G. H. HESS.

GRAIN DRIER.

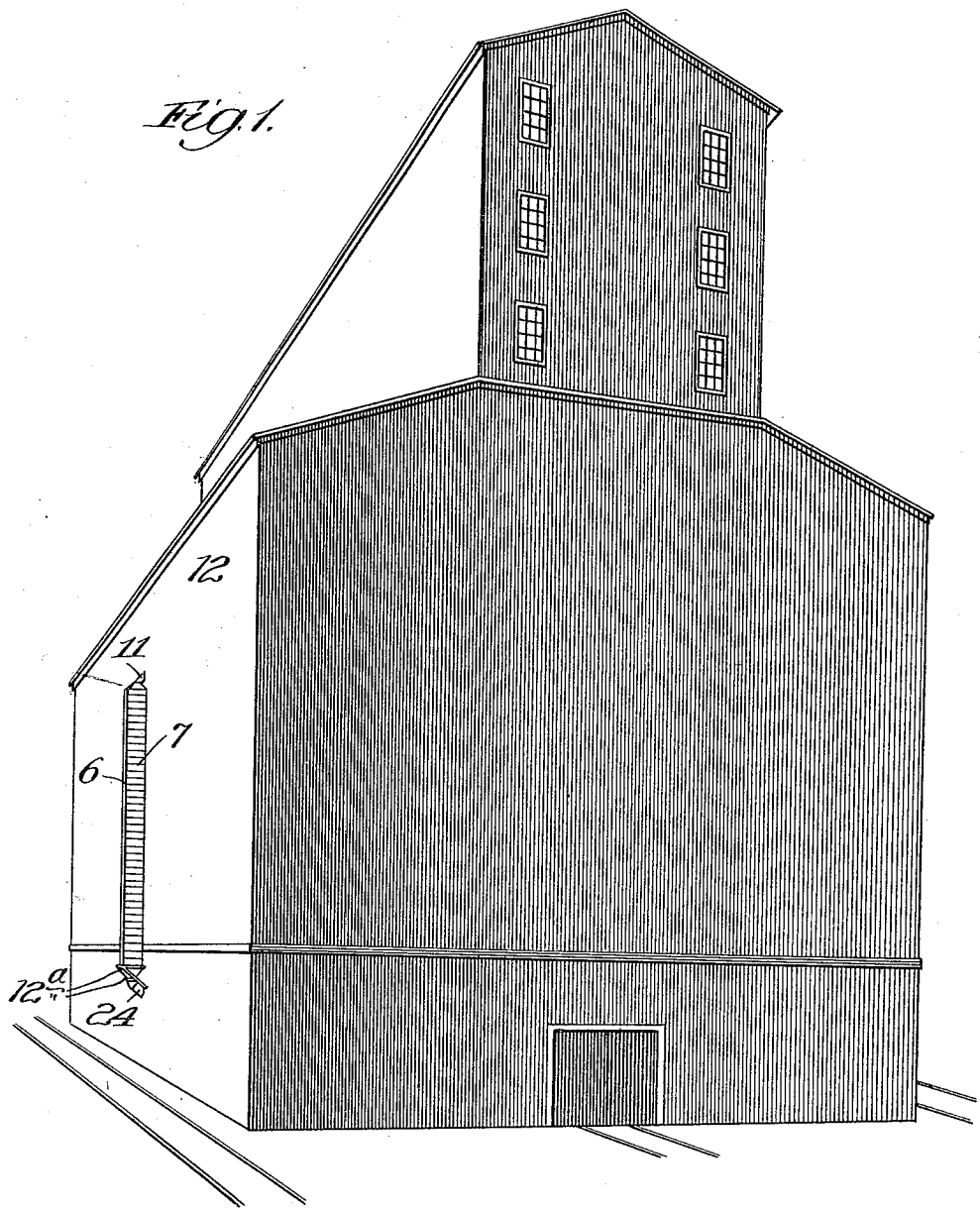
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1,141,546.

Patented June 1, 1915.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
Jas. Gaylord.
Irwin. O Bowman.

Inventor.
George H. Hess,
By Dyrenforth, Lee, Chritton & Wills,
Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

Fig. 2.

