C, the fan, whereby an air-current is drawn in an upward direction through the air-trunk B. D D' D² represent the zigzag screens attached to the frame of the machine by suitable hangers, and receiving a lateral reciprocating or vibratory motion by an eccentric, *d*, mounted upon a shaft, *d'*. *e* represents an opening arranged in the outer side of the air-trunk B, through which the grain is delivered

into the same. F represents the preliminary screen, arranged transversely at the head of the upper screen, D, below the air-trunk B, for the purpose of separating stones, straws, and other impurities from the grain before the latter passes upon the sieve D. All of these parts are old and well known, and may be constructed in any suitable manner.

G represents a chamber secured to the outer side of the air-trunk B above the opening *e*, and provided with an inclined bottom, *g*, which leads to the opening *e*, and has the proper pitch to cause the grain which falls on the bottom to flow through the opening *e* into the air-trunk B.

h represents the top plate of the chamber G, which is provided with an opening, *h'*, through which the grain is spouted into the chamber G.

I represents the feed-box, which is arranged in the chamber G, below the opening *h'* thereof, and made open at its top and at its rear side, as clearly shown in Fig. 4. The feed-box I is supported by elastic or flexible hanger bars or rods *i*, which are secured with their lower ends to the feed-box, and with their upper ends to the upper portions of the side walls of the chamber G.

J represents a standard secured to the upper end of the frame of the sieve D, and connected by a horizontal rod, *j*, with the feed-box I, so that the latter receives a lateral shaking or vibratory motion from the shaking sieve or shoe, which is actuated by the eccentric *d*.

It is obvious that the feed-box may be vibrated by a separate mechanism; but I prefer to attach it to the shaking shoe or sieve frame, as being the simplest arrangement.

K represents the adjustable feed-gate, which is arranged in the chamber G, so as to close against the open rear side of the feed-box I. The gate K is pivoted in the side walls of the chamber G by journals *l l'*. The journal *l'* projects beyond the outer side of the side wall in which it is supported, and is provided with an arm, L, which is made adjustable on a slotted segment, M, by means of a set-screw, *m*. By swinging the gate K on its pivots the opening between the bottom of the feed-box

and the gate can be increased or reduced, thereby increasing or reducing the feed correspondingly.

The grain entering through the opening *h'* in the top plate of the chamber *G* falls upon the bottom plate of the feed-box *I*, and is evenly distributed over the entire length of the feed-box by the shaking or vibratory motion of the feed-box, and flows over the rear edge of the bottom plate of the feed-box in an even and uniform stream, the thickness of which is regulated by the feed-gate *K*. The grain escaping from the feed-box falls upon the inclined bottom of the chamber *G*, and passes in a stream of uniform thickness through the opening *e* into the air-trunk *B*, thereby insuring an even and uniform action of the air-current upon the grain, and a complete separation of the lighter impurities from the same. The grain which has been so freed from the lighter impurities falls upon the preliminary screen *F*, and is distributed by the latter over the upper portion of the first screen, *D*, of the separator.

The rapid vibratory motion of the feed-box *I* along the stationary feed-gate, which has no vibratory motion, not only serves to loosen and distribute the grain in the feed-box, but also causes stones, straws, &c., which would otherwise lodge, to pass through the opening between the feed-gate and the feed-box, thereby preventing interruption in the feed.

I am aware that it is not new to attach a feed-receptacle to a shaking screen, so as to vibrate therewith, and I do not broadly claim such construction; but

I claim as my invention—

1. The combination, with a sieve or screen having a lateral vibrating motion, of a feed-receptacle attached to said sieve or screen and vibrating laterally therewith transversely to the direction in which the grain escapes from the feed-receptacle, and a stationary adjustable feed-gate arranged to close against said feed-box and having no vibratory motion,

whereby the grain is distributed along the discharge-edge of the feed-receptacle and delivered therefrom in a stream of uniform thickness, substantially as set forth.

2. The combination, with a shaking sieve, of a feed-box attached to the sieve and vibrating therewith, and an adjustable feed-gate arranged to close against said feed-box, and pivoted in a stationary frame, substantially as set forth.

3. The combination, with a stationary air-trunk having an inlet-opening in its side, of a feed-receptacle which receives the grain and delivers the same into the opening of the air-trunk, and which vibrates transversely to the direction in which the grain flows from the feed-receptacle, and an adjustable feed-gate, whereby the grain is distributed along the edge of the feed-receptacle and delivered therefrom into the air-trunk in a thin stream of uniform thickness, substantially as set forth.

4. The combination, with a stationary air-trunk having an opening through which the grain enters the same, of a chamber secured to the outside of the air-trunk above said opening, and a shaking feed-box and an adjustable stationary feed-gate arranged in said chamber, substantially as set forth.

5. The combination, with the air-trunk *B*, having an inlet-opening, *e*, of the chamber *G*, a shaking feed-box, *I*, supported in said chamber by hangers *i*, and a feed-gate, *K*, pivoted in said chamber, substantially as set forth.

6. The combination, with the shaking sieve *D* and an air-trunk, *B*, provided with chamber *G*, of the feed-box *I*, arranged in said chamber and attached to the shaking sieve *D*, and the adjustable gate *K*, pivoted in said chamber, substantially as set forth.

Signed this 12th day of April, 1884.

J. B. MARTIN.

Witnesses:

EDWARD WILHELM,
CARL F. GEYER.