

L. C. KISER.
GRAIN DRIER.

APPLICATION FILED SEPT. 4, 1909.

954,033.

Patented Apr. 5, 1910.

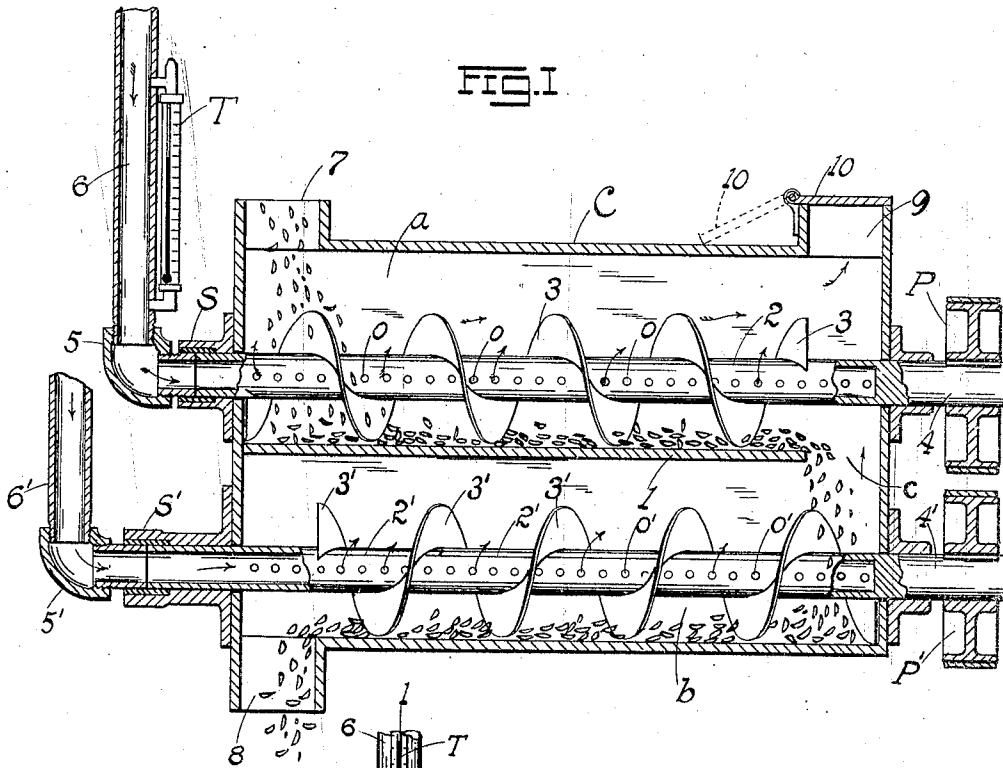


FIG. 1

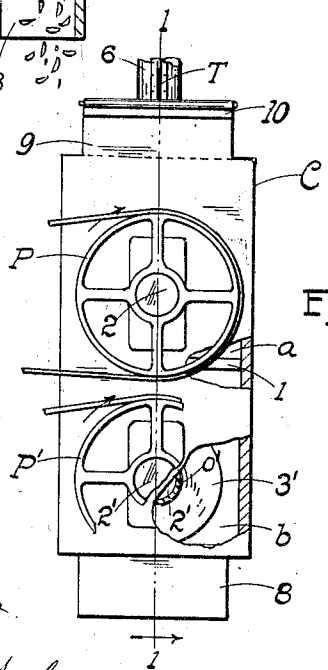


FIG. 2

WITNESSES:

Harry A. Reimer

Ferris C. Heber

INVENTOR.
Lewis C. Kiser.

BY *Ernst Kiser*
ATTORNEY.

UNITED STATES PATENT OFFICE.

LEWIS C. KISER, OF DECATUR, ILLINOIS, ASSIGNOR OF ONE-HALF TO JOSEPH STOCKS,
OF LAKE CITY, ILLINOIS.

GRAIN-DRIER.

954,033.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed September 4, 1909. Serial No. 516,292.

To all whom it may concern:

Be it known that I, LEWIS C. KISER, citizen of the United States, residing at Decatur, in the county of Macon and State of Illinois, have invented certain new and useful Improvements in Grain-Driers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in grain-driers; and it consists in the novel construction and arrangement of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a middle vertical longitudinal section of the apparatus, on the line 1—1 of Fig. 2; and Fig. 2 is an end elevation, parts being broken away.

