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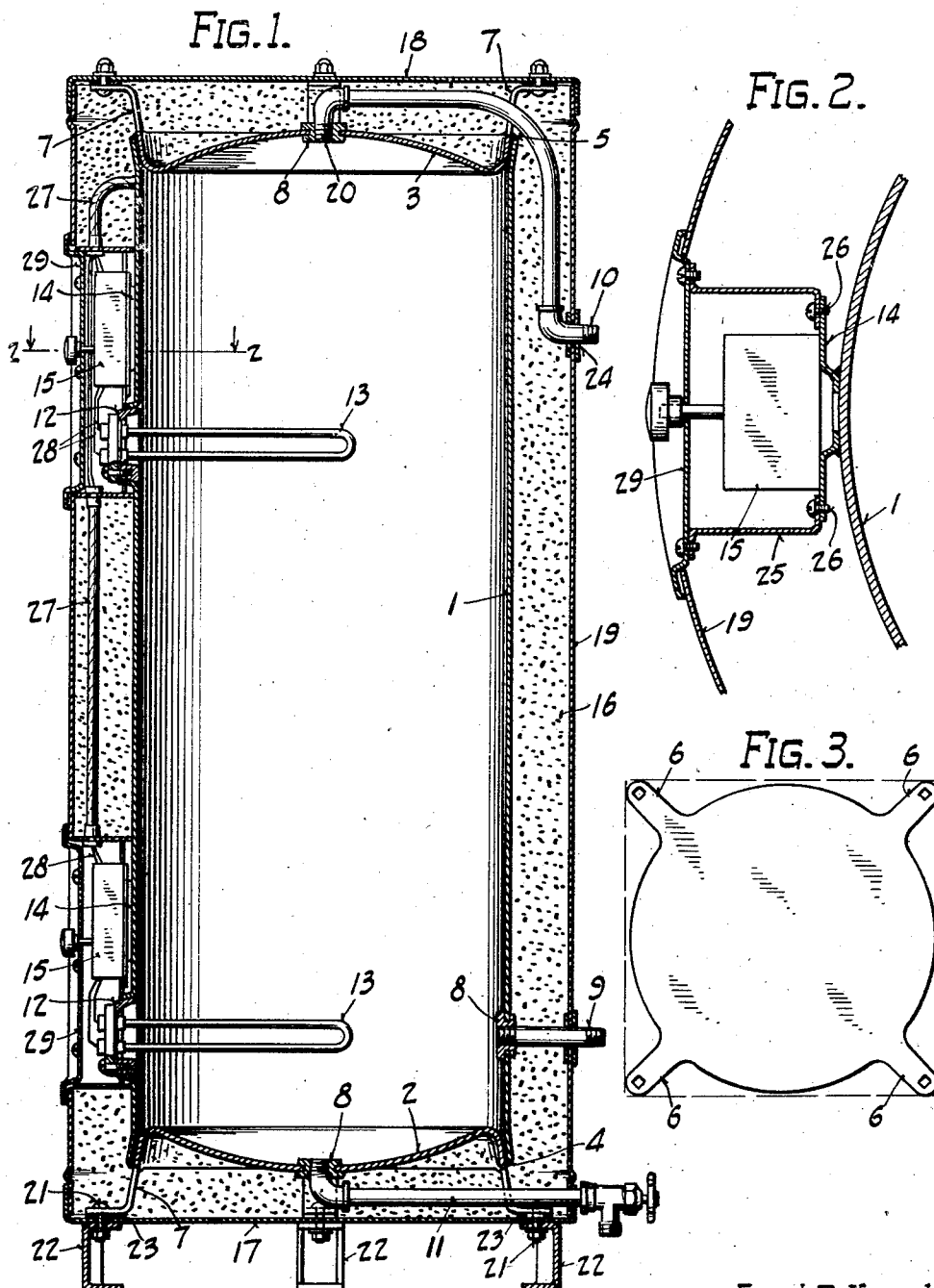
E. R. KOPPEL

