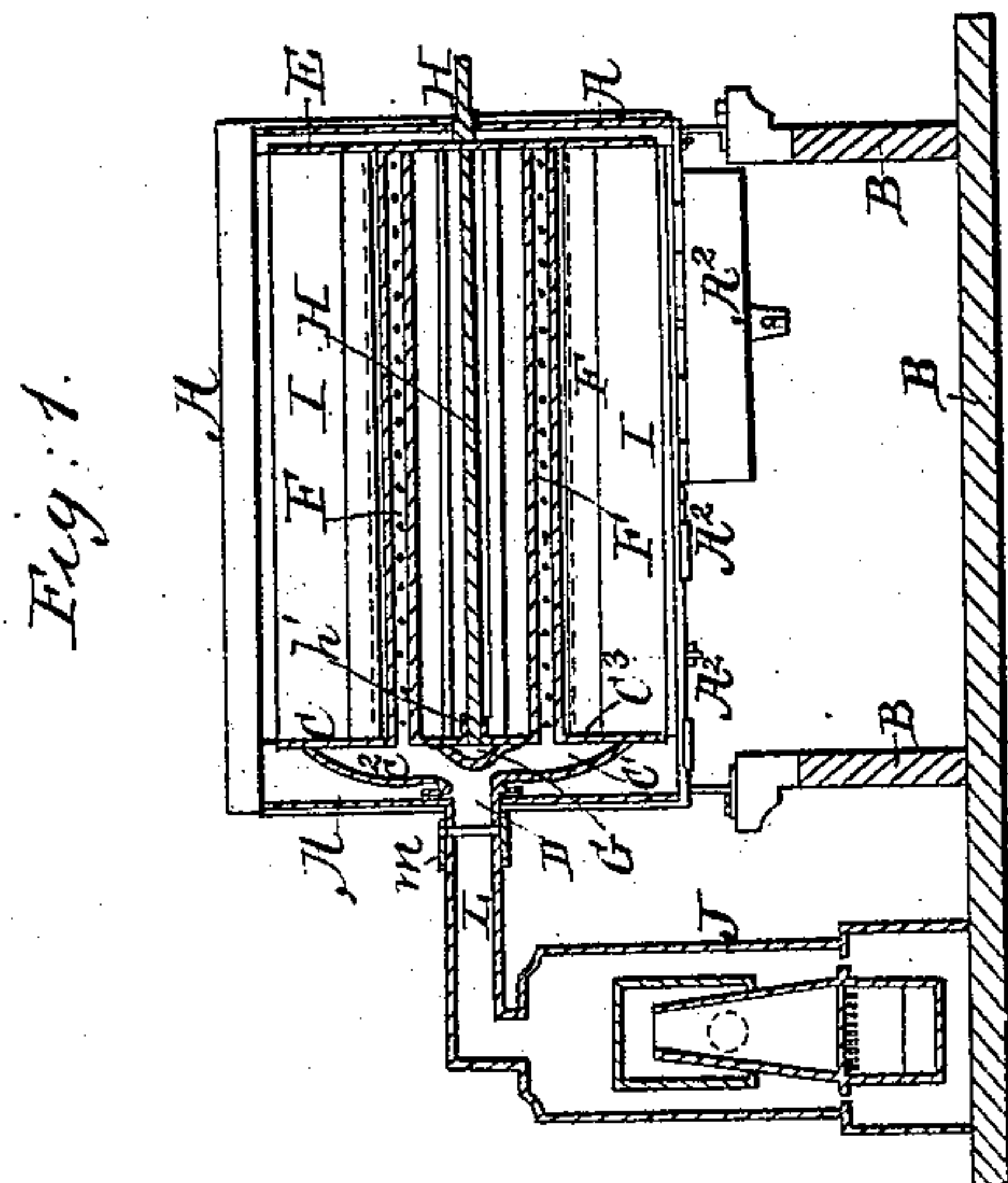
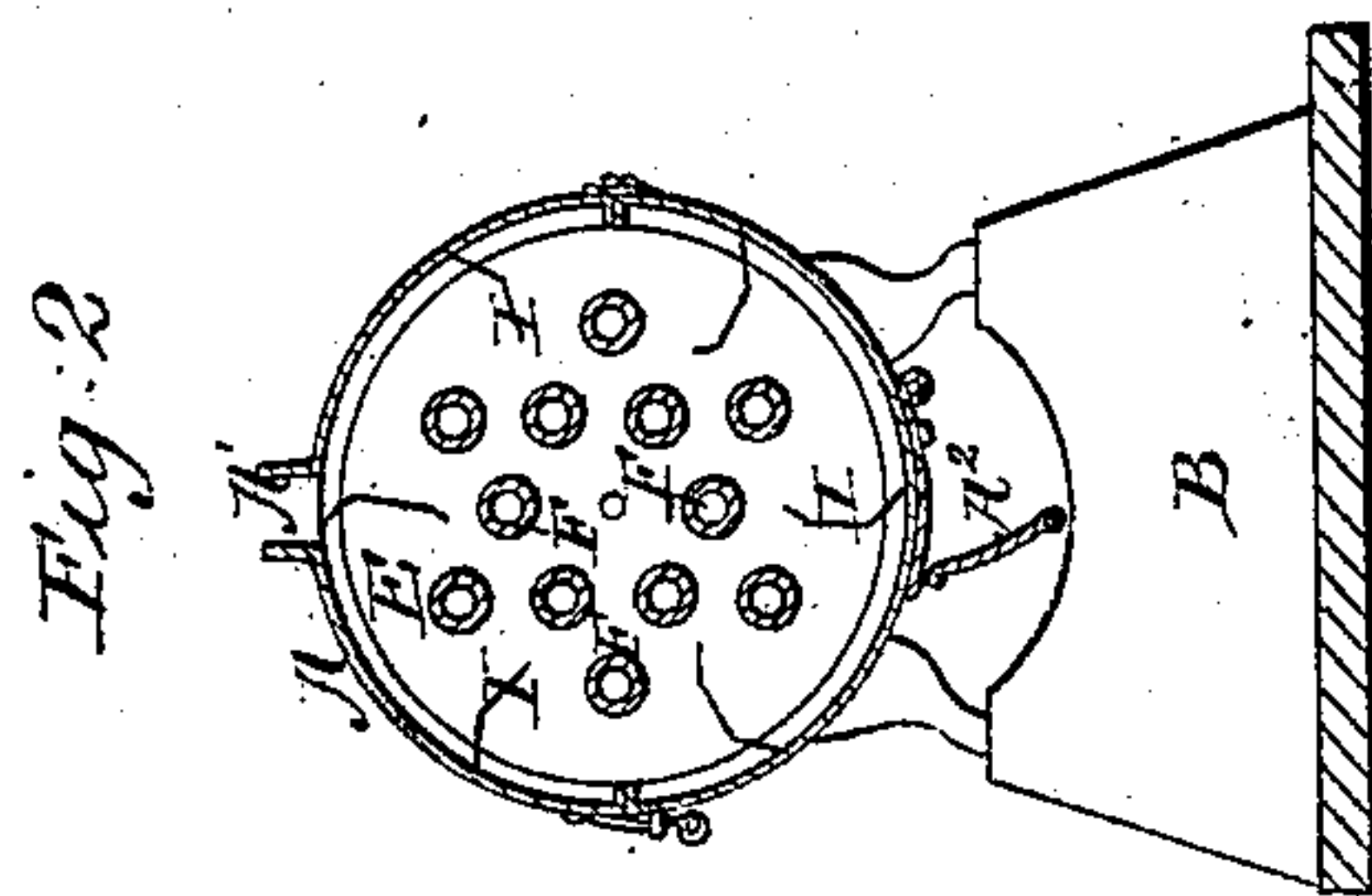
