Nov. 4, 1947. W. D. CALLAN 2,430,275

THERMAL INSULATED CONDUIT

Filed Jan. 15, 1946

Fig. 1

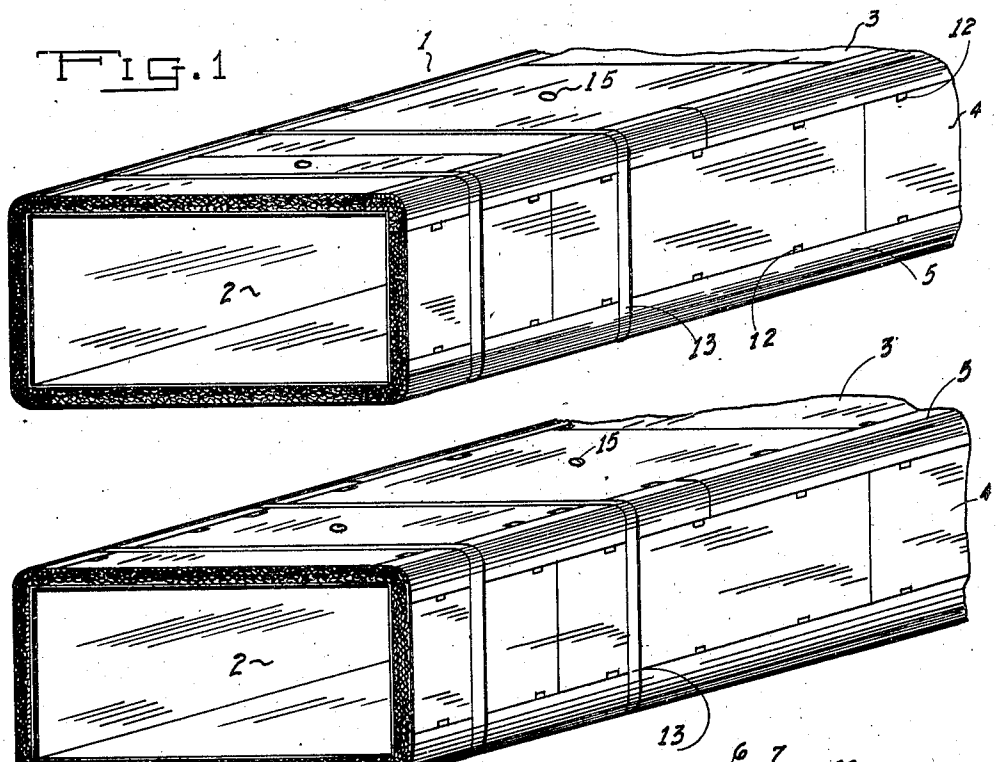


Fig. 2

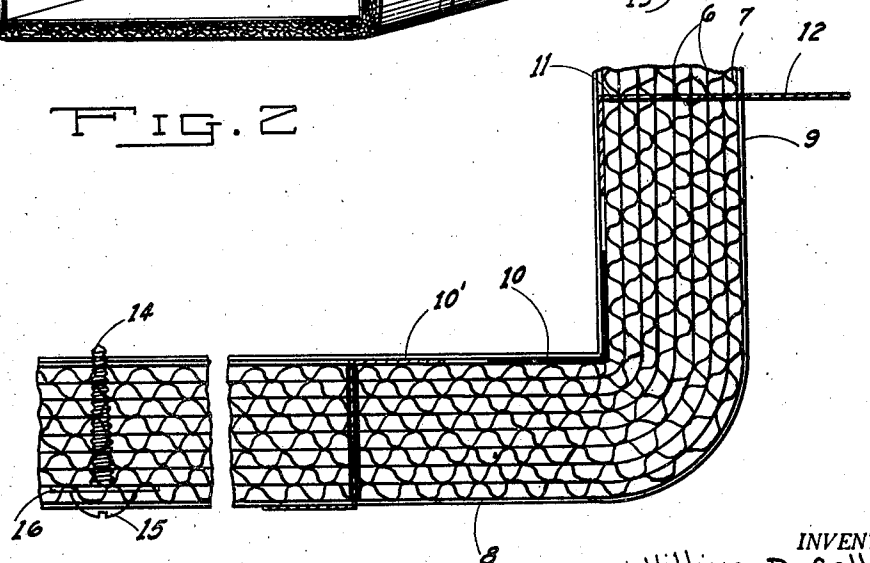


Fig. 3

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Patented Nov. 4, 1947

2,430,275

UNITED STATES PATENT OFFICE

2,430,275

THERMAL INSULATED CONDUIT

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Application January 15, 1946, Serial No. 641,298

2 Claims. (Cl. 138—64)

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This invention relates to air conduits, and more particularly to thermal insulated conduits which are commonly used in air conditioning units where warm and cold air is distributed through a building. These conduits are generally rectangular in form, and thus a conduit of rectangular conformation is illustrated and described herein in connection with the present invention. However, the conduits may be of any conformation and the invention is applicable to a conduit of any desired conformation.

