

G. STAUNTON.
 APPARATUS FOR DRYING GRAIN.
 APPLICATION FILED OCT. 19, 1908.

988,671.

Patented Apr. 4, 1911.

2 SHEETS-SHEET 1.

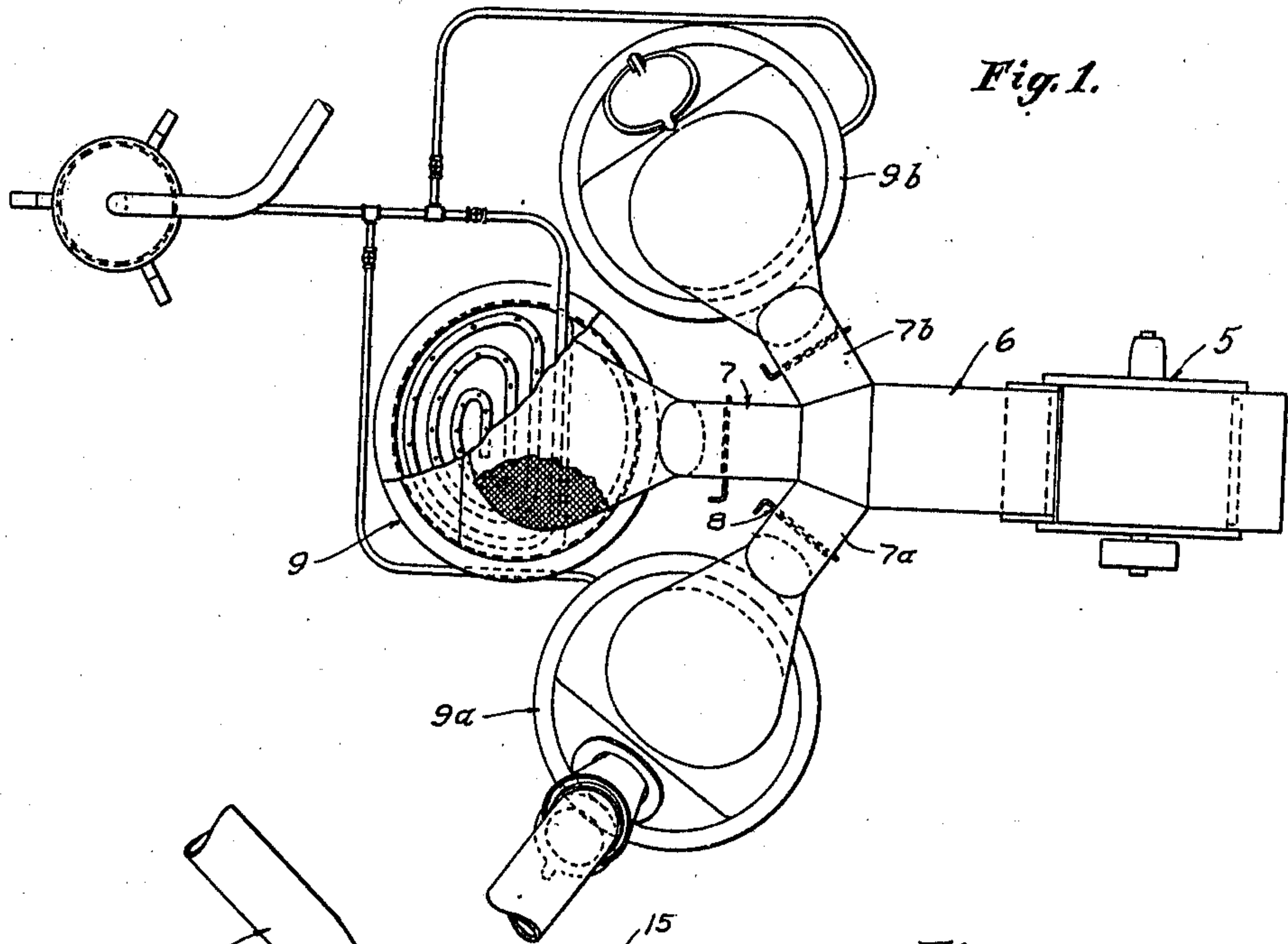


Fig. 1.

