Aug. 13, 1957 E. E. ROBERTS 2,802,551

STRUCTURAL UNIT

Filed Nov. 19, 1953

Fig. 1.

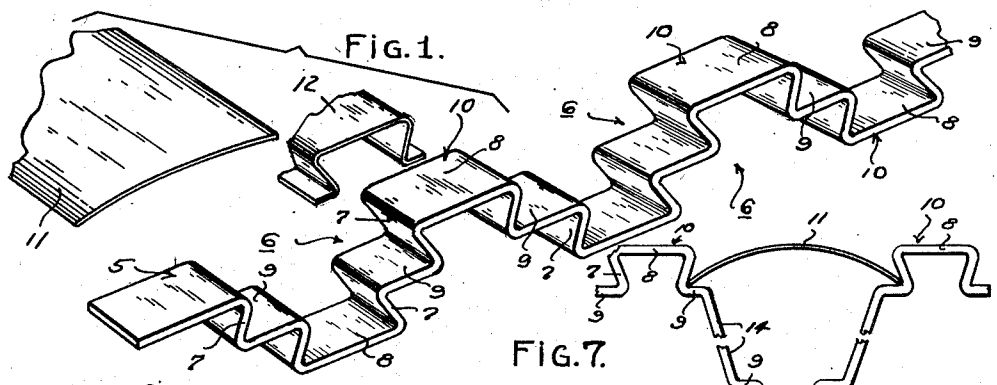


Fig. 7.

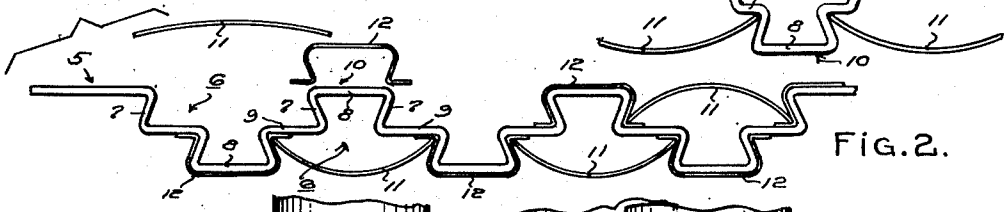


Fig. 2.

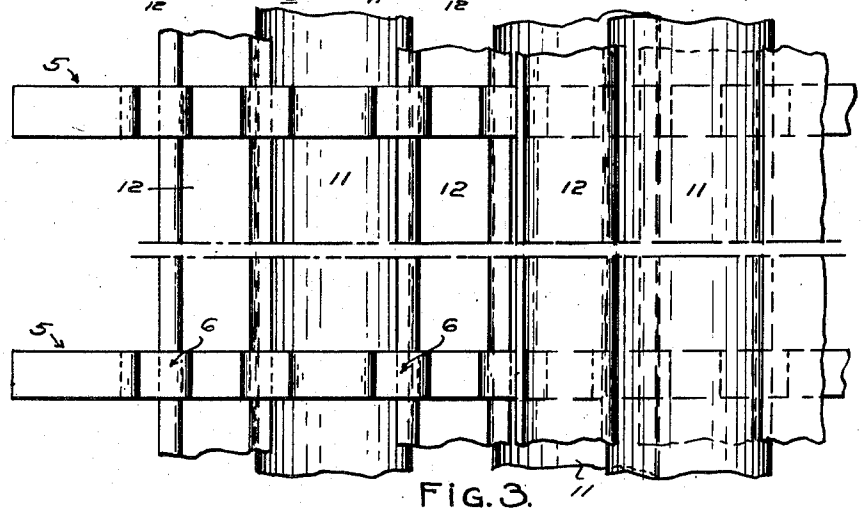
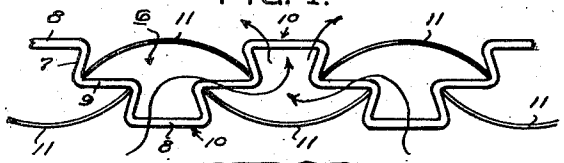


Fig. 3.

