R. S. McINTYRE.

SOLAR WATER HEATER.

APPLICATION FILED JULY 2, 1906.

1,004,888. Patented Oct. 3, 1911.

Fig. 1

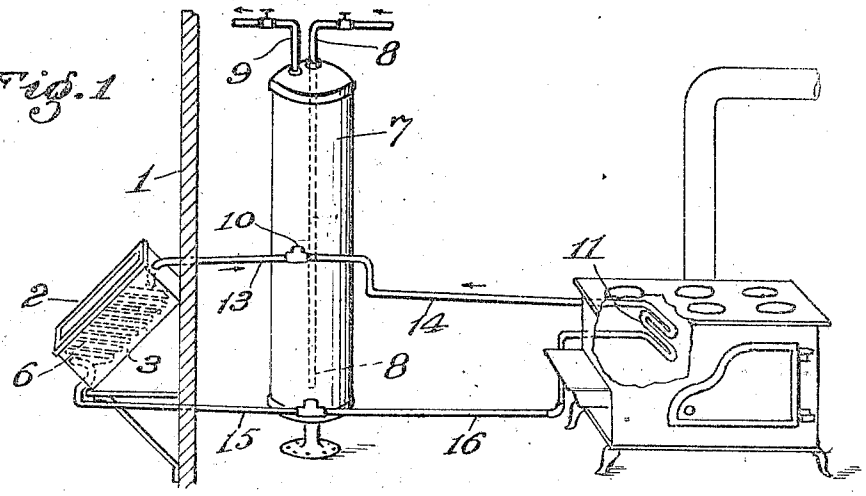


Fig. 3

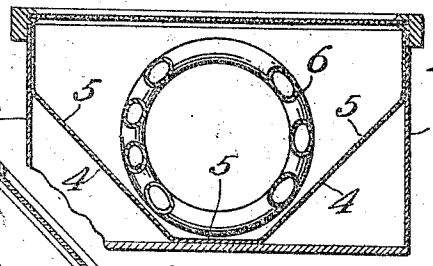


Fig. 2

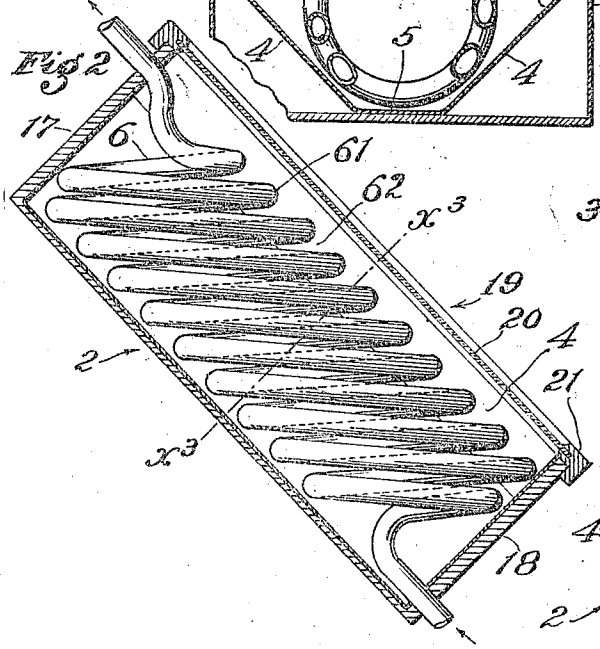
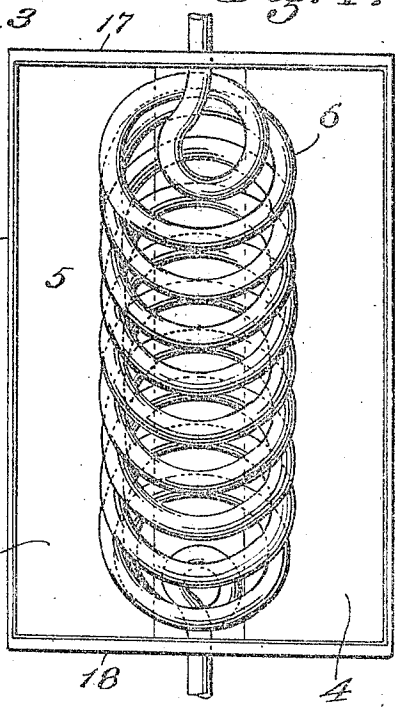


Fig. 4.



Witnesses:
C. C. Holly
J. Townsend.

Inventor.
Robert S. McIntyre,
by James R. Townsend
his Atty

UNITED STATES PATENT OFFICE.

ROBERT SAFFORD McINTYRE, OF RIVERSIDE, CALIFORNIA.

SOLAR WATER-HEATER

1,004,888. Specification of Letters Patent. Patented Oct. 3, 1911.

Application filed July 2, 1906. Serial No. 324,505.

