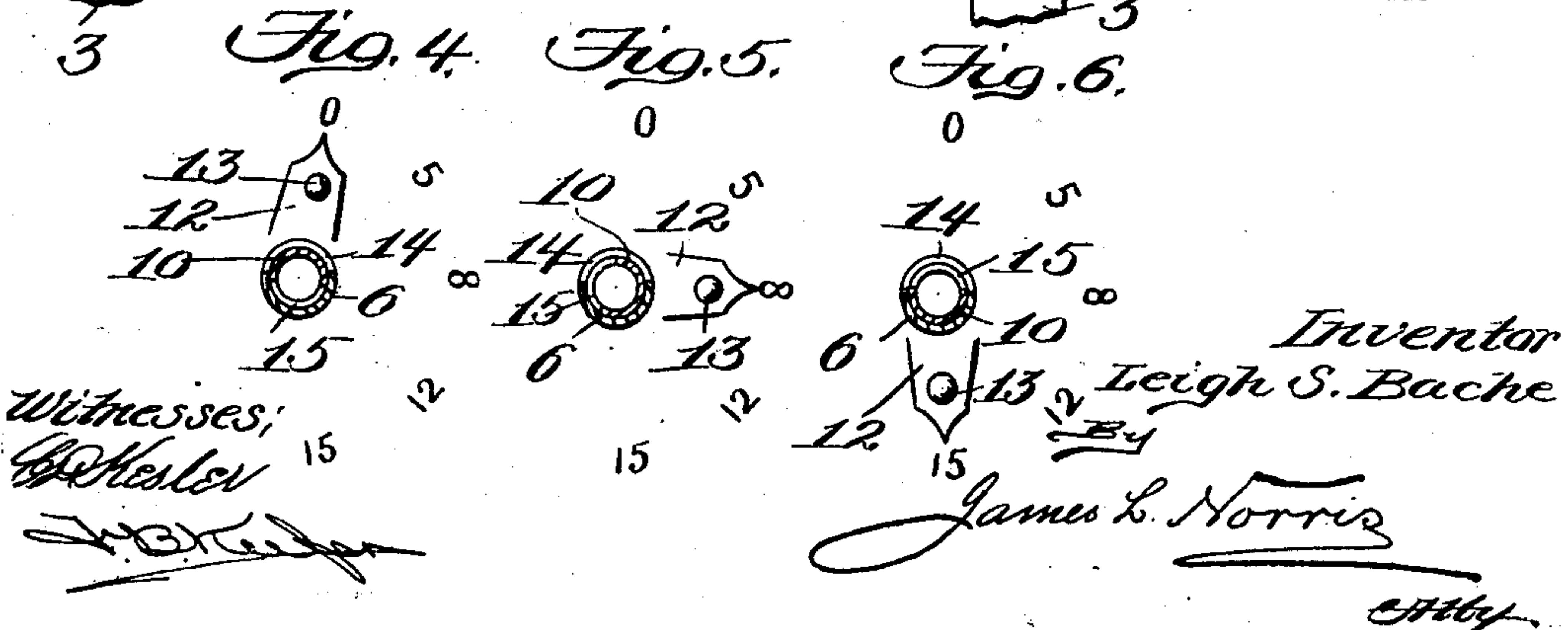
