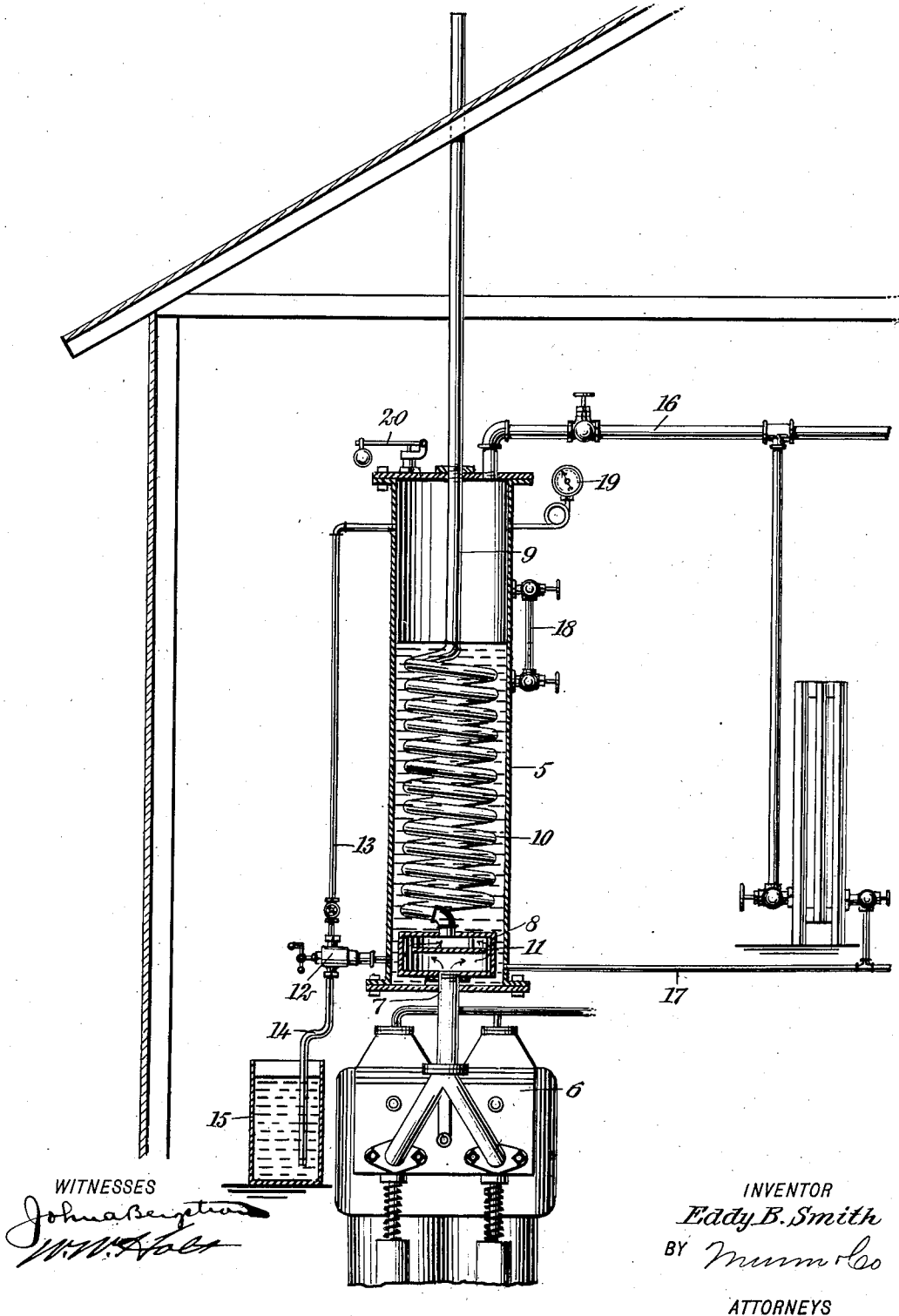


E. B. SMITH.
HEATING APPARATUS.
APPLICATION FILED NOV. 2, 1908.

937,879.

