United States Patent

Eckel

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[45] **Mar. 28, 1972**

[54] ACOUSTICAL ASSEMBLY WITH CONNECTORS HAVING LIPS

[72] Inventor: **Oliver C. Eckel**, P.O. Box 226, Weston, Mass. 02138

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[52] **U.S. Cl.** .....**181/33 G**, 52/127, 52/145

[51] **Int. Cl.** **E04b 1/84**

[58] **Field of Search** .....181/33 R, 33 G, 33 GA, 33 GB, 181/30; 52/127, 144, 145

[56] **References Cited**

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Primary Examiner—Robert S. Ward, Jr.

Attorney—Harold E. Cole

[57] **ABSTRACT**

An acoustic assembly has sound absorbing panels held in place by U-shaped connectors having oppositely disposed lips that extend parallel with and bear against flanges on the panels. A bolt extends through one connector and into the next connector where it enters a socket. Tightening of the bolt draws the connector lips against the panel flanges thus tightening the assembly.

8 Claims, 7 Drawing Figures

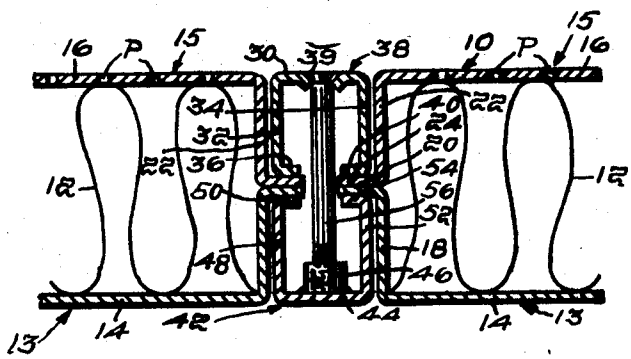


Fig. 1.

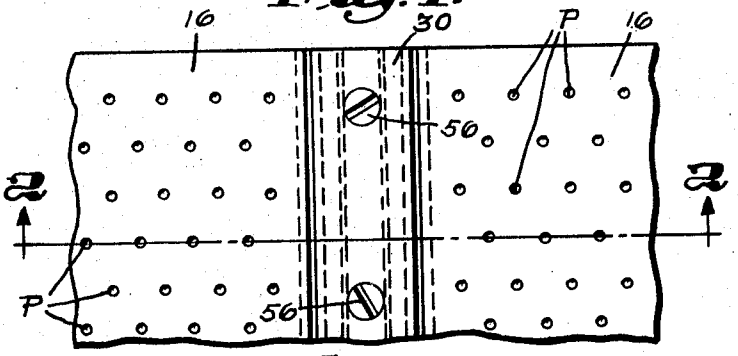


Fig. 2.

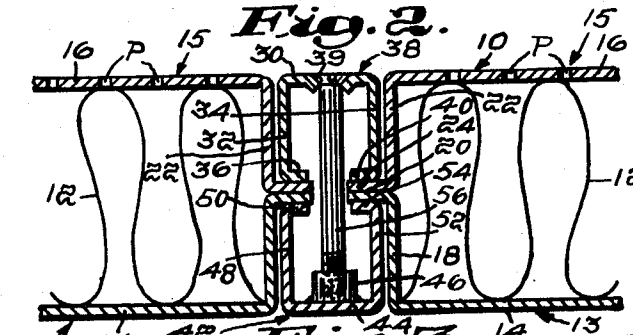


Fig. 3.

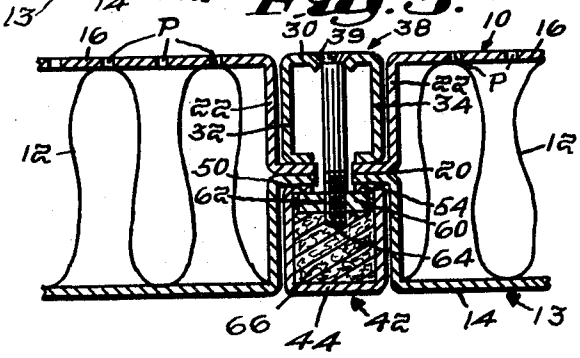


Fig. 5.