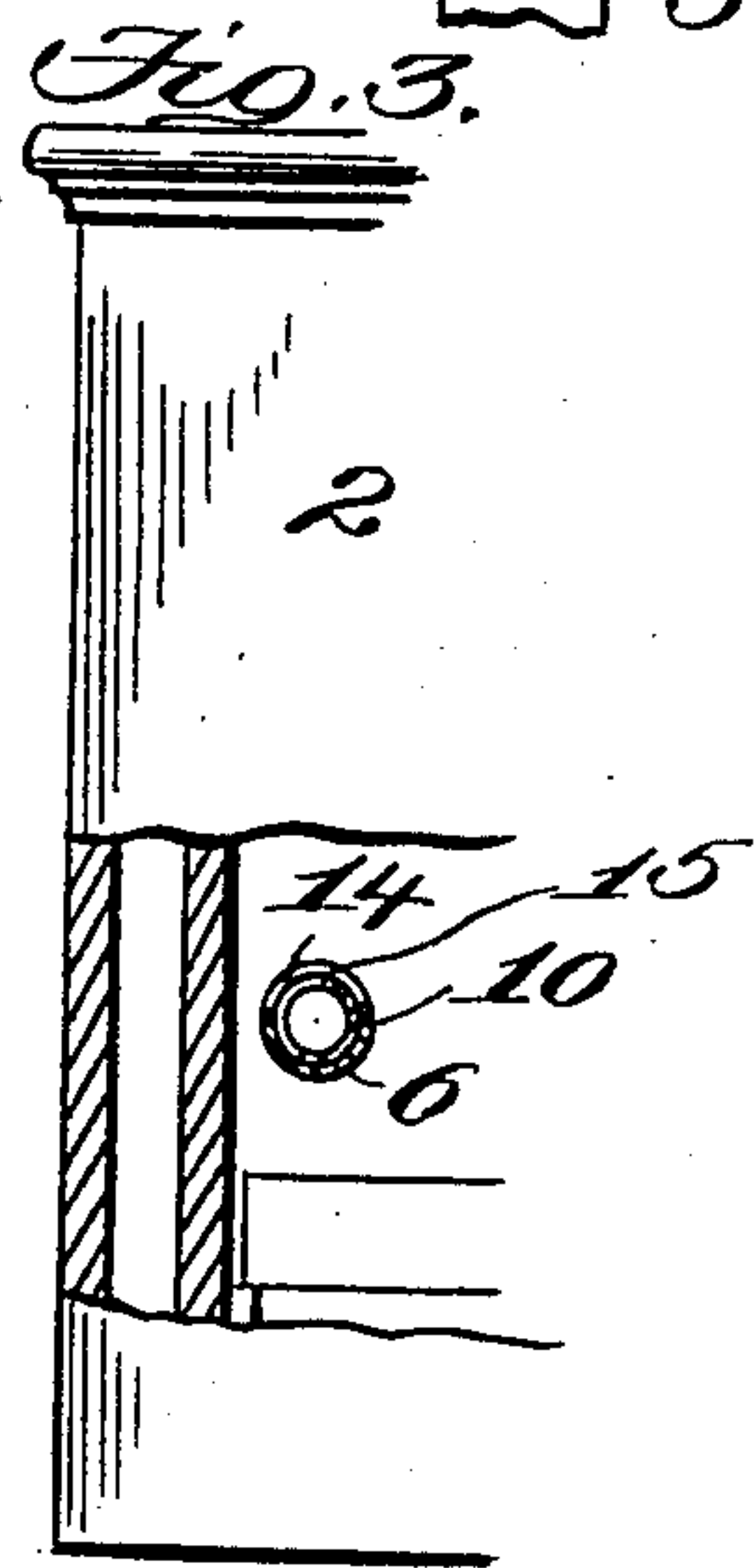
