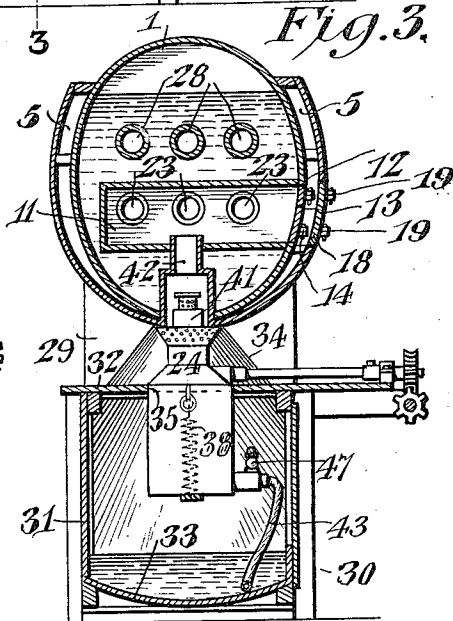
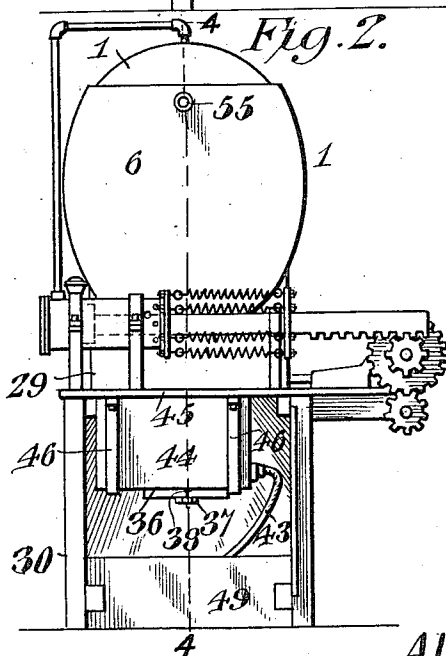
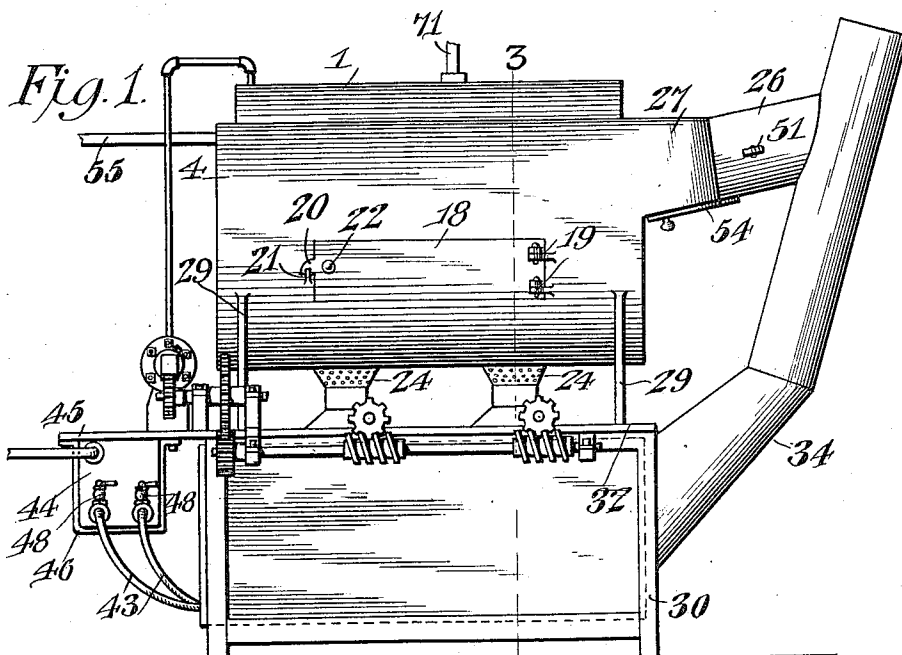


1,032,135.

A. HALECKI.  
STEAM BOILER.  
APPLICATION FILED MAY 9, 1911.

Patented July 9, 1912.

2 SHEETS—SHEET 1.



Alexander Halecki, Inventor

Witnesses  
Jas. K. McCathran  
H. F. Wiley.

