

Sept. 13, 1932.

G. SHOOP

1,877,068

HEAT EXCHANGE ARTICLE

Original Filed April 4, 1930

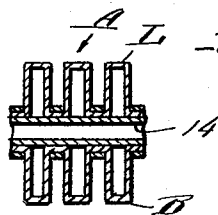
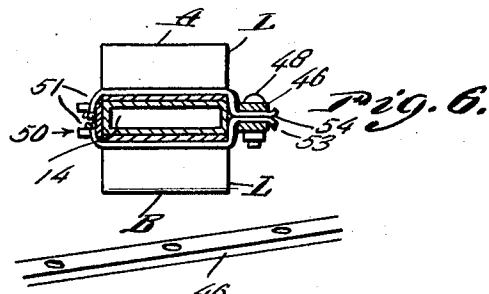
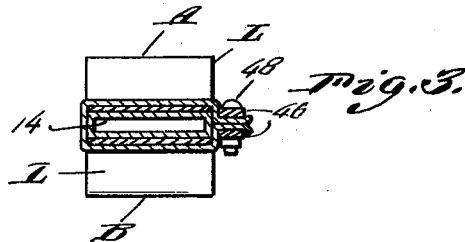
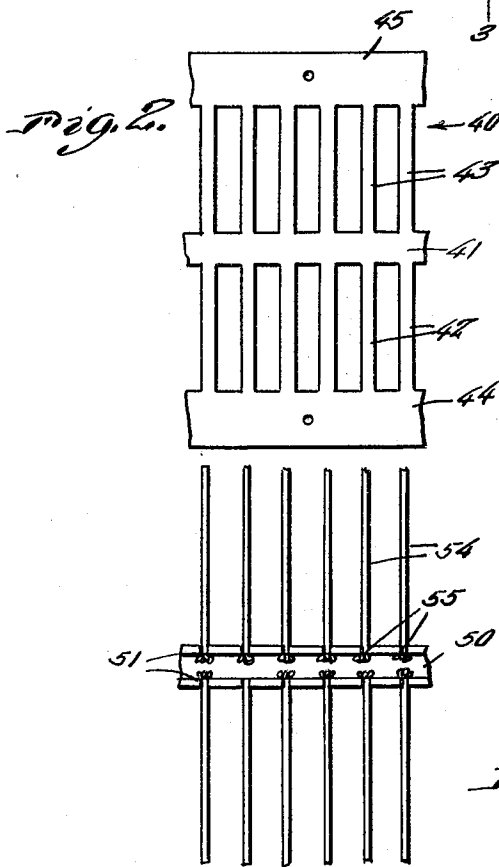
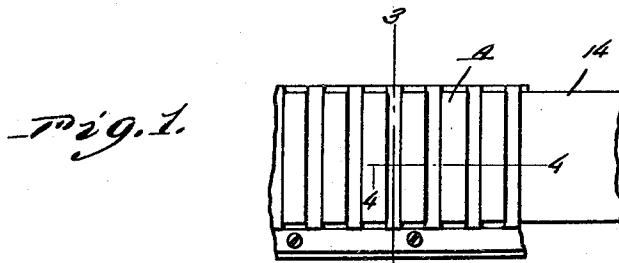


Fig. 4. Gertrude Shoop

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UNITED STATES PATENT OFFICE

GERTRUDE SHOOP, OF SHAMOKIN, PENNSYLVANIA

HEAT EXCHANGE ARTICLE

Original application filed April 4, 1930, Serial No. 441,607. Divided and this application filed July 15, 1931.
Serial No. 550,986.

This invention relates to and contains matter divided out of application Serial No. 441,607, such matter being comprised in the Figures 8 to 13 inclusive of said application, the filing date of said application Serial No. 441,607 being April 4, 1930, which has matured into Patent No. 1,830,375 dated Nov. 3, 1931.

