L. B. Corbin.

Grain Separator.

No. 27,274. Patented Feb. 28, 1860.

Fig. 4.

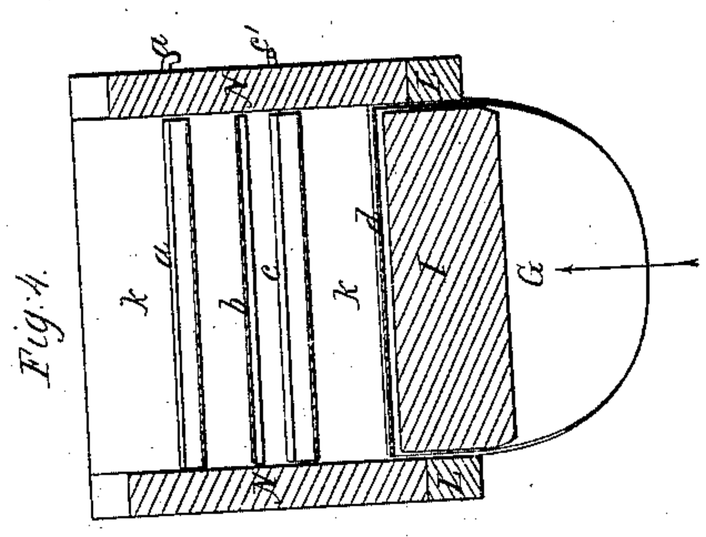

Fig. 2.

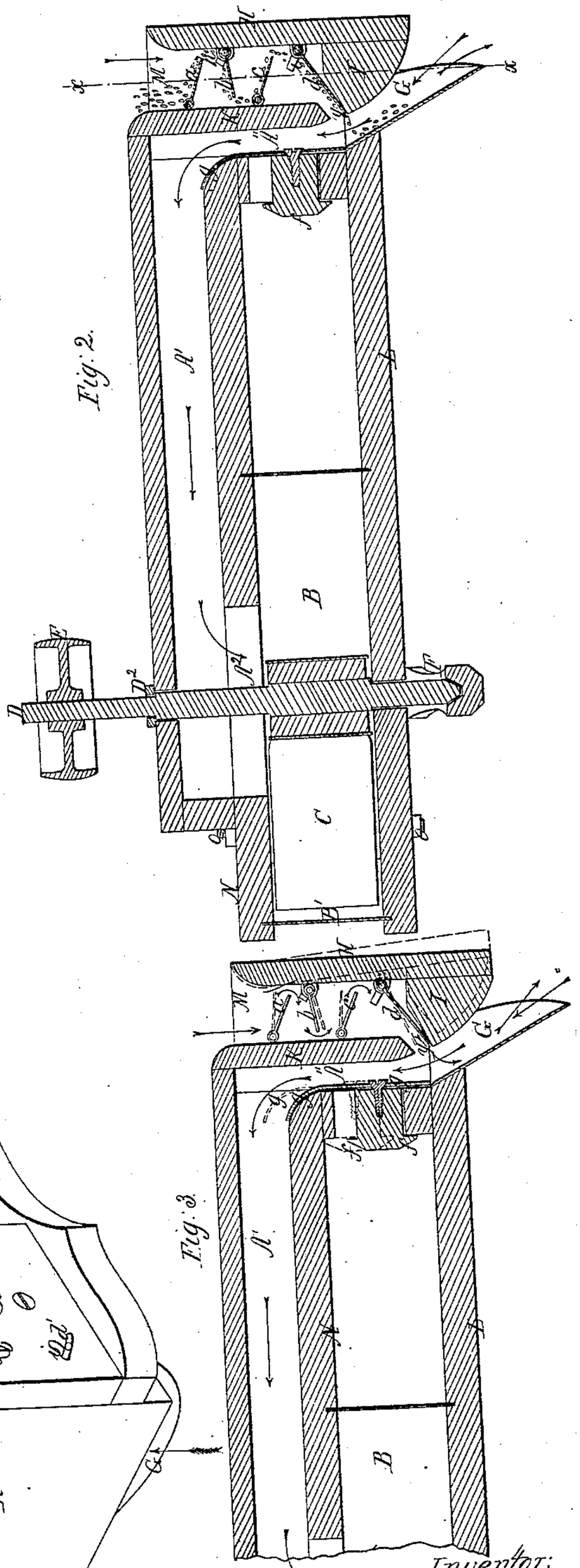

Fig. 1.

