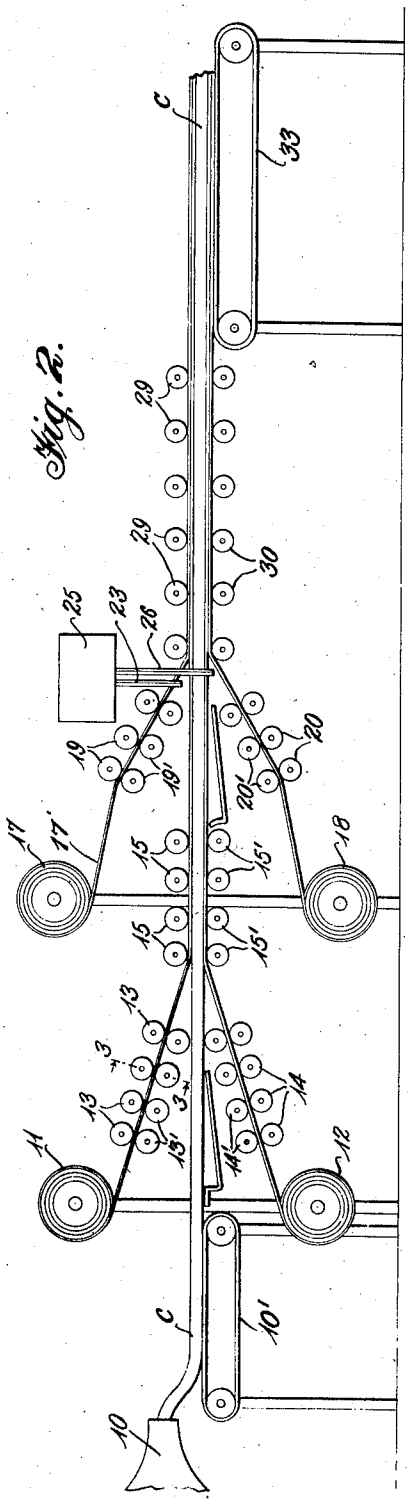
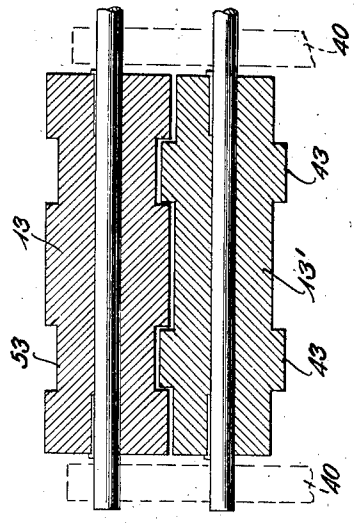
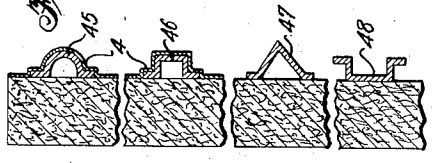
Jan. 26, 1943. A. C. FISCHER 2,309,306

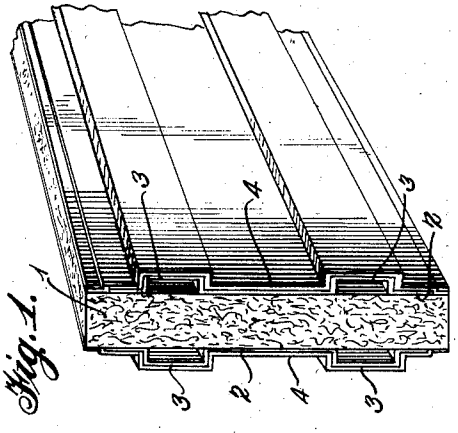
APPARATUS FOR THE PRODUCTION OF ACCESSORIES TO CONSTRUCTION MATERIAL

Filed Nov. 21, 1938 2 Sheets-Sheet 1









Inventor

Albert C. Fischer

By Knight Bros.