2,361,635

FLUID CONTAINER

Original Filed Jan. 29, 1940

2 Sheets-Sheet 1



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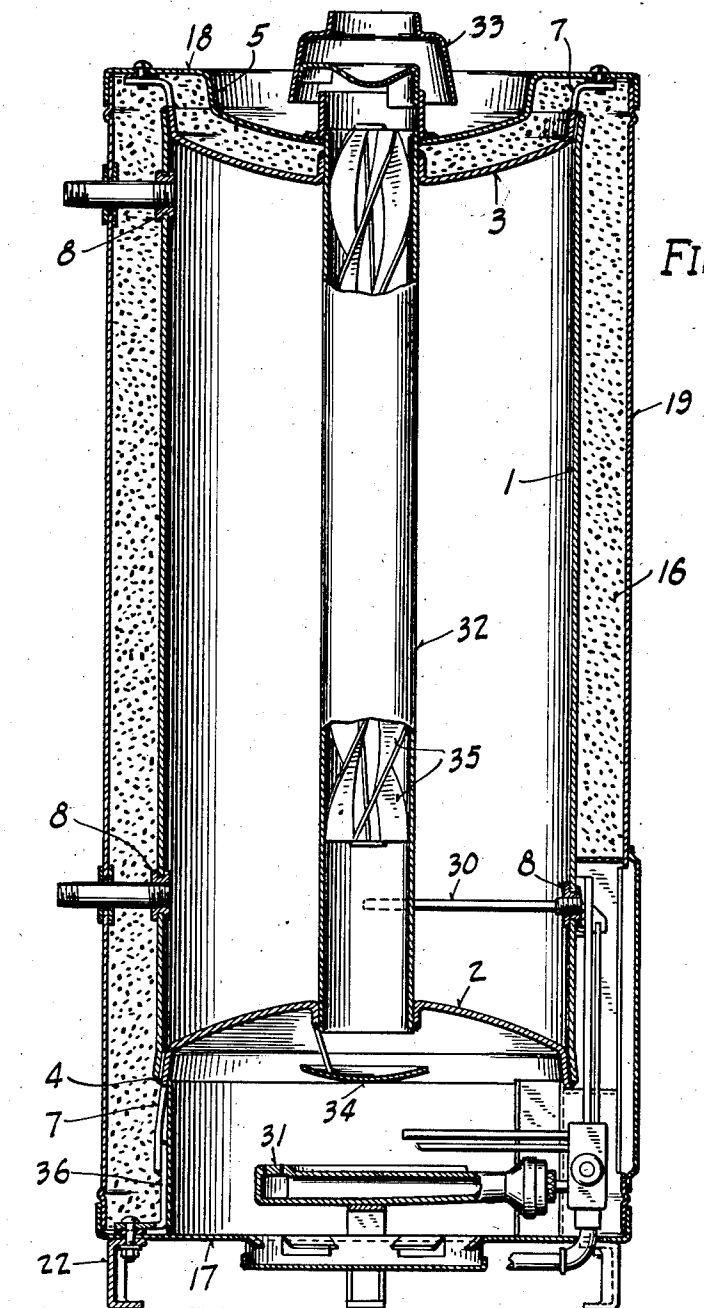
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UNITED STATES PATENT OFFICE

2,361,635

FLUID CONTAINER

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Original application January 29, 1940, Serial No.
316,083. Divided and this application Novem-
ber 10, 1941, Serial No. 418,583

1 Claim. (Cl. 220—15)

This invention relates to hot water tanks.

An object of the invention is to provide an improved construction for hot water tanks.

Another object of the invention is to provide a hot water tank which can be readily mounted in an outer shell or casing and surrounded with insulating material to prevent loss of heat.

Another object of the invention is to provide an insulated tank with a slip joint in the external casing to allow differential expansion or contraction of the tank and casing.

Further objects of the invention will be clear from the following description and the accompanying drawings in which:

Figure 1 is a vertical section of an electrically heated tank;

Fig. 2 is an enlarged section on the line 2—2 of Fig. 1;

Fig. 3 is a plan view of a blank before it is shaped into the head of a tank; and

Fig. 4 is a vertical section of a gas heated tank.

Referring to the drawings, the tank comprises a cylindrical body section 1 slightly flared at the ends to receive the two heads 2 and 3. A coating of vitreous enamel or other suitable lining to prevent corrosion may be applied to the internal surfaces of the shell and heads, after which they are provided with the necessary fittings and then assembled and united by welds 4 and 5; or, alternatively, the shell and heads may be first assembled and welded together to form a complete tank which is then galvanized or treated in other suitable fashion to prevent corrosion.

