L. M. F. Doyere.

Grain Dryer.

No. 26,481. Patented Dec. 20, 1859.

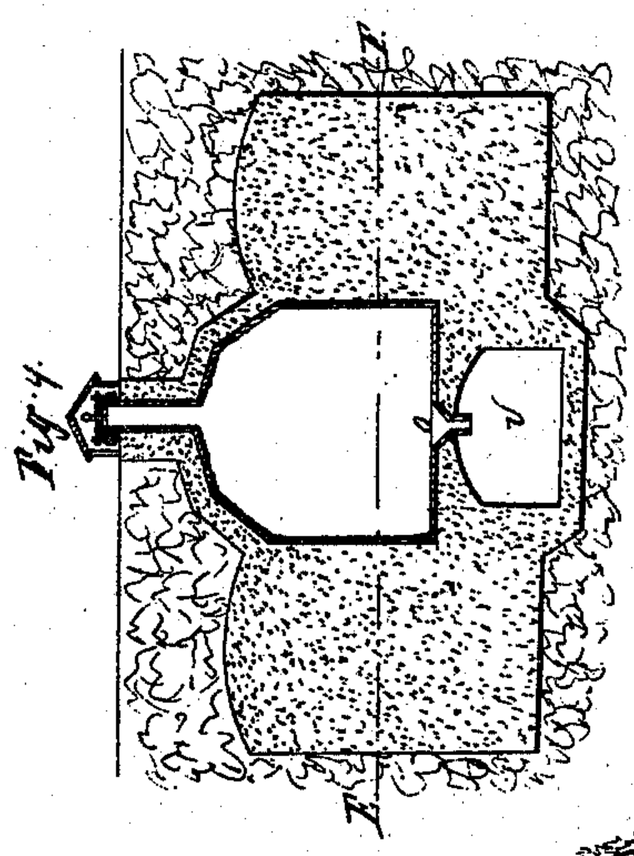

Fig. 10.

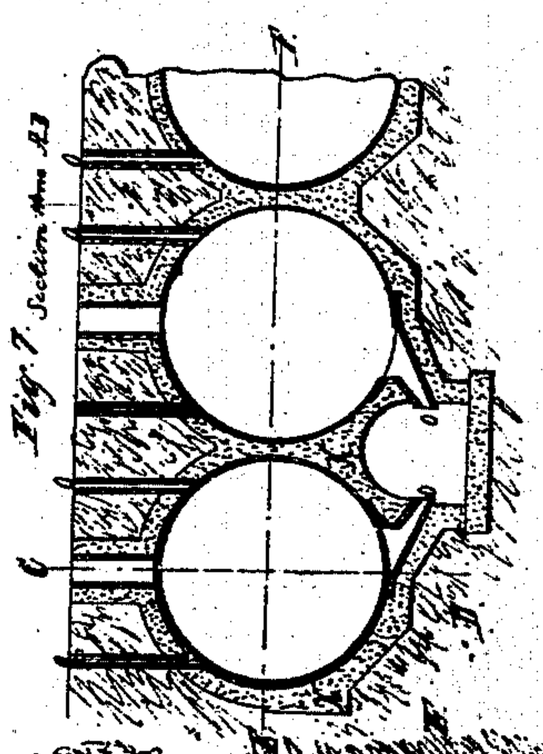

Fig. 7. Section thro' E F.

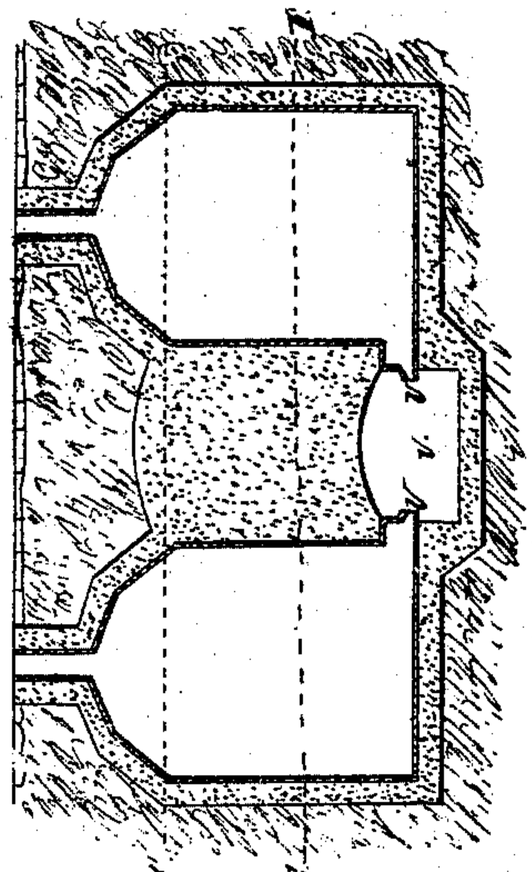

Fig. 8.

