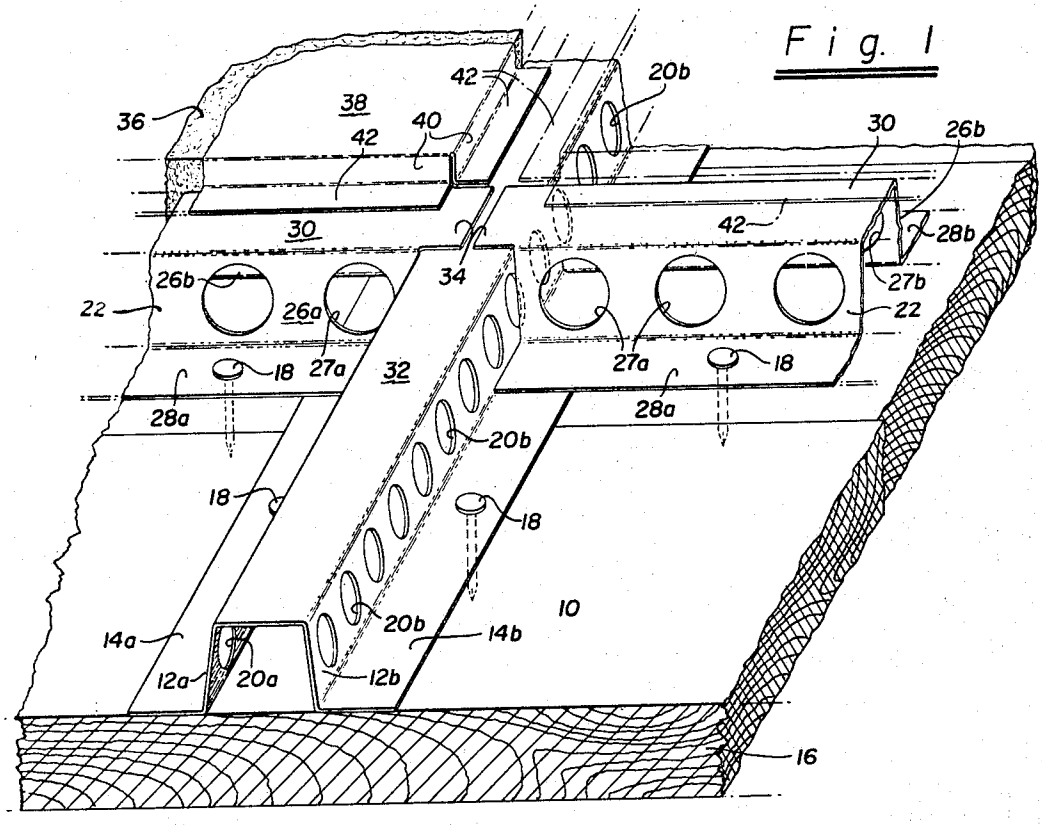
Nov. 21, 1967 E. T. BERG 3,353,316

PANEL-COVERED STRUCTURES

Filed June 1, 1965

Fig. 1



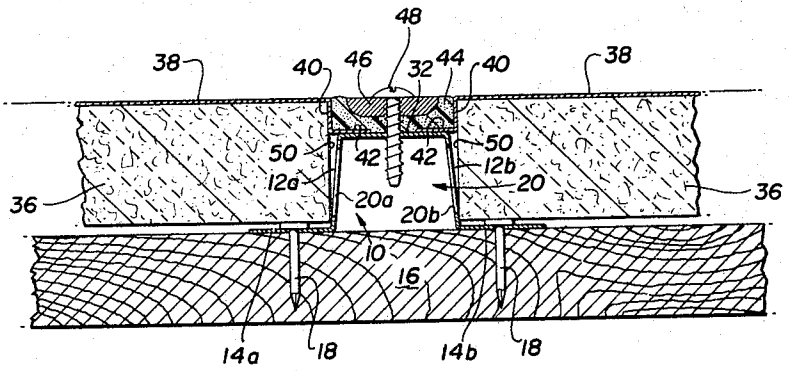


Fig. 2

INVENTOR.

