

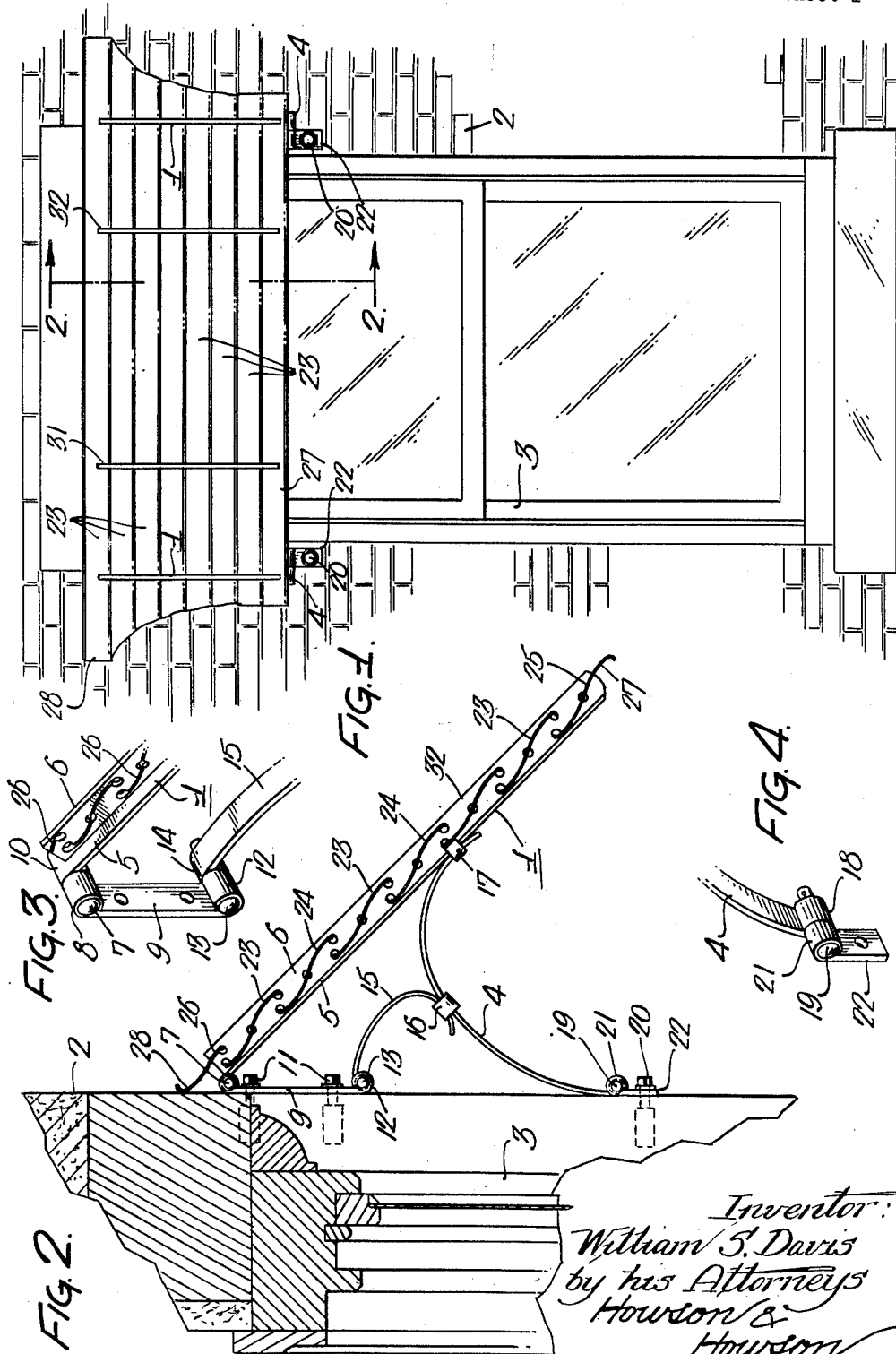
May 26, 1953

W. S. DAVIS
AWNING STRUCTURE

2,639,476

Filed April 5, 1948