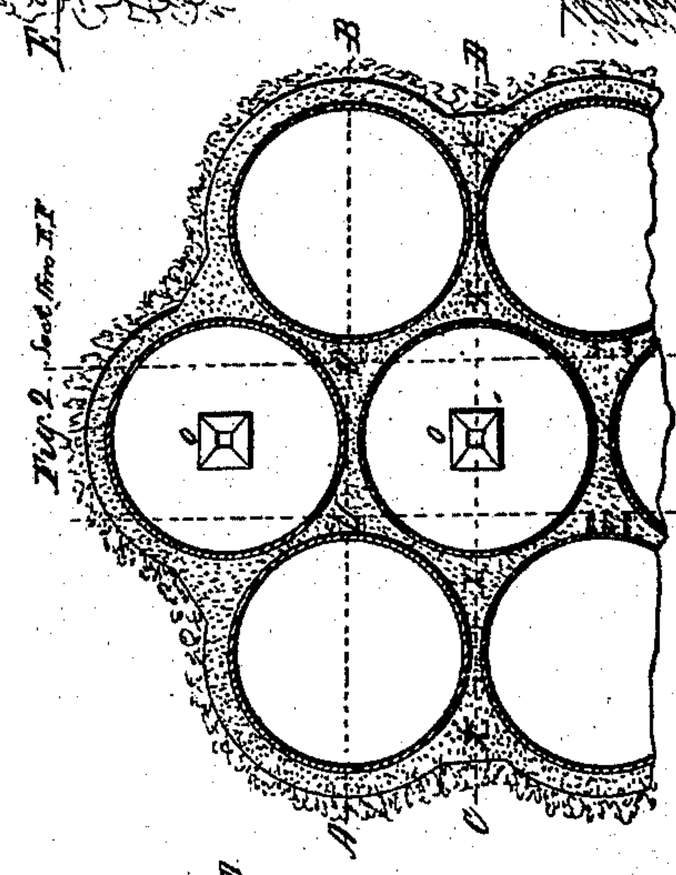

Fig. 2. Section thro' E F

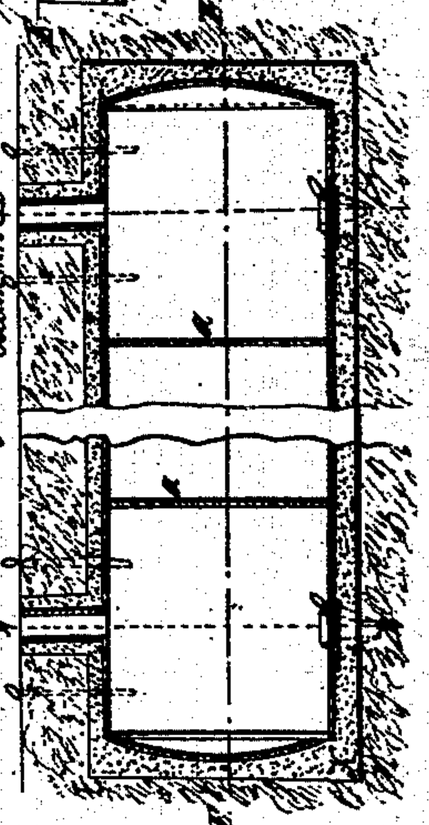

Fig. 5. Section thro' G H

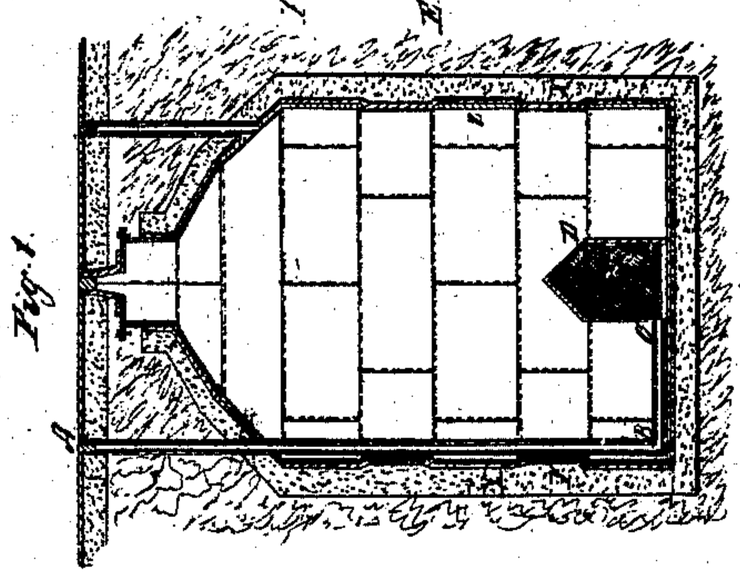

Fig. 1.