Edward T. Berg

BY

United States Patent Office 3,353,316
Patented Nov. 21, 1967

3,353,316

PANEL-COVERED STRUCTURES

Edward T. Berg, 187 Fremont St.,
San Francisco, Calif. 94105

Filed June 1, 1965, Ser. No. 460,159
1 Claim. (Cl. 52—302)

ABSTRACT OF THE DISCLOSURE

An arrangement for covering roofs with metal or plastic panels in a moisture-tight manner wherein inverted flanged channels are nailed to the roof through their flanges and blocks of insulating material are placed upon said flanges. The blocks are covered with dished panels and the panels have outwardly directed lips which come to lie upon the bight portions of the inverted channels. Pads of a plastic sealing material are placed into the spaces between the confronted side walls of adjacent panels upon the lips of said panels. To prevent damage to the panels and the sealed joints between them under the force of expanding air entrapped between the roof and the described cover, the side walls of the channels are provided with rows of large openings and the open ends of transversely disposed channels are arranged to encompass openings in the other channels.

The present invention relates to structures such as roofs and walls, that are covered with panels of sheet metal or plastic materials.

One method of covering a roof or wall with panels is to place inverted channels of sheet metal or plastic material provided with outwardly turned flanges of substantial width upon the outer surface of the roof or wall along the lines where the joints of the panels are expected to be, and to secure these channels firmly to the roof or wall such as by means of nails driven through the flanges at suitable intervals. The panels themselves are of dished conformation and their side walls are provided with outwardly directed lips. These panels are laminated onto rectangular blocks of a weather and/or sound proof material which are placed into the rectangular spaces defined by and between the channels so as to rest upon, or bear against, the flanges thereof. When the panel-covered blocks are placed into these spaces, the lips of the panels come to rest upon the outer surfaces of the bight portions of said channels and are suitably secured to said channels; and the space between the confronted edges of adjacent panels above the bight portions of the channels is usually filled with a plastic sealing compound that is held under compression against the bight portions of the channels and the sides of the panels to prevent seepage of moisture between the panel-covered blocks into the space between the blocks and the roof or wall.

When panel installations of the type described above are exposed to sunlight, the air that is usually entrapped in the space between the blocks and the surface of the roof or wall expands and may impair the sealed joints and/or cause warping and premature deterioration of the panel cover.

It is an object of my invention to provide a panel cover of the type described for roofs or walls, that provides outlets for expanding air underneath the cover, and thus protects the panels and the roof or wall from premature deterioration, yet does not impair the weather-proof character of the installation.

This and other objects of the invention will be apparent from the following description of the accompanying drawing which illustrates a preferred embodiment thereof and wherein

FIGURE 1 is a fragmentary perspective of a partially stripped panel cover constructed in accordance with my invention; and

FIGURE 2 is a fragmentary section through a completed panel installation.

In accordance with the invention the side walls of the channels used for the installation of panel-covered blocks upon roofs and along walls are arranged to converge to some degree in an outward direction and are provided with rows of large openings; and intersecting channel sections are arranged in such a manner that their interiors communicate with each other. Owing to the described arrangement, air formerly entrapped below the panel-covered blocks of weather-proof material and the seals provided between adjacent panels above the bight portions of the channels may now penetrate into the interior of the channels and escape to the outside at the ends of the channels without placing any stress upon the blocks or panels or otherwise impairing the weather-proof seal between adjacent panels.

In the drawing the reference numeral **10** identifies an inverted U-shaped channel having upwardly converging side walls **12***a* and **12***b*. The edges of said channel side walls are turned outwardly to form flanges **14***a* and **14***b* respectively, of substantial width. The channel **10** is firmly secured to the surface of a roof or wall **16**, such as by means of nails **18** that are driven through the flanges **14***a* and **14***b*. Both side walls of the channel **10** are provided with rows of relatively large circular openings **20***a* and **20***b* respectively.

The reference number **22** identifies inverted channel sections that are disposed in longitudinal alignment with each other at right angles to the channel **10** at either side thereof. Both said channel sections are of a construction similar to channel **10**. Each has converging side walls **26***a* and **26***b* which are provided with rows of large holes **27***a* and **27***b* respectively, and the outer edges of said side walls are turned outwardly to form flanges **28***a* and **28***b*, respectively; and by means of nails **18** driven through said flanges they are secured to the surface of the roof **16**, with their flanges arranged to overlie the flanges **14***a* and **14***b* of channel **10** so that the end edges of their side walls lie as closely as possible to the side walls **12***a* and **12***b* respectively of the channel **10**; and for stabilizing the relative position of the channels **10** with the channel sections **22**, the bight portions **30** of the latter may be slightly extended to project over and rest upon the bight portion **32** of the former as shown at **34** in FIGURE 1.

