

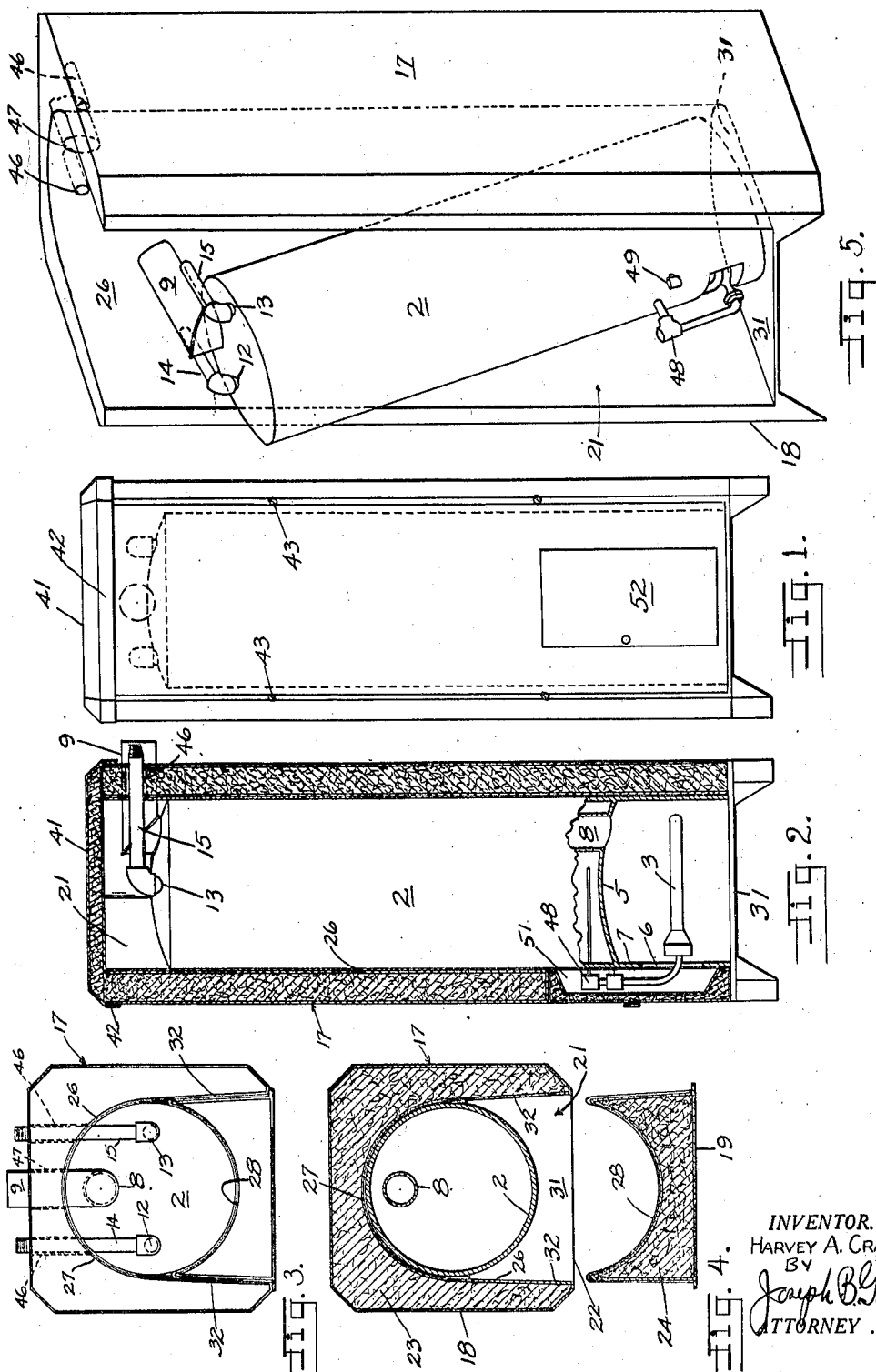
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H. A. CRAIG

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AUTOMATIC WATER HEATER UNIT

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INVENTOR.
HARVEY A. CRAIG
BY
Joseph B. Gardney
ATTORNEY.

UNITED STATES PATENT OFFICE

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AUTOMATIC WATER HEATER UNIT

Harvey A. Craig, New York, N. Y., assignor to
Rheem Manufacturing Company, Richmond,
Calif., a corporation of California

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The invention relates to improvements in automatic water heaters and particularly to heaters of the storage type.