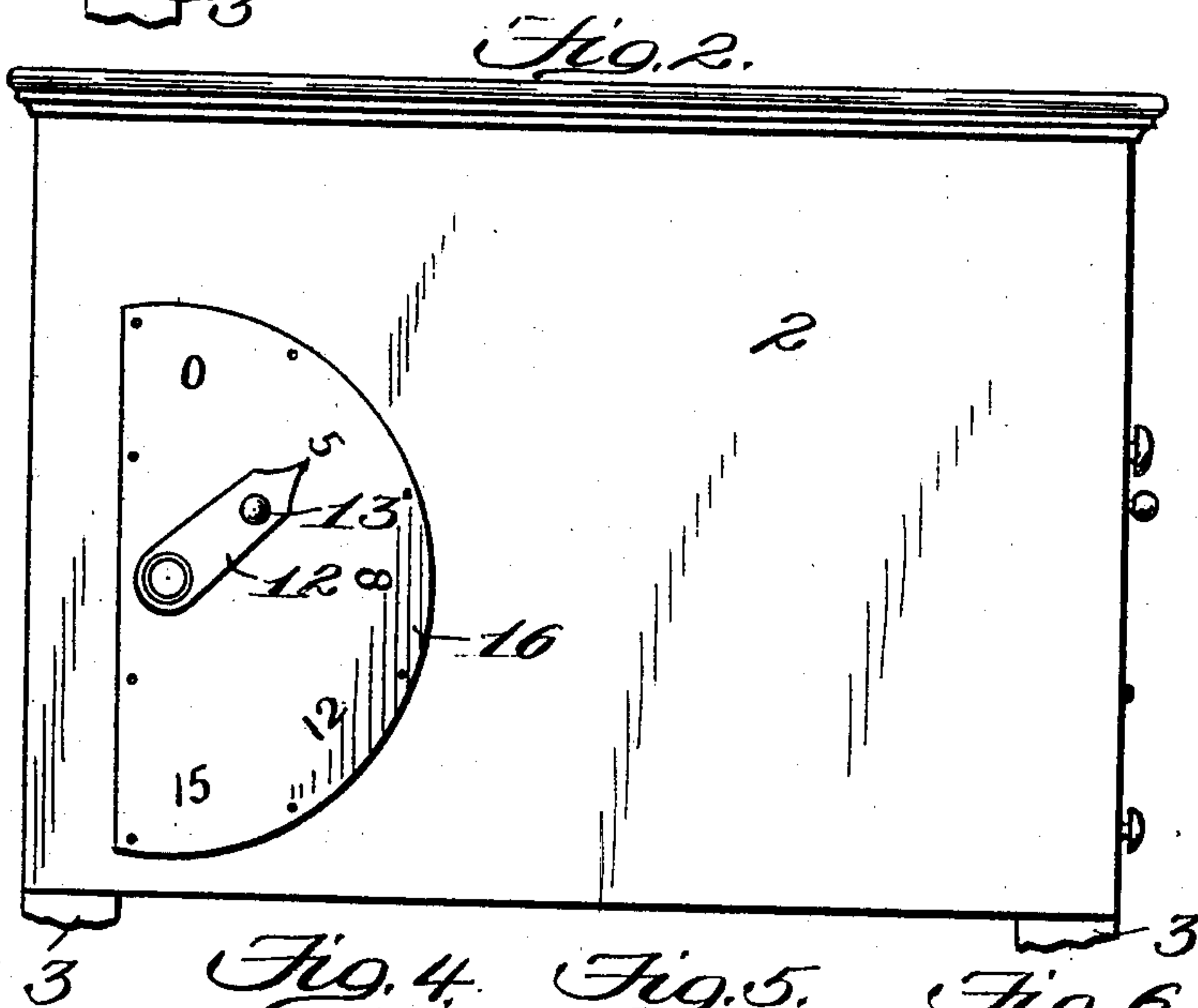
