(No Model.)

3 Sheets—Sheet 1.

S. STEWART.

GAS WATER HEATER.

No. 519,357. Patented May 8, 1894.

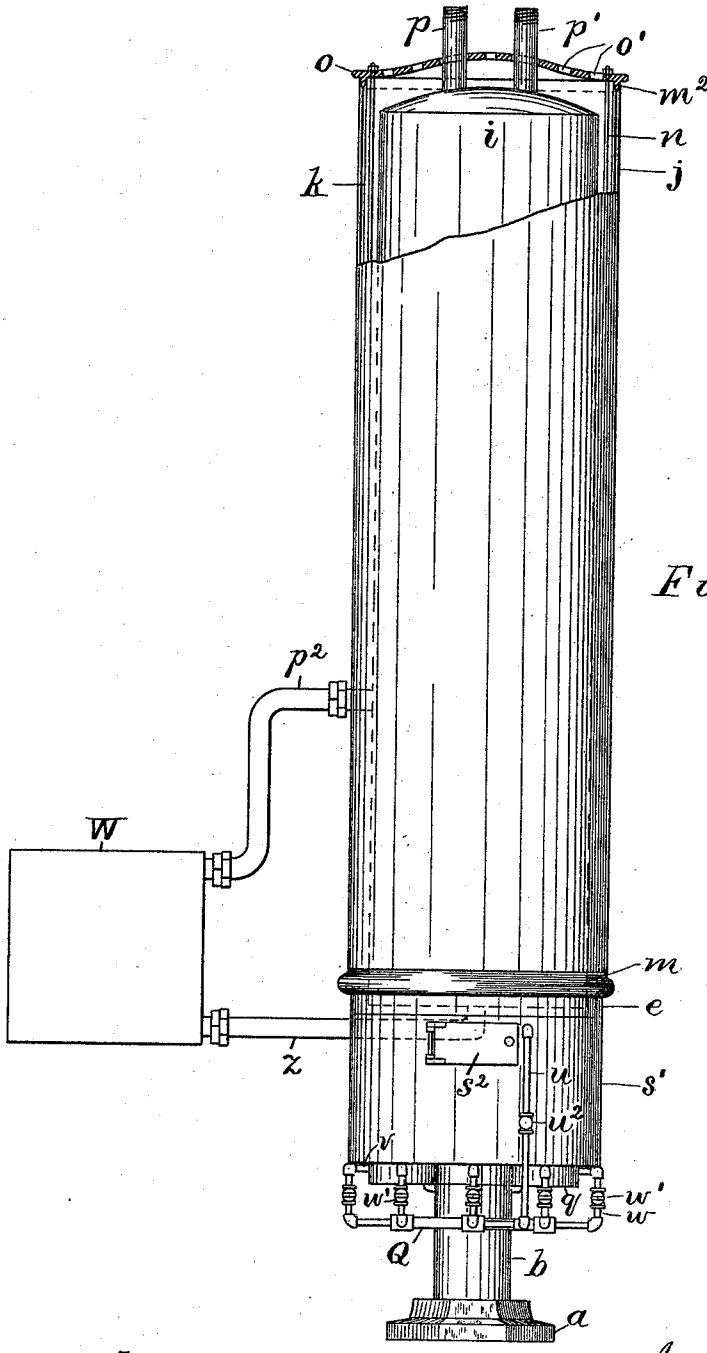

Fig. 1.