4 Sheets-Sheet 1



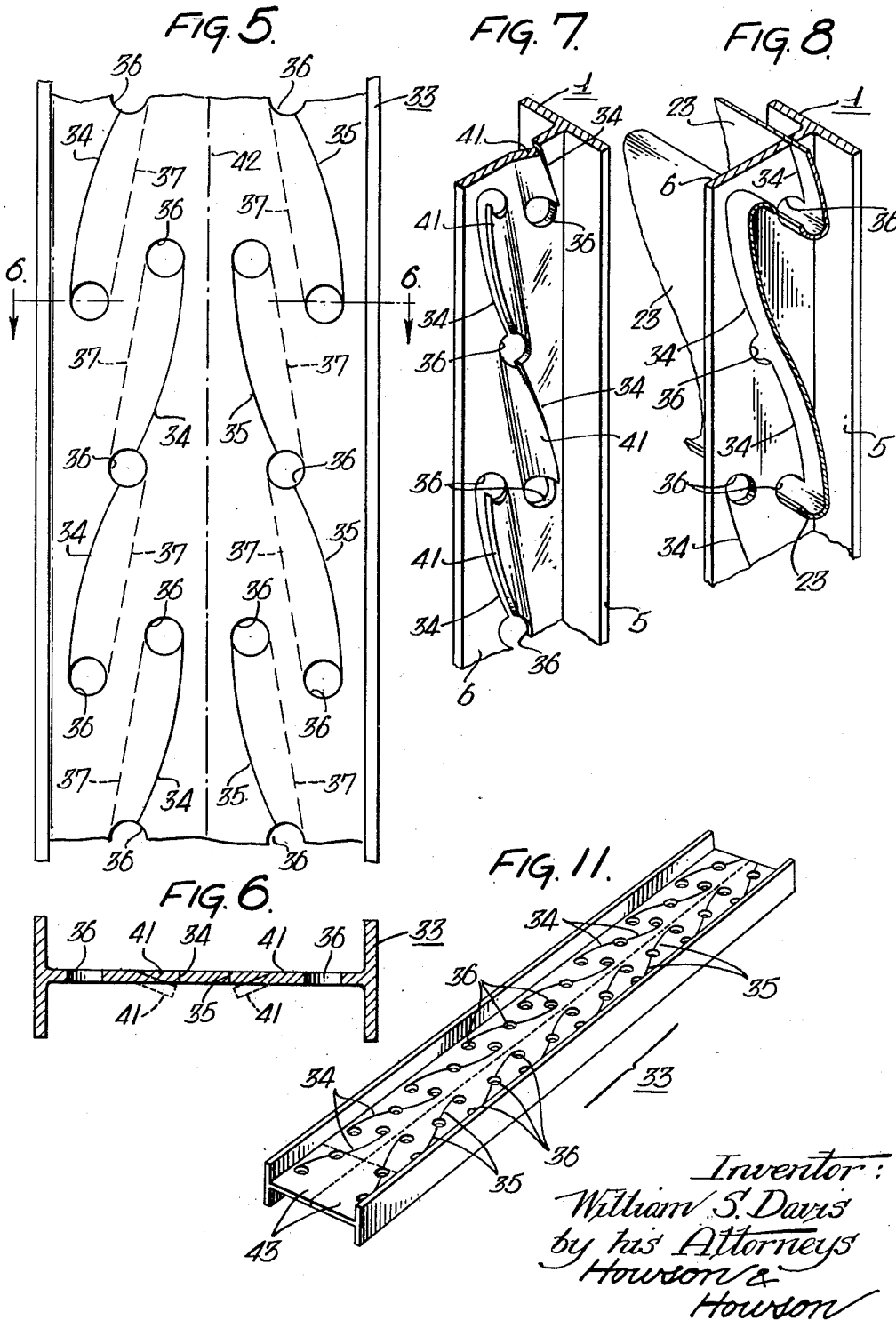
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