The matter of this application relates to improvements in heat or cold radiation means for fluid conduits, the structure of the radiation means being generally in the form of fins or structurally analogous forms which are attachable upon the fluid conduits by novel attaching means.

The object of the invention herein is to provide inexpensively for the equipping of fluid conduits with radiation means, which may be quickly and easily attached thereto, and as easily removed, whereby to reduce the comparatively enormous expense of providing fluid conduit with radiation means of the type now in vogue.

Another object of the invention is to provide for equipping a fluid conduit with radiation means of the fin or analogous formation without removing the conduit from its position in a machine or the like, whereby to reduce the expense of removing and reinstalling such a conduit as would ordinarily be required to so equip the conduit.

Another object of the invention is to provide for equipping a fluid conduit with radiation means of the type described, which because of the construction thereof results in a greater radiation effect than is possible with ordinary fin structures of known type.

These and other objects of the invention, its nature, and its composition and arrangement and combination of parts will be readily understood by anyone acquainted with the art to which this invention relates upon consulting the following description of the drawing, in which:

Figure 1 is a top view of a fluid conduit having installed thereon one form of the radiation means mentioned.

Figure 2 is a plan view of a stamped blank which constitutes one form of attaching means for the radiation structure.

Figure 3 is a transverse vertical sectional view taken approximately on the line 3—3 of Figure 1, and

Figure 4 is a vertical longitudinal sectional view taken through Figure 1 approximately on the line 4—4 and

Figure 5 is a plan view of another form of attaching means for the radiation structure, and

Figure 6 is a transverse vertical sectional view through a conduit and associated radiation structure, the radiation structure being attached to the conduit by the attaching means illustrated in Figure 5.

Figure 7 is a fragmentary perspective view of one of the clamp bars employed in locking the attaching means of both Figure 2 and Figure 5.

Referring in detail to the drawing the letter A generally designates a form of radiation structure, the profile of which is illustrated in Figure 4. This profile is obtained by crimping or stamping a strip of suitable material to provide open rectangular loops designated L. For illustrative purposes, it has been chosen to show the radiation structure A attached to a fluid conduit of oval or flat rectangular form indicated at 14, upon the upper and lower surfaces of the exterior of which are placed the radiation structures, the upper radiation structure being designated A and the lower radiation structure being designated B.

The method of attaching the radiation elements A, B to the said surfaces of the conduit 14 comprise straps or bars or strips arranged to project from a spine or web, the web to engage one edge of the conduit, and the bars, straps, or strips to be thereby positioned to enter the crimps or recesses in the radiation structures and between the loops L as seen in Figure 4, the free end portions of the bars, straps or strips, then being clamped, so as to draw them closely about the radiation structures A, B, so as to assemble said radiation structures with the fluid conduit in the manner already indicated.

Referring to Figure 2 it will be seen that one form of the attaching means consists of strips or straps 43 projecting at longitudinal-

ly spaced points from a spine or web 41 and on each side thereof, the upper ends of the straps 43 and 42 being connected by end strips 45 and 44, which are parallel to the spine or web 41. Reference to Figure 3 will disclose the method of attaching the radiation structures A, B upon the conduit 14. It will be seen that the strips 42, 43 are passed between loops L, and then bent downwardly and upwardly in conformance with the shape of the conduit, and upon each marginal portion of the strips 44 and 45 thus produced, there is longitudinally placed a clamping bar 46, and bolts 48 are extended through the bars and the marginal portions, and the nuts on the bolts turned up so as to solidly clamp the said marginal portions and bars, and the strips 42, 43 so as to solidly attach the radiation structures A, B upon the conduit 14.

