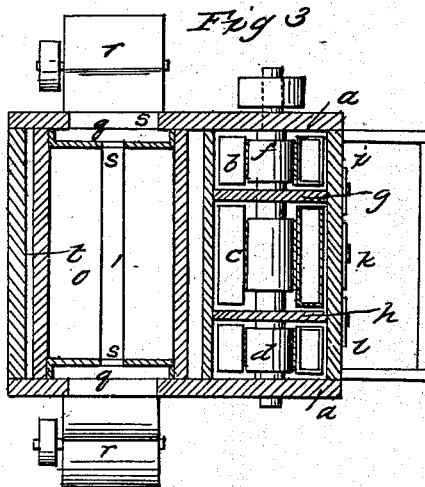
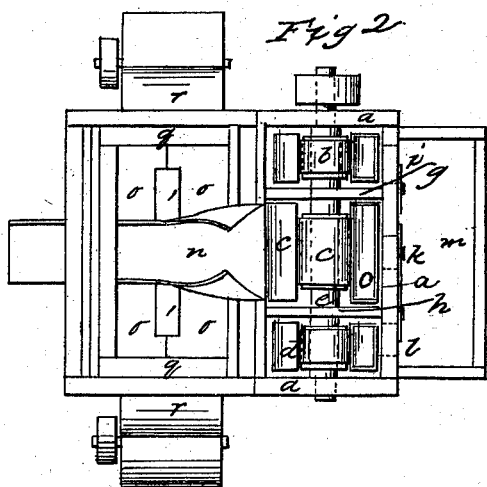
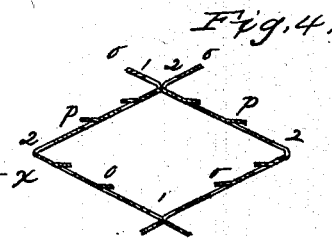
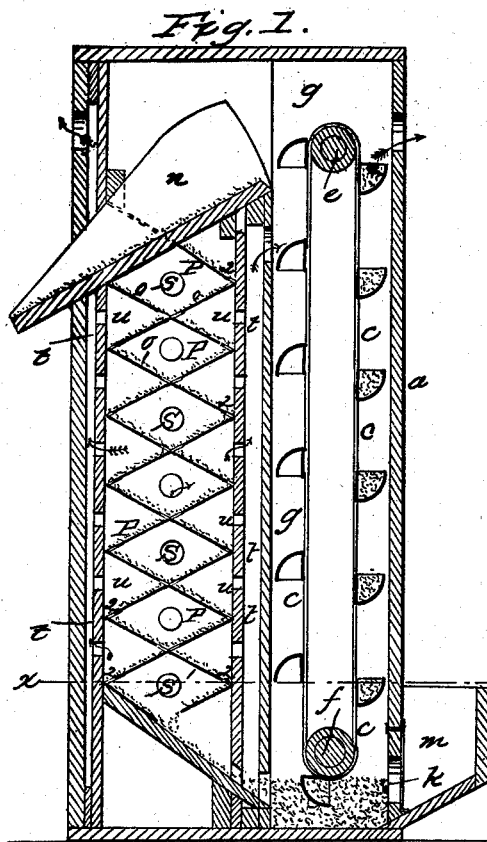


L. S. CHICHESTER.

Grain Drier.

No. 47,596.

Patented May 2, 1865.



Witnesses:
Lemuel W. Enell
Chas H. Smith

Inventor:
Sam S. Chichester

UNITED STATES PATENT OFFICE.

LEWIS S. CHICHESTER, OF BROOKLYN, NEW YORK, ASSIGNOR TO HIMSELF
AND CLARK W. MILLS, OF SAME PLACE.

IMPROVED GRAIN-DRIER.

Specification forming part of Letters Patent No. **47,596**, dated May 2, 1865; antedated
April 15, 1865.

To all whom it may concern:

Be it known that I, LEWIS S. CHICHESTER, of Brooklyn, in the county of Kings and State of New York, have invented and made a certain new and useful Improvement in Grain-Driers; and I do hereby declare the following to be a full, clear, and exact description of the said invention, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1 is a vertical section of my improved apparatus. Fig. 2 is a plan of the same near the top, and Fig. 3 is a plan at the line *x x* of Fig. 1.