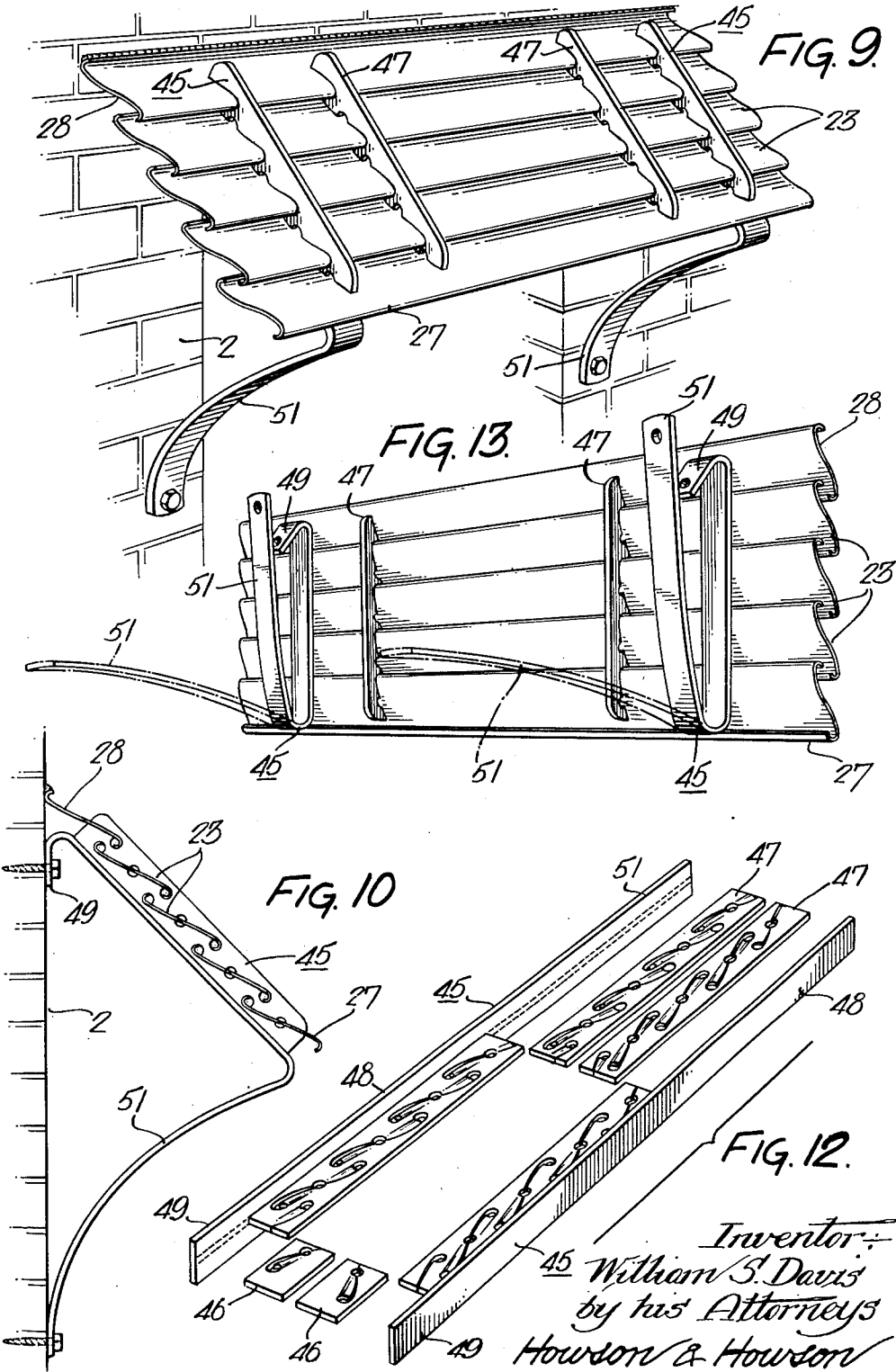
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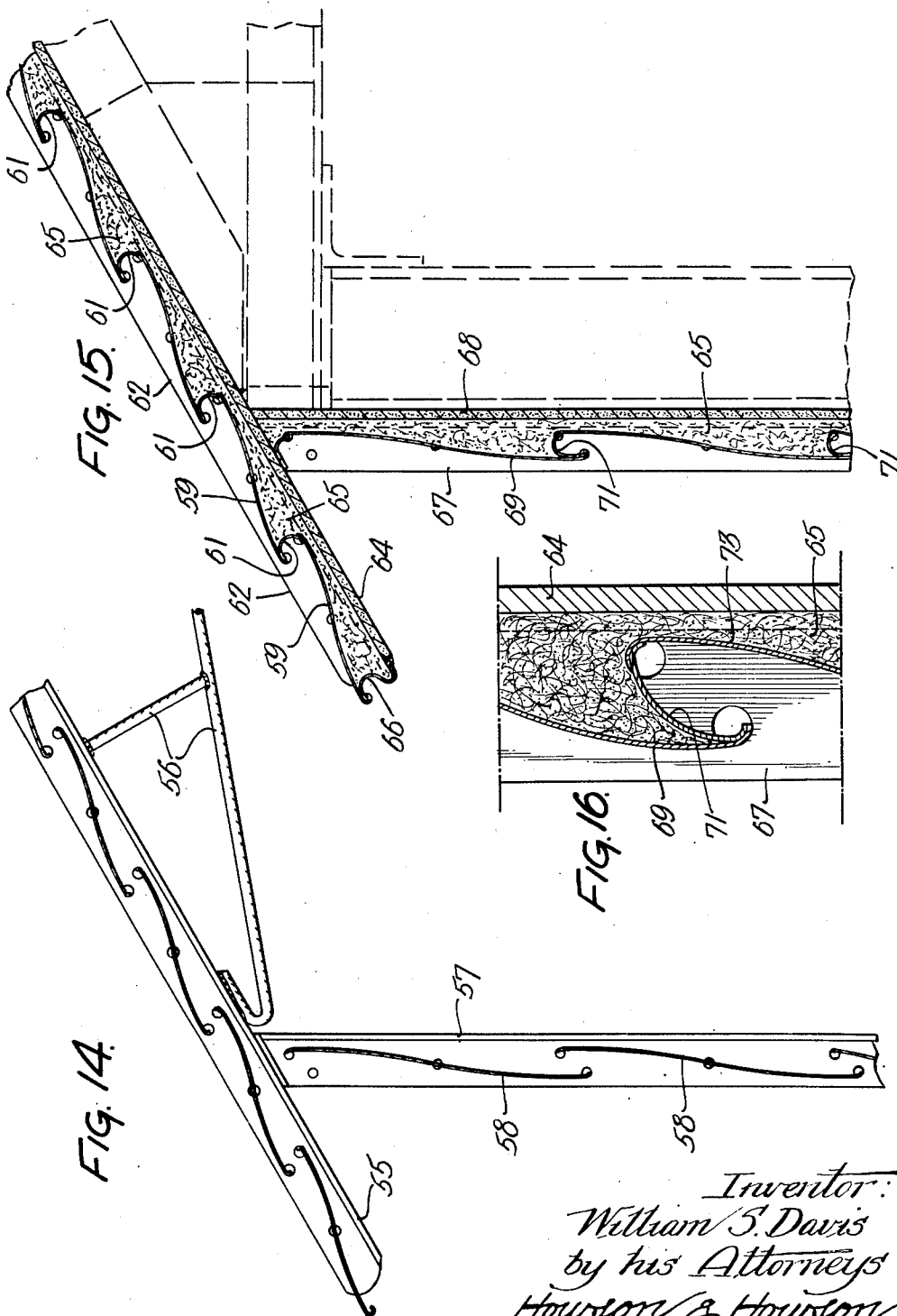
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Inventor:
William S. Davis
by his Attorneys
Howson & Howson

