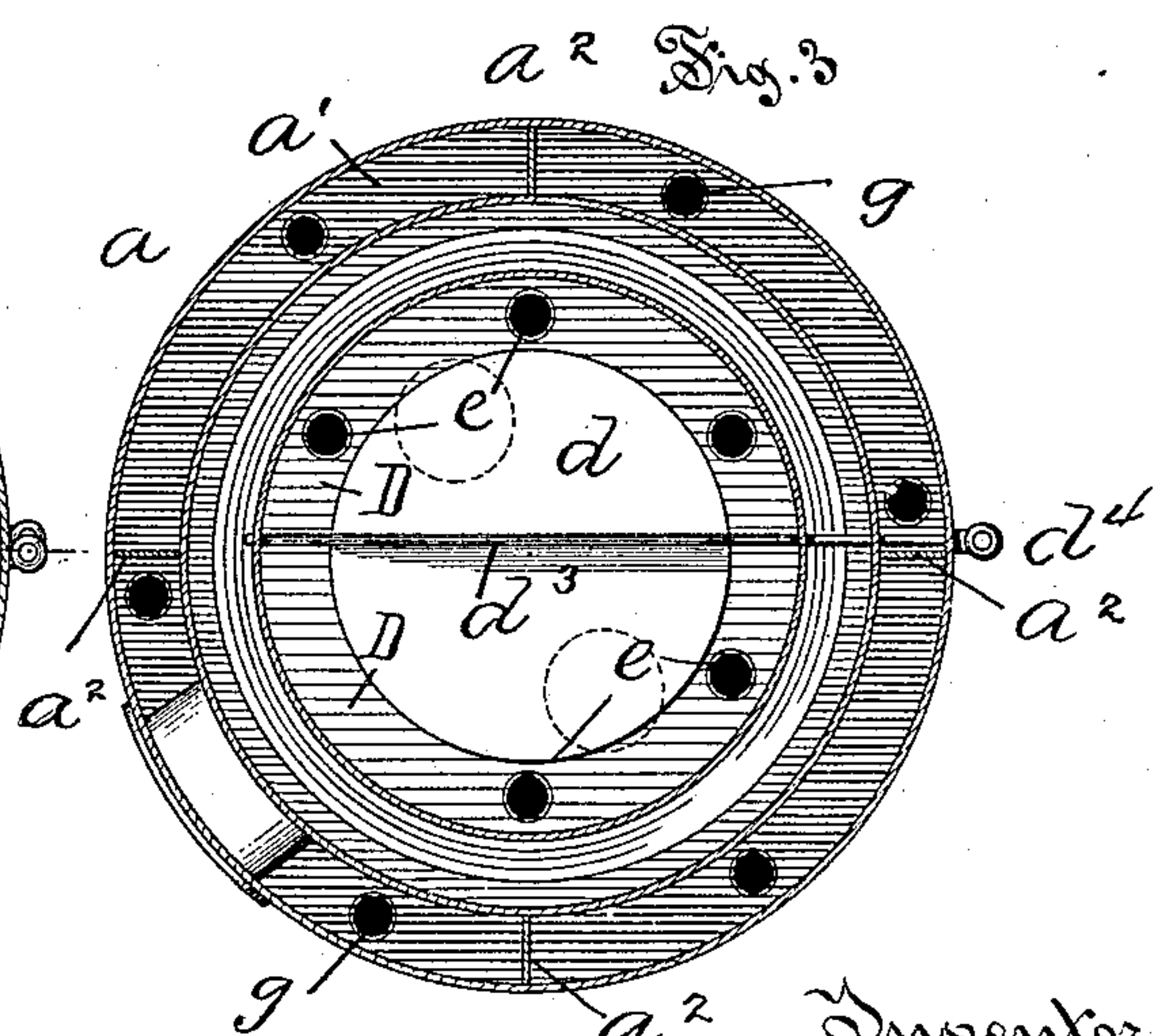
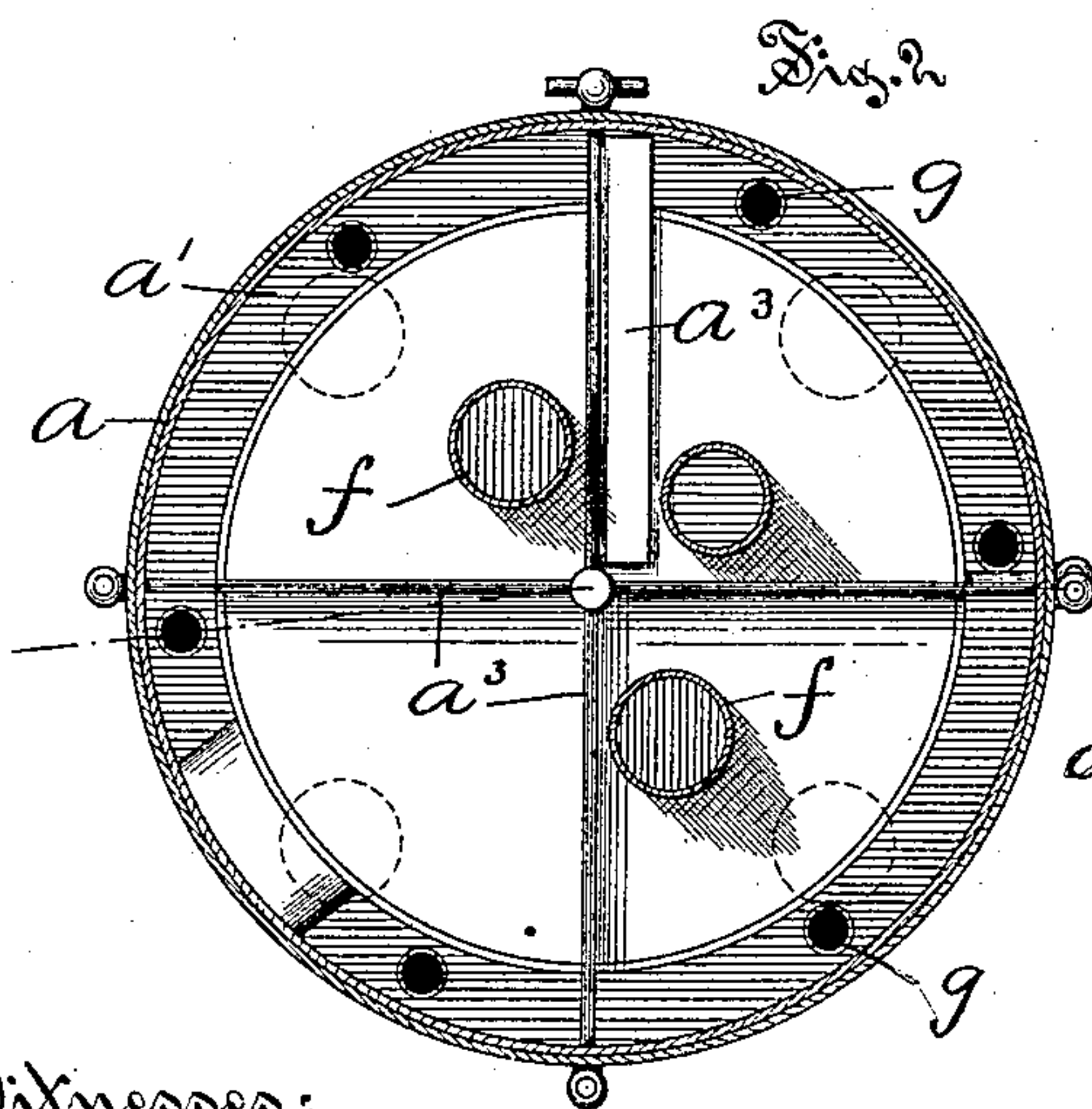