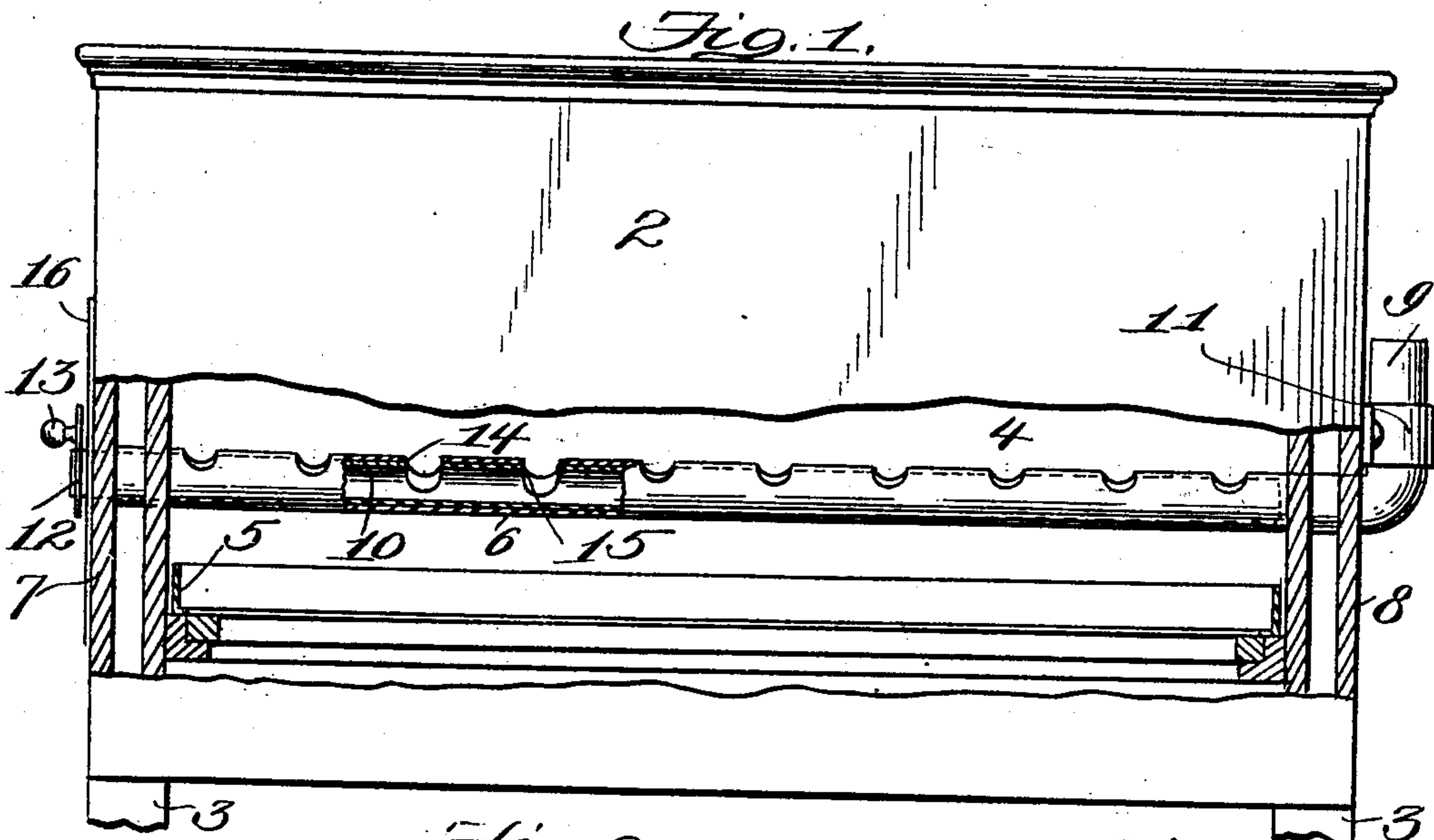