UNITED STATES PATENT OFFICE

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AWNING STRUCTURE

William S. Davis, Philadelphia, Pa.

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17 Claims. (Cl. 20—57.5)

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A principal object of this invention is to provide an efficient, inexpensive and ornamental structure of a character suitable for awning installations, roofs, side walls and the like.

Another object of the invention is to provide a structure of the stated character which may be economically fabricated from metal.

Still another object of the invention is to provide a structure of the stated type having ventilating and light-admitting characteristics.

Still another object of the invention is to provide a structure of the stated type which will have pronounced thermal insulation properties.

A further object of the invention is to provide a structure of the stated type which may be readily mechanised in prefabricated units.

The invention resides further in certain novel processes of manufacture, as hereinafter clearly set forth.

With reference to the attached drawings:

Fig. 1 is an outside elevational view of a portion of the wall of a building showing a window equipped with an awning or eaves structure made in accordance with the invention;

Fig. 2 is a section on the line 2—2 Fig. 1;

Figs. 3 and 4 are fragmentary perspective views showing structural details of the awning structure illustrated in Figs. 1 and 2;

Fig. 5 is a fragmentary view of a metal member of I-section which may be used to advantage in the production of the awning illustrated in the preceding figures, said Fig. 5 illustrating an initial step in the process of manufacture;

Fig. 6 is a sectional view on the line 6—6 Fig. 5;

Figs. 7 and 8 are fragmentary views in perspective illustrating further steps in the process of manufacture;

Fig. 9 is a view in perspective of an awning structure embodying a modification within the scope of the invention;

Fig. 10 is a side elevational view of the awning structure shown in Fig. 9;

Figs. 11 and 12 are views in perspective illustrating steps in the process of manufacturing the awning structure illustrated in the immediately preceding figures;

Fig. 13 is a view in perspective of the awning structure of Fig. 9 prior to installation and in condition for storage or shipment;

Fig. 14 is a fragmentary elevational view illustrating another application of the structural principle of the invention;

Fig. 15 is a fragmentary elevational view illustrating a modification of the type of structure illustrated in Fig. 14, and

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Fig. 16 is an enlarged fragmentary view showing a detail of the structure illustrated in Fig. 15.

With reference to Figs. 1 to 4 inclusive of the drawings, the awning or eaves structure therein illustrated as an embodiment of my invention consists of a pair of metal beam elements 1, T-shaped in cross section, which are attached at their upper ends to the wall 2 above the window 3, and which are maintained in a downwardly and outwardly inclined position by suitable struts 4 which extend between the wall 2 and the respective beams as shown in Fig. 2. The members 1 are in effect inverted with the cross web 5 of the T-section at the bottom and the vertical web 6 projecting upwardly. The cross web 5 is extended at the upper end beyond the web 6 as best shown in Fig. 3 and is turned into the form of an eye which receives one end of a pin 7 supported in a correspondingly formed eye 8 at the upper end of a bracket 9 attached by bolts 11 to the wall 2. The eye at the end of the T-element 1 is indicated in Fig. 3 by the reference numeral 10. At its lower end the bracket 9 has an eye 12 which carries a pin 13 and the projecting end of this pin is received in an eye 14 of a strut element 15. The free end of the element 15 is connected by a clip 16 to the mid-section of a primary strut 4 which as previously described supports the element 1 in the normal inclined position. The outer end of the strut 4 is secured to the cross web 5 of the element 1 by means of a suitable clip 17 and the other end of the strut (see Fig. 4) is provided with an eye 18 which receives the projecting end of a pin 19 supported in an eye 21 on a bracket 22 secured to the wall structure by means of a bolt 20.

Extending between and supported by the structural elements 1, 1 is a series of metallic slat-like elements 23. The cross sectional shape of the slats 23 may vary widely but I have illustrated a reversely or ogee curved contour which I have found well suited to the requirements of the structure. These elements 23 which project at each end somewhat beyond the supporting elements 1, 1, pass through slots 24 of corresponding contour formed in the vertical webs 6 of the elements 1 and are frictionally secured in the slots against longitudinal displacement. The slots 24 form a longitudinal series in the webs 6 of the elements 1 and are relatively arranged so that in assembly the lower end of each slat will overlap the upper end of an adjoining lower slat. Thus, as well illustrated in Figs. 1 and 2, the slats jointly form an effective shield excluding direct rays of the sun from the upper portion of the

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window structure and similarly excluding rain, while at the same time providing ample space between the slats for free circulation of air for ventilation purposes and for reflected light if such light admission is desired.