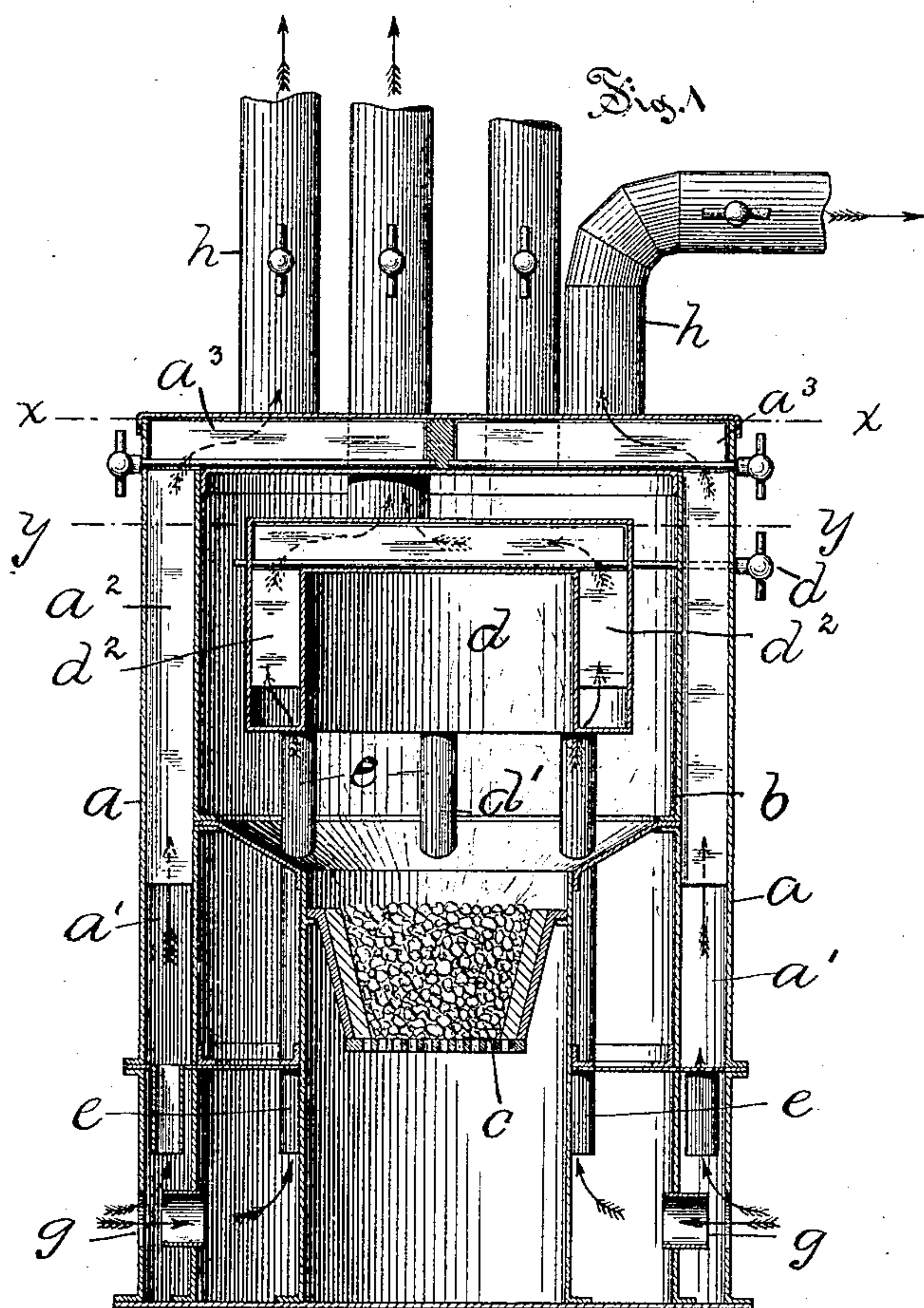


