

E. B. RAYMOND.
HEATER.
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913,672.

Patented Feb. 23, 1909.

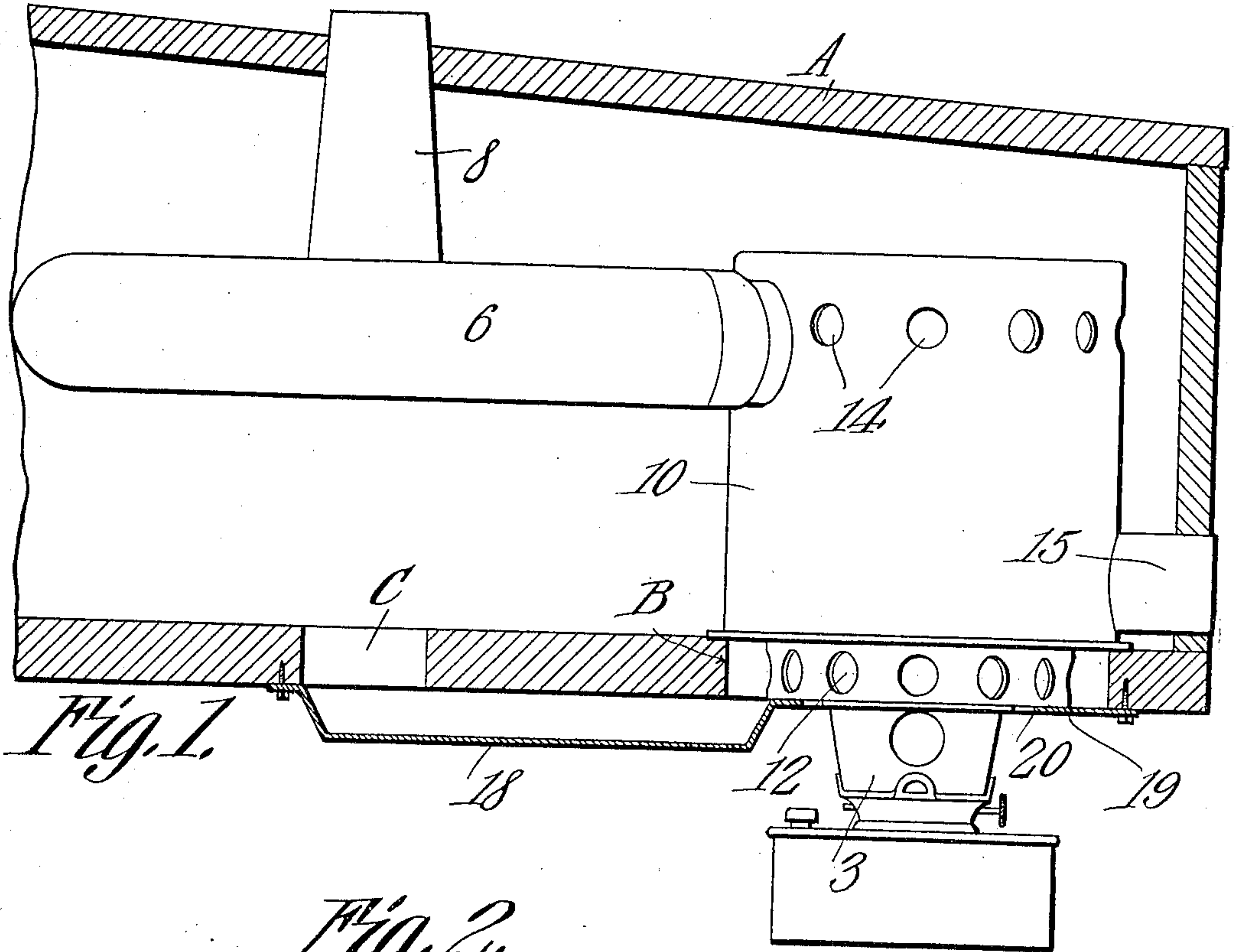


Fig. 1.

Fig. 2.