Patented Oct. 26, 1909.



WITNESSES

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EDDY BERTRUM SMITH, OF SCOTLAND, ONTARIO, CANADA.

HEATING APPARATUS.

937,879.

Specification of Letters Patent.

Patented Oct. 26, 1909.

Application filed November 2, 1908. Serial No. 460,782.

To all whom it may concern:

Be it known that I, EDDY B. SMITH, a subject of the King of Great Britain, and a resident of Scotland, Province of Ontario, and Dominion of Canada, have invented a new and Improved Heating Apparatus, of which the following is a full, clear, and exact description.

This invention is an improved apparatus for collecting the heat from the exhaust gases of gasolene, gas, gas-producing and other internal combustion engines, and has for its purpose to provide in combination with a boiler or casing, a head or combustion chamber in connection with the exhaust of an internal combustion engine, for the complete burning of the gases, and arranged near the bottom of the casing, an exhaust pipe leading from the chamber, having radiating means in its length, as a coil, located adjacent to the chamber, and means for introducing water within the casing, surrounding the chamber and radiating means.

Reference is to be had to the accompanying drawing forming a part of this specification, wherein is represented, partly in central vertical section, an apparatus embodying my invention.

In the preferred construction of my improved heating apparatus or heat collector, I employ an upright boiler or casing 5, of sufficient length to provide a steam chamber above a head of water, sufficient for the collection of the heat from the exhaust gases from such internal combustion engines as are available, such engines for example as are generally used for factories and other buildings. I have illustrated such an engine 6 having its exhaust 7 leading into the bottom of the casing 5 and connecting with a head or combustion chamber 8, for the complete burning of the gases. This chamber is located near the bottom of the casing 5, and is of such size as to leave a space thereabout for the circulation of the water with which the casing 5 is partly filled. Connecting with the top of the casing is an exhaust or discharge pipe 9 having a coil or other equivalent radiator 10 in its length, located adjacent to the combustion chamber, the said coil terminating at the normal water level,

and the pipe 9 extended through the top of the casing 5 and carried to a point outside of the building in which the apparatus is installed, as illustrated in the drawing.

In order that the exhaust gases from the engine may not pass directly from the combustion chamber into the coil or radiator, a diaphragm 11 is arranged in the chamber and operates to enforce the passage of the gases contiguous to the walls thereof, before they escape.

The water is maintained at the level in the casing 5, at approximately the height indicated for steam heating, or the casing completely filled for hot water heating, by an injector 12, the same being operated by the steam generated in the casing, for which purpose it is connected with the steam chamber by a pipe 13, the discharge of the injector leading into the casing below the water level, as is the usual practice, and having an inlet pipe 14 passing from a suitable source of water supply, such for example as a water tank 15. In the use of the steam generated in the casing for heating purposes, I connect the top of the casing with the radiators in the building, by a pipe 16, and also connect the return pipe 17 from the radiators with the casing below the water level, thus producing a circulating system. In addition to the injector 12, the casing 5 is provided with such other boiler connections as a water gage 18, a steam gage 19, and a safety valve 20.

I do not claim as broadly new, the utilization of the exhaust gases of internal combustion engines in generating steam for the heating of buildings or such other useful purposes. I, however, believe that the special construction and arrangement of my heat collector as outlined in the preamble of the specification, is novel and possesses advantages of efficiency over apparatuses having like objects in view, either in use or proposed.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

The combination of a boiler, a combustion chamber within the boiler, an internal combustion engine having the exhaust connected

to the chamber, and a discharge pipe leading from the chamber through the boiler, said chamber being otherwise fluid-tight, as also the walls of the connection between the
5 chamber and engine, said chamber being constructed and arranged to be surrounded by the water within the boiler.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDDY BERTRUM SMITH.

Witnesses:

KATHLEEN O'GRADY,
GRACE CHISHOLM.