To all whom it may concern:

Be it known that I, ROBERT SAFFORD McINTYRE, a citizen of the United States, residing at Riverside, in the county of Riverside and State of California, have invented a new and useful Improvement in Solar Water-Heaters, of which the following is a specification.

Objects of this invention are to produce at minimum cost superior means for supplying hot water for domestic and other purposes, and to provide a superior construction of solar heater for heating water.

The accompanying drawings illustrate the invention.

Figure 1 is a view of my solar water-heater applied in connection with a common range boiler and heater for use in a dwelling; a fragment of which is shown in section. Fig. 2 is a vertical, axial section of the solar heating member of my newly-invented heater. Fig. 3 is a cross section on line x^3, Fig. 2. Fig. 4 is a front view of the solar heater member detached.

1 designates the wall of a building; 2, a box set aslant against said wall and provided with sheet metal side walls 3, and an internal sheet-metal reflector 4 extending aslant, as shown in Fig. 3, to form a trough-like bottom for the back wall of the box. The inner surface 5 is polished to serve as a reflector, while the outer surface is adapted to allow passage of the sun's rays into the box through the walls 3 and sheet-metal reflector 4. 6 is a coiled pipe in said box, the coils of which extend aslant relative to the axis of the box and slope upward continuously from the bottom to the top of the coil. In Fig. 1 the invention is shown connected to a range boiler in a building; there being a main supply pipe 8 opening into the range boiler at the lower part thereof, a main outlet or service pipe 9 from said range boiler, a hot water inlet 10 opening into said boiler and an artificial heater in the form of a water-back 11 in a stove. 13 is a pipe connecting the top of said coil 6 with said hot-water inlet 10. 14 is a pipe connecting the top of the artificial heater with said inlet, and 15, 16, are means connecting the lower end of said boiler with the bottoms of said coil and said artificial heater, respectively.

The main supply pipe 8 and discharge pipe 9 open into and from the range boiler 7 at the bottom and top thereof, respectively, and the hot water inlet 10 is arranged intermediate the mouth of said supply and discharge pipes so that the hot water from either of the heaters will readily flow into the range boiler.

By the construction of solar heater shown, superior advantages are secured; as for instance, the sun's rays are effective from early sunrise until sunset, having access to the coil through both the side walls and the front or top of the box. The upper and lower ends 17 and 18 of the box may preferably be made of wood, and the top or front 19 of the box may be in the form of a pane of glass 20 set in a frame 21 and removable at will to gain access to the coiled pipe 6. Said coiled pipe may be of any suitable material; as for instance, tin, iron, or the like, and may be painted red or black for the purpose of absorbing the heat rays of the sun. The individual coils 61 of said pipe extend obliquely relative to the axis of said coil so that openings 62 are provided between said coils through which the sun's rays may shine to the back of the coil and to the reflecting surface 5 at the back of the coil, so that all portions of the coil may be heated.

The coil may be more or less closely wound to give greater or less surface for the sun's rays to impinge upon.

In practical use, the pipe 8 will be directly connected with the pressure main, and the water be drawn from the service pipe 9 by the usual valves or faucets, not shown. Arrows along the pipes indicate the direction of flow through the apparatus.

Pipes 13, 14 slope upwardly toward the boiler 7 and pipes 15, 16 may slope upwardly from the boiler so that there is a continual upward slope through the pipes of the system from the lower part of the boiler or tank to the hot water inlet 10, thus preventing any air trapping within the pipes.

By employing a coil instead of a hollow cylinder, a small amount of water is caused to circulate in contact with a large amount of heating space that is subject to the impingement of the direct or reflected sun's rays, so that a greater proportion of the water is immediately acted upon by the heat from the walls of the container.

What I claim is:—

1. In a water heater, a box adapted to be set aslant against the wall of a building and provided with sheet-metal side walls,

an internal sheet-metal reflector set aslant to form a trough-like bottom for the back wall of the box, the inner surface being polished, and a coiled pipe in said box, the coils extending aslant relative to the axis of the box and substantially horizontal, and the coils sloping upwardly continuously from the bottom to the top.

2. In a solar heater, a slanting box, a reflector in said box, a coiled pipe, the coils of which are on a horizontal plane, set in said box with the coils arranged one above another and adapted to admit the rays of the sun to the reflector.

3. In a solar heater, a box adapted to be set aslant against the wall of a building and provided with sheet-metal side walls; an internal sheet-metal reflector forming a trough-like bottom for the box, the inner surface being polished; and a heating coil in and extending along the box from the inlet which is at the bottom of the coil upwardly to the outlet at the top of the coil, said inlet leading into the coil at the bottom of the box and the outlet leading from the coil at the top of the box, the members of the coil being so arranged that the sun's rays can readily pass between them to the reflector.

In testimony whereof, I have hereunto set my hand at Riverside California this 25th day of June 1906.

ROBERT SAFFORD McINTYRE.

In presence of—

A. AIRD ADAIR,

LYLA PALMER.