Heretofore in water heater units or installations of the general character described, the boiler or tank in which the water was heated and stored was completely and permanently enclosed within an outer cabinet or insulated jacket of one form or another. Since in this type of heater, repair or replacement of the boiler usually becomes necessary before the unit as a whole has outlived its usefulness, the temporary or permanent removal of the boiler generally entails removing both top and bottom covers of the cabinet, disconnecting of parts difficult of access, marring and possibly mutilating the cabinet or jacket, and removing the insulation material and most frequently rendering it unfit for replacement. The replacement operation was likewise tedious and difficult, and so much so that when considered in connection with the removal operation the substitution of the entire original unit with a new one was in most cases the more economical. In view of the foregoing, the present invention has for an object, permitting the removal and replacement of the boiler in a simple and easy manner and without disturbing the cabinet covers, and substantially the insulation and the cabinet body.

Another object of the invention is to provide a cabinet or insulated housing for the boiler, which notwithstanding its provision with a removable section large enough to cover an opening permitting passage therethrough of the entire boiler, insures proper heat insulation during the use of the heater and will not detract from the sturdiness and appearance of the unit.

A further object of the invention is to provide a unit of the character described in which all of the connections and accessories for the operation and control of the heater will be completely concealed within the cabinet or housing, and yet will be easily and conveniently accessible.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawing accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawing and description may be adopted within the scope of the invention as set forth in the claims.

Referring to said drawing:

Figure 1 is a front view of the unit.

Figure 2 is a vertical sectional view of the unit taken at right angles to Figure 1.

Figure 3 is a plan view of the unit with the top cover of the cabinet removed.

Figure 4 is a horizontal sectional view of the unit with the removable section of the cabinet and insulation backed out.

Figure 5 is a perspective view showing the boiler while being removed from or inserted into the cabinet.

In the embodiment of the invention illustrated the unit is of the water storage type provided with a vertically disposed boiler or tank 2 for containing the heated water and arranged to be fired or heated in any suitable manner, such as with gas, oil, electricity, or the like. As here shown the heating is designed to be effected with gaseous fuel, and there is therefore provided a burner 3 which is positioned within the depending side walls of the boiler and is arranged to direct the flame against the relatively elevated bottom wall 5 of the boiler. An opening 6 in the depending portion 7 of the boiler side walls permits of the ready insertion or withdrawal of the burner. The heated products ascend through a tube 8 extending vertically through the boiler and the products are vented at the top through a horizontal extension 9. Water is supplied to and drawn off from the boiler through pipes 12 and 13 respectively, and such pipes are preferably provided at the top of the boiler with horizontally extending portions 14 and 15 parallel to each other and the vent 9. It will of course be understood that the design of the boiler and the arrangement of the connections may be otherwise than as above described, the latter being merely one of many designs applicable to the use of the invention.

As will be clear from the drawing, the boiler is arranged for enclosure within a jacket or housing 17 designed to provide a support for the boiler and in general a heat insulating device therefor. The jacket or housing as here shown is formed of a plurality of sections 18 and 19, preferably two in number, with the section 18 providing for the normal support of the boiler and being relatively fixedly held, while the section 19 is designed to function as a removable part of the unit yet cooperate with section 18 in concealing the boiler and accessories and preventing the escape of heat from the boiler. The section 18 is preferably made large enough to permit of the complete insertion of the boiler therein and is thereunto provided with a chamber 21 designed to receive the boiler. The chamber

21 has, along a vertical side of section 18, an opening 22 which is preferably large enough to permit the boiler to be passed horizontally there-through while in upright position. Closure of the opening 22 is arranged to be effected by engagement of the removable section 19 therein.