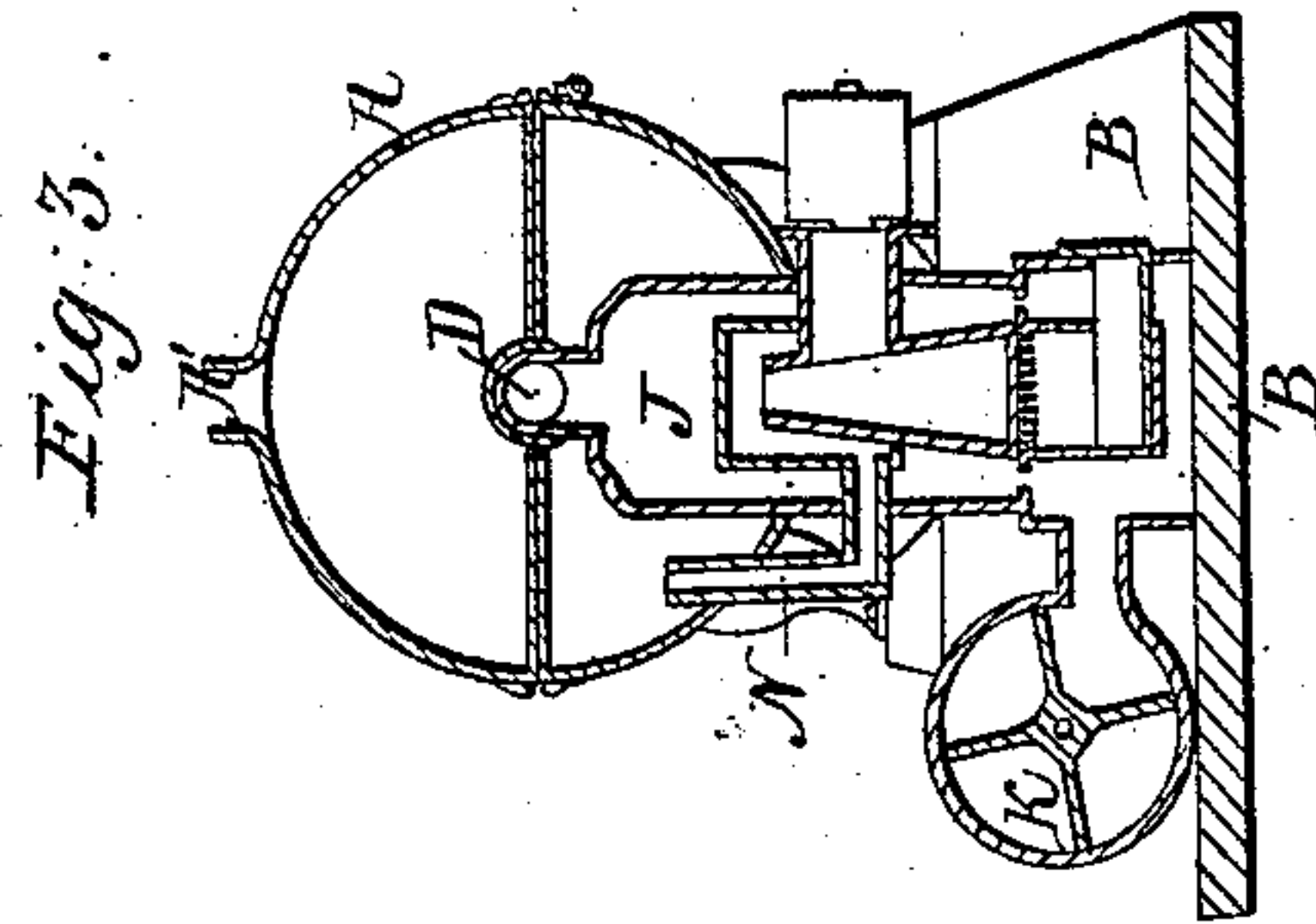