Fig. 4.



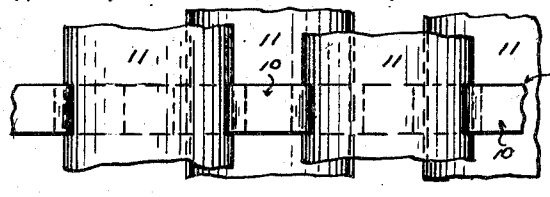


Fig. 5.

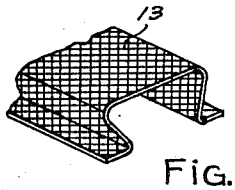


Fig. 6.

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STRUCTURAL UNIT

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7 Claims. (Cl. 189—34)

This invention relates broadly to structural units and has for its purpose a unit of integral form that is constructed to provide a rigid support for a plurality of spaced apart and parallel strips for forming various protective shelters, wall partitions, decorative panelling or the like.

An object of the present invention resides in providing a substantially rigid unit that is stamped or otherwise formed to provide a plurality of dovetail sockets that are equidistantly spaced along the unit and with the sockets opening in opposite directions at each side of the unit and with the sockets of each side being staggered.

A further object of the invention resides in forming a structural unit having the oppositely disposed sockets of dovetail shape and with all of the sockets being parallel and transversely of the unit and with the intermediate portions of the unit between the several dovetail sockets being likewise of dovetail shape and with all of the dovetail sockets and the intermediate dovetails adapted to have a snapping engagement with a plurality of flexible members that jointly form a cover and with all of the members being identically spaced apart and parallel and with the members as supported upon opposite sides of the unit being in staggered and overlapping relation.

A further object of the invention resides in forming a structural unit of the character described whereby a plurality of such units are preferably employed in predetermined spaced and parallel relation for jointly supporting a plurality of cover forming slats or strips and with the several supporting units securely holding the slats or strips in their parallel relation over a predetermined area to be protected without the use of screws, rivets or other fastening devices.

The device readily adapts itself to the easy and convenient assembly of such devices as protective awnings, patio shelter roofs, protective screens for privacy, partition walls, slat houses and many other fabricated panels and the cover slats or strips are flexible in that the slats only may be used with the units in the alternate and overlapped relation to provide shelter devices that afford positive protection against the passage of rain therethrough, yet permit the free circulation of air past the slats. Various combinations are possible with respect to the slat assembly and presents a structural unit that has a wide variety of uses.

Details of constructions and combinations will be more clearly apparent during the course of the following description, reference being had to the accompanying drawings, wherein has been illustrated the preferred embodiments of the device and wherein like characters of reference are employed to denote like parts throughout the several figures.

Referring to the drawings:

Figure 1 is a perspective view illustrating a preferred form of structural unit with a fragmentary showing of associated cover forming elements,

Figure 2 is a side elevation of the unit with certain of the cover forming elements in assembled relation therewith,

Figure 3 is a top plan view of the structure of Figure 2,

Figure 4 is a fragmentary side elevation similar to Figure 2, but illustrating the cover elements in a ventilated assembly,

Figure 5 is a top plan view of the structure of Figure 4,

Figure 6 is a fragmentary perspective view of a modified form of ventilating cover element and,

Figure 7 is a fragmentary side elevation of a modified form of unit.

Referring specifically to the drawings and particularly to Figures 1 to 6 inclusive, the numeral 5 designates a structural unit as a whole, formed of a continuous strip of metal of any desirable length. The strip 5 is flat and of a desirable width and thickness. The unit 5 constitutes a supporting medium for a plurality of cover forming elements and the use of the units 5 will normally be in multiple and spaced apart in parallel relation in accordance with the overall area of the cover.