It will be noted by reference to Fig. 2 that the terminal slat-receiving slots 25 and 26 in the web 6 terminate in the respective adjoining end edges of the web. The slat 27 which occupies the slot 25 thus projects beyond the lower end of the element 1 as illustrated and provides an adequate ornamental finish to the lower end of the assembly. The slat 28 which occupies the slot 26 is of lesser width than the other slats 23 and is shaped so as to bear at its upper end against the surface of the wall 2, thereby providing an effective seal between the wall and the upper part of the eaves or awning structure.

Reference is made also to the elements 31 and 32 appearing in Fig. 1. These elements are flat strips corresponding to the vertical webs 5 of the elements 1 and similarly provided with slat-receiving slots corresponding in form and relative position to the slots of the elements 1. The elements 31 and 32 thus connected with the slats serve to unite the latter at points intermediate the elements 1 to maintain the slats in their proper relative positions and to generally reinforce the assembly.

It is to be noted that in the preferred form, as illustrated, the over-all length of the awning structure, that is, from top to bottom, is insufficient to interfere with the normal functions of the window as a source of light and ventilation, nor will the said structure interfere undesirably with window visibility. The structure however affords a protective shield for direct rays of the sun and against rain and in the latter instance will permit the window to be left open at the top during rains for ventilation purposes.

As previously set forth the invention extends to the method of producing the awning or eaves structure. One desirable method of construction is illustrated in Figs. 5 to 8 inclusive. Starting with an elongated metallic member 33 of I-section (see Fig. 6) such member 33 may be provided in its transverse web with two longitudinal series of slots designated 34 and 35 respectively, which slots have the characteristic ogee curved form of the slats and slots previously described. These slots may be economically produced by stamping in suitable dies by first drilling apertures 36 in the web at points corresponding to the respective ends and to the mid-section of the said slots; thereafter the metal of the web may be stamped out along the curved line of the slot and with reference to base lines, indicated by the broken lines 37, which extend between and tangentially to each of the terminal apertures 36 and the associated intermediate aperture. In effect, each of the slots is produced by displacing two flaps of metal from the web which flaps are defined by the adjoining apertures 36, the line 34, and the aforesaid base line 37, about which the displacement takes place. These flaps are well shown in Fig. 7 wherein they are indicated by the reference numeral 41 and it will be noted that both of the flaps related to the individual slots 34 are displaced toward the same side of the web. This is illustrated in broken lines in Fig. 6. The displacement of the flaps 41 is sufficient preferably to open the slots 34 to an extent permitting free passage therethrough of the slats 23.

After formation of the slots 34 and 35 as de-

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scribed above the I-member 33 is divided longitudinally along the dot and dash line 42 (see Fig. 5) which line extends centrally of the slotted web of the I-member. This produces two identical T-bars corresponding to the elements 1, 1 of the aforescribed awning structure. In this respect it is to be noted that the slots 34 and 35 are laid out in the web of the parent I-beam so that when the web is divided as described the two resultant T-bars will be identical.

The T-bars thus formed are now further processed to form the eye 10 which receives the supporting pin 7 of the bracket 9 and this may be accomplished (see Fig. 11) by cutting away from one end the portions 43 of the slotted web and by subsequently bending the projecting ends of the cross web into the form of said eyes. The slats 23 are now threaded through the open slots 34 and through the slots in the elements 31 and 32 referred to above, after which the several flaps 41 are pressed back toward the plane of the web to an extent pinching the slats and thereby anchoring them in position in the elements 1, 31 and 32. The strut elements 4 and 15 may be assembled with the elements 1 either at the place of installation or previously as may be desirable, the clips 16 and 17 being of a character that they may be readily applied by hand. Mounting of the fabricated structure is accomplished in obvious manner by first attaching the brackets 9 and 22 at indicated points to the building, after which the awning structure may be set up by merely inserting the pins 7, 13 and 19. The angularity of the awning structure 1 may be varied by modifying the curvature of the primary strut 4 or by modifying its length.