Attorneys

Jan. 26, 1943. A. C. FISCHER 2,309,306

APPARATUS FOR THE PRODUCTION OF ACCESSORIES TO CONSTRUCTION MATERIAL

Filed Nov. 21, 1938 2 Sheets-Sheet 2

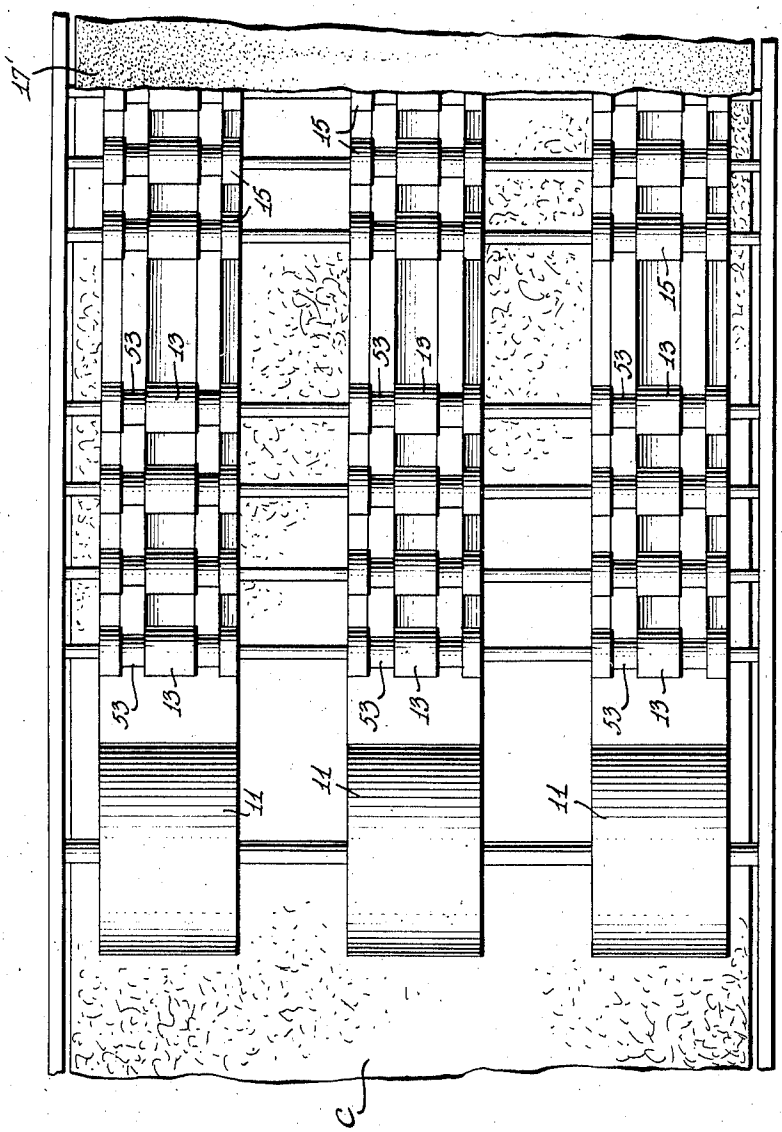


Fig. 5.

Inventor
Albert C. Fischer
By Knight Bros.
Attorneys

Patented Jan. 26, 1943

2,309,306

UNITED STATES PATENT OFFICE

2,309,306

APPARATUS FOR THE PRODUCTION OF ACCESSORIES TO CONSTRUCTION MATERIALS

Albert C. Fischer, Chicago, Ill.

Application November 21, 1938, Serial No. 241,701

8 Claims. (Cl. 154—1)

The present invention relates to accessories to construction materials and more particularly to arrangements for accommodating and compensating for the expansive and contractile effects of structural members spaced from each other by a yieldable structural medium. The invention also comprehends a novel apparatus for the production of such accessories.

It is the object of the invention to provide a yieldable joint between structural members having means associated therewith for imparting a long life to the joint without impairing the efficient operation thereof.

It is a further object of the invention to fabricate a complete joint in preparation to installation without requiring any complicated assembling operations at the point of use.

It is an object of the invention to provide an apparatus for the manufacture of preformed expansion joints as a continuous working operation making possible the fabrication of such joints in large quantities and at consequent low cost. Furthermore a uniform product is obtained by the manufacture thereof in accordance with the present invention. The expansion joint may be produced at a central point of manufacture in any desired lengths and shipped or stored for any length of time without deterioration.

The present invention comprehends the manufacture and utilization of expansion joints between adjoining slabs of concrete in building constructions such as roadways, provision being made for the reception and return of the plastic flowable medium constituting the joint between the expansible and contractible slabs, without weakening the slabs at the joints with the consequent spalling and cracking thereat.