Each unit is stamped, pressed or otherwise shaped to form oppositely disposed dovetail openings or sockets 6, with the sockets being equidistantly spaced and with the sockets at opposite sides of the unit being staggered with respect to each other. The forming of the sockets 6, provides inwardly inclined walls 7, connected at their tops by straight wall sections 8. A wall section 9, constitutes the common bottom for the oppositely disposed sockets. The wall sections 8 and 9 are parallel and equidistantly spaced apart. The wall sections 8, with the walls 7, constitute dovetail connectors 10, for intermediate cover channels, to be described. As clearly apparent, the unit is reversible for identical use on either side.

In Figure 3, there has been illustrated a fragmentary top plan view of a partially assembled cover device, wherein two of the units 5 are serving as connecting battens for the cover members. The cover members, here illustrated as elongated and preferably metallic slats 11, formed of a desirable non-rusting material, are normally slightly bowed, as shown in Figures 1 and 2, and these slats have a normal width slightly greater than the greatest width of the sockets 6. At assembly, the slats are engaged along one edge within the sockets of the several units 5, after which the slat is further bowed until its opposite edge snaps within the opposite sides of the sockets and, upon release will be firmly held in the sockets under sufficient tension to prevent their disengagement under the influence of high winds. With the slats installed, as in Figure 2, their top portion will lie substantially flush with the top of the wall sections 8. Where the several slats 11 are employed to form a ventilated awning, roof or similar device, they will readily permit the flow of air upwardly or downwardly in the directions of the arrows in Figure 5. When employing the slats 11 only as the cover elements, they will be bowed in opposite directions by virtue of the oppositely disposed sockets 6, thus positioning the several slats in overlapping relation to prevent the passage of water therepast. Water striking the uppermost slats will enter the lowermost slats and be drained away, yet offering no interference to the free circulation of air.

It is contemplated, that awnings, roofs, partitions or other panels shall be formed that is entirely closed over its inner and outer areas. For this purpose, intermediate channel members 12 have been provided. These channel members 12 are substantially dovetail in cross-section and are dimensioned to have a dovetail snapping engagement over the dovetail connectors 10. The terminal edges of the side walls of the members 12 are bent outwardly to lie parallel with the wall sections 9 at assembly. The channel members 12 are formed of any desirable material, similar to the slats 11 and are flexible for permitting of a snapping engagement with the connectors 10. In the use of these intermediate cover members 12, with the several units 5 positioned in properly spaced and parallel relation, the members 12 are positioned in overlying relation to the aligned connectors 10 of the spaced apart units 5 and then, sufficient force placed thereon as

to cause them to flex and snap over the connectors to have a firm seating connection therewith, with their flanges lying flat upon the walls 9. After all of the intermediate cover members 12 have been installed, the several slats 11 are flexed and snapped into position with their opposite edges firmly bearing against the members 12 at the point of bending for forming the flanges. Thus, a continuous cover is provided that is effectually sealed against the entry of air or water. The assembly of the cover with the intermediate channel members 12, forms a very effective interior air chamber calculated to be most desirable as an insulator.

The use of the slats 11 and intermediate members 12 will be ornamental in appearance and the members 12 may be formed of materials other than metal, such as plastic and may be also formed opaque, translucent or transparent and in a variety of colors, thus permitting a multiude of combinations that enhance the appearance of the device. It is possible that, with the members 12 formed translucent or transparent, suitable illuminating means may be installed within the air chamber formed by the inner and outer spaced covers to further provide for ornamentation. The intermediate channel members may also be formed of foraminous material, such as insect screening, shown at 13 in Figure 6, thus permitting the unit 5 to support a completely covering device that permits of the circulation of air therethrough, while at the same time excluding insects.

The modified form of the device shown in Figure 7, is identical in all respects to the unit 5 already described, with the exception that the sockets 6 of the inner and outer sides are spaced a greater distance apart. This has been possible by bending the intermediate walls 9 to form angularly disposed leg portions 14, having a length desirable for the spacing apart of the inner and outer sockets 6. The greater spacing of the sockets by the legs 14 is calculated to be such as to form a partition wall of the recognized thickness commonly employed in buildings. Further, it provides a stronger wall section when employed as an external wall for slat houses, for fences or the like. The greater spacing of the wall or cover members further provides an interior air chamber capable of being filled with concrete, with the cover members 11 and 12 effectively constituting the forms and the units 5 constituting the reinforcing.

