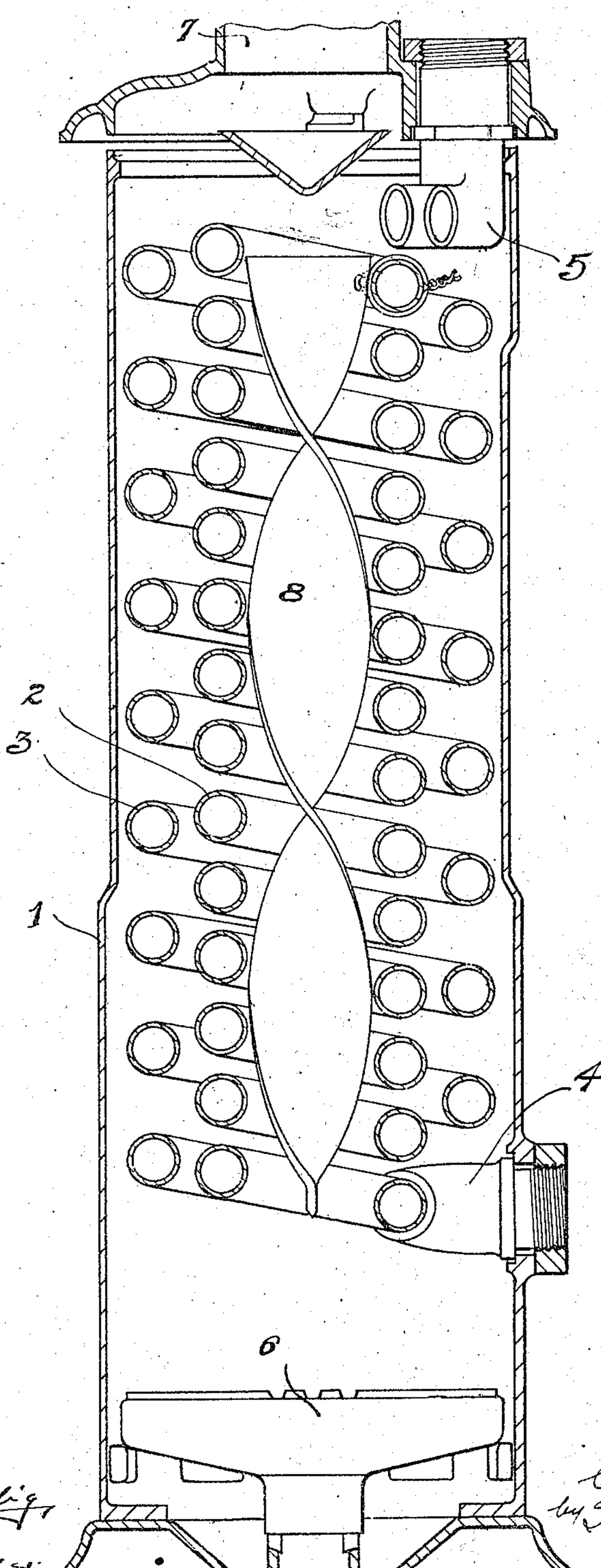
C. A. BACKSTROM.

WATER HEATER.

APPLICATION FILED JUNE 19, 1914.

1,166,424. Patented Jan. 4, 1916.



WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES A. BACKSTROM, OF CRAFTON, PENNSYLVANIA, ASSIGNOR TO PITTSBURG WATER HEATER COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

WATER-HEATER.

1,166,424. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed June 19, 1914. Serial No. 846,003.

To all whom it may concern:

Be it known that I, CHARLES A. BACKSTROM, a citizen of the United States, residing at Crafton, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Water-Heaters, of which the following is a specification.

The invention relates to water heaters, and particularly to that type having a vertical coil. The invention has for its primary objects (1) the provision of an improvement involving the use of a baffle of novel construction whereby the efficiency of the heater is materially increased, (2) the provision of a baffle of cheap and simple construction adapted to retard the upward movement of the body of heated gas at the center of the coil and to direct such body of gas laterally across the water carrying coils whereby a maximum heating effect is secured.

One embodiment of the invention is illustrated in the accompanying drawing wherein:

The figure is a longitudinal section through a heater built in accordance with my invention.

In the drawings 1 is the casing of the heater and 2 and 3 are concentric vertical sets of coils connected to the inlet header 4 and the outlet header 5. Two sets of coils are illustrated but any number of coils might be employed. Beneath the coils is a gas burner 6 which may be of any improved type. The heated gases escape from the heater through the outlet flue or passage 7.

Located inside of the inner coil of the heater is a baffle plate 8 bent into the form of a spiral and preferably extending substantially from one end of the coils to the other. The plate is held suspended in place by means of a wire 9 passing around the coil and through the plate. The use of this helical baffle plate I have found to increase the efficiency of the heater about 5 per cent. as compared with heaters provided with other baffles of the most approved type as heretofore used in the art. This increase in efficiency is due, first, to the fact that the helix forces the heated gases at the center of the heater to follow a longer path than would otherwise be the case, and second, to the fact that the curves of the plate tend to distribute the gases laterally across the water coils. A maximum reduction in the temperature of the heated gases is secured and consequently a maximum heating effect upon the water in the coils. The pitch of the helical baffle plate is preferably made relatively steep, as illustrated, so that the gases will not be too greatly retarded in their upward movement, and so that only a portion of the gases will be deflected across the lower turns of the coil; the remaining portion following the baffle plate upward and being deflected across the upper turns of the coil. The baffle plate can be very easily and cheaply made and applied without difficulty to substantially all types of vertical coil water heaters. The foregoing and other advantages will be readily apparent to those skilled in the art.

It will be understood that by the term "vertical coil" is meant an upright coil in which the turns of the coil are arranged so as to provide a substantially vertical or upright passageway inside the turns of the coil for the passage of a current of heated gas, the upright baffle plate in the passageway under this condition being effective to accomplish the function of distributing the ascending heated gas laterally across the turns of the coil.

What I claim is:

In combination in a water heater, a vertical casing, a burner at the lower end thereof, a vertical helical coil in the casing above the burner with its coils spaced apart to permit the passage of gases laterally therebetween, and a helical baffle plate having a relatively steep pitch extending upward through the coil and adapted to retard the upward movement of the gases and deflect a portion thereof laterally across the turns of the coil.

In testimony whereof I have hereunto signed my name in the presence of the two subscribed witnesses.

CHARLES A. BACKSTROM. [L. S.]

Witnesses:
JOHN BOURKE,
CATHERINE T. BOURKE.