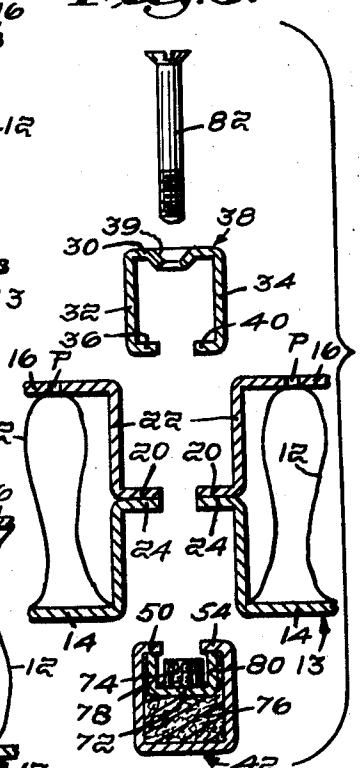


Fig. 4.

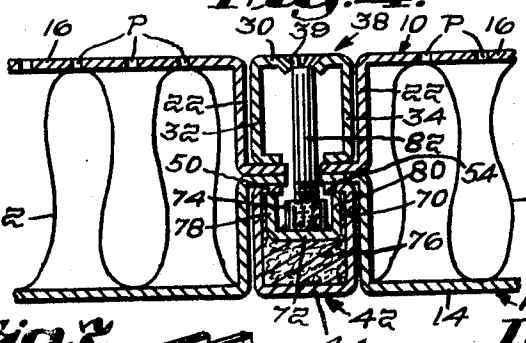


Fig. 6.

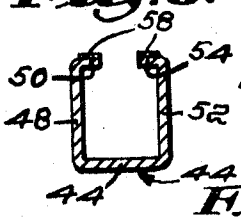
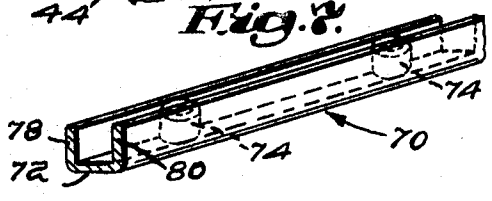


Fig. 7.



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ACOUSTICAL ASSEMBLY WITH CONNECTORS HAVING LIPS

The principal object of my invention to provide improved sound absorbing structures that greatly stiffen the assembly and enable more uniform pressure to be applied to the panel flanges by means of lips on connectors that bear on and can be tightened against the panel flanges. Also they make possible the use of sound absorbing material in vital places.

The foregoing and other objects which will appear as the nature of the invention is better understood, may be accomplished by a construction, combination and arrangement of parts such as is disclosed by the drawing. The nature of the invention is such as to render it susceptible to various changes and modifications, and therefore, I am not to be limited to the particular construction disclosed by the drawing nor to that described in the specification; but an entitled to all such changes therefrom as fall within the scope of my invention.

In the drawing:

FIG. 1 is a fragmentary front elevational view of my assembly.

FIG. 2 is a sectional view taken on the line 2—2 of FIG. 1.

FIG. 3 is a sectional view similar to FIG. 2; but showing a modified form of my invention.

FIG. 4 is a sectional view similar to FIG. 2; but showing a further modified form of my invention.

FIG. 5 is an exploded view showing various parts forming the invention shown in FIG. 4.

FIG. 6 is a cross sectional view of a U-shaped connector with resilient material added to the lips thereof.

FIG. 7 is a perspective view of a U-shaped support with sockets integrally attached thereof, ready to receive bolts.

As illustrated, an acoustical member or panel **10**, a plurality of which are used as structural members, form a wall, ceiling, floor or the like. Said panel is provided with sound absorbing material such as fiberglass **12** between two oppositely disposed enclosure sheets **13** and **15** which are formed of a suitable material such as 18-gauge galvanized sheet metal, for instance. Each said enclosure sheet **13** has a face portion **14** which is the inner face as shown, from one end of which an integral side portion **18** angularly extends. From this side portion a short extension or attaching flange **20** extends horizontally outward, in position of use, as shown, at a point intermediate the outer and inner faces of said panel **10**. Said enclosure sheet **15** has a face portion **16** which is the outer or exposed face as shown from one end of which an integral side portion **22** angularly extends towards said portion **18**. From the latter side portion **22** a short extension or attaching flange **24** extends horizontally as shown, alongside said flange **20** so that said flanges **20** and **24** are associated as a parallel pair in contact with each other.

The face **16** of the enclosure sheet **15** has perforations P therein, such as 3/32-inch holes, and said face **14** of the inner sheet **13** may have them if there is need for sound absorption from both sides of said panel.

If three or more panels **10** are connected, then both extremities of any panel placed in an intermediate position will be provided with attaching flanges.

Since a plurality of panels **10** are used to form a wall or the like, they are firmly retained by means of a U-shaped connector **38**, which has a bridge or cross member **30** that is preferably flush at its outer surface, with said outer face portions **16**. At opposite sides of said bridge member **30**, two legs **32** and **34** extend.