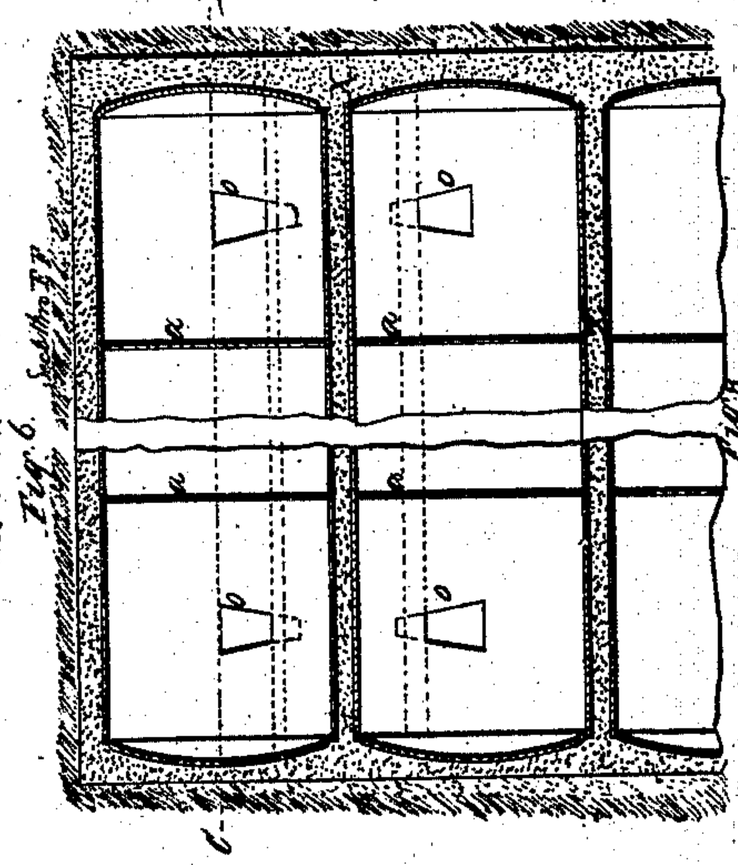

Fig. 6. Section E F

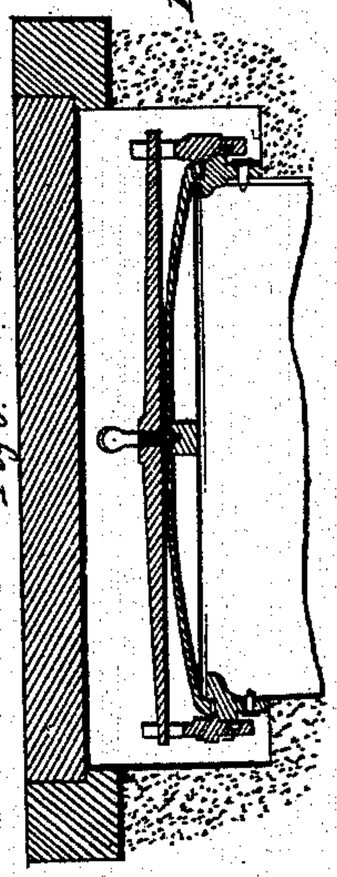

Fig. 3.

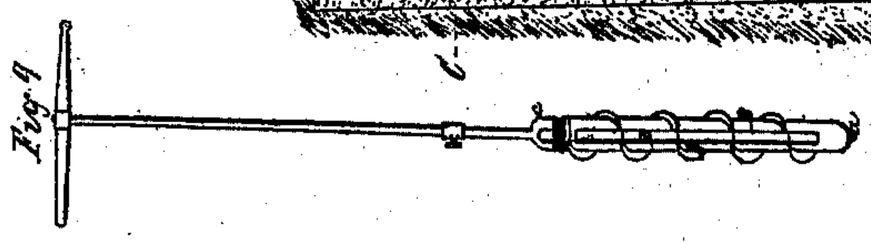

Fig. 9

Witnesses:
M. Schlemmer Jr
H. Connelly

Inventor.
L. M. F. Doyere

UNITED STATES PATENT OFFICE.

LOUIS M. F. DOYÈRE, OF PARIS, FRANCE.

APPARATUS FOR PRESERVING GRAIN.

Specification of Letters Patent No. 26,481, dated December 20, 1859.