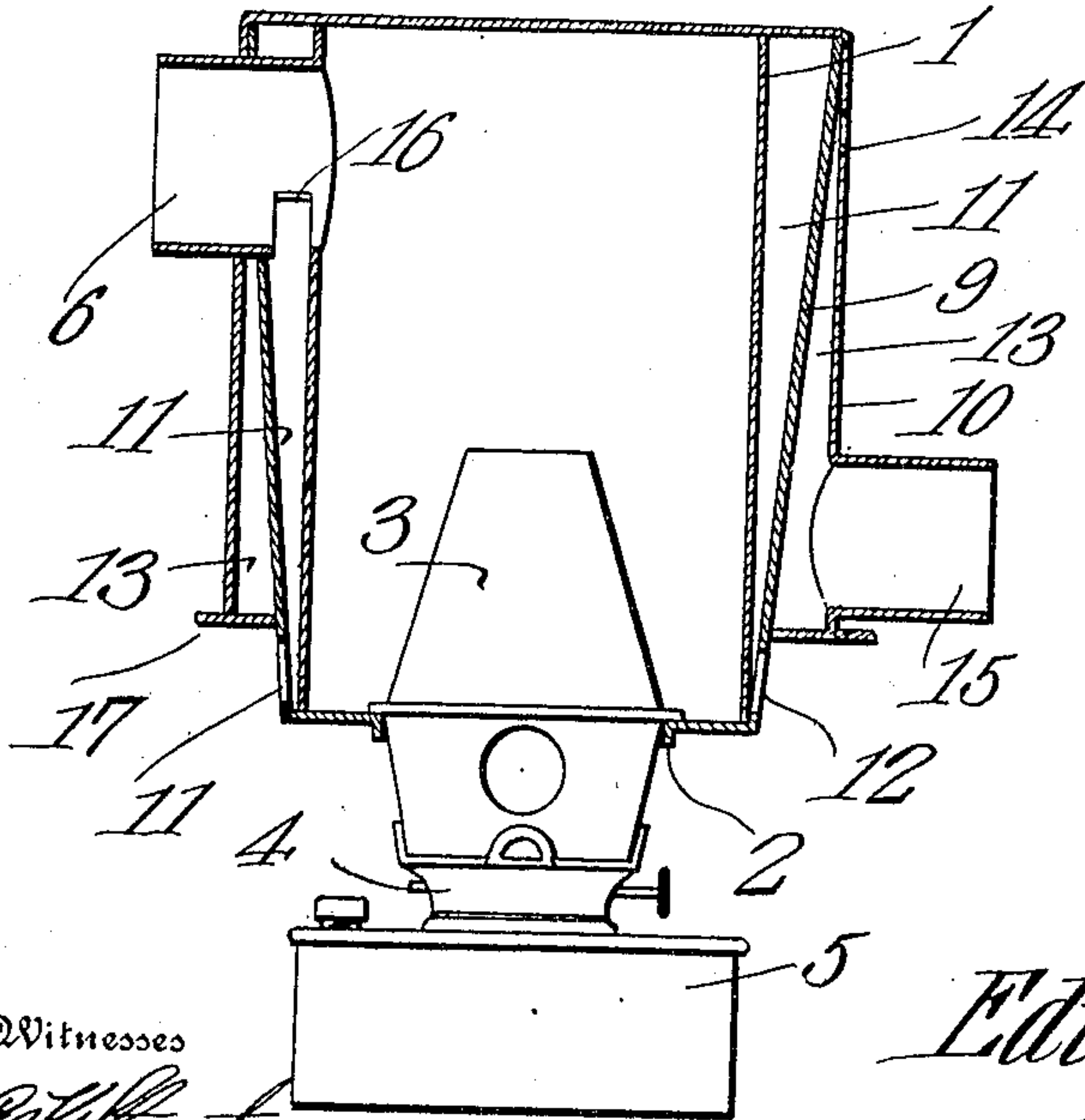
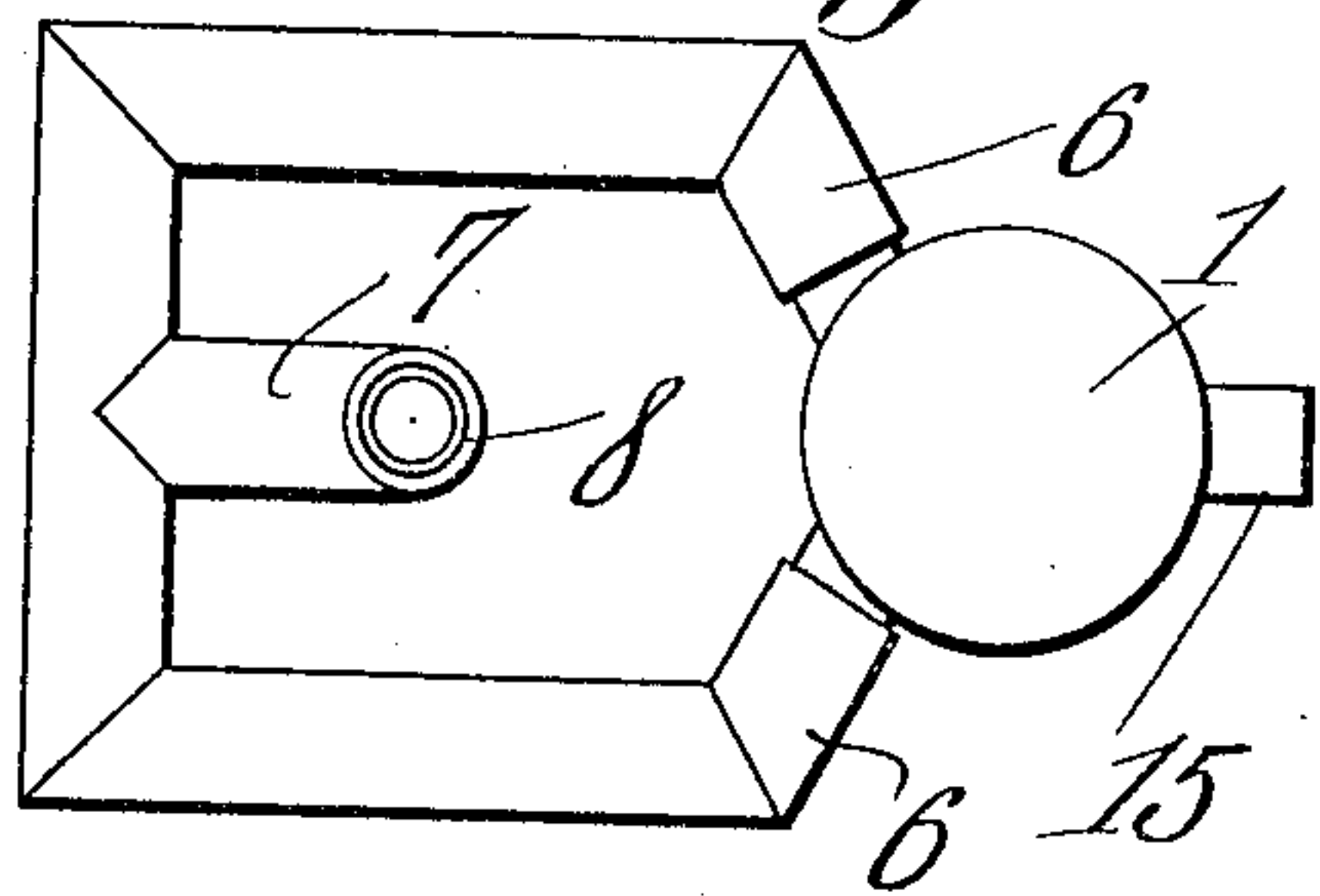