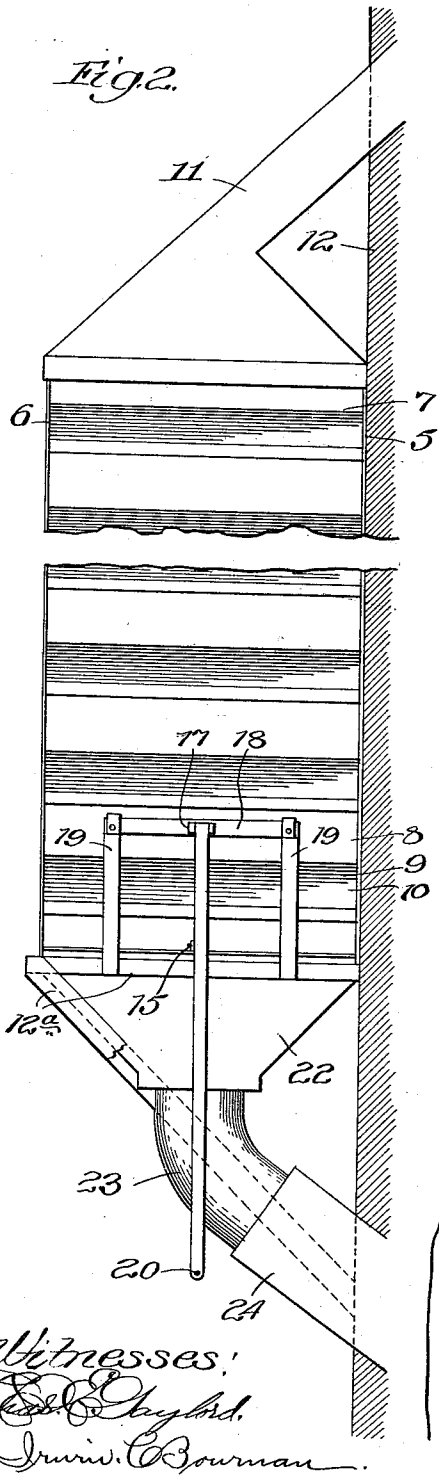
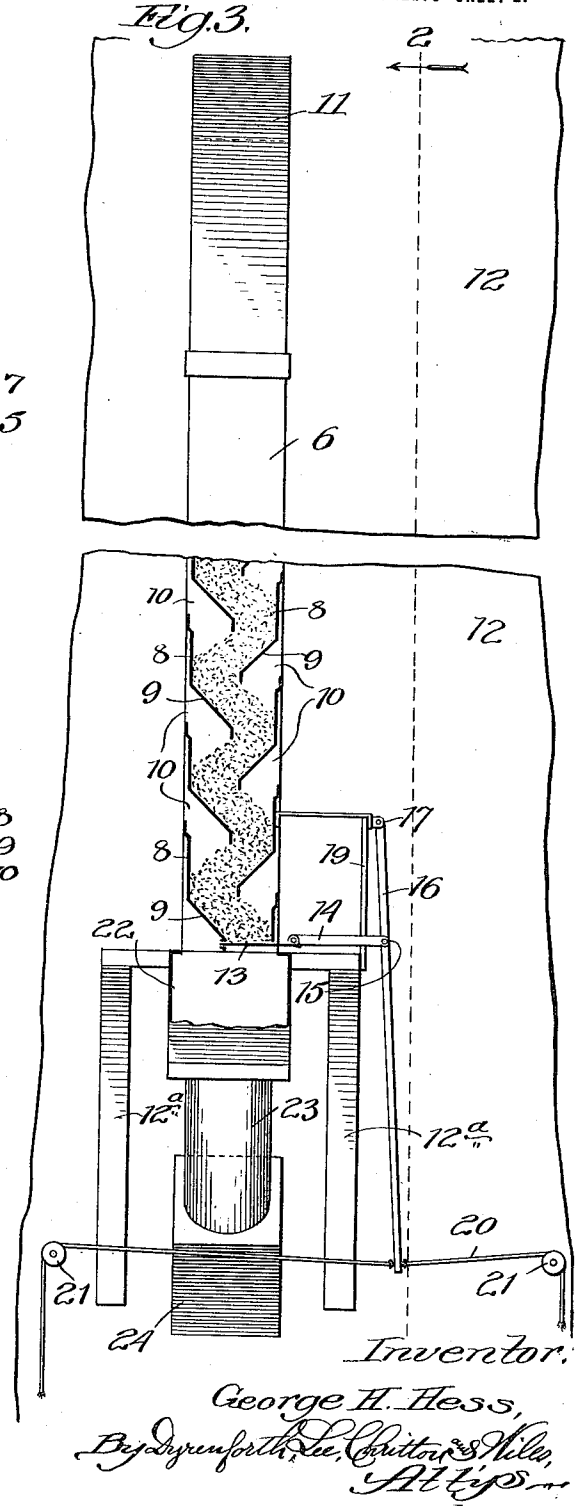


Fig. 3.



Witnesses:

Edw. C. Clayford.

Irwin C. Bowman.

Inventor:

George H. Hess,

By Dyrenforth, Lee, Chritton & Wilkinson,

Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE H. HESS, OF LA GRANGE PARK, ILLINOIS.

GRAIN-DRIER.

1,141,546. Specification of Letters Patent. Patented June 1, 1915.

Application filed May 27, 1914. Serial No. 841,255.

To all whom it may concern:

Be it known that I, GEORGE H. HESS, a citizen of the United States, residing at La Grange Park, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Grain-Driers, of which the following is a specification.

My invention relates more particularly to grain-driers of the type involving racks usually vertically disposed, for confining the grain and permitting of the passage of drying air therethrough.

The drying of grain by the apparatus now in common use is relatively expensive as they usually involve employment of heating apparatus provided especially for use with the drying apparatus.