A modification of the structure described above is illustrated in Figs. 9 to 13 inclusive. In this case the primary supporting elements 45 corresponding to the elements 1 of the previously described embodiment are formed as illustrated in Fig. 10; the same typical parent member in the form of an I-beam may be utilized and the web thereof slotted and divided longitudinally as described above. In this case however the portions of the slotted web of the two T-elements thus produced, which portions are designated by the reference numerals 46 and 47, are cut away from the cross web 48 at the respective ends of the latter so as to provide elements shaped as illustrated in Fig. 12 wherein a short length 49 of the cross web 48 is left at one end and a relatively extended length 51 of the cross web at the other. The short length 49 is then bent, as illustrated in Fig. 13, and the free section 51 of the cross web at the other end is bent backwardly and into proximity to the end 49, also as illustrated in Fig. 13. The separated portions 47 of the slotted web (see Fig. 12) are utilizable for the intermediate reinforcing elements of the fabricated awning structure as shown in Fig. 13 and, with the end portions 49 and 51 bent back as described above, the entire assembly takes the form of a relatively flat package which may be readily stored or shipped to the desired point of installation. When mounting this structure upon a building as an awning over a window opening, the portion 51 is bent outwardly, as indicated in broken lines in Fig. 13, and also in Figs. 9 and 10, to form integral struts for the primary supporting elements 45, and the bent extremities 49 form a bracket extension for connecting the upper end of the awning structure to the wall. This embodiment of the invention is desirable by reason of the obvious

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economy of production and simplicity of transportation and installation.

An application of the principle of the invention to roof and side wall structures is illustrated in Fig. 14. In this case the T-section primary support elements 55, which correspond to the elements 1 and 45 of the previously described embodiments, constitute the roof beams, but in view of the fact that this function requires considerable strength the aforesaid elements have associated therewith a suitable truss system indicated by the reference numeral 56. In other respects the roof structure will correspond as a matter of structural principle and detail substantially to the structures described above.

The side wall structure illustrated in Fig. 14 also comprises T-shaped elements 57 and associated slat elements 58. In this case the elements 57 form the wall studs and the elements 58 form the siding in obvious manner. While affording a shield from the natural elements, the slats 58 afford passage for ventilating air.

In Figs. 15 and 16 the structure is, in general, the same as that shown in Fig. 14 except that in the case of Fig. 15 the spaces between the overlapping ends of the adjoining slats are closed by filler strips 61 which are inserted between the said overlapping ends and are held in place by resilient engagement thereof with the curved extremities of the slats as best shown in Fig. 16. These filler strips 61 extend between the confronting faces of the slat supporting elements of which one is shown at 62. The elements 52 in this case are supported on underlying sheathing 64 and the space between the sheathing 64 and the slats 59 is filled with suitable insulating material 65. At the lower end of the roof structure a filler strip 66 is provided for insertion between the lower edge portion of the sheathing 64 and the lower edge of the terminal slat 59 to close the insulation space between said slat and sheathing. A corresponding device is employed in the side wall structure wherein a T-section stud of the fabricated wall structure is indicated by the reference numeral 67, the inner sheathing by the numeral 68, the slats supported by the elements 67 by the reference numeral 69, and the filler strips between the overlapping ends of the slats by reference numeral 71.

It is obvious that there may be considerable modification in the shapes of the several elements of the aforescribed structures, and in the form of the finished structure, without departure from the principles of the invention.

I claim:

1. The combination with a plurality of elongated support members T-shaped in cross section and having in the vertical webs thereof corresponding slots forming in each a longitudinal series, of a plurality of slat elements established respectively in the corresponding slots of said members and forming with the latter an integral structure of the character described, and support means comprising integral extensions of the cross web of the T-section for mounting the structure against an upright wall surface in a position inclined downwardly and outwardly from said surface.

2. In combination with a plurality of elongated support members having corresponding slots forming in each a longitudinal series, of a plurality of slat elements established respectively in the corresponding slots of said members and forming with the latter an integral structure, and one or more elongated elements having slat-re-

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ceiving slots corresponding to the support members supported by and uniting the slats intermediate the support members.

