

E. RUUD.
CONDENSATE COLLECTOR FOR WATER HEATERS.
APPLICATION FILED OCT. 9, 1908.

975,894.

Patented Nov. 15, 1910.

FIG. 1

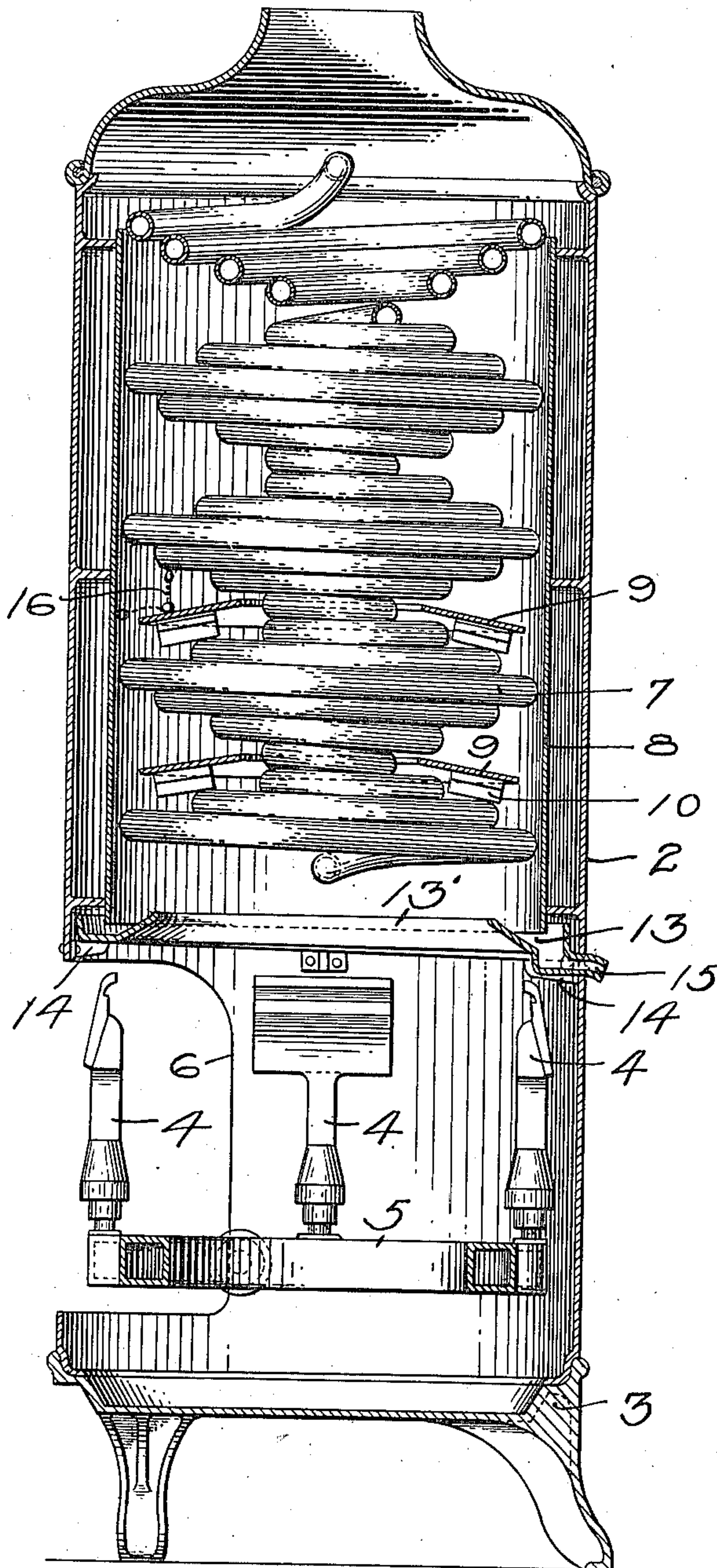


FIG. 2

