(No Model.)

2 Sheets—Sheet 1.

C. W. NEWTON.

HOT WATER AND STEAM RADIATOR.

No. 385,679. Patented July 3, 1888.

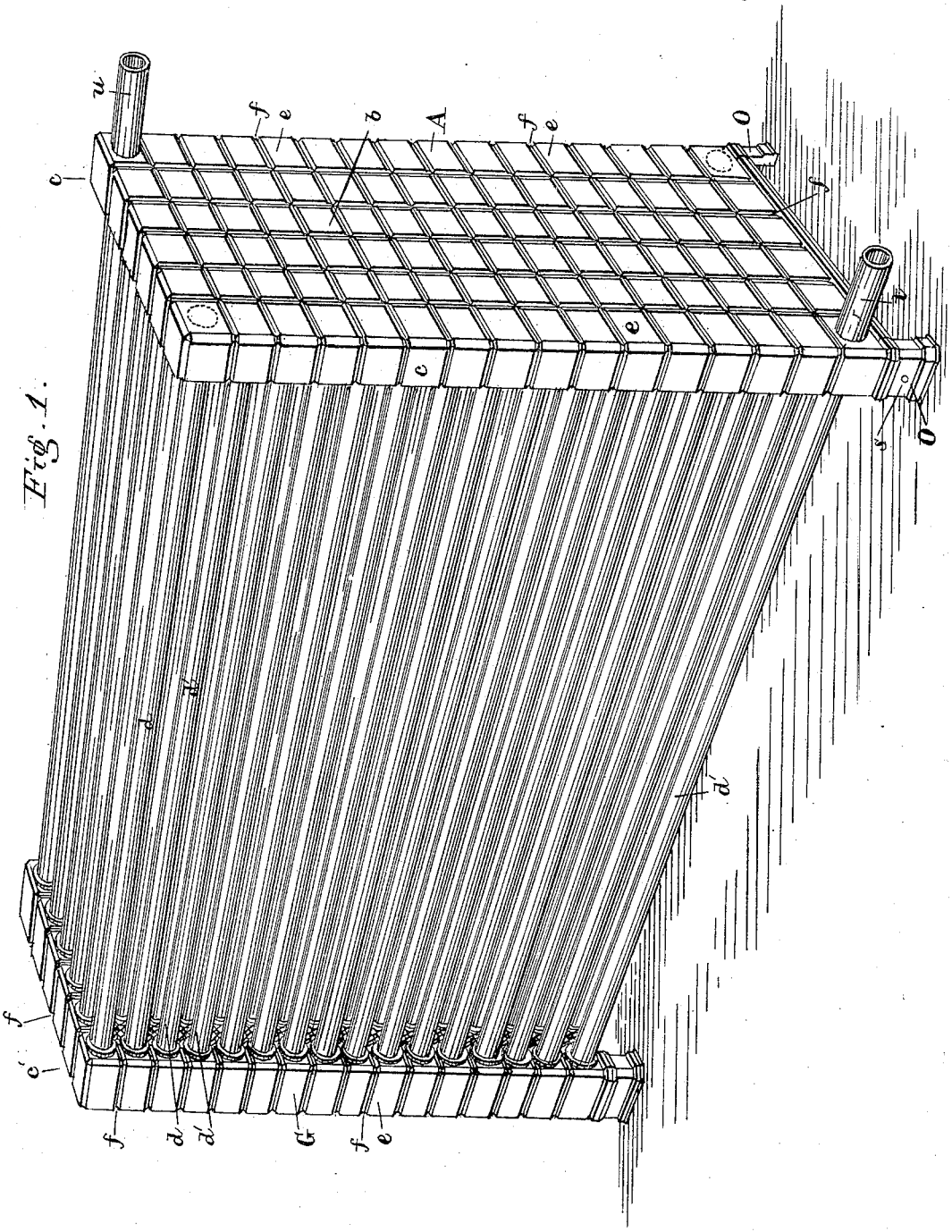

Fig. 1.

Witnesses:
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

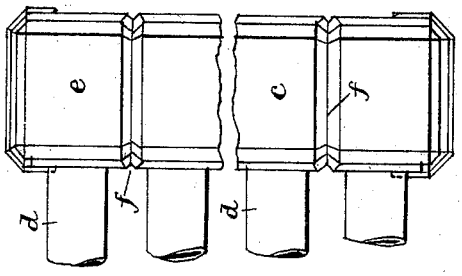


Fig. 6.

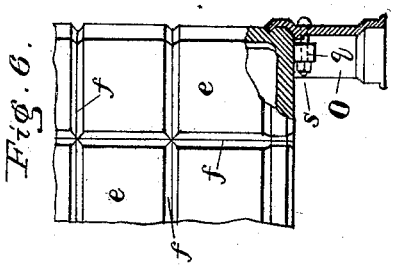


Fig. 2.