No. 898,301.

PATENTED SEPT. 8, 1908.

L. S. BACHE.
INCUBATOR.

APPLICATION FILED SEPT. 26, 1907.



UNITED STATES PATENT OFFICE.

LEIGH S. BACHE, OF BOUNDBROOK, NEW JERSEY.

INCUBATOR.

No. 898,301.

Specification of Letters Patent.

Patented Sept. 8, 1908.

Application filed September 26, 1907. Serial No. 394,670.

To all whom it may concern:

Be it known that I, LEIGH S. BACHE, a citizen of the United States, residing at Boundbrook, in the county of Somerset and State of New Jersey, have invented new and useful Improvements in Incubators, of which the following is a specification.

This invention relates to incubators.

In the art of artificial egg incubation it has been a comparatively simple matter to supply and properly regulate fresh air. On the contrary, however, some trouble has been experienced in effecting the proper removal of the gases which are generated and accumulate in the incubating chamber. During the first few days of the incubating period these gases are not present in any appreciable amount, but, as the hatch proceeds and the animal life becomes stronger, there is a greater accumulation of gases in such chamber. It is a well known fact that in this chamber there are evolved two gases, at least, gases of two different types, one being lighter than air and the other heavier. The heavier gas descends toward the bottom of the incubating chamber and the lighter gas ascends toward the top. It has been quite easy to remove the heavier gas; ordinarily, however, the lighter gas was permitted to accumulate, no direct provision being made for its escape; ordinarily this light gas was discharged from the incubator when the doors were opened twice a day to turn the eggs. This expedient is all right and successful up to and including the eighteenth day with hens' eggs and the twenty-fifth day with ducks' eggs. After such periods it was essential that the door of the incubator be kept closed, so that there was no way of removing such gas by the apparatus ordinarily in use. The consequence of this was that many young chicks and ducklings reached what is known as the "pipping" stage and died. By virtue of my invention the difficulty in question and the evil effects following the same are wholly eliminated. I provide a simple and effective means for removing the upper stratum of gas and I also increase the circulation of fresh air through the incubator. I provide for the successful discharge of increased quantities of gas during the incubation period and effect corresponding results with respect to the admission of fresh air. As will hereinafter appear, I mount in any suitable position, preferably just over the egg-tray, a duct for the conveyance from the incubator of the said

gas, and fresh air can, of course, be admitted into the incubator through this said duct.

In the drawings accompanying and forming a part of this specification I represent in detail one advantageous form of embodiment of the invention which, to enable those skilled in the art to practice the same, will be set forth at length in the following description, while the novelty of the invention will be included in the claims succeeding said description.

Referring to said drawings: Figure 1 is a side elevation of an incubator involving my invention, with a portion thereof removed and in section, to more clearly illustrate the invention. Fig. 2 is an end elevation of said incubator. Fig. 3 is an end elevation of one side of the same with a portion thereof removed and in section. Figs. 4, 5, and 6 are diagrammatic views illustrating the action of the indicating means.

Like characters refer to like parts throughout the several figures of the drawings.

Referring to the drawings, the incubator shown is denoted in a general way by 2 and it may be of any suitable size, shape, or material, these features forming in themselves no part of the present invention. It is customary to provide the incubator with legs as 3. The incubator 2 contains an internal chamber as 4 and there is adapted for removable support within the same as usual an egg-tray as 5.

I provide a duct for the escape of the heavy gas in the incubator, to the atmosphere. In fact, I may, if desired, employ several of these ducts; although in the drawings there is only one shown, and the same may be of any desirable character; for example, it may consist of a tube as 6 supported by and extending from the end wall 7 of the incubator to and through the opposite end wall 8 thereof, said tube being represented as having an upturned end or bend as 9 exterior of the incubator, through which the gas in question passes to the atmosphere. There is coöperative, as will hereinafter appear, with this duct or tube 6 a valve and, in the present instance, the valve may be of any desirable character, although it is represented as consisting of a tube as 10. One of the tubes 6 and 10 is turnable with respect to the other at the will of an attendant to regulate the discharge of the gas, and, in the present instance, the valve or tube 10 is mounted for such movement, while the tube 6 is held against turning,

for which purpose the upward bend 9 thereof may be engaged by a clip as 11 fastened to the exterior of the incubator 2, as clearly indicated in Fig. 1.