(No Model.)

L. W. TURNER.
HOT AIR FURNACE.

No. 397,154.

Patented Feb. 5, 1889.



Witnesses:

W. M. Yorkman.

H. R. Williams.

Inventor
Lewis W. Turner.
by Simonds & Burdett,
Atty.

UNITED STATES PATENT OFFICE.

LEWIS W. TURNER, OF YALESVILLE, CONNECTICUT.

HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 397,154, dated February 5, 1889.

Application filed December 14, 1885. Serial No. 185,637. (No model.)

To all whom it may concern:

Be it known that I, LEWIS W. TURNER, of Yalesville, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Hot-Air Furnaces, of which the following is a description, whereby any one skilled in the art can make and use the same.

My improvement relates to the general class of furnaces adapted to the heating of air for the purpose of warming buildings; and it has for its object the production of a furnace so made as to the construction and arrangement of its parts as to enable the user to control and direct at will the supply of heated air to be furnished to any desired room of the building and to prevent the accumulation of heat in any one part at the expense of the rest.

My improvement consists in the combination of the hot-air chamber of a furnace, divided by a system of diaphragms and dampers into a number of heating-sections, each having an individual flue or outlet for the heated air, and in details of the combination and construction of the several parts, as more particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a view in vertical section through a hot-air furnace made in accordance with my improvement and illustrating one manner of its embodiment. Fig. 2 is a view in horizontal section through the upper part of the furnace on plane denoted by line $x x$ of Fig. 1, and showing the top of the inner heating-chamber in plan. Fig. 3 is a plan view of the furnace parts below the plane of section denoted by the line $y y$ of Fig. 1.