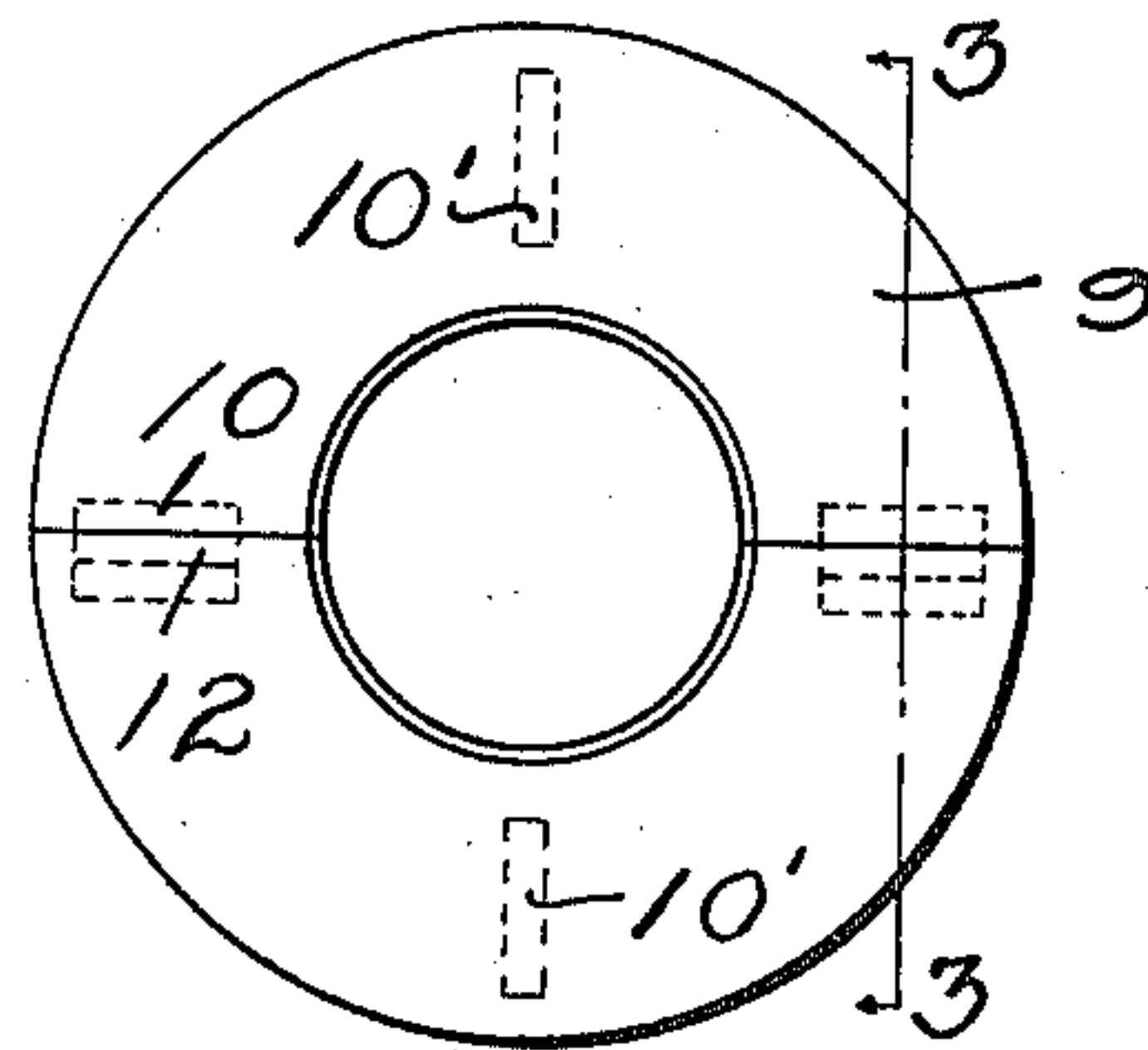
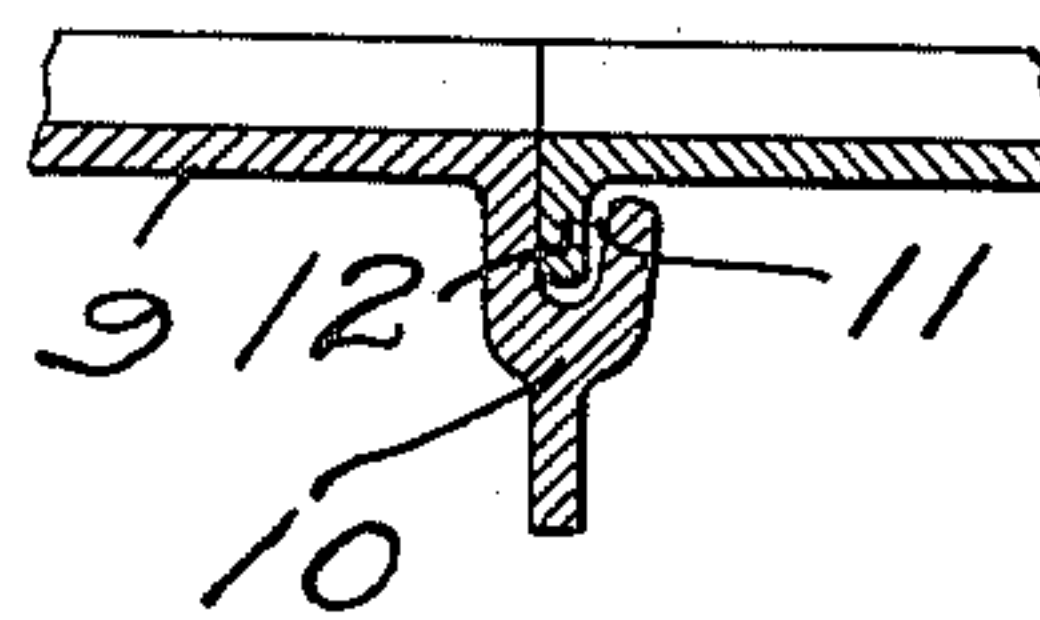


FIG. 3



WITNESSES

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UNITED STATES PATENT OFFICE.