By *E. G. Siggers*  
Attorney

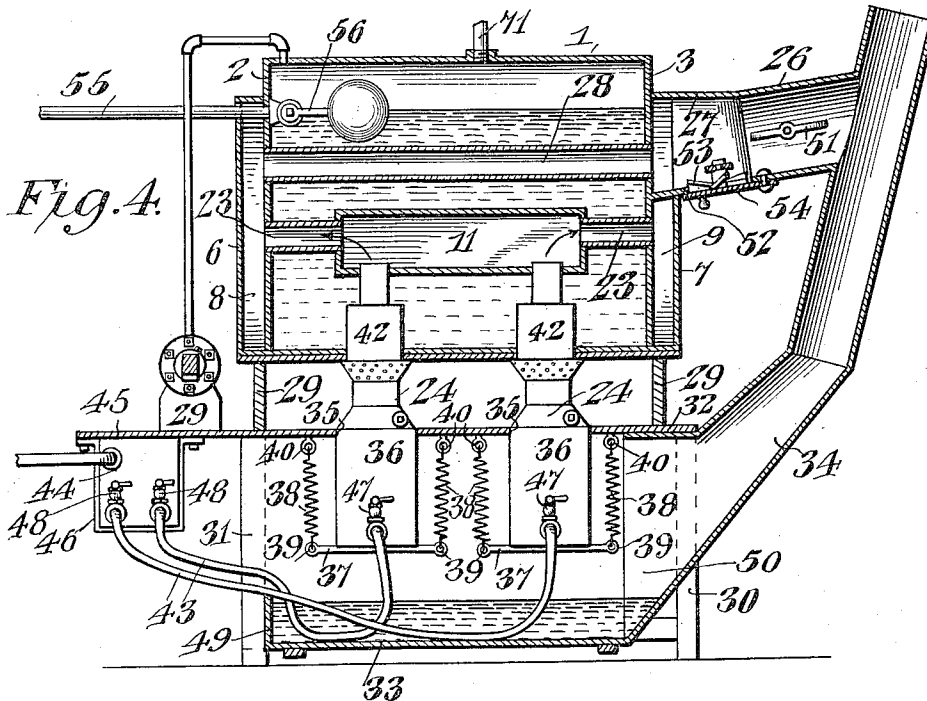
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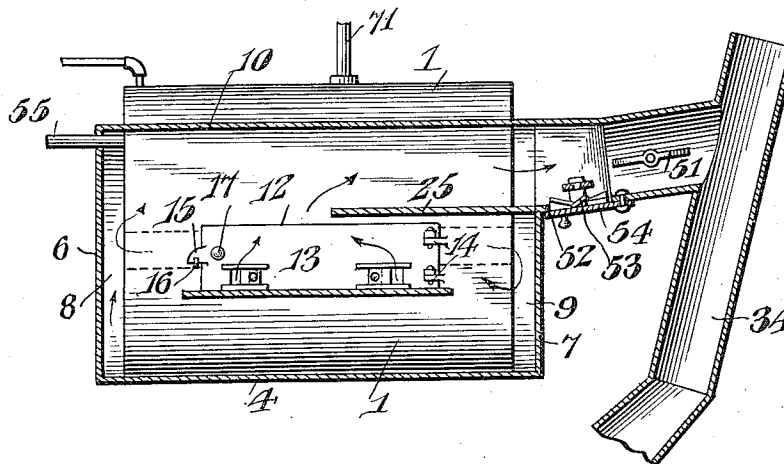
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2 SHEETS—SHEET 2.

1,032,135.



*Fig. 5.*



Alexander Halecki, Inventor

Witnesses

Jas. F. McLaughlin  
H. F. Kelly

By

E. G. Siggers

Attorney

# UNITED STATES PATENT OFFICE.

ALEXANDER HALECKI, OF BARNESBORO, PENNSYLVANIA.

## STEAM-BOILER.

1,032,135.

Specification of Letters Patent.

Patented July 9, 1912.

Application filed May 9, 1911. Serial No. 626,121.

*To all whom it may concern:*

Be it known that I, ALEXANDER HALECKI, a subject of the Emperor of Russia, residing at Barnesboro, in the county of Cambria and State of Pennsylvania, have invented a new and useful Steam-Boiler, of which the following is a specification.

The invention relates to improvements in steam boilers.

The object of the present invention is to improve the construction of steam boilers, and to provide a simple, efficient and comparatively inexpensive steam boiler, designed principally for use in steam heating systems, and adapted to enable hydrocarbon oils, gas and similar fuels to be advantageously employed, and equipped with means for automatically feeding liquid hydrocarbon to one or more burners, and for delivering such fuel to the burners in a comparatively cool condition.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a side elevation of a steam boiler, constructed in accordance with this invention. Fig. 2 is an end elevation of the same. Fig. 3 is a transverse sectional view on the line 3—3 of Fig. 1. Fig. 4 is a vertical longitudinal sectional view on the line 4—4 of Fig. 2. Fig. 5 is a vertical longitudinal sectional view of the boiler, the section being taken through the outer shell.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

In the accompanying drawings in which is illustrated the preferred embodiment of the invention, the boiler, which is horizontal, comprises in its construction a main approximately cylindrical shell 1, having heads or ends 2 and 3 and equipped with an outer curved shell 4, surrounding the sides and bottom of the main shell and fitted against the latter at the bottom thereof, as clearly shown in Fig. 3 of the drawings, and spaced from the sides of the main shell to form side

spaces 5. The outer shell, which terminates short of the top of the main shell, extends beyond the front and rear ends thereof and is provided with front and rear walls 6 and 7, spaced from the ends or heads 2 and 3 of the main shell to provide end spaces 8 and 9. The side and end spaces 5, 8 and 9 are closed at the top by a top wall 10, suitably connected with the inner and outer shells.