Placed into the rectangular spaces defined by the channels **10** and the channel sections **22** are rectangular blocks **36** of a weather and/or sound proof material, such as the material known as Fesco Board (FIGURE 2). Placed over and firmly secured to said blocks, such as by means of suitable cement, are dished panels **38** whose end edges are bent downwards to form side walls **40** of limited depth that are provided with outwardly directed terminal lips **42**. Said lips rest upon the bight portions **30** and **32**, respectively, of the channels or channel sections upon whose flanges the blocks **36** are resting. Placed into the trough formed by the confronting side walls **40** and lips **42** of each two adjacent panels is a pad **44** of a plastic, yet preferably elastic sealing compound, such as plastic polyisobutylene. A narrow plate or bar **46** of somewhat lesser width than the space between the side walls **40** of adjacent panels is placed upon the pad and is secured by suitable screw means **48** through the pad to the bight portions of the channels or channel sections under such pressure that the pad spreads and forms a moisture-tight seal between adjacent panels. Said seal is so tight that air which is invariably entrapped underneath the blocks **36** and laterally of the channels **10**

or channel sections **22** cannot penetrate the seal. When a panel cover is exposed to sunlight in summer, the air underneath the cover heats up and expands placing the cover under destructive strains which may warp the cover and/or crack the seals between adjacent panels. In a panel-covered roof or wall structure constructed in accordance with the invention, however, the expanding air may pass into the spaces between the sides **50** of the blocks **36** and the upwardly receding side walls of the channels **10**, and through the holes **20** in said side walls into the interior of said channels. From there the air may escape to the outside atmosphere through the open ends of the channels, without placing any stress upon the blocks, the panels or the sealed joints between the panels. The same is true for the channel sections **22**. Air may readily penetrate into their hollow interior through the holes **27***a* and **27***b*, and from there may reach the interior of the abutting channels **10** due to the manner in which the ends of the channel sections are arranged to encompass one or more of the holes **20***a* or **20***b* in the side walls of the abutting channels **10**, as illustrated in FIGURE 1; and once in the interior of the channels **10**, the air may escape into the outside through the open ends thereof as described hereinbefore. Thus, the arrangement of the invention makes it possible to seal the joints between adjacent channels in an air and weather-tight manner, without subjecting the panel cover in general or the sealed joints between adjacent panels to the destructive strain of air expanding under the influence of heat; and the paths of escape provided in accordance with my invention for the expanding air masses underneath the panel cover, are such that they do not impair the weather-tight character of the panel cover because the lower ends of the channels **10** whether applied to a roof or a wall, may safely be left open, without the danger that moisture may penetrate into the space below the panel cover and deteriorate the wall or roof underneath.

While I have described my invention with the aid of a particular embodiment thereof, it will be understood that the invention is not limited to the specific constructional details shown and described by way of example, which may be departed from without departing from the spirit and scope of the invention.

I claim:

A panel cover for structures such as roofs and walls comprising first and second groups of parallel disposed channel members of inverted U-shaped cross-sectional contour having diverging side walls containing longitudinally arranged rows of openings and having laterally directed flanges provided along the outer edges of said side walls, said first and second groups being arranged at right angles to each other to define rectangular spaces between them, with the open ends of the members of one of said groups arranged to encompass an opening in the side walls of members of the other group, blocks of an insulating material placed into said spaces upon the flanges of said channel members and having dished panels secured to their outer surfaces, pads of a sealing compound in the space between said panels above the bight portion of said channel members, bars placed upon said pads, and means for securing said bars through said pads to the bight portions of said channel members.

References Cited

UNITED STATES PATENTS

854,235	5/1907	Plass	52—461
2,207,679	7/1940	Gilpin	52—673 X
2,759,439	8/1956	Clements	52—395 X
2,948,362	8/1960	Jones	52—460
2,971,617	2/1961	Smith et al.	52—495
2,976,970	3/1961	Toney	52—463 X
3,170,217	2/1965	Williams	52—488

FRANK L. ABBOTT, *Primary Examiner.*

C. G. MUELLER, R. S. VERMUT, *Examiners.*