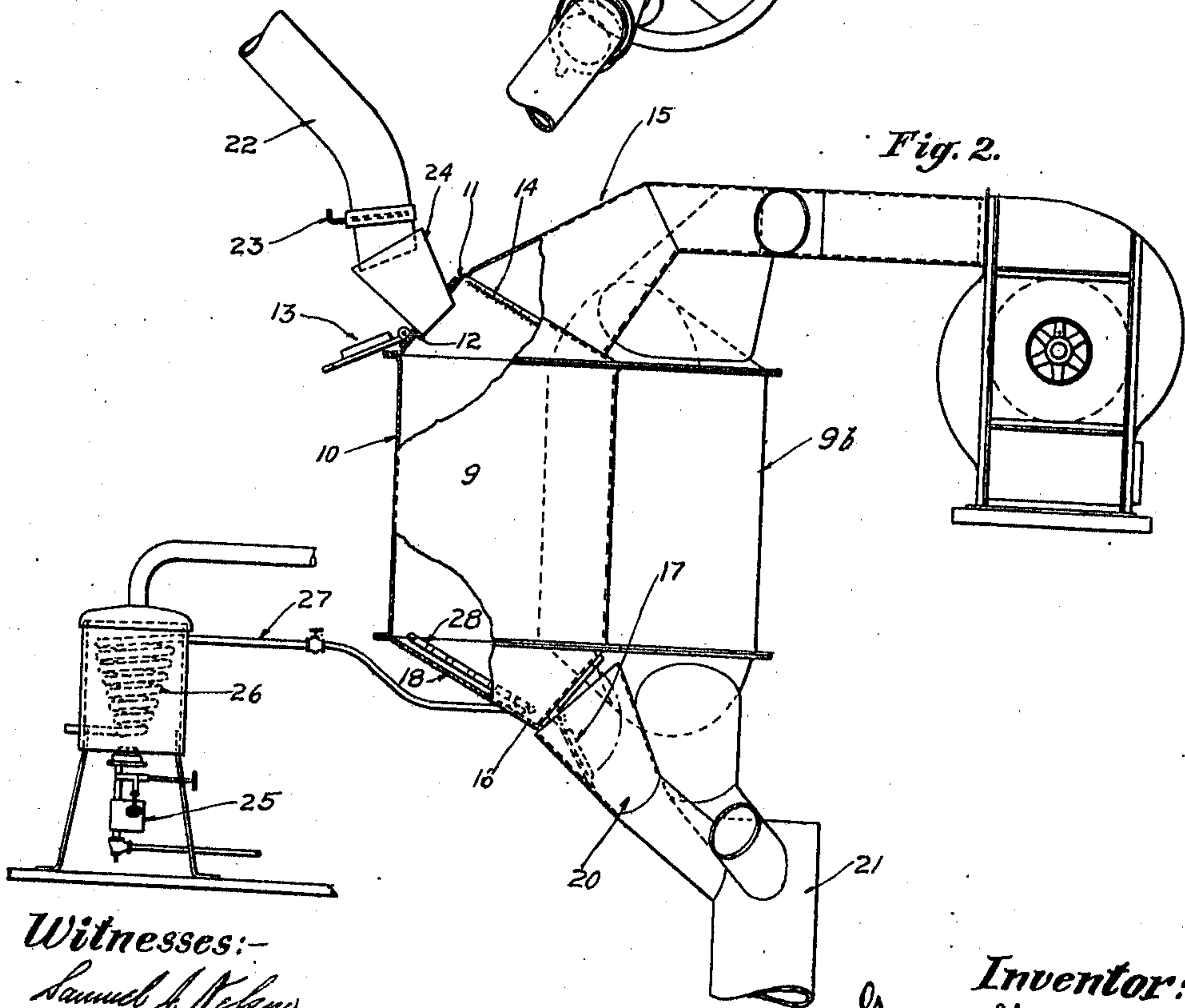


Fig. 2.

Witnesses:-
 Samuel J. Nelson.
 John E. Moring.

Inventor:-
 Gray Staunton
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2 SHEETS—SHEET 2.

Fig. 3.