Attest:
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Fig. 2

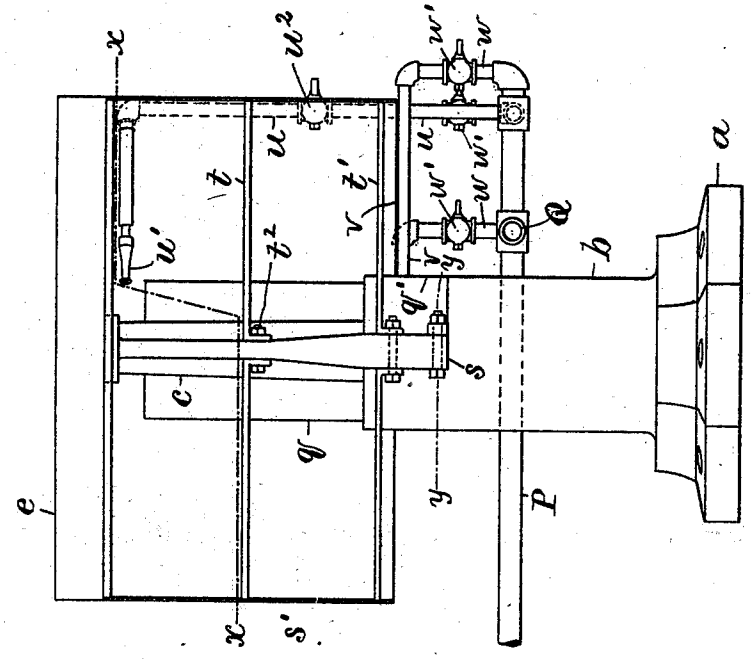
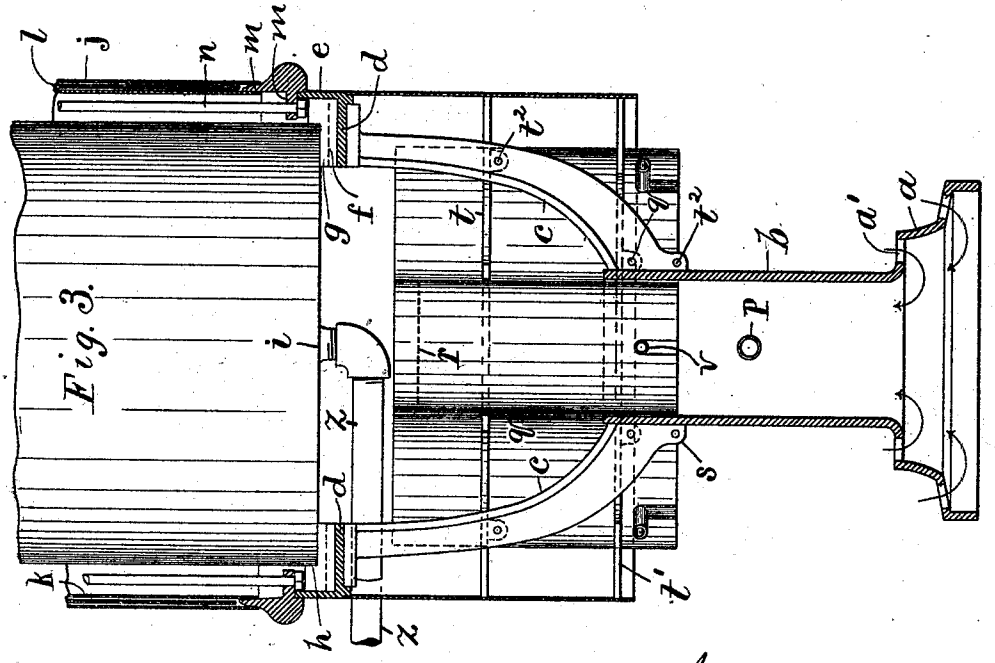


Fig. 3.



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(No Model.) 3 Sheets—Sheet 3.

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Fig. 4.

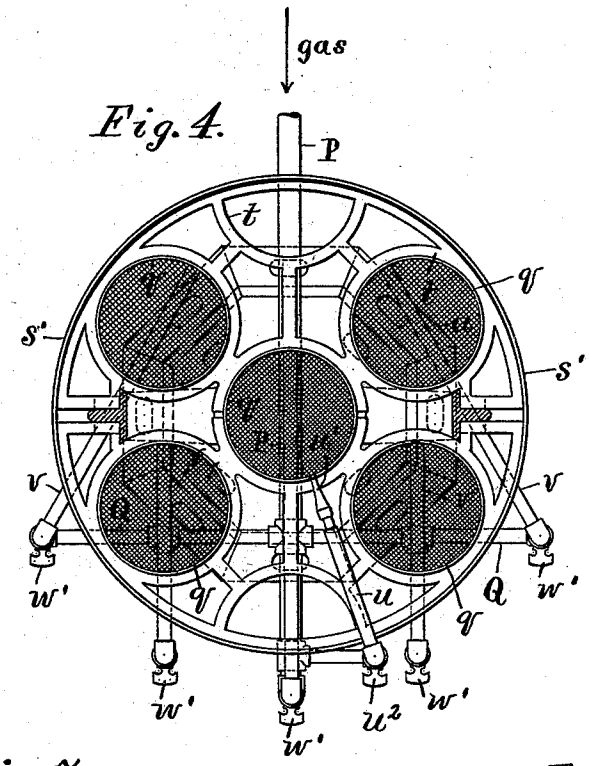


Fig. 5.

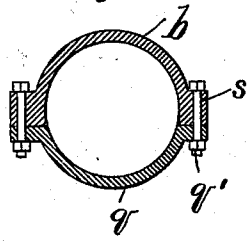
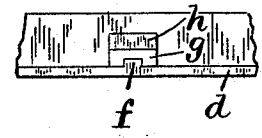


Fig. 6.



