

No. 621,231.

Patented Mar. 14, 1899.

J. DOUGLASS.
LIQUID COOLER.

(Application filed Oct. 2, 1897. Renewed Feb. 14, 1899.)

(No Model.)

Fig. 1

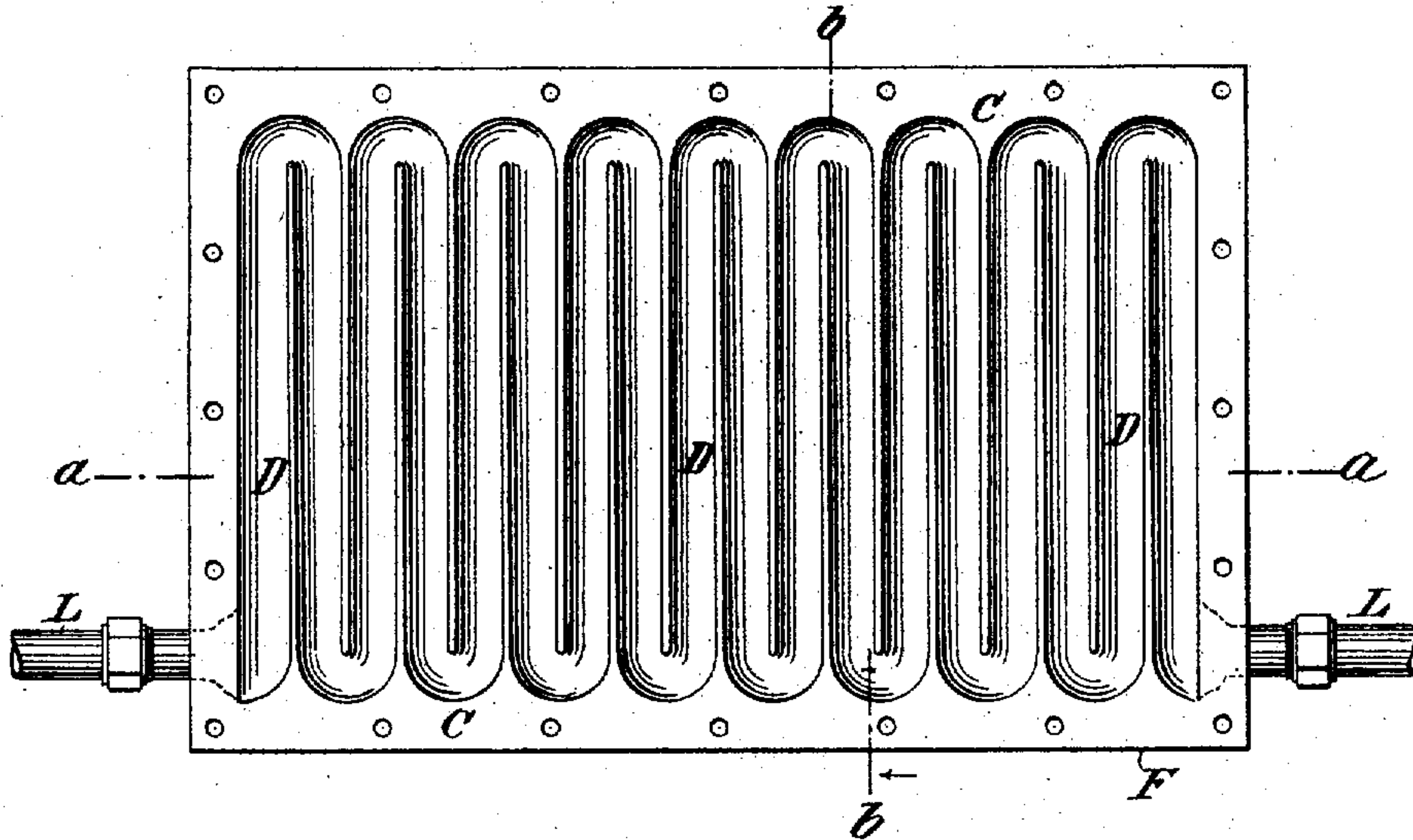


Fig. 2

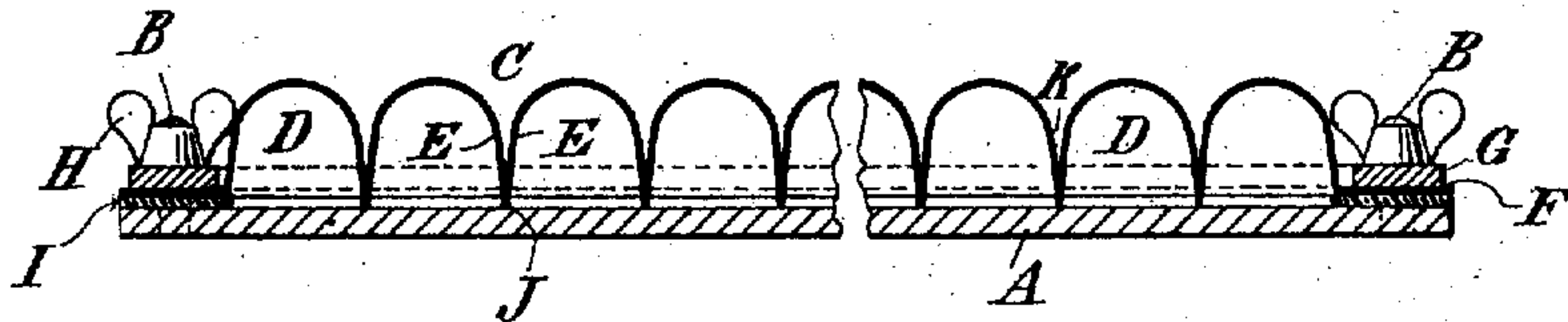
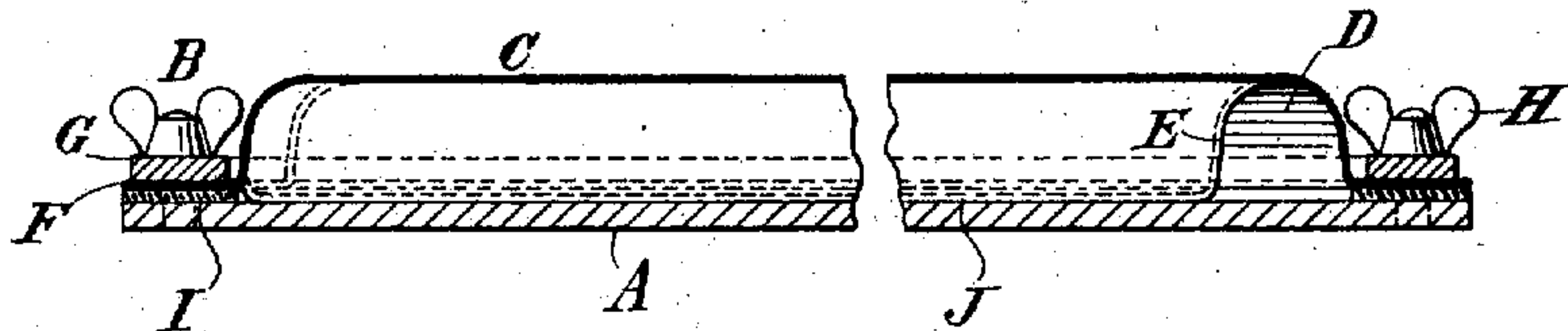


Fig. 3



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UNITED STATES PATENT OFFICE.

JAMES DOUGLASS, OF NEW YORK, N. Y., ASSIGNOR TO ELLEN T. DOUGLASS,
OF SAME PLACE.

LIQUID-COOLER.

SPECIFICATION forming part of Letters Patent No. 621,231, dated March 14, 1899.

Application filed October 2, 1897. Renewed February 14, 1899. Serial No. 705,511. (No model.)

To all whom it may concern:

Be it known that I, JAMES DOUGLASS, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Liquid-Coolers, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

10 The present invention relates to an improved form of liquid-cooler, such as is used for the purpose of cooling beverages of various kinds in their passage from a source of supply or storage to the point of delivery, as
15 in the case of conducting beer, porter, ale, &c., from a barrel or keg and drafting it at a distant point, as, say, at a bar. As is understood, such coolers usually consist of a long continuous passage more or less doubled or
20 coiled upon itself, the cooler usually being placed upon a rack or in an ice-box and having ice packed on it. As is well understood in the art of thus treating such beverages, it is undesirable to have the same pass over or
25 come in contact with iron, steel, or any similar metal likely to chemically injure or unite with the liquid. Therefore it is common to make such apparatus of copper, tin, or similar metal not oxidizable by the liquid being
30 cooled. Such coolers have been made of copper or tin pipe coils; but these are, in such metals and in such form, costly of construction and do not afford the best exposure of the walls of the passage to the cooling medium and if
35 for economy they are made of light metal are easily broken or ruptured, as by the ice packed on them. Also, coolers have been proposed consisting, essentially, of a flat top and a body of cast metal having an inverted-
40 U-shaped passage doubling back and forth on itself or of raffle-like form, but in such case the necessary thickness of cast metal prevented the best disposition of the walls for the maximum cooling effect, and if made of
45 tin or copper were unduly costly; and duplicate plates of cast metal or stamped sheet metal, each having a semicircular passage, have been proposed. I propose to avail of
50 the raffle-like form of apparatus, but to form the cap-plate or the plate having the cooling-passage therein of sheet copper, tin, or other like non-oxidizable metal by stamping or simi-