The invention generally described comprises a rectangular core of any suitable material, preferably metal, composed of sections interfitted end to end and covered with an outer covering to enclose and insulate the core. The outer covering is relatively thick, and is advantageously composed of relatively large slabs which may be readily disposed about the core. Those slabs which are fitted to the top, bottom and side walls are flat, and those which are fitted to the corners are angular, conforming to the shape of the longitudinal corners of the core. Except for their shape, the flat and corner slabs are of the same general construction composed of a plurality of flat sheets alternately disposed with indented sheets. While the use of flat sheets interposed between the indented sheets is advantageous in spacing the indented sheets and preventing them from nesting, these may be eliminated to have the indented sheets contiguous if care is exercised to have the projections of adjacent sheets oppositely disposed so that the projections will be in contact with the recesses spaced apart.

The slabs are adhered to the core by means of adhesive applied in different spots over the area of the contacting surfaces. The corner slabs may be preferably adhered over their entire contact surface.

Metal clips with portions inserted beneath the corner slabs may advantageously project between adjacent side edges to be bent over and engage the margins of the flat slabs which are applied to the top and side walls of the core. It is unnecessary to use these clips for the slabs on the top wall of the core, but they could be used if desired.

Metal straps may be encircled about the slabs at spaced intervals along the conduit after the slabs have been assembled about the core.

Metal screws with large sheet metal heads may also be disposed at spaced intervals along the top and/or bottom wall to project through the slabs applied thereto. These help in holding the slabs in close contact with the wall of the core,

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and more particularly hold them in place until the adhesive has hardened.

For a better understanding of the invention, reference is made to the accompanying drawing in which:

Fig. 1 is a perspective view of a longitudinal portion of a conduit embodying the invention;

Fig. 2 is a perspective of a longitudinal portion of a conduit with the bottom side up; and

Fig. 3 is a cross-section through one corner of the conduit and with an end of one of the clips upstanding.

Referring specifically to the drawings, numeral 1 refers generally to a conduit composed of core 2 and a covering including flat top and bottom slabs 3, flat side wall slabs 4 and corner slabs 5 fitted about the core and secured thereto.

The core is a tubular of any desired shape, but preferably rectangular, and of any material. It is preferably metal but could be formed from paper, such as asbestos paper, wound about a mandrel to form same into proper shape.

The slabs 3, 4 and 5 are composed of flat sheets 6 alternately disposed with indented sheets 7 to build up the slabs to any desired thickness. Both the flat and indented sheets preferably are asbestos paper in order to be fireproof.

The corner slabs are angular with legs 8 and 9 disposed at a right angle. Adhesive 10 is applied along the corner of the core or to the inside corner of the corner slab for adhering them to the pipe. At the time that the corner slabs are applied, the end 10' of a metal blank is fitted therebeneath with the body portion 11 at right angles thereto and against the edge of the slab. The bottom and end slabs are then applied to the core, adhesive having been first applied to the surface of the core, preferably in spots, and when in place with their edges abutting the edge of adjacent slabs or the slips, the end portion 12 is hammered down to overlay the margins of the slabs adjacent the corner slabs. These clips are disposed to engage opposite edges of the bottom and side slabs, and could, if desired, be used for securing the edge of the top slabs. Ordinarily, they are not required for the top slabs in addition to other securing means.

Metal straps or band 13 are clamped at spaced intervals along the length of the conduit to further hold and secure the covering slabs upon the core.

Screws 14 are also preferably disposed at intervals along the top and bottom of the conduit to project through the slabs and connect with the core where the slabs may be tightly com-

pressed against the core. Any number of screws may be employed, but one disposed at about the center is preferred for holding the slabs against the conduit. The screw has a head 15, and a metal washer 16 is preferably placed upon the screw beneath its head to provide a larger area of contact with the slab than would be permitted with the head 15.

The corner slabs are rounded on their outside corners and thus present a neat and finished appearance. They and the flat slabs are easily and quickly applied as are the flat slabs. The manufacture of the covering in slabs which assembled on the job permit them to be stacked and packed in much less space than would be required if the covering was formed integral as is the core member.

The corner and flat covering slabs preferably have flat outside or facing flat layers rather than indented layers, in order to give a smoother and more finished appearance. The indented layers are preferably within the core between the facing or outside flat layers. All the layers are preferably formed from fireproof material. Mineral paper, such as formed from asbestos fibers, is suitable for all the layers. It may be preferable in some instances to employ relatively hard, rigid facing or outside layers, in which event they may advantageously be molded from fiber and hydraulic cement mixture. The sheets may be molded to any thickness.

The metal core sections are made in lengths of about three feet with a portion of opposite ends bent outwardly at a right angle (not shown) to reenforce and strengthen the metal core transversely for preventing the bottom, top and side walls being bowed inwardly. Accordingly, the covering slabs are applied with their opposite

ends abutting against the transverse flanges. This flanged end construction of the core sections is conventional.

Having described one embodiment of the invention in detail, it will be understood that there may be changes in details of construction without departing from the spirit of the invention.

I claim:

1. An air conduit comprising a rectangular tubular core and an insulating covering disposed about the core composed of angular corner slabs and flat slabs, adhesive applied to bond the slabs to the core, and fastening clips having an end anchored beneath a corner strip and extended to overhang the outer margin of the flat slabs.

2. An air conduit comprising a rectangular tubular core and an insulating covering disposed about the core composed of angular corner slabs and flat slabs with the flat slabs between and abutting the edges of the corner slabs, adhesive applied to the contact surface of the corner strips to bond them with the core, and fastening clips having an end anchored beneath the corner strips and extended to overhang the opposite outer margins of the flat slabs on the side and bottom walls of the conduit.

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