Similar marks of reference denote the same parts.

Grain for its delivery into store-houses or on board of vessels almost uniformly has to be elevated, and this is generally effected by endless belts and buckets, and but little or no opportunity is afforded during this operation for the moisture to be driven off, or for the grain to be cooled in cases where it is or has become heated to a greater or less extent.

The nature of my invention consists in an arrangement of two or more elevators, combined with a drying apparatus, whereby the grain can either be raised and delivered upon a peculiar drying or cooling apparatus and then raised a second time and delivered, or raised and delivered at once, as the circumstances of the case or the nature of the grain may require.

In the drawings, *a* represents a casing containing an elevator. I have shown said elevator as formed in three sections, *b*, *c*, and *d*, but there may be only two sections or more than three. The elevators pass over drums on the shaft *e*, and beneath other drums on the shaft *f*, and are driven by competent power. The elevators and the grain-receptacles at the bottom are separated by divisions *g* and *h*, that extend up to the top of the elevator-casing *a*, or nearly so, and the grain-receptacles at the bottoms of the elevators are provided with openings *i k l* to the hopper *m*, and each opening is provided with a separate cover or slide. At the top of the elevator *c* is a chute or spout, *n*, leading out of the apparatus, and from which the grain passes to any desired

receptacle as it is delivered. Below the chute *n* is a series of alternately converging and diverging grain-drying tables, *o p*, that are each placed at such an inclination that the grain will run or slide over them with the necessary velocity, and openings are provided at 1 1, where the tables *o* converge, and immediately above the apex or point of divergence of the tables *p*, and openings 2 2 are also provided in the tables *p p* near or at their outer edges and above the highest edges of the converging tables *o o*. Any desired number of these converging and diverging tables may be employed, according to the height of the elevator, and, if desired, two or more ranges of these converging and diverging tables may be placed side by side, forming a collection of diamond-shaped openings or chambers between the tables, the grain passing from the lowest point of one chamber upon the apex of the next immediately below and separating into the adjacent chambers. Each table may be formed of metal, with longitudinal slots beneath, overhanging lips, as seen in Fig. 4, in order that air may pass through said slots and through the grain lying upon or sliding over such tables. The inclosure containing these tables is made with hollow walls. Those at *q q* are supplied with air from the blowers *r r*, said air passing in between the tables through openings at *s s*, and the hollow walls at *t t* receive through openings *u u* and convey away the air charged with moisture from the grain.

When the grain is to be dried, the valve or gate at *k* is to be shut, and the grain is taken from the hopper *m* by the elevator or elevators *b* and *d* and delivered upon the drying-tables *o* and *p*, and passes over their surface gradually from the top to the bottom, being subjected to the action of hot air introduced through the blowers *r r*, said air being heated by any suitable furnace. From the lower table the grain passes to the elevator *c*, and is again raised and discharged through the spouts *n* to a vessel or other receptacle.

When the grain is to be cooled in the act of being elevated, the apparatus is employed in the same manner, but instead of heated air being introduced the ordinary atmosphere is

employed, or said air may be cooled or deprived of any moisture before it is passed into my apparatus by passing said air through a series of tubes or metal chambers placed under water to condense any vapors and insure the air being dry as well as cold when it comes in contact with the grain to be cooled.

Grain that is both dry and cool can be raised directly by the elevator *c* without passing over the drying or cooling tables.

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

1. The combination, with a drying or cooling apparatus for grain, of two or more elevators, substantially as specified, so that the grain can be passed through the drying apparatus and again elevated and delivered, or ele-

vated and delivered at once, substantially as specified.

2. A series of flat drying-tables for grain, inclined in alternate opposite directions and receiving the grain from the bottom of one set of tables upon the apex of the tables below, substantially as specified.

3. The combination of the series of tables *o p*, inclined in alternate opposite directions, with the hollow walls *q t*, forming the inlets and outlets of the air, as set forth.

In witness whereof I have hereunto set my signature this 12th day of September, 1864.

LEWIS S. CHICHESTER.

Witnesses:

LEMUEL W. SERRELL,
CHAS. H. SMITH.