For effectively retaining the heat in the boiler there is provided suitable insulation means positioned between the walls of the jacket and the boiler, and in the present embodiment such means is formed in sections 23 and 24 corresponding in a general way with the jacket sections 18 and 19 respectively. Preferably the insulation sections, which are formed of any desired heat insulation material, are fixedly held to the associated cabinet sections so that each insulation section forms with the associated jacket section an independent unit. This arrangement is particularly desirable with respect to the removable section, since in withdrawing or replacing the latter, it is only necessary to handle the single composite member and no difficulty will be encountered in replacing the parts in properly related position. In view of the inclusion of the insulation section 23 in the jacket section 18, it is the inner surface 26 of the latter which defines the effective space in chamber 21 for the reception of the boiler. Since it is desired that the insulating sections closely embrace the boiler, the portions of the surfaces of the sections arranged to lie opposite the boiler are curved or otherwise shaped in conformity with portions of the boiler designed to be covered thereby. In the present instance the boiler is cylindrical, and therefore the surface portions 27 and 28 of the respective sections arranged to engage or lie opposite the boiler are curved at approximately the same radius as the boiler and together define a substantially complete cylindrical space when the sections are operatively positioned about the boiler. As there are but two sections utilized in the embodiment illustrated, each section is designed so as to provide a curved surface of approximately 180 degrees. As previously explained, the jacket section 18 preferably provides for the support of the boiler, and said section, in addition to having a bottom or platform 31 for such support of the boiler, has included as part thereof extending portions 32 between which the insulated section 24 is arranged to fit. Preferably the surfaces of portions 32 engageable by section 24 are formed to diverge outwardly, and since the engaging surfaces of the section are formed accordingly, a tight wedging fit between the sections is assured. It will be evident that the design or form of the portions of the jacket sections providing the exterior of the unit, is more or less optional. In the unit illustrated the jacket or housing is generally rectangular in cross section and formed with beveled corners, the section 18 by reason of the extensions 32 providing substantially the three sides of the jacket while the section 19 provides the fourth side. Depending to a large extent on the character of the insulation material used, each composite section may be provided with an outer shell of metal or other material completely enclosing the insulation, or the shell may be utilized only for that much of the section which will be exposed when the sections are operatively disposed about the boiler. In the latter instance, the boiler engaging and the interengaging portions of the sections may be left bare or covered with a form retaining type of heat insulation material to hold the inner insulating material in

place. In either case, however, it has been found desirable to insert between the boiler and insulating sections and between the opposing surfaces of the latter, a wrapping of some soft thin sheet material desirably of a heat insulating character, so as to insure a tight fit and prevent "sweating" between the insulating sections and around the boiler.

Preferably the jacket or housing is provided with a removable heat-insulated cap 41 which is formed with a short marginal flange 42 arranged to overlie the outer sides of the shells comprising sections 18 and 19. The sections may be removably secured together by screws 43 or in any other suitable manner.

The water pipes and flue at the top of the boiler are extended through openings 46 and 47 in the upper rear portion of the boiler supporting section of the cabinet, thus effectively concealing said members, and an important feature in the design of the unit resides in the fact that all of the usual accessories and connections therefor, such as the thermostat 48, drain valve 49, and the like, are concealed within the jacket yet are readily accessible when necessary. These parts are usually concentrated at the front of the boiler adjacent the bottom, and as will be clear from Figure 1, I have provided in the removable section 19 an opening 51 into which the accessories and parts aforesaid are accommodated when the section 19 is in closed position. The opening 51 is covered by a heat insulated door 52 which may be opened whenever access to accessories and parts is desired without withdrawing section 19.

It will now be clear that, should it be desired to remove the boiler for repair or replacement, but a minimum number of steps and operations are necessary. Ordinarily the first step is to release the attaching means between the cabinet sections, and withdraw the removable section 18 with its associated insulated portion 23, the cap 41 being left undisturbed if desired. The water pipes and flue at the top of the boiler are then disconnected from the supply pipe, the water outlet pipe, and the flue, and at the same time the gas supply pipe is disconnected from the thermostat and burner. If there are any electrical connections the latter may be severed as necessary. With the boiler, connections, and accessories thus released, the boiler may be tilted as indicated in Figure 5 so as to effect the ready withdrawal of the water pipe and flue connections from the openings 46 and 47, and then the boiler with the connected parts may be removed bodily while in the tilted or a vertical position. Installation or replacement of a boiler merely involves a reversal of the foregoing operations.

I claim:

1. In a heater of the character described, a substantially cylindrical boiler with its length substantially exceeding its diameter and having control portions extending from a side thereof, a heat insulating housing for said boiler comprising a section with an exterior portion providing a cabinet for the boiler and an interior portion arranged to substantially fit around a segment of said boiler, said section having a supporting platform for said boiler and provided with an open side substantially equal to the length and width of the boiler whereby the boiler may be moved therethrough to and from within said section while in upright position, and said opening having its opposing sides diverging outwardly, a

second section having its exterior arranged to coact with said first section in providing said cabinet and having its interior coact with said first section to completely surround said boiler, said second section being designed for detach-
5 able connection with the first section and having side portions corresponding to and arranged to engage said sides of the said opening, and said second section having an opening for accom-
10 modating said control portions, a releasable closure for said last opening and a removable cap over said sections.

2. In a heater of the character described, the combination of an elongated boiler having an

accessory portion projecting outwardly there-
from, a heat insulation housing fitting around
said boiler and having a thickness greater than
the outward projection of said accessory portion
5 and provided with an opening for receiving the
latter, and a closure removably engaging the
walls of said opening and lying on the outer side
of said accessory portion, the wall of said clo-
sure being of less thickness than the insulated
10 housing and the outer side of the closure in
closed position lying substantially flush with the
outer side of the housing.

HARVEY A. CRAIG.