COGSWELL & WILLIAMS,
Grain Drier.

No. 34,405.

Patented Feb. 18, 1862.



Witnesses.
Chas. M. Carey
C. B. Forbush

Inventors.
A. G. Williams
C. B. Cogswell

UNITED STATES PATENT OFFICE.

MORTIMER C. COGSWELL AND ADDISON G. WILLIAMS, OF BUFFALO,
NEW YORK.

IMPROVEMENT IN GRAIN-DRIERS.

Specification forming part of Letters Patent No. 34,405, dated February 18, 1862.

To all whom it may concern:

Be it known that we, MORTIMER C. COGSWELL and ADDISON G. WILLIAMS, of the city of Buffalo and State of New York, have invented certain new and useful Improvements in Grain-Driers; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure I is a longitudinal section of the drier and a vertical section of the furnace as connected therewith. Fig. II is transverse section of the drier. Fig. III is a vertical section of the furnace and blower in connection with an end elevation of the drier.

Letters of like name and kind refer to like parts in each of the figures.

The nature of our invention relates, first, to the construction, application, and use of a stationary cylindrical case into which the grain is received for drying and having appropriate openings for the passage of grain into the case and for the discharge of the grain therefrom when sufficiently dried, and openings for the escape of the evaporation or moisture from the grain during the drying process; second, to placing and using within this case a series of perforated air-tubes for distributing the air throughout the case, with appropriate buckets for lifting and showering the grain within the case, which tubes and buckets are fitted to and revolve with appropriate heads within the case. One of these heads is made double, so as to form a capacious air-chamber, and is connected to and revolves upon a tubular or hollow journal, through which journal air is admitted into the air-chamber of the head and thence to the distributing-pipes, as hereinafter more fully described.

A represents a stationary cylindrical case, which is supported upon a suitable frame or foundation, as shown at B. This case is made of metal. Heavy sheet-iron, with suitable supporting-ribs, will answer the purpose, or "boiler-iron" may be used. It has a slit or opening at the top which runs its whole length and is shown at A'. This opening is for the escape of the evaporation or moisture during the drying process. At the bottom of the case are several valves or doors, as shown

at A², for the discharge of the grain when sufficiently dried. These doors are placed along the bottom at intervals, so that the grain may be let out at such part or portion of the case it may be in its passage through the case at the time it becomes sufficiently dry. This case as well as the air-tubes and buckets are set upon a slight incline, say an eighth or a quarter of an inch to the foot, which will be sufficient to give the grain a tendency to work from the end, where it is let into the opposite end of the case. The case may be made of any required length—say from fifteen to fifty feet and from three to six feet in diameter—for stationary use. When made portable it may be made of any desirable length—say from four to fifteen feet.

