(No Model.)

L. GATHMANN.

GRAIN DRIER.

No. 339,874. Patented Apr. 13, 1886.

Fig. 1.

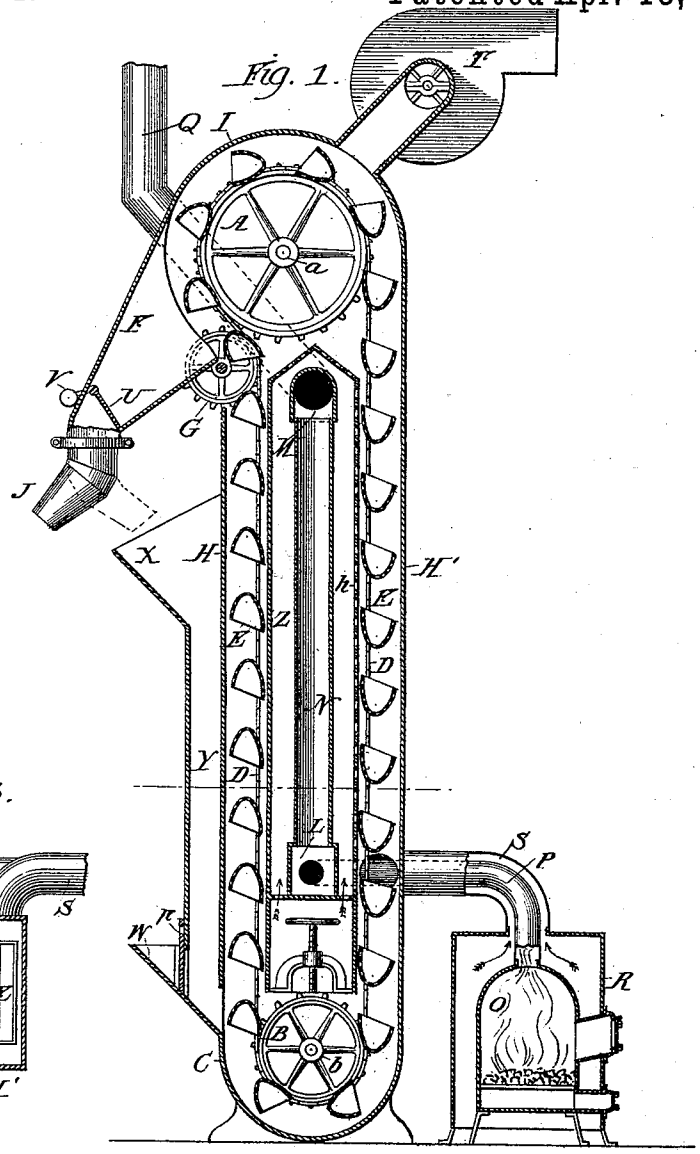


Fig. 3.

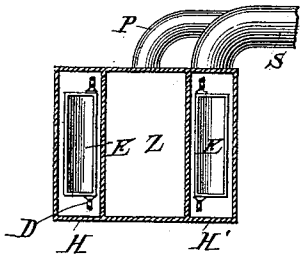
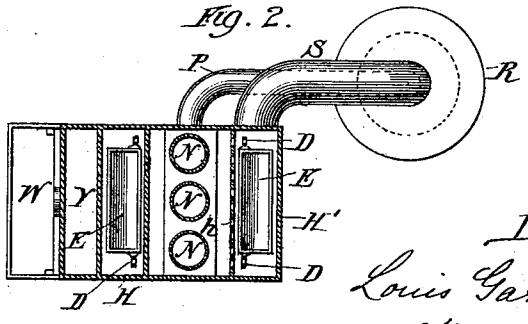


Fig. 2.



Witnesses:
Frank L. Blanchard
Richard Reinbold

Inventor:
Louis Gathmann
By Wm H Lotz
Attorney.

N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

LOUIS GATHMANN, OF CHICAGO, ILLINOIS.

GRAIN-DRIER.

SPECIFICATION forming part of Letters Patent No. 339,874, dated April 13, 1886.

Application filed December 8, 1885. Serial No. 185,034. (No model.)

To all whom it may concern:

Be it known that I, LOUIS GATHMANN, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Grain-Driers, of which the following is a specification, reference being had therein to the accompanying drawings.

The nature of my invention relates to apparatus for drying grain by artificial heat in a continuous automatic operation; and it has for its object to arrange an air-heating apparatus between the legs of an elevator, and to provide for a free circulation of the heated air through the grain while elevated in the buckets.