Referring to Figure 5 it will be seen that there is provided a channel member 15 provided in each vertical wall, with notches longitudinally spaced and directly opposite each other in opposing flanges, the notches being designated 51. Wires or bars 53, and 54 have their inner ends placed in the notches 51, so that they extend in longitudinal spaced parallel manner and at right angles to the channel 15. The inward ends of the bars or wires 53, 54 are knotted or swaged as indicated at 55, so as to prevent their withdrawal from the notches 51 in all except one direction. As seen in Figure 6, the channel 51 is placed with its under horizontal surface against one edge of the conduit 14, and the wires or bars 53, 54, are then bent so as to lie between the loops L and the free ends of the wires or bars 53, 54 are then downwardly bent against the opposite edge of the conduit 14 and then outwardly extended, and placed between a pair of the clamping bars 46, through which bolts 48 are then passed and the nuts thereon turned up so as to tighten the bars 46 upon the free end portions of the wires or bars 53, 54 in the manner shown in Figure 6, whereby to draw upon said wires or bars and clamp the same solidly about the radiation structure, A, B, so as to assemble them securely upon the fluid conduit.

Since various modifications of the disclosure above may be apparent to anyone acquainted with the art to which this invention relates, it is to be definitely understood that I do not desire to limit the application of this invention to the particular modifications set out herein to illustrate the principles thereof, and any change or changes may be made in material, structure and arrangement of parts consistent with the spirit and scope of the invention.

Having thus described my invention, what I claim as new is:

1. A radiation structure of the type described comprising a metallic conductor, a strip of radiating material formed with al-

ternating recesses and projections and arranged longitudinally of the conductor, and means for attaching the strips upon the conductor comprising a web for engaging the conductor, spaced ribs projecting from the web adapted to be bent to lie in the recesses of the strips between the projections and be then further bent so as to meet and be clamped at the side of the conductor opposite that engaged by the web, and a pair of clamp bars for longitudinal arrangement with respect to the conductor and in engagement with the meeting ends of the ribs, a web connecting the meeting ends of the ribs and bolts through said clamp bars and through the second webs for drawing them together whereby to clamp the ribs to constrict them about the strips and conductor.

2. A radiation structure of the type described comprising a metallic conductor, a strip of radiating material formed with alternating recesses and projections and arranged longitudinally on opposite sides of the conductor, and means for attaching the strips upon the conductor comprising a web for engaging the conductor, spaced ribs projecting from the web adapted to be bent to lie in the recesses of the strips and be then further bent so as to meet and be clamped at the side of the conductor opposite that engaged by the web, and a pair of clamp bars for longitudinal arrangement with respect to the conductor end on an opposite side of the meeting portion of each arm, and bolts through said clamp bars for drawing them together whereby to clamp the meeting portions of the bars to constrict the bars about the strips and conductor, said web comprising an elongated plate, and said spaced arms being in the form of flat straps integral with the web, and projecting from each side thereof and a relatively wide flat plate connecting the ends thereof.

3. A radiation structure of the type described comprising a metallic conductor, a strip of radiating material formed with alternating recesses and projections and arranged longitudinally on opposite sides of the conductor, and means for attaching the strips upon the conductor comprising a web for engaging the conductor, spaced ribs projecting from the web adapted to be bent to lie in the recesses of the strips and be then further bent so as to meet and be clamped at the side of the conductor opposite that engaged by the web, and a pair of clamp bars for longitudinal arrangement with respect to the conductor and on an opposite side of the meeting portion of each arm, and bolts through said clamp bars for drawing them together whereby to clamp the meeting portions of the bars to constrict the bars about the strips and conductor, said web consisting of a channel formation having spaced notches in the edges of its vertical walls, and said

spaced arms comprising rods projecting from said vertical walls each having one end retained in one of the notches thereof.

5 4. Means for securing to a conductor strips of radiating material having alternating projections and recesses therebetween, comprising a sheet of material having spaced openings within the edges thereof defining therebetween portions for positioning in said
10 recesses and a portion for engaging a part of the conductor, said sheet being adapted to be bent around the conductor and upon the radiating strips and to have the free edges thereof clamped together so as to clamp the
15 said radiating strips upon the conductor.

In testimony whereof I affix my signature.
GERTRUDE SHOOP.

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