The main shell is provided with an interiorly arranged combustion chamber 11, consisting of a substantially rectangular box or casing, extending inwardly from one side of the main shell and terminating short of the opposite side of the main shell. The combustion chamber is closed at its inner side, and the main shell is provided at the outer side of the interior combustion chamber with an opening 12, and it has a door 13, which normally closes the outer side of the combustion chamber. The door 13 is connected at one end to the main shell by suitable hinges 14, and it is equipped at its other end with a catch 15, engaging with a projecting lug or keeper 16. The door 13 is also provided adjacent to its free end with a suitable handle 17, and it is adapted to be opened to afford access to the interior of the combustion chamber. The adjacent side of the outer shell is also provided with a door 18, slightly larger than the door 13 and connected at one end to the outer shell by hinges 19, and provided at its other end with a catch 20, engaging a projecting lug or keeper 21. The door 18, which is also provided with a suitable handle 22, is adapted to be opened and the door opening of the outer shell is of sufficient size to permit the door of the inner shell to swing through it.

The interior combustion chamber is connected at its front and rear ends with the end spaces 8 and 9 by short horizontal tubes 23, and the heat from lamps 24 passes through the short horizontal tubes 23, as indicated by the arrows in Fig. 4 of the drawings, and enters the end spaces 8 and 9 and passes therefrom into the side spaces 5, thereby enveloping the major portion of the inner or outer shell of the boiler and thoroughly subjecting the water contained therein to the action of the heat. Horizontal partitions or baffle plates 25 are arranged in the front portions of the side spaces at a point between the top and bottom thereof for preventing the heat and products of combustion from passing directly from the front end spaces 9 into the

smoke pipe 26. The smoke pipe 26 has an enlarged inner portion 27, extending entirely across the rear end of the boiler and closing the rear end spaces 9 at the top thereof, and communicating with the upper portions of the side spaces 5 above the horizontal baffle plates or partitions 25. The horizontal baffle plates or partitions extend inward to approximately the central portion of the side spaces, and the heat and products of combustion pass upward over the horizontal partitions or baffles 25 and escape into the enlarged inner portion of the smoke pipe 26. The upper portion of the boiler is also provided with a plurality of longitudinal tubes 28, piercing the heads or ends 2 and 3 and communicating with the end spaces 8 and with the enlarged portion 27 of the smoke pipe to permit a portion of the products of combustion to be drawn through the tubes 28, which increases the heating surface of the boiler.

The boiler is provided with suitable supports 29 and is mounted upon a supporting frame 30. The supports 29 space the boiler from the top of the bearing frame, which is equipped with an approximately rectangular casing 31, composed of vertical sides, a horizontal top 32, and a curved bottom 33, the front end of the casing being open and the rear end of the casing communicating with a flue 34. The top 32 of the casing is provided with a plurality of openings 35 through which the lamps or heaters 24 extend, the fonts or reservoirs 36 being located within the casing 31. The lamps or heaters 24 are supported within the upper portion of the casing by holders, consisting of horizontal plates 37 and coiled springs 38, connected at their lower ends to the plates 37, which are provided with eyes 39 to receive the lower terminals of the springs 38. The upper terminals of the springs are secured to eyes 40, which depend from the top wall 32 of the casing. The springs maintain the lamps or heaters firmly in contact with the bottom of the boiler. The lamps or heaters are provided with suitable burners 41, projecting into burner receiving tubes 42, which extend from the bottom of the boiler to the interior chamber 11. The burner receiving tubes pierce the inner and outer shells at the bottom of the boiler, and the bottom of the casing of the inner chamber, and they are suitably secured to the shells and to the said casings.

The lamps or heaters are supplied with a liquid hydrocarbon or similar fuel by means of tubes 43, connected with the fonts or reservoirs 36 of the lamps or heaters and with a tank 44, mounted exteriorly of the casing and preferably secured to an extension 45 of the top thereof by means of suitable hangers or straps 46. The lamps or heaters and the tank are provided with suitable cocks 47 and

48 for controlling the flow of fuel through the tubes 43, which are partially submerged in the water contained in the lower portion of the casing 31. The bottom portion of the casing is constructed to form a water pan 49, and the flue 34 is provided at the rear end of the casing with an enlarged portion 50 and is connected at its upper portion to the smoke pipe 26, whereby the draft of the chimney will create a draft through the casing and produce an evaporation of the water contained in the water pan 49 and cooperating therewith in maintaining the tubes and the reservoirs of the lamps or heaters in a relatively cool condition. No claim is made in the present application to the means for cooling the reservoir and the tubes.