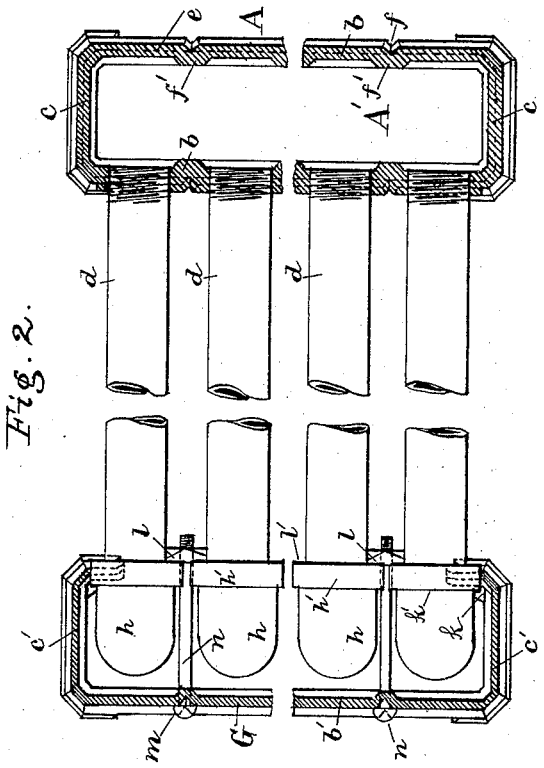


Fig. 3.

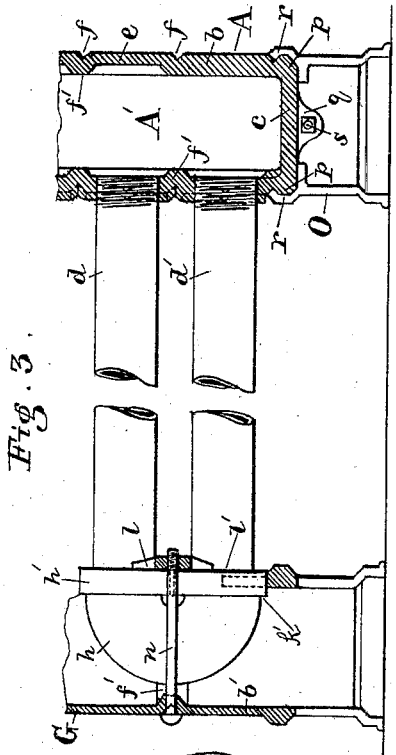
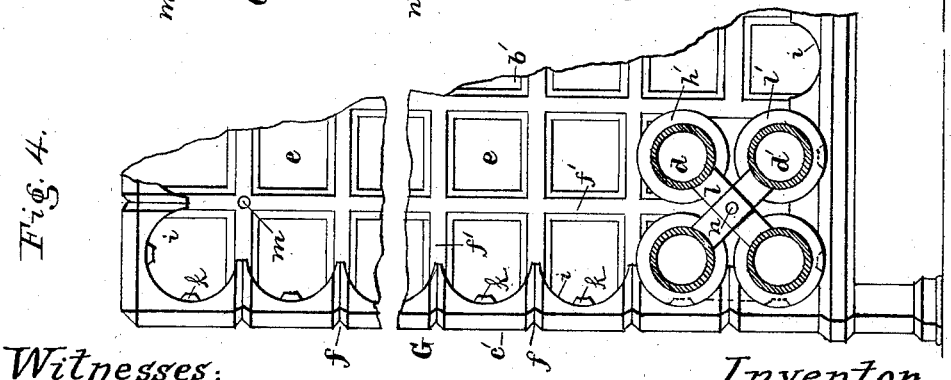


Fig. 4.



Witnesses:
A. C. Eader.
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UNITED STATES PATENT OFFICE.

CHARLES W. NEWTON, OF BALTIMORE, MARYLAND, ASSIGNOR TO BARTLETT, HAYWARD & CO., OF SAME PLACE.

HOT-WATER AND STEAM RADIATOR.

SPECIFICATION forming part of Letters Patent No. 385,679, dated July 3, 1888.

Application filed July 5, 1887. Serial No. 243,364. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. NEWTON, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Hot-Water and Steam Radiators, of which the following is a specification.

My invention relates to improvements in the construction of radiators for heating by the use of steam or hot water.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the radiator. Fig. 2 shows the construction that would be seen on a horizontal section of the radiator. Fig. 3 shows construction that would be seen on a longitudinal vertical section of the radiator. Fig. 4 is a vertical elevation showing a portion of the case or shell end. Fig. 5 is a top view of a portion of the chest end. Fig. 6 is an end view showing a portion, being a lower corner, of the chest end, showing the manner of fastening the leg thereto.