3. The combination with a plurality of elongated support members of T-section having corresponding slots in the vertical webs forming in each a longitudinal series, of a plurality of slat elements established respectively in the corresponding slots of said members and forming with the latter an integral structure, the transverse web of the T being extended at each end of the member beyond the end of the vertical web to provide means for attaching the structure to a suitable foundation, and wherein one of the extended ends of the transverse web being longer than the other end so as to constitute a strut for supporting the structure in an inclined position against an upright wall surface.

4. A structure according to claim 3 in the form of a fabricated unit wherein the longer projecting ends of the cross webs of the supporting members are folded against the underside of the structure for storage and shipping purposes.

5. As a new article of manufacture, a metallic awning in the form of a prefabricated unit comprising two elongated support members of T-section whereof the transverse web is extended at each end beyond the upright web to form means for attaching and supporting the awning in an inclined position against a wall surface, the said vertical webs of the support members being provided with slots extending diagonally between the longitudinal edges of the web, and slats established in said slots and uniting said support members, the lower edge of each slat overlying the adjoining lower slat and being spaced from the latter, and said slats jointly forming the effective face of said awning.

6. An awning structure according to claim 5 wherein the uppermost slat of the series is extended beyond the upper ends of the supports so as to constitute a sealing strip for the upper edge of the awning.

7. An awning structure according to claim 5 wherein the slats are bound in the slots.

8. A fabricated structural unit consisting of a plurality of elongated metallic support members each having a plurality of transverse slots arranged in corresponding longitudinal series, each said slot comprising a narrow slit terminating at each end in an aperture, said slit and apertures defining a laterally displaceable flap of metal at a side of the slit, a plurality of slat elements mounted respectively in the corresponding slots of and uniting said members and securely clamped in the slots by said flaps, said members constituting the sole support of said slats in the structure and the clamping action of the flaps constituting the sole means for immobilizing the slats in the slots, and means operatively associated with said members for securing the said structural unit in position.

9. A structural unit according to claim 8 wherein a longitudinal edge portion of each slat is beaded over into one of the terminal apertures of the slat retaining slots.

10. A structural unit according to claim 8 wherein each of the slots comprises an intermediate aperture, each terminal aperture, with the intermediate aperture and intervening slit defining an independent laterally displaceable flap at the side of the said slit.

11. A structural unit according to claim 10 wherein the slot is in the form of an ogee curve

with the intermediate aperture at the mid section of the curve.

12. A structural unit according to claim 11 wherein the said flaps lie respectively at opposite sides of the slot.

13. A structural unit according to claim 12 wherein slats conform to the ogee form of the slots, said slats intersecting the intermediate aperture and having their respective side edges extending into the terminal apertures.

14. A fabricated structural unit comprising a plurality of elongated support members having corresponding slots forming in each a longitudinal series, of a plurality of slat elements established respectively in the corresponding slots of said members, said slat elements individually extending uninterruptedly between and beyond the support members of each adjoining pair and forming with the latter an integral structure wherein the terminal ends of the slats project freely from the said members, said slots being substantially parallel with each other and being respectively arranged so that the lower edge of each slat will over-lie the adjoining lower slat when the said support members are established in positions inclined to the vertical, said slots extending diagonally between the edges of the individual support members and at an angle to the latter such that when the said members are disposed at an angle of 45° to the vertical the slats will incline to the vertical in the same direction, the upper longitudinal edges of the slats being offset from the median plane of the slats so as to form an up-turned lip at said upper edge, means for clamping the slats in the slots of the support members, means at the upper ends of said support members for attaching said members to an upright wall, and strut means interposed between the surface of the wall and the lower ends of said support members to maintain the said members in the inclined positions.

15. A structural unit according to claim 14 wherein the slats are of ogee curve formation in lateral cross section and wherein further the extreme upper edge portions of the slats curve upwardly and forwardly to form recessed lips at the said upper edges.

16. A structural unit according to claim 15 wherein the lower edges of the slats curve downwardly and under in accordance with but in the reverse direction to the upper lips whereby the slats are symmetrically but oppositely curved at opposite sides of the longitudinal center lines of the slats.

17. A structural unit according to claim 16 wherein the slots in the support members terminate at each end in apertures for reception of the curled edges of the slats.

WILLIAM S. DAVIS.

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