The flue 34 may be provided with a suitable damper for controlling the draft through the casing 31. The smoke pipe 26 is provided with a suitable damper 51, and it has a circular opening 52 in the bottom of the enlarged portion 27 to receive a rotary draft indicating wheel 53. The draft indicating wheel, which is mounted on a suitably supported spindle or pivot, is provided with blades and the rapidity of the rotation of the wheel 53 will indicate the extent of the draft through the smoke pipe. The latter is also provided with a suitable closure 54, pivoted or otherwise secured to the bottom of the smoke pipe and arranged to cover the opening 52. No claim is made in the present application to the draft indicating means. Water is supplied to the boiler through a feed pipe 55, equipped with an automatic float valve 56, arranged within the boiler and adapted to maintain the water at a predetermined level. As soon as the water falls below such level, the float controlled valve 56 opens and permits the water to flow into the boiler until it is closed by the action of the same.

Although lamps or heaters are illustrated in the accompanying drawings for heating the water contained within the boiler, various other heating means may, of course, be employed, and the steam boiler is equipped with an automatic pressure controlling device, which forms the subject-matter of a companion application, filed of even date herewith filed May 9, 1911, Serial No. 626,122.

A steam supply pipe 71 is connected with the boiler for supplying steam to the heating system.

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

1. A boiler comprising a main shell having an interior combustion chamber, an outer shell spaced from the sides and ends of the main shell to form side and end spaces and terminating at opposite sides of the top of the boiler, end tubes connecting the com-

bustion chamber with the said end spaces, horizontal partitions located in the side spaces and extending inwardly in a direction longitudinally of the boiler from one end of the same, and a smoke pipe or flue having an enlarged portion extending entirely across the end of the boiler having the said partitions and communicating above the same with the side spaces.

2. A horizontal boiler comprising a main shell having an interior combustion chamber, an outer shell spaced from the sides and ends of the main shell to form side and end spaces, baffle plates arranged in the side spaces and extending inwardly in a direction longitudinally of the boiler from one end of the same, a smoke pipe located at such end of the boiler and communicating with the side spaces above the baffle plates and closed to the adjacent end space below the baffle plates, and longitudinal tubes extending through the boiler the entire length thereof and affording a direct communication between the smoke pipe and the end spaces at the opposite end of the boiler.

3. A horizontal boiler comprising a main shell having an interior combustion chamber, an outer shell spaced from the sides and ends of the main shell to form side and end spaces and terminating at opposite sides of the top of the boiler, horizontal baffle plates arranged in the side spaces and extending inward from one end of the boiler, a smoke pipe located at such end of the boiler and communicating with the side spaces above the baffle plates and closed to the adjacent end space below the baffle plates, and longitudinal tubes located above the combustion chamber and extending throughout the entire length of the boiler and affording direct communication between the smoke pipe and the end space at the opposite end of the boiler.

4. A boiler comprising a main shell, an outer shell spaced at points from the main shell, a casing located wholly within the main shell and extending inwardly from one of the side walls of the same and arranged in spaced relation with the other walls thereof, said casing constituting a combustion chamber, means for connecting the combustion chamber with the space between the

main and outer shells, a burner receiving tube piercing the bottom of the boiler and the bottom of the casing, and inner and outer doors arranged at the main and outer shells to afford access to the combustion chamber.

5. A boiler comprising a main shell, an outer shell spaced from the main shell, a casing extending inwardly from one side of the main shell and forming a combustion chamber, said shells being provided at the casing with inner and outer doors arranged opposite each other, the inner door being adapted to swing through the opening of the outer door to afford access to the interior of the casing, and a burner receiving tube piercing the bottom of the boiler and the bottom of the casing.

6. The combination of a supporting frame, a boiler mounted thereon and having an interior casing forming a combustion chamber and spaced from the bottom of the boiler and connected with one of the walls thereof and communicating with the exterior, a burner receiving tube piercing the bottom of the boiler and communicating with the combustion chamber, and a heater mounted in the supporting frame at a point beneath the boiler and having a burner projecting into the burner receiving tube.

7. The combination of a supporting frame having a casing, a boiler mounted on the supporting frame above the casing and having an interior casing forming a combustion chamber and spaced from the bottom of the boiler and connected with one of the walls thereof and communicating with the exterior, a burner receiving tube piercing the bottom of the boiler and communicating with the combustion chamber, a heater supported within the casing beneath the boiler and having a burner extending into the burner tube, and means for creating a draft through the casing.

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

ALEX. HALECKI.

Witnesses:

CLAY C. STRAW,  
FRED RIDER.