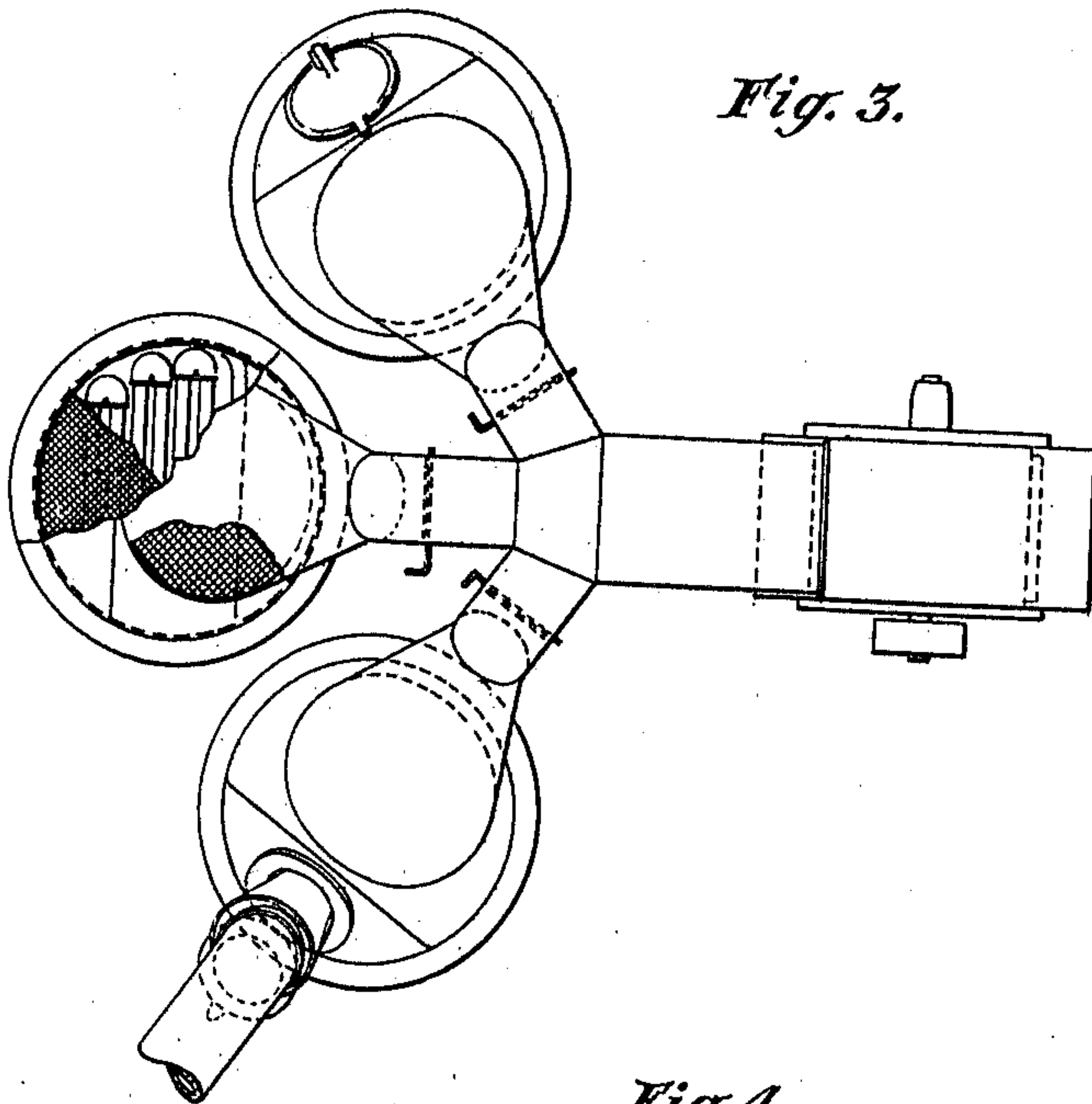
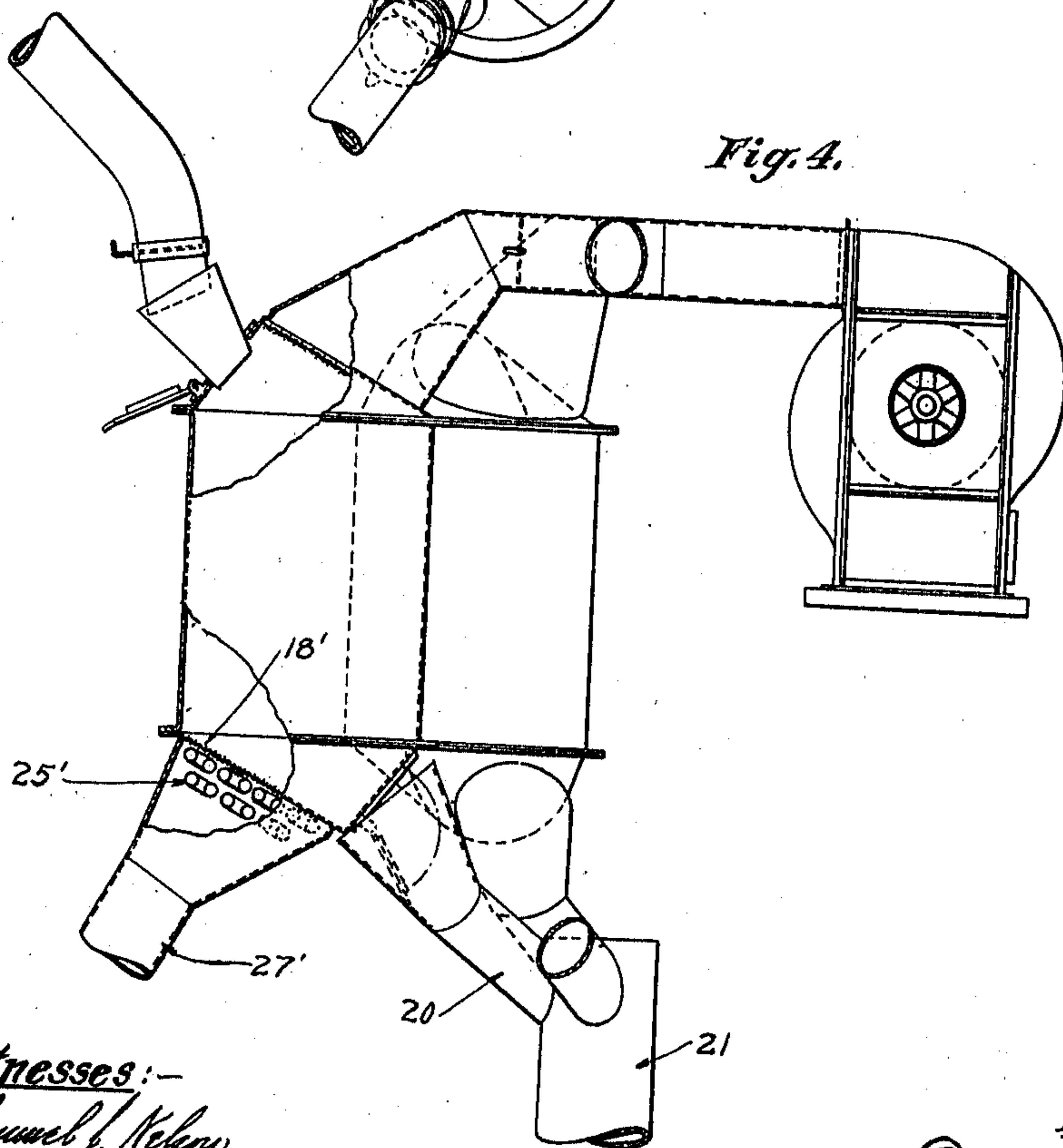


