No. 863,651. PATENTED AUG. 20, 1907.

E. ROOCH.

WATER HEATER.

APPLICATION FILED MAY 7, 1906.

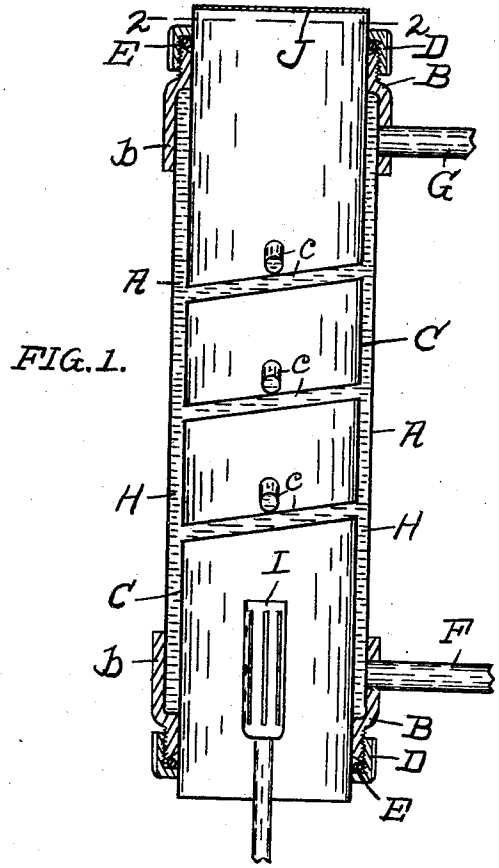


FIG. 1.

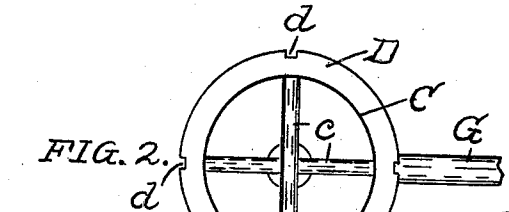


FIG. 2.

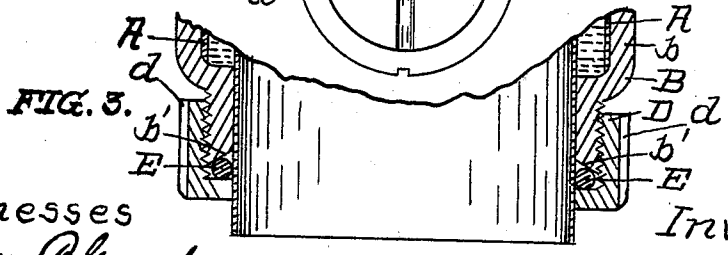


FIG. 3.

Witnesses
Agnes B. Grant.
Earle R. Russel

Inventor
Edward Rooch
By Parkinson & Richards
Attorneys

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EDWARD ROOCH, OF NORWOOD, OHIO.

WATER-HEATER.

No. 863,651. Specification of Letters Patent. Patented Aug. 20, 1907.

Application filed May 7, 1906. Serial No. 315,583.

To all whom it may concern:

Be it known that I, EDWARD ROOCH, a citizen of the United States, residing at Norwood, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Water-Heaters, of which the following is a specification.

The object of my invention is to provide an improved water heater of simple and economical construction, and my invention consists in the combination and arrangement of parts hereinafter described and claimed.

In the drawings, Figure 1 is a vertical section of a heater embodying my invention; Fig. 2, a section on line 2—2 of Fig. 1; and Fig. 3, an enlarged section through the bottom of the heater.

To form the outer wall and frame of the heater, a tube A, preferably of brass, is secured between upper and lower casings B, preferably by sweating the ends of the tube into flanges *b*. In this manner the use of screw threads or other means of attachment on tube A is avoided thus permitting the use of a comparatively light tube. Within tube A and casings B is a tube C preferably of copper. The tube C passes freely through casings B and is secured in position by means of caps D which are threaded to casings B. Round packings E are imprisoned between caps D and inclined ends *b'* of casings B so as to contact with the sides of tube C. In the edges of caps D are notches *d* which may be engaged by a wrench to tighten or loosen the caps. It will be seen that by tightening caps D, packings E are squeezed out against the sides of tube C to form flexible connections to support the tube and at the same time permit expansions and contractions thereof when heated or cooled. By loosening the caps D, the tube C may be readily removed for cleaning. At intervals, inclined water tubes *c* are secured across tube C and serve to increase the heating surface and circulation while at the same time they brace the walls of the tube against collapse from outside pressure. Intake pipe F and outlet pipe G communicate with the space H between tubes A and C. A suitable burner I is mounted in the lower part of tube C. Over the top of tube C is secured a small mesh brass screen to retard the outflow of the heated gas but permits sufficient circulation to support combustion.

By this construction, it will be seen, that I provide a water heater of very simple and economical construction and operation and which may be readily taken apart for cleaning.

I claim as my invention:—

1. In a water heater, the combination of an upper and lower casing; an outer tube secured between the casings; an inner tube passing through the outer tube and casings and longitudinally movable relatively thereto; members adapted to be secured to the casings; packings imprisoned by the members and adapted to contact with the inner tube; inlet and outlet pipes communicating with the space between the tubes; and a suitable burner for supplying heat to the inner tube, substantially as specified.

2. In a water heater, the combination of an upper and lower casing; an outer tube secured between the casings; an inner tube passing through the outer tube and casings and longitudinally movable relatively thereto; inclined water tubes secured across the inner tube; members adapted to be secured to the casings; packings imprisoned by the members and adapted to contact with the inner tube; inlet and outlet pipes communicating with the space between the tubes; and a suitable burner for supplying heat to the inner tube, substantially as specified.

3. In a water heater, the combination of casings B having flanges *b* and inclined ends *b'*; tube A sweated between flanges *b*; tube C passing through casings B and tube A and longitudinally movable relatively thereto; caps D secured to casings B; packings E imprisoned between caps D and inclined ends *b'* and contacting with tube C; suitable inlet and outlet pipes; and a suitable burner for supplying heat to tube C, substantially as specified.

4. In a water heater, the combination of casings B having flanges *b* and inclined ends *b'*; tube A sweated between flanges *b*; tube C passing through casings B and tube A and longitudinally movable relatively thereto; screen J secured across the top of tube C; inclined water tubes *c* in tube C; caps D threaded to casings B; packings E imprisoned between caps D and inclined ends *b'* and contacting with tube C; suitable inlet and outlet pipes; and a suitable burner for supplying heat to tube C, substantially as specified.

EDWARD ROOCH.

Witnesses:
AGNES B. GRANT,
BRAYTON G. RICHARDS.