Fig. 3.



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UNITED STATES PATENT OFFICE.

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HEATER.

No. 913,672.

Specification of Letters Patent.

Patented Feb. 23, 1909.

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To all whom it may concern:

Be it known that I, EDWARD B. RAYMOND, a citizen of the United States, residing at Blackwell, in the county of Kay and State of Oklahoma, have invented a new and useful Heater, of which the following is a specification.

This invention relates to heaters, the same being particularly designed for use within brooders.

The object of the invention is to provide a heater, the burner of which is located outside of the brooder so that danger of fire is greatly reduced.

Another object is to provide a heater having means whereby vitiated air may be conveyed from the floor of the brooder and to the heater and discharged from the heater with the waste products of combustion.

Another object is to provide means whereby heated fresh air may be supplied to the interior of the brooder to displace the exhausted vitiated air.

With these and other objects in view the invention consists of certain novel features of construction and combinations of parts which will be hereinafter more fully described and pointed out in the claims.

In the accompanying drawings is shown the preferred form of the invention.

In said drawings: Figure 1 is a section through a portion of a brooder having connected thereto a heater embodying the present improvements, the return conduit of the heater being shown in section. Fig. 2 is a vertical transverse section through the heater. Fig. 3 is a plan view thereof on a reduced scale.

Referring to the figures by characters of reference, 1 designates a heating drum closed at the top and having an opening 2 in the bottom thereof in which is fitted a chimney 3 engaging and supporting burner 4 of a lamp 5 so that the products of combustion are free to flow through said chimney and into the drum. Said drum is preferably formed with diverging outlet pipes 6 which extend any desired distance in any preferred direction and open into an outlet pipe 7 having a chimney 8 extending therefrom. The drum 1 is surrounded by an inner downwardly tapered jacket 9 and an outer cylindrical jacket 10. Jacket 9 forms an air compartment 11 which is closed both at the top and the bottom but openings 12 are formed

within the jacket 9 adjacent the lower end thereof and below the lower end of the jacket 10. Said jacket 10 forms an air compartment 13 therein closed at its ends but having outlet openings 14 near its upper end. An air inlet pipe 15 opens into the jacket 10 and the outlet pipes 6 are provided with slots 16 whereby air is free to pass from the compartment 11 into the pipes 6.