In the accompanying drawings, the letter a denotes the outer jacket; b , the wall or shell of the furnace; c , the fire-box; d , an inner heat-circulator supported directly over the fire within the furnace, with the re-entrant bottom forming a combustion-chamber, d' , and having the tubular inlets e and outlets f for the passage of air through the circulator, as more fully described in my application filed November 17, 1884, Serial No. 148,095, and now pending, for a patent on new and useful features in this device.

The furnace has the usual form of ash-box

and an opening through the walls, giving access to the fire-box for the introduction of fuel. Between the wall b and the jacket a is a space, a' , forming what I call an "outer heating-chamber," and this is provided with a sufficient number of inlets, g , for cold air, and outlets or hot-air flues h , that are led to any desired part of the house from the upper part of the furnace. This chamber a' is divided at the sides of the furnace by a number of vertical diaphragms, a^2 , that may be fixed between the walls a and b , or may be pivoted or hinged so as to swing sidewise. In the latter case a handle extends out through the walls of the furnace in a position easy of access. They terminate at the top of the inner wall, b , and are extended by the flat dampers a^3 , that are hinged transversely across the top part of the furnace, and complete the division of the chamber a' into a number of heating-sections, A , equal in number to the flues h . By means of these partitions and dampers the outflow of heat from any given section may be directed into the flues appurtenant to that section, and thus prevent its diversion into a flue toward and through which is a draft so strong as to take an undue amount of heated air, which, as is often the case in prior furnaces, makes the warming of some one of the rooms of a house an impossibility.

The inner heating chamber or circulator, d , is so located and secured above the fire, within the walls of the furnace, that the flames and heated gases of combustion strike against and wrap around it, the waste smoke and gases passing out through the smoke-pipe. The walls of the circulator are closed against access of these products of combustion, the air to be heated passing into it through the inlet-tubes e , and after heating passing out through the tubes f , that may be of any convenient number. In the drawings two such outlet pipes or flues are shown, and the chamber d is divided into two heating-sections, D , by vertical diaphragms or partitions d^2 and the damper d^3 , that extends across the top of and within the chamber, and is so pivoted as to be adapted to complete the division between the parts. The damper-handle d^4 is fast to an extension of the damper-rod, and is located outside the walls of the furnace.

The office of the above division of the heating-chamber of the circulator is the same as already explained with regard to the outer heating-chambers of the furnace.

5 In practice I find it convenient and desirable to have the diaphragms or partitions stop short of the bottom of the respective heating-chambers, so that in case the outflow of heated air from any flue shall be stopped—as by the
10 closing of a register or damper in the flue—the useful effect of its appurtenant heating-section will not be lost, but the heated air will pass down under the partitions into the adjacent sections, and then out through their
15 flues.

The transverse damper in each heating-chamber is preferably hinged or pivoted at the bottom, as shown, so as to lie flat upon the top of the lower wall of the chamber when
20 closed, and it is held open by frictional contact between its upper edge and the upper wall of the chamber.

I claim as my improvement—

1. In combination, in a furnace, the outer
25 heating-chamber, a' , having cold-air inlets g and hot-air flues h connecting therewith, the vertical diaphragms a^2 , fixed between the up-

per part of the walls, but terminating short of the bottom of the heating-chamber, the dampers a^3 , extending across the upper part of the
30 furnace in continuation of the diaphragms, and the handles for operating the said dampers, located on the outside of the furnace-wall, all substantially as described.

2. In combination, in a furnace, the heat-
35 circulator d , located in the combustion-chamber directly above the fire, the cold-air inlets to said chamber under the lower part, and the hot-air flue leading from the upper part, the vertical diaphragms d^2 , that divide the
40 annular heating-chamber, that stop short of the bottom of the annular chamber, leaving a space for the passage of air, and the damper d^3 , hinged within the heater in continuation of the diaphragms and having a
45 handle extending to the outside of the furnace, and the outer heating-chamber separated into heating-sections by means of the vertical diaphragms that are extended by dampers, all substantially as described.

LEWIS W. TURNER.

Witnesses:

CHAS. L. BURDETT,
H. R. WILLIAMS.