To all whom it may concern:

Be it known that I, LOUIS MICHEL FRANÇOIS DOYÈRE, of Paris, in the Empire of France, professor of natural philosophy, a subject of the Emperor of the French, have invented or discovered an Improved Method of Constructing or Arranging Granaries or Chambers for the Preservation of Corn and other Grain, and that the following is a full, clear, and exact description of the principle or character which distinguishes it from all others before known and of the usual manner of making and using the same.

Figure 1 shows a vertical section of one mode of constructing the subterranean granaries or chambers. A number of these chambers may be placed together as shown in the sectional plan Fig. 2. Fig. 3 is a vertical section of the same arrangement through the line A B. Fig. 4 is also a vertical section through C D of the same. Fig. 5 is a longitudinal section of another chamber of a cylindrical form. Figs. 6 and 7 show respectively a horizontal and vertical section of two cylindrical chambers connected together. Fig. 8 is a section of an air tight cover for the chamber shown in Fig. 4.

Z is a thin sheet iron, zinc or other suitable internal metallic chamber impervious to air and moisture and surrounded by a coating composed of pitch asphalt coal tar mixed with sand or chalk to give it the necessary consistency. This coating is applied to the metallic chamber Z to the required thickness and serves to preserve it from oxidation.

X is a casing or coating of beton or it may consist of masonry if required. The casing X protects the chamber from any outward or inward pressure. The hole in the chamber for the ingress and egress of the grain must be hermetically closed. This object may be effected by means of a plate or cover placed on the orifice and fastened thereto by bolts, hydraulic cement being previously interposed. The plate is then covered with earth and afterward with a layer of asphalt or other suitable material.

Fig. 8 represents a cover for closing the orifice of similar chambers intended as granaries which cover is fastened down by pressure screws over a packing *a a* of india rubber, leather or tow, the whole being then covered with masonry. The chamber so constructed and closed may be placed under or above ground. If placed above ground a suitable support or embankment of earth should be formed around it. The latter position should be adopted in localities where the ground is very damp. When the casing X is of sufficient strength, the earthen support or embankment may be dispensed with. I prefer however placing the granaries under the ground in consequence of the temperature being lower and less variable than on its surface. Vaults, cellars and other similar constructions may also be rendered suitable for preserving corn by lining them internally with the bituminous and metallic casings Y Z applied one over the other and which form with the material composing the vault or cellar a strong and impervious granary.

The preserving chamber must be provided with tubes O, Figs. 1, 5 and 7, for introducing a sound or tester into the grains for ascertaining the state of the grain when required. Should corn or other grain in a warm state be introduced into the preserving chamber it is necessary to cool it and I effect that object in the following manner. A B C, Fig. 1, is an iron or wooden pipe for conveying atmospheric air into a cage D formed of a frame covered with strong wire gauze. The air being forced into the cage D by a centrifugal machine or by other suitable means passes through the grain in the chamber and escapes at the upper part through an orifice opened for that purpose. The chamber Fig. 1 is the most simple arrangement having the same upper orifice for the introduction and extraction of the contents, other arrangements may also be employed. Thus Figs. 2 to 7 show sections of arrangements of several chambers which permit of the extraction of the contents from below.

The arrangement of Figs. 2, 3 and 4 consists of several chambers grouped together in three rows, one row Fig. 4 above and the other two on the sides of a vault *v*. The upper row of chambers have their discharge apertures *o*, *o* formed at the lower part and open in the vault *v*, Figs. 3 and 4. The two side rows of chambers have their egress orifices at the sides *u u*, Figs. 2 and 3. The greatest part of the contents falls out by its own gravity and the remainder can be removed by a workman descending into the chamber. The combination for preserving grain which I consider preferable is that shown at Fig. 5 which consists of a horizontal metallic cylinder surrounded by a casing

of beton X and divided into separate cells or chambers by partitions *a a a*, Figs. 5 and 6. These partitions may be fixed or movable at will.

By my process the corn or other grain is more or less preserved according to its degree of moisture when introduced into the chambers. When it contains less than sixteen per cent. of moisture its preservation can be effected for a great length of time. Grain containing above sixteen per cent. of moisture requires to be often examined while in the chambers and when the grain commences to change which may be known by the smell and taste it should be removed. Exceedingly moist grain should be dried by artificial means before being introduced into the preserving chambers.

What I claim as new and intend to be protected by Letters Patent is—

The method of constructing or arranging air tight chambers or granaries for the preservation of corn and other grain as hereinbefore described and shown in Figs. 1 to 8 of the drawing.

L. M. F. DOYÈRE.

Witnesses:
V. DE FONTAINSWREAR,
L. GALLY.