Other objects and purposes will appear from a more detailed description of the invention following hereinafter taken in conjunction with the accompanying drawings wherein:

Figure 1 is a perspective view of one embodiment of a preformed expansion joint,

Figure 2 is a front elevation of an apparatus indicating diagrammatically the production of the preformed expansion joint in accordance with the present invention,

Figure 3 is a sectional view along line 3—3 of Figure 2,

Figure 4 shows several different configurations which the spaces in the channels in the expansion joint may assume, these being formed integrally with each other or as separate channel members, and

Figure 5 is a plan view of a modified embodiment of the machine shown in Fig. 1.

In Figure 1 is shown a filler core 1 of yieldable plastic material adapted to be disposed between adjacent slabs of structural material, such as concrete slabs in roadways. Metallic plates 2 are arranged on opposite sides of the core formed with channels 3 which define spaces for receiving the core material which is subject to cold flow upon the expansion of the slabs and the consequent tendency of the material to be extruded from the joint. Instead of the channels 3 being pressed from the same sheet of metal, they may be formed of separate parts and may be kept together by the flexible backing sheet 4. The flexible backing 4 operates to protect the metal sheets against corrosive influences in shipment and storage and provides a desirable medium for separating the concrete structural slabs from the expansion joint filler.

The expansion joint illustrated in Figure 1 may be fabricated completely at the factory, thereby reducing manufacturing costs considerably and assuring a uniform product meeting predetermined specifications. The channels 3, shown as rectangular in form are preferably formed of metal. However, wood, fiber board, cardboard or any other material may be used and the channeled plates are maintained in place adjacent the opposite faces of the core by the superposed carrier 4 which is preferably a flexible web of felt, fabric, rubber, or paper which may be either water-proofed or not, depending upon the application of the invention. The fabric is affixed to the core or the plates in any suitable manner, and preferably by an adhesive which may be that inherent in the flexible web or plastic core material, or which may be an extraneously applied layer of adhesive. The characteristic of the adhesive may vary with that of the flexible carrier depending upon the exposed or unexposed location of the joint.

Whereas the joint in Figure 1 shows two channels formed on each face of the core, it is understood that in some cases one will suffice and that in others more than two channels may be used.

In Figure 4 are shown various outlines which the channels may assume. The channel 45 is shown forming a space semi-circular or oval in cross-section, 46 and 48 are rectangular in opposite directions, and 47 is triangular. Different configurations may be formed in the same channel member or separate channels having different configurations may be applied to the core material at displaced points and held together

by the flexible backing as indicated in Figure 4, and as shown in the machine of Figure 5.

In Figure 2 is shown a machine for forming an expansion joint of the type illustrated in Figure 1. A suitable extruding device having an outlet nozzle 10 forces a web of plastic material C therefrom onto a conveyor 10' to impart a proper set to the material prior to the junction thereof with the other parts of the assembly. Rolls of flexible channelling material 11 and 12 are mounted above and below the movable core and are fed through a series of cooperating forming rollers 13, 13' and 14, 14', respectively, to the point of junction of the channels with the core material. The channelling material is preferably of sheet metal. In Figure 3 is illustrated a sectional view of one set of the final rollers 13, 13' mounted in the sides of the frame 40. Roller 13 is provided with grooves 53 and roller 13' is provided with projections 43 which cooperate with each other to impress any desired configuration into the sheet of channel material. The interengagement of the grooves and projections in the successive pairs of rollers are gradual so that the proper space formation is imparted to the channel material without rupture thereof.

The rollers 15 and 15' operate upon the opposite faces of the channel material to effect the proper adhesion therebetween and the core. The peripheral surfaces of the rollers 15 and 15' may be varied in accordance with the configuration of the channel which they press onto the material. Following a series of successive pressing operations by the rollers 15 and 15' which have been shown as four in number for example only, a flexible backing sheet is applied to the outside of each of the channels opposite the core material. The webs of flexible material which may be of fabric, paper and the like, which may have been pretreated by impregnation or otherwise previously, or which may be treated suitably in their travel to the point of application thereof to the core and channel members, are shown as rollers 17 and 18 which are fed through pairs of guide rollers 19, 19' and 20, 20', respectively, to the point of junction thereof with the combined core and channel members. If the flexible backing material is lacking inherently in an adhesive medium, adhesive is applied to the inner faces of the webs of flexible material by way of conduits 23 and 26 feeding from the adhesive supply tank 25. Thus adhesion is effected between the inner face of the flexible backing material and the outer surfaces of the channel material while adhesion exists naturally between the extruded core and the inner face of the channel material. A series of pressing rollers 29 and 30 on opposite sides of the travelling assembly serves to impress the whole assembly prior to the feeding thereof to a conveyor 33 from which the material is fed to a suitable cutting mechanism for severing in proper lengths.