My invention therefore consists of the novel devices and combinations of devices hereinafter described and specifically claimed.

In the accompanying drawings, Figure 1 represents a vertical section of the entire apparatus; Fig. 2, a sectional plan of the same, and Fig. 3 a sectional plan of the device modified.

Corresponding letters in the several figures of the drawings designate like parts.

A denotes one of a pair of sprocket-wheels mounted upon an upper shaft, *a*, to which power is applied in any suitable manner; and B is one of a pair of sprocket-wheels mounted upon a shaft, *b*, within the boot C of the elevator. Over these sprocket-wheels A and B are stretched endless chains or link-belts D, carrying elevator-buckets E, which latter are made of perforated sheet metal or wire-cloth in a manner to hold the grain and yet to allow a circulation of air through such grain.

For the purpose of providing a ready discharge of the grain from the buckets E into the hopper F, I place below the upper sprocket-wheel, A, a pair of idler-wheels, G, that guide the chains D on their loose or down-moving side to be about on a parallel line with the elevating side of the chains; but these guide-wheels G are not essential, since by placing the elevator on an inclination it can be made to discharge the grain into the hopper F without such guide-wheels G.

H H′ are the elevator-legs extending from the boot C to the head I, in which the bucket-chains travel. To one end of head I is connected the hopper F, which to its lower end has turn-spout J. The space between the elevator-legs H H′, that is generally left open, I close in from both sides, and place into the so obtained vertical chamber Z a lower horizontal flue, L, and an upper horizontal flue, M, both communicating through a series of vertical tubes, N.

O is a stove or furnace placed anywhere near the elevator. The hot gases or products of combustion from a fire in such stove O are conducted through smoke-pipe P into flue L, whence they pass upward through flues N into flue M, and thence are carried off through a smoke-pipe, Q. The flues L, M, and N thus arranged form a radiator for heating the circulating air. The stove or furnace O is inclosed by a casing, R, standing upon legs to admit air from under into the stove-surrounding space, which air as it becomes heated will rise and pass off through pipe S, surrounding smoke-pipe P and leading into leg H′. The inward wall, *h*, of elevator-leg H′ is perforated to allow the heated air from chamber Z to pass into leg H′ and to circulate through the grain carried in perforated buckets E.

With the head I of the elevator I connect a suction-fan, T, that will draw off the air impregnated with the moisture evaporated from the grain by the heat, and that will produce a strong air-circulation through elevator-leg H′ only by providing the hopper F with a valve, U, overbalanced by a weighted lever, V, in a manner that it will be opened from the pressure of the grain after the hopper has been partly filled therewith, and that will be automatically closed again by lever V as soon as the grain has passed through or by such valve.

Grain to be dried is conducted from the bin of an elevator into the elevator-boot through hopper W, that is provided with a gate, *p*, for regulating the feed of such grain; but when the same grain has not become sufficiently dry with passing through the machine once the gate *p* is closed and the spout J is turned to discharge into hopper X, whence, through a flue, Y, the grain is dumped into the boot again, to pass through the machine once more or as often as necessary.

The apparatus is to be arranged in any well-

known manner to change and regulate the speed of the upper shaft, *a*, that the grain may be held in the buckets a longer or shorter time, according to its condition or the degree of dryness to be obtained.

The flues L, M, and N may be dispensed with, and the chamber Z itself may form the radiator by being suitably connected with smoke-pipes P and Q, as shown by Fig. 3, in which case, however, the inner walls of the elevator-legs H H′, forming two of the walls of such heating-chamber, must be imperforate.

It is obvious that a steam-radiator may be arranged as well between the elevator-legs.

What I claim is—

1. A grain-drying apparatus consisting of an elevator and of a heating-radiator placed or formed between the legs of such elevator, substantially as set forth.

2. A grain-drying apparatus consisting of an elevator having perforated buckets and of a heating-radiator placed or formed between the legs of such elevator, substantially as set forth.

3. A grain-drying apparatus consisting of an elevator, of a heating-radiator placed or formed between the legs of such elevator, and of an exhaust-fan connected with such elevator, all substantially as set forth.

4. A grain-drying apparatus consisting of an elevator having perforated buckets, of a heating-radiator placed or formed between the legs of such elevator, and of an exhaust-fan connected with such elevator, all substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS GATHMANN.

Witnesses:
RICHARD REINBOLD,
HARRIS W. HUEHL.