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THE NATIONAL LITHOGRAPHING COMPANY.
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

SAMUEL STEWART, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE STEWART MANUFACTURING COMPANY, OF SAME PLACE.

GAS WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 519,357, dated May 8, 1894.

Application filed June 23, 1893. Serial No. 478,606. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL STEWART, a citizen of the United States, residing at Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Gas Water-Heaters, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention is especially applicable to the hot water boilers which are commonly connected with the water back of a stove or range, but it may be applied to other hot water boilers.

The construction provides a set of fixtures embracing a non-conducting jacket which forms a flue around the outside of the boiler, and a series of independent gas burners for heating the water in the required degree.

The invention consists in the combinations hereinafter claimed.

The improvements will be understood by reference to the annexed drawings, in which—

Figure 1 is an elevation of a range boiler having the fixtures applied thereto, with the top of the jacket in section at the center line. Fig. 2 is a side elevation of the stand for a range boiler with the gas fittings applied thereto. Fig. 3 is an elevation of the boiler-stand upon a larger scale, partly in section at the center line where hatched. Fig. 4 is a plan of the stand and gas fixtures at the line x, x, in Fig. 2. Fig. 5 is a plan of the stand at line y, y, in Fig. 2. Fig. 6 is a detached detail view of the supporting ring.

The stand resembles the ordinary boiler stand in certain respects, being made of the usual height and formed with a foot a, central column b, and two arms c carrying a ring d having vertical flange e projected upward from its outer edge. Four radial ribs f are provided upon the top of the ring, and blocks g with shoulders h at their outer ends are fitted by a groove in the bottom to the top of such ribs.

The boiler i is set upon the blocks g within the shoulders h, and the same stand can be adapted to center different sized boilers thereon by using blocks with shoulders of different dimensions. The jacket consists in an outer shell j and inner shell k formed of sheet metal, with an intermediate lining of asbestus l; the shells being centered one within the other at the bottom by a tapering ring m having an inwardly projecting flange m' perforated for bolts n. A perforated cover o is fitted to the top of the jacket by means of a tapering ring m^2, and the bolts n are extended from the cover, inside of the shell k, through the holes in the flange m', beneath which nuts are applied which clamps the upper and lower rings firmly upon the jacket. The flange m' is formed with a collar m^3 to embrace the flange e; which adjusts the jacket upon the stand concentric with the boiler. The water pipes p, p', are extended from the top of the boiler through the cover to make connection with the pipes and faucets from which the heated water would be drawn. The feed supply pipe z is shown extended from the bottom of the boiler in the usual manner adjacent to the central burner. A pipe p^2 is also extended from the side of the boiler through the jacket to make a water back connection when desired. The water back W is shown connected with the pipes z and p^2, to represent the connection of the boiler with a stove or range for heating the water without gas when such stove or range is in use.

Five burners are provided beneath the boiler, each having a cylindrical casing q with metal screen r at the top, through which a mixture of gas and air is discharged and ignited above the screen.

The stand column is made tubular, and one of the casings q is held removably within the same by a detachable clamp q' secured by bolts q^2 to lugs s projected from the column at the lower ends of the arms c.

The foot a is provided with apertures a' to admit air to the central burner. The other four casings are supported at equal distances around the center burner by two skeleton frames t, t', which are made in halves to facilitate their removal, and are secured by bolts t^2 to the arms c and lugs s.

The main supply pipe P is extended through the column b from the rear side of the same to the front just below the casing q of the center burner, and a header Q is extended across the front end of the same, and provided with five connections w containing

cocks w' from which pipes v are extended to the bottom of each casing. The pipes v are secured by suitable hangers to the frame t', and the casings q rest upon the top of the pipe and are supplied with gas from a jet hole v' formed in the top of the pipe v.

From the main supply pipe at the front of the column a pipe u is extended to a pilot burner u' which projects a jet over the central burner to light the same when required. A cock u^2 is inserted in the pipe u to regulate the pilot burner.

A sheet metal guard s' is extended downward from the ring c to protect the burners from drafts of air, and a lighting door s^2 is formed in the side of the guard to light the pilot burner u. By keeping the pilot burner ignited, the center burner may be lighted at any time by supplying gas to the same through the proper cock w', and such central burner then serves to light any of the surrounding burners when gas is supplied to the same.