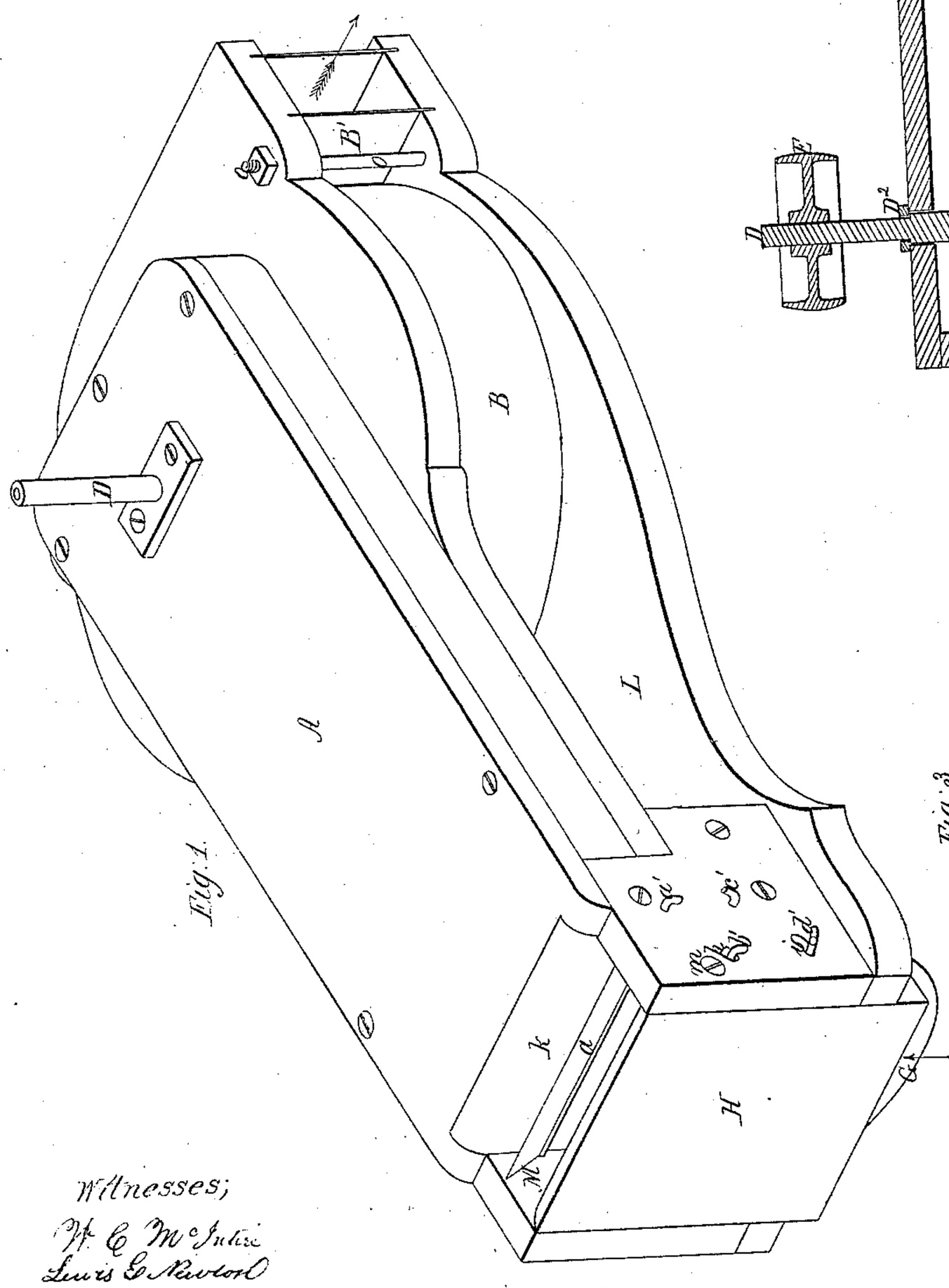

Fig. 3.