Fig. 4.



Witnesses:
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Inventor:
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UNITED STATES PATENT OFFICE.

GRAY STAUNTON, OF EVANSTON, ILLINOIS.

APPARATUS FOR DRYING GRAIN.

988,671.

Specification of Letters Patent.

Patented Apr. 4, 1911.

Application filed October 19, 1908. Serial No. 458,339.

To all whom it may concern:

Be it known that I, GRAY STAUNTON, a citizen of the United States, residing at Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Drying Grain, of which the following is a specification.

My invention relates to a drying process and apparatus for the drying of grain and other substances; and it has for its object to provide a process and apparatus whereby grain or other substances may be easily, economically and efficiently dried.

One of the particular objects of my invention is to provide a drying system in which the drying process may be continuously carried on while the grain or other substance is still or at rest, by the passage of a positively circulated drying fluid there-through.

A further object of my invention is to provide a generally improved drying apparatus; and other objects of my invention will become apparent to those skilled in the art from the following description taken in conjunction with the accompanying illustrative drawings, wherein;

Figure 1 is a plan view of a drying apparatus with parts broken away; Fig. 2 is a side elevation of the same; and, Figs. 3 and 4 are similar plan and side views of a modified apparatus embodying my invention and suitable for the carrying out of my process.

In general my invention contemplates the treatment of grain or other substance to be dried, which consists in inclosing the substance in a containing receptacle, and positively drawing through the substance to be dried, a current of heated drying fluid, such as hot air, the atmosphere within the said receptacle being maintained in attenuated condition by the fluid-exhausting device which draws the current therethrough.

My invention further contemplates the continuous carrying on of the drying process upon bodies of grain or other material to be dried while in a state of rest and in a single apparatus, by dividing the drying apparatus into a plurality of receptacles independently arranged for connection with the exhausting apparatus, and arranged also to be independently filled and emptied of their contents.