In heating the water by the gas burners, the whole or any desired number of the burners is first operated to bring the water to the proper temperature, and all the burners except the center one are then cut off by closing the appropriate cocks w'; the heat thereafter being maintained by the use of such burner. The products of combustion consisting of heated air and burned gas, rise from the burners into contact with the bottom of the boiler and the pipe z, and thence pass upwardly within the jacket in close contact with the boiler. The holes o^2 in the perforated cover o are made small enough to check or restrict in considerable degree the exit of such products from the casing, and they are thus kept in contact with the boiler until the greater part of their heat is absorbed.

The non-conducting jacket prevents the radiation of heat into the kitchen or other apartment where the boiler is placed, and thus prevents the heating of the apartment in an unpleasant degree in hot weather.

The boiler, with the jacket and gas fixtures shown, is entirely complete without any connection to a range or water back, and where the boiler is operated independently of such water back, the inlet and outlet pipes would evidently be connected in a suitable manner with the faucets for using the hot water. The invention is however especially useful in connection with those boilers which are set in connection with a range and water back, as it is now very common to discontinue the use of the range in hot weather, and to operate a gas stove for cooking purposes. In such a case, the use of the heating boiler is usually lost, as well as the supply of hot water to all its connections, as the kitchen sink, laundry and bath room.

By the use of the present fixtures, the boiler may be used independently of the range and without disturbing the connections to the water back, the gas burners operating to heat the supply when required, and to afterward keep the water heated at a very slight expense.

I have, on account of its great utility, claimed the boiler provided with water back connections and with the gas heating fixtures as a novel combination.

When the water is heated by the water back, the jacket operates to prevent radiation from heat in the boiler, and thus maintains the water at a higher temperature.

The fixtures can be applied to any range boiler by removing the same from the ordinary stand and substituting the stand and jacket shown herein.

It is obvious that the ring d may be provided with integral projections having shoulders to center the boiler instead of the removable blocks g.

The outer shell j and inner shell k form a duplex jacket, which may be used with or without an intermediate lining, and such lining may be made of any suitable non-conducting material.

Any suitable means may be used to sustain the burner casings in position upon the stand, in place of the frames t t'.

It will be observed that the introduction of the gas supply pipe P across the column b just below the open mouthed central burner enables me to utilize the downward radiation of heat through the burner in heating the supply pipe; and the passage of gas through such heated pipe raises the temperature of the latter and causes it to burn subsequently with increased efficiency.

What I claim herein is—

1. A stand for upright heating-boilers provided with gas burners to heat the boiler, a ring with projections to sustain the boiler above the ring, and a jacket forming a flue about the boiler and supported upon the ring, as set forth.

2. A stand for upright heating-boilers, provided with gas burners to heat the boiler, a ring with flange having a jacket centered thereon, and removable blocks with shoulders, supported upon the ring to center the boiler, as set forth.

3. A duplex jacket for heating-boilers, consisting in inner and outer sheet metal shells, and rings m, m^2 fitted between the shells and drawn together by bolts n, substantially as herein set forth.

4. A duplex jacket for heating-boilers, consisting in inner and outer sheet metal shells, a cover provided with tapering ring m^2, the bottom ring m having inwardly projecting flange m', a non-conducting lining between the shells, and bolts to clamp the rings together, substantially as herein set forth.

5. A stand for upright heating-boilers, provided with gas burners to heat the boiler, a duplex jacket with metallic rings at the top and bottom connected by bolts n and centered upon the ring d, and a cover upon the

jacket with holes o^2 adapted to retard the exit of the heated products from the casing, substantially as herein set forth.

6. The stand for heating-boilers, consisting in the foot *a*, column *b*, arms *c* and ring *d*, and provided with a series of cylindrical burner casings *q*, means for sustaining the casings below the ring, and gas pipes extended beneath the casings, and provided with separate cocks, substantially as herein set forth.

7. The stand for heating-boilers, consisting in the foot *a*, column *b*, provided with casing clamp *q'*, the arms *c* carrying ring *d*, and having the skeleton frames *t*, *t'*, in halves, secured thereto, burner casings supported within the clamp and the frames, and gas pipes extended to the casings and provided with separate cocks, as set forth.

8. The combination, with a heating boiler and a stand for the same comprising the base *a*, hollow column *b* and supporting arms *c* projecting therefrom, of the central gas burner mounted in the upper end of the column *b* and lateral burners sustained upon the stand adjacent thereto, each of said burners comprising the cylindrical casing *q* with screen *r* at the upper end and perforated gas pipe *v* at the lower end, the header Q for connecting the said gas pipes, and the supply pipe P passed through the column *b* below the central burner and connected with the header, as and for the purpose set forth.

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

SAMUEL STEWART.

Witnesses:
WILLIAM HOLZER,
HENRY J. MILLER.