At c is represented a double head for supporting the open ends of the air-tubes and forming a capacious air-chamber c' within. For convenience of construction this head is made in two parts—viz., the plane circular plate c³ and the dome-like disk c². These parts are connected together to form an air-chamber and a support for the tubes and buckets. The disk or dome part c² is connected with the hollow journal D, upon which the head revolves. This journal passes through the head of the outside case and has a bearing therein and forms an air-passage into the chamber c'. The other head E is a plane circular plate, which is keyed onto the shaft H. The shaft H runs through and connects with the double head, as shown at h'. This shaft projects through the end of the outside case for the purpose of attaching gearing thereto. There is a series of perforated air-tubes, as shown at F, which are connected to these heads. The open ends of these tubes connect with the circular plate c³ of the double head in any convenient manner, so that they will open into and receive air from the air-chamber c'. The other ends of the tubes connect with the plane circular plate or head E. The diameter of the heads is nearly equal to the inside diameter of the case A, and the tubes are about four inches in diameter, and are of sufficient length to place the heads a distance apart nearly equal to the length of the case, so that when put into the case the heads, tubes, and buckets will nearly fill the case (excepting the spaces

between) and revolve freely therein. The tubes are so connected with the heads in respect to their perforations as that the blast of air therefrom will be toward the center of the case. Ordinarily there should be about twelve of these tubes (may be more or less) so placed and arranged as to give the greatest possible distribution of the air through the case. If the case should be made fifteen feet (or more) in length, the double head with air-chamber should be used at both ends, in order to insure the introduction of a sufficient quantity of air to meet the increased demand in consequence of the increased length of the case. When the length is carried to fifteen or more feet, it would be proper to introduce bridges or truss-work to support the tubes and buckets between the heads.

At I is represented a series of buckets of equal length of the tubes lying parallel with the tubes and connected at each end to the heads. These buckets are for the purpose of lifting, stirring up, and showering the grain in the case, so as to give the air the greatest possible effect upon it. They revolve in close proximity to the bottom of the case, so as to pick up the grain and carry it up until the revolution causes it to slide off and fall in showers, striking upon the tubes, bounding, and falling again to the bottom of the case, to be again picked up by the buckets and showered as before. By this means the grain is kept constantly in motion, stirred up, and scattered in a manner to admit the air at a great degree of heat without scorching. The grain, also, in the operation becomes scoured and cleaned. The chaff and dust, passing up with the evaporation, are driven out through the opening at the top with the escaping air.

At G is shown a dome-like projection from the circular plate within the air-chamber, against which the current of air from the hollow journal strikes in order to deflect it directly to the open ends of the tubes.

J represents a furnace for heating the air. This may be of any convenient and well-known construction. K represents a blower. This also may be of any suitable and well-known construction. We make no claim to either of these.

L is an air-pipe leading from the furnace to the hollow journal of the double head.

M is a movable sleeve, which is used to form or complete the connection between the air-pipe L and the hollow journal D.

N is a smoke-pipe from the furnace.

Operation: The several parts of our improved grain-drier being constructed and arranged substantially as herein described, the grain is spouted into the case through the opening at the top (at the upper end of the case) and falls upon the pipes and buckets. The revolution of these will keep the grain in constant motion, as before described, so that heated air at a very high degree may be used. The tubular or hollow journal D will allow the air to pass in while the drier is in motion, and the air-chamber *c'*, in connection with the perforated pipes E, will distribute the air in small jets or currents through the perforations, so as to mix with the showering grain from the periphery of the case to the center and dry the grain in a very short time and in the most satisfactory manner. Two, three, or more of these driers may be connected together in a manner to run the grain from one to the other. When this is done, a cold blast of air may be used in the latter one for cooling the grain immediately after it is dried. In case the grain becomes "heated" in the bins it may be run through the drier with a blast of cold or hot air, and thereby restored to its original condition.

The double head, with air-chamber, hollow journal, and perforated pipes, is applicable to flour-bolting reels, and we also have designed it for that purpose.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The double head *c*, having an air-chamber *c'* and hollow journal D, for the purposes and substantially as herein described.
2. The combination of the double head *c* with perforated distributing air-tubes F, for the purposes and substantially as described.
3. The combination of the double head *c*, hollow journal D, distributing air-pipes F, and lifting-buckets I with the case A, for the purposes and substantially as herein set forth.

M. C. COGSWELL.

A. G. WILLIAMS.

Witnesses:

CHAS. MCCARTHY,
E. B. FORBUSH.