Witnesses;
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UNITED STATES PATENT OFFICE.

L. B. CORBIN, OF DRYDEN, NEW YORK.

GRAIN-SEPARATOR.

Specification of Letters Patent No. 27,274, dated February 28, 1860.

To all whom it may concern:

Be it known that I, L. B. CORBIN, of Dryden, county of Tompkins, in the State of New York, have invented a new and useful Improvement in Grain-Separators; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

My invention relates to that class of machine in which the grain is subjected to a blast of air to free it of its impurities and has for its object to effectually clean the grain of all foreign substances while the mechanism employed shall be simple and not apt to clog up, or get out of order, and to these ends my invention consists in certain improvements in the construction of this kind of machine, as will be fully described hereinafter.

To enable those skilled in the art to make and use my invention I will proceed to describe the mode in which I have practiced it, referring by letters to the accompanying drawings forming part of this specification and in which—

Figure 1, represents in isometrical perspective a machine embracing my invention. Fig. 2, represents a vertical longitudinal section through the center of the same. Fig. 3, represents part of another similar view embracing illustrations, to be hereinafter referred to. And Fig. 4, represents a vertical cross section at *x x*, Fig. 2.

The same letters denote the same parts, of the apparatus, in the different views.

B, is the case, C, the fans and D, the shaft or axle of an ordinary fan blower; the shaft D, is supported in a step bearing formed in the metallic stand F (which is bolted to the base, or bottom board L, of the apparatus) and is retained by a cap piece D^2, fitting down over its shoulder and fastened to the top board A.

E, is a pulley to which a belt may be applied to drive the fan which is arranged, as illustrated between two boards L and N (see Figs. 1, and 2,) in the upper of which N, is cut a circular air passage A^2 (see Fig. 2) forming a connection between interior of the fan case, B, and the air trunk A′. Said air trunk, or passage is formed on top of the board N, by the top case A, (as represented at Figs. 1 and 2) and connects at its other extremity with a box or chamber which is divided by a vertical partition K into two compartments one of which forms a vertical prolongation of the air passage A′; the other (M), what I designate, "spreading chamber."

G is a scoop-shaped discharge spout which is arranged at the lower end of the spreading chamber and air passage and through which the grain makes its exit from the apparatus.

a, *b*, *c*, *d*, are the adjustable spreading aprons and *a′*, *b′*, *c′*, *d′* the rods on which they are hung.

g, is the adjustable fender board and *f* its hand piece or knob. The front board H, of the chamber M, is hung on two pivot screws, *m*, (see Fig. 1) one on each side in order that it may be readily vibrated, or swung in and out from the chamber M, at its lower end, to vary the opening between the base block I, and the bottom edge of partition K, (see Figs. 2, 3) for the extrication of any large bodies which may get into said opening and might clog up said exit (*y*).

h, and *i*, are slots, cut in the sides of the chamber M, to allow the rods *b′* and *d′* (which are attached to the swinging board (H) to vibrate with board H.

The blue arrows indicate the direction in which the current of air passes, and the red arrows the direction of the passage of grain through the machine.

The grain to be separated from all its foreign particles and unsound parts, is discharged in a gradual stream into the top of the chamber M, and falls onto the first of the spreading aprons *a*, on which the seeds are somewhat scattered, and from which they slide gradually down and fall onto the apron *b* from thence onto *c*, on which they are further dissipated, over the surface of said apron (*c*) from which they pass onto the apron *d* (by which time the particles have become all separated and spread out into a very thin sheet) from whence they slide through the exit *y* (see Figs. 2 and 3) into the discharge spout G.