5 One end of the inner tube or valve 10 is shown as extending beyond the end 7 of the incubator and it has fastened thereto a pointer or index-finger as 12, constituting also an actuator for turning the tube 10.
 10 To facilitate the operation of the index-finger by an attendant it may be equipped with a knob as 13. The index-finger or pointer 12, as will hereinafter appear, co-acts with a dial. The tube 6 is shown as having therein a mul-
 15 tiplicity of holes or perforations as 14 in the upper side thereof, while the tube 10 has a similar number of perforations or holes 15. The tube 10 can be so manipulated as to throw the perforations or holes 15 therein out
 20 of register with the perforations 14 in the tube 6, or the perforations mentioned can be put in partial register, as indicated in Fig. 5, or in full register, as shown in Fig. 6. When the perforations of the respective tubes are
 25 out of register the solid portion of the valve or tube 10 closes the perforations 14 in the outer tube 6.

A dial as 16 coöperates with the pointer or index-finger 12, and this dial is ordinarily
 30 made from sheet metal fastened to the outer face of the end wall 7 of the casing of the incubator in any suitable manner. It bears on its exposed surface certain indicating characters such as a zero mark and the numerals
 35 5, 8, 12, and 15. Any other symbols might be employed in lieu of those represented. In the present instance the tube 6 extends through the dial 16. It should be, of course, explained that the tube 10 is fitted closely
 40 within the tube 6 so that accidental turning movement of the tube 10 will not be possible, by reason of the frictional relation.

When the pointer 12 is opposite the zero mark on the dial 16 the solid portion of the
 45 tube 10 will cover the perforations 14 in the outer tube. When the pointer, however, is swung over to be opposite either the numbers 5, 8, or 12, and it is shown opposite the number 8 in Fig. 5, the perforations 14 and
 50 15 will be brought into partial register. When the pointer is brought opposite the number 15 as shown in Fig. 6, such perforations will be brought into full register so as to permit the maximum amount of heavy air to
 55 pass from the incubator. It might be explained that the numbers 5, 8, 12 and 15 indicate the positions which the pointer should occupy at the days thus numbered during the period of incubation.

What I claim is:

1. The combination of an incubator, a duct and a valve both in said incubator, the duct serving to discharge gas from said incubator, the valve serving to regulate the pas-
 60 sage of gas into the duct, and the valve and duct being substantially coaxial and one of them being movable with respect to the other.

2. The combination of an incubator, a duct and a valve both in said incubator, the duct serving to discharge gas from said incu-
 70 bator, the valve serving to regulate the passage of gas into the duct, the valve and duct being substantially coaxial, one of them being movable with respect to the other, and the valve being provided with means to ef-
 75 fect its operation exteriorly of the incubator.

3. The combination of an incubator, a tubular duct and a tubular valve both in said incubator, the duct serving to discharge gas from the incubator and each of the two tubu-
 80 lar parts being perforated and one of them being movable with respect to the other to put the perforations of the respective tubular parts into or out of register.

4. The combination of an incubator, a tu-
 85 bular duct and a tubular valve both in said incubator, each of said tubular parts being perforated and the valve being turnable with respect to the duct to put the perfora-
 90 tions of the respective tubular parts into or out of register to regulate the admission of gas into said duct, and the latter serving to discharge such gas from the incubator.

5. The combination of an incubator, a tubular perforated gas discharge duct in the in-
 95 cubator for effecting the discharge of gas therefrom, and a movable tubular-perforated valve also in said incubator for controlling the entrance of gas into the duct, one of said tubular parts being inclosed by the other. 100

6. The combination of an incubator, a tubular perforated duct in the incubator for effecting the discharge of gas from said incubator, a turnable perforated tubular valve
 105 also in said incubator for controlling the entrance of gas into said duct, one of said tubular parts inclosing the other, the turning of the valve serving to bring the perforations of the respective tubular parts into or out of register, and the valve being accessible exte-
 110 riorly of the incubator.

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

LEIGH S. BACHE.

Witnesses:

EDNA CORIELL,
 JOHN ZULAUF.