The blanks from which the heads are formed are generally circular in shape but have four projections 6 extending into the four corners of the square which incloses the circular portion of the blank. This procedure utilizes metal which would be sheared off if a perfectly circular blank were used. The blanks are formed into heads of suitable shapes of which two different modifications are shown in Figs. 1 and 4, and the projections 6, which are an integral part of the heads, are bent into legs 7 for the support of the tank or its external casing.

Spuds 8 are provided for the cold water inlet 9, hot water outlet 10, and drain pipe 11. Mounting rings 12, or other mounting means of suitable material are provided for the support of the heating elements 13 and are welded or otherwise secured to the cylindrical shell. Plates 14 are welded to the shell for the attachment of thermostat controls 15. For the electrically heated tank, the thermostat elements are placed in contact with or inserted into the shell of the tank

and are responsive to variations in its temperature to control the supply of current to the heating elements.

The tank is insulated against loss of heat by insulation 16 between the tank and an external casing which consists of a bottom 17, a top 18, and a cylindrical section 19 which slips into the top and bottom.

In assembling the structure, the hot water outlet 10 and elbow 20 are fitted to their respective spuds. The tank is mounted in the bottom section 17 of the external casing and the legs 7 are secured by bolts 21 to an external support 22 which may be a ring extending around a complete circumference, or separate legs for attachment to the four legs of the tank.

Asbestos or other insulating washers 23 are desirably used in conjunction with the bolts 21 to diminish loss of heat by conduction through the legs 7. After the tank has been secured to the bottom part of the external casing, the cylindrical section of the casing is slipped over the tank and into the bottom of the casing and the hot water outlet 10 is allowed to project slightly through the hole 24 provided for it. The cold water inlet 9 and drain pipe 11 are screwed into their respective fittings. Thermostat housings 25 are mounted in the openings in the cylindrical shell that have been made for them and are secured by screws 26 to plates 14. Thermostats 15, heating elements 13, and electrical conduits 27 and wiring 28 are installed and cover plates 29 are fastened over the openings in the outer casing provided for the insertion of the heating elements and thermostats. Insulating material 16 is placed between the tank and the external casing and the upper section 18 of the casing is mounted in position and bolted to the four legs on the head of the tank.

In this construction the outer casing can be readily and easily assembled around the tank and is then rigidly supported by the tank. Despite these advantages, the tank has no connection with the cylindrical shell section of the external casing. Differences in the expansion of the tank and casing caused by differences in temperature cause no strain on either since the top of the casing is free to slide up and down over the cylindrical part. To further provide for differences in the expansion or contraction of the tank and casing, the cover plates 29 are secured to the thermostat housing 25 but not to the outer casing and are free to slip over it when the tank expands or contracts more than the casing. The holes for the insertion of the thermostat

housings are made sufficiently longer than the inwardly extending projections of the cover plates to provide ample clearance for the maximum differences in relative expansion that will occur in use.

A modified construction suitable for gas heating is shown in Fig. 4. A thermostat 30 projects into the tank and is responsive to the temperature of the water to control the flow of gas to burner 31. A central flue 32 conducts the hot gas from the burner up through the tank to the chimney support 33 for the attachment of the chimney. A baffle 34 and vanes 35 are provided to affect the course of the hot gases and cause them to be used efficiently for the heating of water in the tank.

The hot water tank is secured to the top of the casing by the four legs on the upper head, and to the lower section of the casing by means of the four legs on its lower head and the additional supports or extensions 36 to provide sufficient clearance over the burner.

In this construction as in the other, the tank and the casing are free to expand or contract longitudinally, any relative motion between the two merely causing slippage between the top section of the casing and its cylindrical shell without imposing strain on either.

With the construction of the present invention

rivets are unnecessary in the casing and appearance is considerably improved. Furthermore, the casing can be readily removed without destroying its elements so that various parts may be replaced or parts may be used again.

This application is a division of the application Serial No. 316,083, filed January 29, 1940, and now Patent #2,303,126.

Various embodiments and modifications of construction may be employed within the spirit and scope of the invention hereinafter claimed.

The invention is claimed as follows:

A hot water heater comprising a substantially cylindrical shell, heads welded to the ends of said shell to form a tank for containing water under pressure, projections forming an integral part of each head and extending longitudinally from the edge thereof, an external casing around the tank and having a cylindrical shell and head members, means for securing the projections on one head to one end of the casing, means for securing the projections on the other head to the head member of the casing at points adjacent to the outer circumference of the casing, and a slip joint in the casing intermediate the attached head member and casing shell to permit differential expansion or contraction of the tank and casing.

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