It is understood that the metallic sheets of channel members 11 and 12 may be separate rolls which are formed and applied to the core material C at spaced points, whereupon the application of the flexible backing in the subsequent stages of manufacture will retain the separate channels in place upon the opposite faces of the core material either by the adhesive inherently in the core material, the adhesive inherently in the flexible backing or by the application of an external film of adhesive from the supply container 25. Such an arrangement is shown in the plan view in Figure 5 with the web of material 17' reeled from roll 17 functioning to maintain the individual channels in place.

A cross section of the rolls in Figure 3 is only illustrative since any desired formation can be imparted to the channel material by the proper grooving of the rolls. A single pair of rolls may operate upon two or more laterally displaced sheets of channel sheeting.

While I have described my invention as embodied in specific forms and as operating in a specific manner for purpose of illustration, it should be understood that I do not limit my invention thereto, since various modifications will suggest themselves to those skilled in the art without departing from the spirit of my invention, the scope of which is set forth in the annexed claims.

What I claim is:

1. In an apparatus of the class described, a device for extruding a core of plastic material in sheet form, means for forming sheet metal channel members adapted to be applied to the opposite faces of said core material comprising a plurality of pairs of rollers for executing a pressing operation in said sheet metal, and means for superposing a flexible backing sheet on the outside of each of the channel sheets.

2. In an apparatus of the class described, means for extruding a web of plastic material subject to cold flow, means for applying a sheet of metallic material provided with longitudinally extending channels to the opposite sides of said web with the channel part of each sheet defining a space adjacent said web, pressing rolls for defining said channels in advance of the point of application of said sheets to said web, means for pressing together the sheets with said web following the combination thereof, means for applying a flexible web of backing material on the outside of said metallic sheets, and means for pressing together said web and juxtaposed sheets.

3. In an apparatus of the class described, a device for extruding a web of plastic material, means for forming rolls of thin sheet material into longitudinally extending channel members, means for applying said channelled sheet material to the opposite faces of said web of plastic material, and means for superposing a flexible backing sheet on the outside of the channelled sheet material.

4. The apparatus as set forth in claim 3, wherein said first means comprises a plurality of pairs of rollers having interfitting peripheries for forming the desired channel impression in said thin material.

5. The apparatus as set forth in claim 3 wherein said first means comprises a plurality of pairs of rollers serially arranged with interfitting peripheries of gradually increased degrees of interengagement for forming the desired channel impressions in said sheet material.

6. In an apparatus of the class described, means for extruding a web of plastic material subject to cold flow, means for applying a thin sheet of material provided with longitudinally extending channels to the opposite sides of said web, with each channel part of the sheet defining a space adjacent to said web, pressing rolls for forming said channels in advance of the point of application of said sheets to said web, means for pressing together the sheets with said web following the combination thereof, means for applying a flexible web of backing material on the outside of said thin sheets, and means for

pressing together said web and juxtaposed sheets.

7. In an apparatus of the class described, means for extruding a web of plastic material subject to cold flow, means for applying to the opposite sides of said web a plurality of thin sheets of longitudinally channelled material along a plurality of laterally displaced points thereacross, with the channel part of each sheet defining a space adjacent to said web, pressing rolls for forming said channels in advance of the point of application of said sheets to said web, means for pressing together the sheets with said web following the combination thereof, means for applying a flexible web of backing material on the outside of said thin sheets, and means for pressing together said web and juxtaposed sheets.

8. In an apparatus of the class described, means for extruding a web of plastic material subject to cold flow, means for applying a thin sheet of material provided with longitudinally extending channels to the opposite sides of said web, with the channel part of each sheet defining a space adjacent to said web, pressing rolls for forming said channels in advance of the point of application of said sheets to said web, and means for pressing together the sheets with said web following the combination thereof.

ALBERT C. FISCHER.