The end A designates the chest, which is at one end and comprises two broad walls, *b*, connected at top, bottom, and sides by narrow walls *c*, and forming a chamber, A′, for steam or hot water, into one broad side of which the horizontal pipes *d d′* enter. It will be seen the walls of the chest or chamber A′ are made in square panel-sections, which are divided or made distinct by the exterior grooves, *f*, which extend horizontally and vertically. On the interior and directly opposite the exterior grooves the wall has ribs *f′*, which also extend horizontally and vertically, like the grooves. This special construction has been contrived to afford certain advantages, to wit: First, the metal of the panels *e* may be thin and light, and the interior ribs will afford to the broad walls the desired stiffness and strength; second, by thus making the entire walls of the chest in comparatively small square panel-sections I am able to make the patterns from which the walls are molded in separate sections or parts, the edges or lines of joinder of which parts will be at the center of the said exterior grooves, *f*. The necessity of an entire different pattern for each size and shape of chest is thereby obviated, and a dozen or more different sizes may be made by simply combining in the molding-flask a sufficient number of separate sections of the pattern to produce the article wanted. The case or shell G is at the opposite end, and supports the pipes *d* and incloses the return-couplings *h*. The case or shell comprises an outer wall, *b′*, and top, bottom, and side walls, *c′*. This end is made of square panel-sections of the same size and for the same purpose as described for the chest end.

The top, side, and bottom walls, *c′*, have scallops or rounded notches *i*, into which the return-couplings *h* fit, and at the inner side of each notch is a lug, *k*. Each of these couplings has a rim-flange, *h′*, around its two ends. The face of this flange is the part which bears against the notches *i*. The back edge, *k′*, of the flange rests against the lugs *k*, as shown in Figs. 2 and 4, and thereby the return-couplings *h* are prevented from moving backward into the case or shell G. A cross-bar or spider, *l*, having four arms is employed to stay the adjoining couplings and support the pipes in proper relative position. The ends of the arms of this spider are concaved to fit the pipes *d d′*, and they have position against the front edge, *l′*, of the coupling-flange. These spiders are tapped and screw-threaded at the center, and the outer wall, *b′*, has bolt-holes *m*, as many as may be deemed necessary; but ordinarily four are sufficient. A bolt, *n*, is passed through the said hole *m* in the wall and into the spider, as seen in Figs. 2 and 3, and thereby the pipes and case or shell G are confined together. It will be seen the fixed lugs *k*, which take on the back edge of the coupling-flange, and the arms of the spider *l*, which take on the front edge thereof, with the bolts *n*, connecting the wall and spiders, secure the pipes and case very effectually, and at the same time enable them to be readily detached.

A special construction is provided for fastening the legs O to the radiator. The lower corner of the chest A (see Fig. 3) has a swell-beaded edge, *p*, on two opposite sides, and on the bottom between the two edges *p* has a lug, *q*, with a bolt-hole. The leg O at its top has a slide-groove, *r*, at each of two opposite sides, whereby the leg may slide onto the said two beaded edges *p*. A bolt, *s*, passes through the leg and into the bottom lug, *q*, and thereby retains the leg.

In supplying the radiator, water first enters the bottom pipe, *t*, and rises in the radiator-chest A and pipes *d d'*, and the air therein is forced out or expelled at the top pipe, *u*.

The panel-sections are here shown square; but they may be of various other shapes and effect the desired end. By my construction of the case or shell end G, and combining therewith so as to inclose the return bends or couplings *h* of the circulating-pipes, both ends of the radiator have the same appearance.

When the radiator is full of water and the water heated, the circulation in the radiator is as follows: The hot water will enter at the pipe *u* and flow through the first series of the upper pipes, *d*, the return-couplings *h*, and back through the lower pipes, *d'*, into the chest end A, thence through the next lower series of pipes *d* and *d'* into the chest end, and so on until the water passes out of the pipe *t* to return to the boiler.

Having described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The combination, in a radiator, of the horizontal circulating-pipes *d d'*, the return-couplings *h*, uniting the ends of said pipes, the supporting case or shell inclosing the return-couplings, the cross-shaped spider having its ends fitted against and in contact with the couplings, and the bolt *n*, connecting the case-wall and spider, substantially as specified.

2. The combination, in a radiator, of the horizontal circulating-pipes *d d'*, the return-couplings having rim-flanges *h'* at their ends, the supporting case or shell having its wall provided with rounded notches *i*, each having an inner lug, *k*, a cross-shaped spider, *l*, having its ends fitted against the pipes and in contact with the return-couplings, and the bolt *n*, connecting the case-wall and spider, substantially as specified.

3. The combination, in a radiator, of a chest, A, formed of panel-sections *e*, and having a swell edge, *p*, on two opposite sides and bottom, and provided with a downward-projecting lug, *q*, having a suitable bolt-hole, a leg, O, provided at its top with a slide-groove, *r*, to engage the swell edges, and a bolt, *s*, passed through the leg and into the said downward-projecting lug, substantially as specified.

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

CHARLES W. NEWTON.

Witnesses:
JOHN E. MORRIS,
JNO. T. MADDOX.