When the heater herein described is in a brooder A, a circular opening B is formed in the floor of the brooder, the diameter of said opening being greater than the diameter of the lower end of jacket 9 but less than the diameter of the corresponding end of jacket 10. It will be apparent therefore that the lower end of the outer jacket 10 will rest upon the floor while the lower portion of the inner jacket will extend into the opening B. If preferred, an annular flange 17 may be formed about the lower end of the jacket 10 so as to rest upon the floor of the brooder. An outlet opening C is formed in the floor of the brooder preferably adjacent the center thereof, and secured under the floor is a trough or conduit 18 preferably formed of sheet metal and having a flat extension 19 extending under the jacket 9 and apertured as at 20 to receive the chimney 3. It will be apparent therefore that air entering the opening C will be directed within conduit 18 to the opening B.

It is thought that the operation of this heater will be clearly apparent from the foregoing description when read in connection with the accompanying drawings. When the lamp is lighted the products of combustion will pass into the drum 1 and thence outward through pipes 6 and 7 to the chimney 8 which extends through the top of the brooder. The air contained within the compartments 11 and 13 will of course be heated and a circulation established. Fresh air will be drawn into the compartment 13 through pipe 15 and will when heated rise and flow through the openings 14 into the upper portion of the brooder. As this air becomes vitiated it will settle toward the floor and pass outward through opening C and trough 18 to the opening 13 where it will enter the apertures 12 and thus pass into compartment 11. It will then escape through slot 16 to the pipe 6 and thus be conveyed with the products of combustion to the chimney 8. It will be seen therefore that

the interior of the brooder is kept constantly supplied with warmed fresh air and the vitated air therein is frequently drawn off so that there is no danger of the chicks becoming asphyxiated. Moreover, by extending the conduit 18 under the floor said floor is kept warmed and sickness among the chicks consequently reduced. Although the trough 18 has been shown extending under only a part of the floor it is to be understood that, if preferred, it can be enlarged so as to extend under all portions of the floor. While the heater is particularly designed for use in brooders it is to be understood that it is also useful in incubators and in various other structures.

What is claimed is:

1. The combination with a compartment having an outlet opening in the floor thereof; of a heater arranged within said compartment and comprising a heating drum, non-communicating air-distributing and air-receiving compartments surrounding the drum, said receiving compartment having inlets at its lower end for receiving vitiated air from the outlet opening in the floor of the compartment, an outlet pipe extending from the heating drum for conveying products of combustion through the compartment to be heated, said receiving compartment having an outlet opening into said pipe, and said distributing compartment having a fresh air inlet adjacent its lower end and outlets adjacent its upper end, said outlets opening into the compartment to be heated, and said distributing compartment surrounding the air-receiving compartment.

2. The combination with a compartment to be heated, said compartment having an outlet opening in the floor thereof; of a heater arranged within said compartment and comprising a drum, an inner jacket surrounding the drum and forming an air-receiving compartment, and an outer jacket surrounding the drum and forming an air-

distributing compartment, said receiving compartment having a plurality of openings in the lower portion thereof, means for directing vitiated air from the opening in the floor of the compartment to be heated to said openings, and a heating pipe extending from the drum and through the compartment to be heated, said pipe opening into the atmosphere surrounding said compartment and communicating with the air-receiving compartment, there being a series of outlet openings in the outer jacket for directing air therefrom and into the compartment to be heated, said outer jacket having a fresh air inlet.

3. The combination with a closed compartment having an outlet opening in the floor thereof and a receiving opening; of a heater comprising a drum extending over said receiving opening, a lamp suspended from and opening into the drum, said lamp extending below the floor, an inner jacket surrounding the drum and projecting into said opening, said projecting portion having inlet apertures, means for conveying air from the outlet opening in the floor to the receiving opening, said means constituting a closure for the space between the wall of the receiving opening and the jacket, an outlet pipe communicating with the drum and the compartment formed by the jacket, and an outer jacket surrounding the inner jacket and constituting a closure for the receiving compartment, said outer jacket having a fresh air inlet, there being an outlet in the outer jacket for directing air into the closed compartment.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

EDWARD B. RAYMOND.

Witnesses:

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JAMES E. CURRAN.