The object of my invention is to construct an apparatus for the drying and subsequent cooling of grain, and similar substances, the entire process being accomplished virtually in a single chamber traversed by hot and cold air currents respectively. The sources of these currents are immaterial, any means known to the art being employed to heat the hot air currents, and to cool the cold air, and since the present invention is not concerned with the character of heating and cooling means, no illustration thereof is here attempted. The advantages of the present invention will be more fully apparent from a detailed description thereof, which is as follows:—

Referring to the drawings, C, represents a box or casing provided with a centrally disposed horizontal partition wall 1 which terminates a short distance from the rear end wall of the casing. The partition thus divides the chamber of the casing into two superposed compartments *a*, *b*, between which intercommunication is established through the passage *c* formed between the end of the partition 1 and the rear vertical wall of the casing. Mounted in the upper or drying compartment *a* above the partition 1 is a hollow shaft 2 provided with a spiral conveyer 3, the shaft being provided with perforations or openings *o* between the wraps of the conveyer as shown. At the bottom of the cooling compartment *b* is mounted a similar hollow shaft 2' provided with a reversely wrapped spiral conveyer 3', this shaft likewise having air escape openings or perforations *o'*. The rear ends of

the shafts terminate respectively in solid portions 4, 4' to which the drive belt-pulleys P, P' are keyed or secured, the opposite open ends of the respective shafts passing through stuffing-boxes S, S' as shown. The intake of the shaft 2 communicates with the elbow 5 at the end of the hot-air pipe 6, the corresponding end of the shaft 2' communicating with the elbow 5' of the cold-air supply pipe 6'. The hot-air pipe is provided with a thermometer T. The casing C is provided with an intake-mouth 7 for the grain, at the front end, or the end adjacent to the pipes 6, 6' and with a discharge mouth or pipe 8 opposite the intake 7, and with an upper rear gas and steam escape flue 9 which may be closed by a valve or hinged flap 10.

In the operation of the drier, the grain is charged into the compartment *a* through the inlet or feed mouth 7 dropping down on the partition 1, along which it is gradually conveyed by the spiral conveyer 3 of the rotating shaft 2, the latter being operated from its belt pulley P as shown. When the grain reaches the opening or passage *c*, it drops therethrough to the bottom of the cold-air compartment *b*, being then advanced by the spiral conveyer 3' toward the discharge opening or mouth 8. The grain while traversing the upper compartment *a* is subjected to the action of the jets of hot air, which is driven under pressure from the pipe 6 into the hollow shaft 2, and escapes through the openings *o* penetrating the grain, the latter drying under its influence, the steam and gases being either allowed to escape freely through the flue 9 by opening the valve 10, or be temporarily held back against such escape by closing and weighting down said valve.

When the dried grain has dropped into the compartment *b*, and while being advanced toward the discharge mouth 8 by the spiral conveyer 3', it is subjected to the cooling action of the cold-air jets issuing from the openings *o'* of the hollow-shaft 2', the air being supplied thereto under pressure from the cold-air supply pipe 6'. Thus the grain (or other substance) is first dried and then delivered cool, when it is ready for any subsequent treatment to which it may be subjected.

Having described my invention, what I claim is:—

1. A grain drier comprising a casing hav-

ing an inlet and a discharge opening oppo-
 site thereto at one end of the casing, a parti-
 tion wall between said inlet and discharge
 openings dividing the chamber into an upper
 5 and lower compartment having intercom-
 munication at the end of the casing opposite
 the inlet and discharge openings aforesaid,
 a spiral conveyer in the upper compartment
 for advancing the material from the inlet
 10 end of the casing to the opening between the
 compartments at the opposite end of the
 casing, means for delivering currents of
 heated air through the material during its
 passage through the upper compartment, a
 15 spiral conveyer in the lower compartment
 for advancing the material to the discharge
 opening of the casing, and means for deliver-
 ing currents of cold air through the material
 while being advanced through the lower
 20 compartment.

2. A grain drier comprising a casing hav-
 ing superposed intercommunicating com-
 partments, the upper compartment having
 an inlet opening at the top of the casing

and the bottom compartment having a dis- 25
 charge opening at the bottom of the casing
 at the same end with the inlet opening, hol-
 low shafts in the compartments having
 spiral conveyers for advancing the material 30
 from the inlet through the upper compart-
 ment to the opening between the compart-
 ments where the material drops into the
 lower compartment, then advancing the ma-
 terial through the lower compartment to the 35
 discharge opening, the walls of the shafts
 being perforated, and means for conducting
 hot air under pressure into the upper shaft
 for drying the material in the upper com-
 partment, and for conducting cold air to the 40
 lower shaft whereby the material is cooled
 by the currents projected through the perfor-
 ations.

In testimony whereof I affix my signa-
 ture, in presence of two witnesses.

LEWIS C. KISER.

Witnesses:

E. BLANCHE FITZWATER,
 C. J. HARTLEY.