Said leg **32** terminates at its inner end with a lip or short angular portion **36** that contacts a said flange **24**, while said leg **34** similarly terminates with a similar lip **40** that contacts another said flange **24**. Said retainer face **30** has a central hole **39** therethrough, later referred to.

Another U-shaped connector **42** has a bridge or cross member **44** that is flush with said outer face portions **14**. A bolt-receiving socket **46** is welded to said cross or bridge member **44**, later described. Two legs **48** and **52** are at opposite sides of said bridge member **44** and they terminate at their ends with lips **50** and **54** respectively, being similar to lips **36** and **40**. A bolt **56** extends through said hole **39**, being countersunk in said bridge member **30**, and it screw-threadedly connects with said socket **46**. Thus said connectors **38** and **42** are drawn towards each other when said bolt **56** is screwed into said socket **46**, drawing said lips **36** and **40** tightly to said flanges **20** and **24**. Likewise said lips **50** and **54** are drawn tightly to said flanges **20** and **24** on said enclosure sheets **13**.

In said FIG. 3 a modified form is shown in which a bolt receiving bar **60** in said retainer **42** has a screw-threaded hole **62** therethrough. A bolt **64** extends through said hole **39** and enters said hole **62** and when it is tightened it draws said bar **60** against said lips **50** and **54**, thus effecting a tightening action of said panels **13** and **15** as above described. Immediately below said bar **60** is compressed fiberglass **66** which said bar **60** contacts, and which serves as a sound absorber.

In said FIG. 4 another modified form is shown in which a U-shaped smaller connector **70** which I call a support extends into said U-shaped connector **42**. It has a bridge member **72** to which a bolt-receiving socket **74** is welded similar to said socket **46**. Exteriorly of said support **70** is sound absorbing material **76** which bears against said bridge member **44** and also against said support bridge member **72**, being compressed between the two latter bridge members.

Said support **70** has a leg **78** and another leg **80** which legs extend from opposite ends of said bridge member **72** and bear against said lips **50** and **54** respectively. A bolt **82** extends through said hole **39** and screw-threadedly connects with said socket **74**. As said bolt is tightened it draws said U-shaped support **70** against said lips **50** and **54**, thus tightening the whole panel assembly as above described.

Fiberglass **12** between said support bridge **72** and bridge **44** serves to absorb sound, thus making the connecting means between said acoustical panels more sound absorbent.

A compressible material **58** such as rubber or plastic may be placed on lips such as **50** and **54** showing in said FIG. **6** to further make the assembly soundproof.

In said FIG. **7** said support **70** is shown having sockets **86** welded to the inner surface thereof and which may be spaced apart different distances as desired. In this form there is no discoloration from welding as on an outside connector since no sockets are welded thereto.

What I claim is:

1. An acoustical assembly comprising two laterally opposite, sound absorbing panels and two connectors between them, each said panel embodying two face portions spaced from each other, two side portions extending from said face portions towards each other and two flange portions extending from said side portions angularly and positioned alongside and adjacent each other, sound absorbing material between said two face portions, said connectors each embodying two legs and a bridge member between and connecting said legs at one end, said legs each having a lip portion at the other end extending inwardly towards each other and respectively contacting said flange portions, a first said connector bridge member having a hole therethrough, a bolt receiving member in a second said connector, a bolt extending through said hole and adapted to connect with said receiving member to thereby draw said lips of each connector towards each other and firmly against said flanges.

2. An acoustical assembly as of claim **1**, said bolt receiving member being fixed to said second connector bridge member.

3. An acoustical assembly as of claim **1**, said bolt receiving member bearing against said lips of said second connector.

4. An acoustical assembly as of claim **3**, and sound absorbing material between said receiving member and said receiving member and said second connector bridge member.

5. An acoustical assembly as of claim **1**, and a U-shaped support within said second connector embodying two legs and a bridge member between them, said latter legs contacting said lips of said second connector, said bolt receiving member being fixed to said support bridge member.

6. An acoustical assembly as of claim 5, said support being spaced inwardly from said second connector bridge member, and sound absorbing material between the latter and said support bridge member.

7. An acoustical assembly as of claim 1, said connector lips having compressible coating material at the surfaces in contact with said panel flanges.

8. An acoustical assembly as of claim 5, said bolt receiving member being integrally united to the inner surface of said support bridge member.

* * * * *

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,651,887 Dated March 28, 1972

Inventor(s) Oliver C. Eckel

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 2, line 69, cancel "said receiving member and".

Signed and sealed this 12th day of December 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

FORM PO-1050 (10-69)

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* U.S. GOVERNMENT PRINTING OFFICE : 1969 O—366-334.

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