larly shaping the same, the form of the passage being practically a conic arc or inverted-U shape and exterior spaces being formed 55 between the walls of the passage to practically the depth or breadth of the walls. The conic form of the passage results in a strong arc capable of sustaining a heavy load of ice and permitting the use of a light gage 60 of metal with consequent cheapness and ease of forming the same, and at the same time presents the greatest available area of the walls to the cooling or refrigerating medium, while the area of the walls constituted by the 65 base-plate and which is not directly submitted to the cooling medium is reduced to a minimum.

To this end my improved apparatus consists of a plain flat base-plate having its upper 70 face of non-oxidizable metal and a superimposed cap-sheet-metal plate of copper or similar material, which plate is indented, upset, or struck up so that the same constitutes the walls, together with the base-plate, of a continuous passage of an inverted-U form and 75 having a raffle-like or similar arrangement, the two plates being removably secured together by proper holding and packing devices.

Referring to the drawings accompanying 80 this specification, Figure 1 is a plan view, looking on the underneath face of the cap-plate, of one form of my apparatus, this view being shown on a reduced scale. Fig. 2 is an enlarged cross-section on plane *a a*. Fig. 3 85 is an enlarged section on the plane *b b*.

Referring to the views in detail, A represents the base-plate of the apparatus, which may be of any suitable metal, as already indicated, and of proper form, thickness, and 90 strength. Projecting upwardly from this plate and at various intervals around the edge of the same are screw-bolts B.

C indicates what I term the "cap-plate." This is composed of sheet metal—say copper or 95 tin—and is brought to form by being stamped in dies or otherwise upset. This stamping or upsetting produces a continuous groove or passage D of inverted-U shape or conic section form, the side walls E of the passage 100 slightly inclining away from each other toward the base of the apparatus, on which they rest in close contact.

F is the flange of the cap-plate, and on this

flange rests the frame G, which continues all around the outer edge of the flange and may be secured thereto by brazing or similar process. The edge of the cap and this frame are
5 pierced at intervals by holes corresponding to the position of the bolts B of the base-plate, which bolts pass through said holes and to above the plate where they receive thumb-nuts H, by which the cap-plate is secured to
10 its base, a packing-strip I being provided to make a liquid-tight joint and to permit the adjustment necessary of the cap-plate on its base, so as to bring the edges J of the walls between adjacent portions of the passage into
15 close contact with the base-plate. To insure such contact, the edges J extend slightly below the plane of the underneath face of the flange of the cap-plate, or the base may be correspondingly raised. By this construction
20 and arrangement exterior grooves or spaces K are formed between the adjacent sections of the walls of the passage and so expose the side walls of the passage to the action of the cooling medium practically from their arc tops
25 down to the edges J, that rest upon the base-plate, thus effecting the maximum extent of cooling area. These grooves also act as drains to prevent water collecting between adjacent parts of the passage D.

L L indicate the inlet and outlet couplings, 30 one at each end of the passage D, which couplings are designed to connect one with the ordinary feed-pipe attached to the source of storage and one with the faucet device from which the liquid is drafted. 35

What is claimed as new is—

1. The herein-described liquid-cooling apparatus, consisting of a base-plate A, and of a cap-plate of sheet metal constructed with a continuous groove or passage D therein of inverted-U form, the adjacent walls E of which
40 passage are separated by a groove K, said passage being closed by the said base-plate, substantially as and for the purpose set forth.

2. The herein-described liquid-cooling apparatus, consisting of a base-plate A, and of a cap-plate of sheet metal constructed with a continuous groove or passage D therein of inverted-U form, the adjacent walls E of which
45 passage are separated by a groove K, said passage being closed by the said base-plate, and means for removably securing said cap-plate to its base, substantially as and for the purpose set forth. 50

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Witnesses:

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