The apparatus by which I preferably carry this process into effect consists in gen-

eral of a series of structurally separated receptacles having closable apertures for filling and emptying the receptacles, and having additional circulation apparatus comprising an inlet for the introduction of heated air or other heated gaseous matter, and an outlet for its eduction, the outlets of the several receptacles being connected in common with a suitable exhausting means and arranged to have their communication with such exhausting means independently controlled, whereby any desired receptacle may be cut off from or opened to communication with the exhausting means.

In the drawings 5 indicates an exhausting means, shown as a blower, which may be of any suitable or desired construction, having its inlet spout 6 divided into several branches 7, 7^a, 7^b, each provided with a valve or damper 8, controlling the passage of air through said branch to the blower inlet. To each branch pipe is connected a receptacle-unit of which a suitable plurality, preferably three (3) are provided, the group composed of the several units constituting the material-receiving structure as a whole. Each said receptacle unit, indicated generally at 9, 9^a and 9^b, comprises preferably a cylindrical body 10 having an angular hood 11, in one angular face of which is made a feed-opening 12, closable as by a valve or door 13, and the other angular base of the hood being composed of a screen 14, through which communication is had from the interior of the receptacle 10 to a throat 15, communicating at its upper end with a branch pipe 7. At its bottom the receptacle is preferably provided with a similar angular base 16, one side of which is provided with an opening closable by door 17, and the other side of which may be solid, as shown at 18 in Fig. 2, or foraminous, as shown at 18' in Fig. 4.

The several grain outlet openings closed by doors 17 may open into chutes 20 leading into a common down-spout 21, and for the independent filling of the receptacles a movable feed spout 22 may be provided communicating with the source of supply, of grain or other material, controlled by a valve and operating in conjunction with a detachable funnel 24 for directing material into any selected entrance opening 12.

Air or other gaseous substance is introduced into the base 16 of the receptacle to pass through the material to be dried in a

heated condition, and to this end I may provide an extraneous heater 25 as shown in Figs. 1 and 2, arranged to heat air within a coil 26, whence it is conducted through a pipe 27 through the solid wall of base 18, to an interior coil 28 provided with apertures through which the heated air may escape into the body 10 of the receptacle over a large area of its base, and below the body of material which the receptacle may contain. If preferred, however, a construction as shown in Fig. 4, may be employed wherein the heating structure is a steam coil 25' disposed within an air intake pipe 27', opening through the foraminous bottom 18' of the receptacle to the interior thereof; or other suitable heating means may be employed.

In either arrangement shown the drying of the grain or other material is accomplished as follows: The material to be dried is introduced into the receptacle 9 and the doors 13 and 17 are closed so that the receptacle is entirely closed save for the opening for ingress and egress of air or the drying fluid. Now the blower exhausting air from the receptacle and entraining heated air through the bottom intake pipe 27' draws or circulates such drying medium through the contained material to be dried, and maintains the atmosphere within the receptacle attenuated below normal atmospheric pressure, and under such conditions of dry heat in an attenuated atmosphere the grain or other substance, in a condition of rest, dries rapidly and in good condition, its moisture being constantly carried away by the air currents. When the material is sufficiently dried the particular receptacle unit is cut off from the blower by the closing of its appropriate damper, the dried material is let out through the opening of doors 17 and the receptacle is refilled. For the use

of three or more receptacle units in the group, in connection with an exhaustor capable of satisfactorily maintaining a rarefaction within at least two of them, the process may be continuously carried on, two only of the receptacle units being connected with the exhaustor at any one time, so that the third may be charged and discharged of its grain while cut off from the exhaustor, and then opened to the action of the exhaustor as soon as the grain within one of the other receptacle units is dried, so that such other receptacle unit requires emptying and refilling.

While I have herein described in some detail a particular mode and means for carrying out my process, it will be understood that I do not desire to be limited to the particular illustrative disclosure herein made further than as specified in the claims.

Having described my invention, what I claim is;

In a drying apparatus, a cylindrical receptacle, tapering top and bottom portion therefor, the top portion having in one of its sides a materials-supply opening, and in the other a drying-medium exhaust opening, and the bottom having in one of its sides a drying-medium supply opening and in the other side a materials-exhaust opening, and means for supplying drying medium to the receptacle, whereby material inclosed within the receptacle receives a draft of such medium of substantially uniform cross-sectional stress throughout the receptacle.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

GRAY STAUNTON.

In the presence of—
FORÉE BAIN,
MARY F. ALLEN.