EDWIN RUUD, OF PITTSBURG, PENNSYLVANIA.

CONDENSATE-COLLECTOR FOR WATER-HEATERS.

975,894.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EDWIN RUUD, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Condensate-Collectors for Water-Heaters, of which the following is a specification.

The object of this invention is to provide for carrying off the water of condensation which forms on the exterior or heat-receiving surface of the pipes or coil of water-heating apparatus, thus preventing it from dripping on the burners and other structural parts and avoiding the destructive action of the same.

In those types of water heaters wherein gas is burned the condensation is considerable, especially in winter when the water entering the coil is quite cold, and at such time practically all of the moisture contained in the heat currents and the products emanating from the burners is condensed on the exterior of the coil. Heretofore, this water has been permitted to run down over the burners and other parts with destructive effect. The destruction is especially serious when the gas contains sulfur compounds which when burned in the presence of moisture forms sulfurous acid. And as the burners, rings and other structural parts of the lower portion of the heater are usually formed of cast-iron the injury resulting is very great, the castings being eaten away in a comparatively short time. And frequently the copper coil succumbs to the same destructive action.

While the invention may be variously adapted for collecting water of condensation from the surface on which it is condensed, the same is here shown applied to a gas-burning water heater, Figure 1 being a view in vertical section of a heater equipped with the improvement. Fig. 2 is a view in plan of one of the deflectors, and Fig. 3 is a sectional detail on line 3—3 of Fig. 2.

Referring to the drawings, 2 designates the outer casing of the heater structure which rises from base 3. 4 are the gas burners located in the lower portion thereof, and 5 the burner tube or ring. 6 is the door space. Above the burners is the water circulating coil 7, formed preferably in a vertical series of spool-shaped windings for the purpose of exposing a maximum area or surface of the coil to the ascending heat

currents. The coil is contained within a lining or jacket 8 supported by casing 2. The parts thus far described are of usual and well known construction, and may be arranged as here shown or otherwise, as preferred.

The improvement as here embodied consists of one or more ring-like deflectors or plates 9 which are dished slightly to give them outward and downward slope. The diameter of the deflector at its outer periphery is preferably slightly less than the diameter of the largest turns of the coil, while the diameter of the inner periphery is preferably somewhat greater than that of the smallest turns, so that there is ample clearance or space for the heat currents to pass upward through and around the deflector.

In adapting the invention to the form of coil here shown, each deflector is located within a contraction in the coil winding, with lugs 10 and 10' on its under surface resting on the coil turns beneath. The deflector 9 is preferably formed in two half sections so as to be readily applied and removed, and lugs 10 may be projected laterally to underlap the joint between the sections and grooved downwardly at 11 to receive depending flange 12 of the other section, whereby the parts are securely united.

13 is a ring-like trough or gutter located beneath coil 7, preferably at the lower extremity of lining 8 to catch water dripping from the latter, the trough or gutter being flared inwardly at 13' to insure catching of all the drippings. The gutter is supported on lugs 14, and is preferably inclined as shown, with suitable discharge 15 at its lowermost side.

In operation, the water which condenses on the coil turns drips on the sloping deflector beneath and is thrown outward against lining 8, as indicated at 16, and drips from the lining into the trough or gutter and is carried away, there being no opportunity for it to reach the burners or other parts beneath.

In the adaptation here shown, the deflectors 9 serve primarily to throw outward the drippings from the smaller turns of the coil, the drippings from the larger turns draining directly into the gutter. As many of the deflectors may be used as are found desirable. Two are here shown which are usually sufficient as the condensation is greatest on those portions of the coil nearest

the burners. The deflectors are so proportioned and positioned as to in no way interfere with a normal operation of the heater. nor do they detract from the heating efficiency of the coil.

I claim:—

1. In a water heater, the combination of an upright coil having insets formed by coil turns of reduced diameter, coil heating means, and deflectors in the coil insets for deflecting from the heating means water of condensation dripping from the coil.

2. In a water heater, the combination of an upright coil having insets formed by coil turns of reduced diameter, coil heating means, and ring-like deflectors in the coil insets, the deflectors having downwardly and outwardly sloping top surfaces for deflecting from the heating means water of condensation dripping from the coil.

3. In a water heater, the combination of

an upright coil having insets formed by coil turns of reduced diameter, coil heating means, and ring-like deflectors formed in segmental sections fitted together in the coil insets for deflecting from the heating means water of condensation dripping from the coil.

4. In a water heater, the combination of an upright coil, an upright coil-inclosing jacket, gas burners beneath the coil, deflectors positioned to deflect onto the inner surface of the jacket water of condensation dripping from the coil, and means for carrying off the water from the jacket.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN RUUD.

Witnesses:

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JNO. J. FITZGERALD.