I have discovered that the drying heretofore performed on apparatus as hitherto provided may, in many cases, be accomplished by the action of natural currents of air when properly directed into the grain, and utilizing this principle, I have devised apparatus for drying grain which is simple and economical of construction and operates to a highly satisfactory degree to dry grain supplied thereto.

I have devised my improved apparatus for use more particularly in connection with grain-elevators, the grain in which often reaches a condition requiring it to be subjected to currents of air, the grain so treated being then loaded into cars or returned to the elevator, in such cases it being desirable that the drying apparatus be located adjacent to the elevator to avoid undue handling and, therefore, I have chosen to illustrate my invention in this connection.

Referring to the accompanying drawings,—Figure 1 is a perspective view of a grain-elevator equipped with my improved drying apparatus. Fig. 2 is a broken view in side elevation of the apparatus, showing the adjacent wall of the elevator in section, this view being taken at the line 2 at Fig. 3, and viewed in the direction of the arrow; and Fig. 3, a view in front elevation of the drying apparatus, with a portion of the front side thereof removed.

In carrying out my invention, I may provide any form of construction which will support the grain and permit the passage of natural currents of air therethrough, the grain-supporting structure coöperating with deflecting means of any desirable construction, so disposed as to deflect the natural currents of air through the grain.

In the construction illustrated, the grain is supported in a manner to permit currents of air to be passed therethrough and dry the grain, in a casing, commonly known as a rack, involving a rear upright plate 5, a parallel front upright plate 6 with plates 7 of angle-shape in cross-section secured to and extending from the plate 5 to the plate 6. These plates 7 have vertical upright portions 8 and inwardly deflected portions 9, and are arranged in staggered relation, as shown, to afford openings 10 at opposite sides of the rack in staggered relation, the grain to be dried, upon being introduced into the top of the rack, being supported on the plates 7 in the form of a zig-zag column, whereby, air passed into the openings 10 at one side of the rack passes through the grain and out through the openings 10 at the opposite side of the rack.

The upper end of the rack is open and communicates with a pipe 11, which opens into the elevator through the wall 12 thereof against which the rack is secured in the position shown (namely, with its openings 10 at angles to this wall) by any suitable means, as for example, the braced frame construction represented at 12^a, the grain in the elevator being fed in any suitable manner to the pipe 11. Across the bottom of the rack proper is a slide-valve 13 for controlling the discharge of the grain from the rack, this valve being pivotally connected with a link 14 pivoted at 15 to a lever 16 between the ends of the latter, this lever being fulcrumed as indicated at 17 on a cross-arm 18 secured to two uprights 19 rising from the support 12^a, the lower end of this lever being fixed to a cable 20 extending over pulleys 21, with the free ends of the cable within reach of the operator, who, by pulling on one end or the other of the cable, opens or closes the valve 13.

The rack, at the bottom thereof controlled by the valve 13, communicates with a hopper 22 discharging into a spout 23, preferably rotatably mounted in the bottom of the hopper in a manner not shown, to permit its discharge end to communicate with a pipe 24 opening through the wall 12 and into the elevator, or into a car, or the like, below the spout, the pipe 24, at its inner end, in accordance with common practice, coöperating with

grain-elevating mechanism, not shown, for elevating the grain in the elevator. The pivoted spout 23, when turned out of registration with the pipe 24, permits the rack to be drained of rain water without its discharging into the pipe 24.

It will be understood from the foregoing that the grain-rack is located in the open air where it is subjected to the natural currents of air, the wall of the building against which the rack is positioned serving to deflect the air currents into the openings 10, and thence through the grain and out through the opposite side of the rack, the air thus passing through the grain drying it and reducing it to sweetened condition for return to the elevator or discharge into a car or the like.

An essential feature of my invention consisting in providing deflecting means for natural currents of air, it is immaterial whether the deflecting means be the wall of a building against which the rack is positioned, or whether the deflecting means be plates or wings located adjacent to the rack, and independent of the walls of the building as would be the case were the apparatus to be located in the open and away from a building.

The form of the grain-supporting structure is also immaterial, provided the grain is supported in a manner, and the structure is of such form, that air can pass through the structure and the grain confined therein.

I have demonstrated by actual practice that drying apparatus, constructed in accordance with my invention, is not only economical of manufacture and economical to operate, but serves in a highly satisfactory manner to dry grain under certain conditions.

What I claim as new and desire to secure by Letters Patent is:

Grain-drying apparatus comprising a structure having openings in its sides and adapted to support the grain to be dried, means adapted to connect the upper end of the structure with the interior of a building for receiving grain, and means adapted to convey the grain from the lower end of said structure into said building, said structure being so located relative to the wall of said building that said wall will extend at the rear portion of said structure and at substantially right angles to the sides of the latter and deflect natural currents of air into said openings, for the purpose set forth.

GEORGE H. HESS.

In presence of—
OTTILIE C. AVISUS,
AMY C. FISCHER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."