The manner in which the grain passes through the "spreading chamber" will be more fully comprehended by reference to Fig. 2, where the grain is drawn in, with yellow lines; as the grain passes off of the last apron *d*, in a very thin sheet, the blast, or current of air, created by the fan blower (or bellows) passes up through it in a direction about at right angles to the plane in which

the sheet of grain is moving off of the apron *d*, and perfectly purges it of all light and foreign substances (such as straws, burs unsound grains &c. &c.) carrying them up the vertical part A″ of the air passage over the fender, *g*, and along the trunk A; from thence through A² (see Fig. 2) and the fan case and out at the discharge mouth piece B′, as indicated by the blue arrows (see Fig. 1).

At Fig. 3, is illustrated by red lines the variation which may be made in the degree of inclination of the spreading aprons, *a*, *b*, *c*, *d*, which variation or adjustibility is very needful; since different kinds of grain when more or less wet and cloggy will require more or less inclination to the aprons, to insure its properly sliding down them and becoming thoroughly dissipated, or spread out before arriving at the exit *y*.

The elevation of the horizontal air passage A′ is fixed at such a point that the capacity of the blast will be just insufficient to lift the heaviest grain (or wettest) which will have to be passed through the machine, up over it. By this construction all foreign matters lighter than the good grain must be elevated to the air trunk A′; from whence they are carried off; but this arrangement would not operate successfully when lighter grain would be run through the machine, for the grain and all would be elevated to the trunk A′ and carried off; but when lighter grain is to be cleaned the fender *g*, is elevated, (as seen in red at Fig. 3,) to such height as to cause the same effect to be produced on the light grain as was before on the heavy; the capacity of the blast remaining the same in all instances (its feeding passage, the vertical air passage A″ remaining always the same size). It frequently occurs that there are mixed with the grain large pieces of foreign matters which would not readily pass through the exit *y*, intended only to emit a very thin stream of grain. The presence of any such obstacles is very easily detected by the operator who by taking hold of the front board H keeping the lower apron down on to the block I, and shaking the lower edge (as illustrated in red lines at Fig. 3) will effectually dislodge any such obstacle without stopping the machine, or any loss of time. The scope of adjustment of the last apron *d*, is much more restricted than that of any of the others, but its adjustment accomplishes an additional and very important result viz: the regulation of the capacity of the exit *y*, which is very important, for it is necessary that the exit should be so varied as to just allow, the thinnest possible sheet of the grain being operated upon, to pass through, since otherwise the supply of air to the fan would be in a great measure permitted through the chamber M, which would not only be detrimental to the thorough separation of the chaff from the grain, but would also induce too rapid a descent of the grain over the aprons.

I have illustrated and described the apparatus which I have been using in my mill, and which was arranged immediately over the run of stones, (the spout G, extending into the eye of the stone) and below the hopper from the spout of which (shaken by the clauzel) the grain flowed into the chamber M, instead of into the eye of the stone as ordinarily; but it is obvious that my invention can be applied in other forms.

In the application of my invention which I have made to grain which had gone through all the practiced processes of cleaning and was being ground, I have cleaned out about ¾ of a pound, to the bushel, of foreign matters such as straws, husks, burs, unsound grain, worms &c. &c.

I do not wish to limit my invention to the number of spreading aprons shown since it may be varied without departing from the spirit of my invention neither do I wish to limit myself to the exact construction of apparatus shown and described in this application, nor do I wish to be understood as embodying in my invention the idea of passing grain over inclined screens, or perforated surfaces, as is common in steaming apparatuses, or over a series of heated surfaces as in drying machines but

What I do claim as of my invention, (in machines for extracting foreign matters from grain) is—

1. Making the spreading aprons adjustable, so that the degree of inclination of each and any of them may be varied at pleasure for the purposes hereinbefore set forth.

2. The adjustable frontis-piece H, of the spreading chamber, in combination with the partition K, the whole arranged to operate as specified for the purpose set forth.

In testimony whereof I have hereunto set my hand and affixed my seal this first day of December 1859.

L. B. CORBIN. [L. S.]

Witnesses:
J. M. McIntire,
W C. McIntire.