The forming of the units 5 of flat metallic strips permits them to be deformed to follow the curvature of columns or the like, without effecting the mounting of the slats 11 or the intermediate members 12. The strips forming the units 5 will be made in any desirable length to be cut for any particular type of cover or wall structure.

It will be apparent from the foregoing, that a very simple and highly flexible structural unit has been provided to serve as a connecting batten for a plurality of parallel cover forming slats. It is quickly and easily assembled and just as quickly and easily disassembled. The cover forming slats and intermediate members are merely snapped into seating engagement and will be securely held in the assembled relation without the use of bolts, screws or other fastening devices. The unit is extremely cheap to manufacture, is strong, durable and highly effective for its various purposes.

It is to be understood, that while various embodiments of the device have been shown and described, changes are contemplated in the precise shape and size of the sockets and their spacing and such other changes as readily fall within the spirit of the invention or the scope of the subjoined claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A structure of the character described for fabricating a cover device wherein a plurality of cover forming slats are supported in spaced apart parallel relation and with certain of the slats being in staggered and overlapping relation to the other slats, the unit comprising an elongated strap that is shaped to provide a plurality of equidistantly spaced and opposite disposed transverse sockets throughout its length, the oppositely disposed sockets being staggered with respect to each other, each of the sockets adapted to have a snapping seating engagement with transversely bowed slats whereby the slats are supported within the sockets under tension and means between each of the sockets to form a connector that has a snapping engagement with channeled strips that form an intermediate cover element that is parallel with the cover forming slats.

2. The device according to claim 1, wherein the unit forming strap is flat and relatively wide and relatively rigid, the several sockets being dovetail in shape.

3. The device according to claim 1, wherein the unit forming strap embodying the several sockets and the connectors are formed of a continuous strip of material.

4. A device of the character described whereby to form a batten for fabricating a cover device wherein a plurality of substantially identical elongated cover forming slats are supported in spaced apart and parallel relation and the slats forming an inner and an outer spaced apart cover and with the slats of the inner and outer cover being in staggered and overlapping relation, the device comprising an elongated strap that is bent to form a plurality of open and transversely arranged dovetail sockets disposed upon opposite sides of the strap and with the sockets upon the opposite sides being equidistantly spaced and staggered with relation to each other, the said strap between the several sockets constituting a dovetail connector for snapping and tensioned support of intermediate channeled cover elements, the several slats being bowed transversely and formed of flexible material to have a flexing and tensioned engagement within the sockets, the several slats and the channeled elements being in parallel and in contacting engagement throughout their length when supported by the sockets and the connectors.

5. A cover device comprising inner and outer layers of transversely bowed slats that are spaced apart and parallel and with the layers being spaced from each other and parallel, intermediate channeled cover forming members disposed between the several slats and having contact with the marginal edges of the slats throughout their length, the slats of the inner and outer layers being staggered and in overlapping relation, rigid supporting means for the several slats and the channeled members that comprises a continuous strap bent to form a plurality of spaced apart open dovetail sockets that are disposed in opposite directions from the opposite sides of the strap, the sockets extending transversely of the strap and with the oppositely disposed sockets being in staggered relation, the strap in those areas between the sockets constituting dovetail connectors, the slats being flexible for bowed tensioned engagement in the sockets and the channeled members being flexible for tensioned snapping engagement with the connectors.

6. The device according to claim 5, wherein the channeled cover forming elements have their marginal edges flanged and wherein the marginal edges of the slats have a tensioned overlying engagement with the flanges when they are supported in the sockets whereby the several slats and the channeled cover forming members provide a continuous closed cover.

7. The device according to claim 5, wherein the channeled cover forming elements are formed of foraminous material for the circulation of air through the cover.

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