June 13, 1950 H. R. MOFF 2,511,364

FOLDING STRUCTURE

Filed April 2, 1948 2 Sheets-Sheet 1

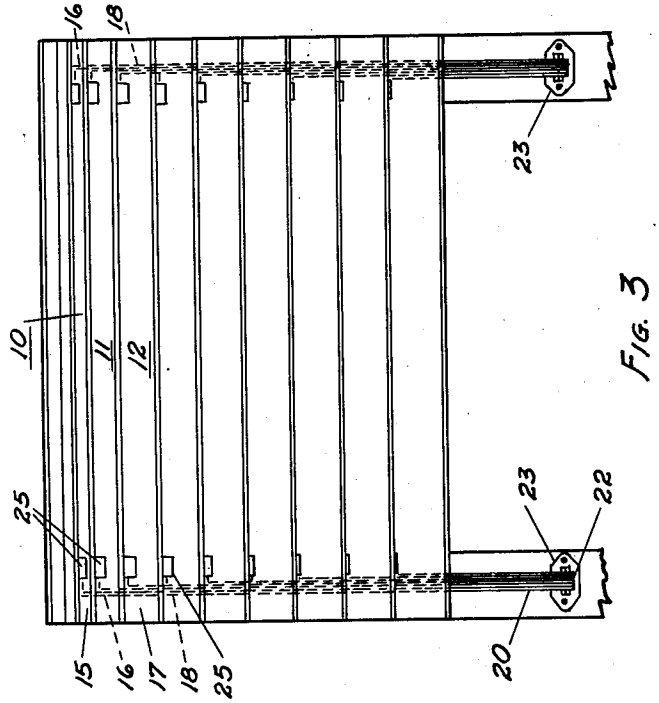


FIG. 3

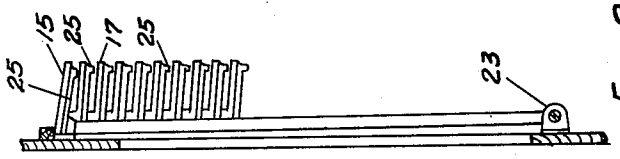


FIG. 2

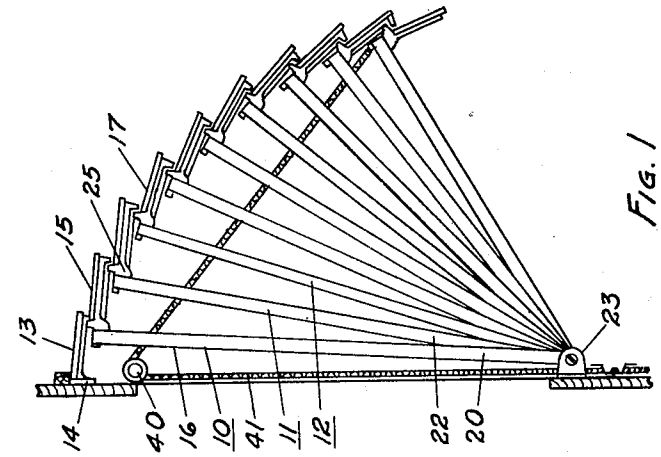


FIG. 1

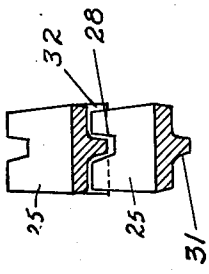


FIG. 6

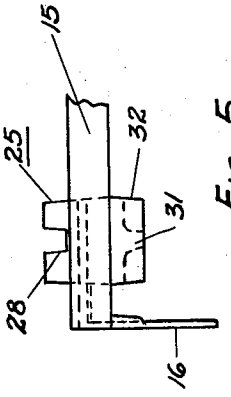


FIG. 5

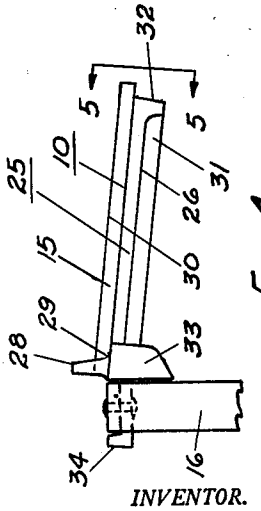


FIG. 4

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FOLDING STRUCTURE

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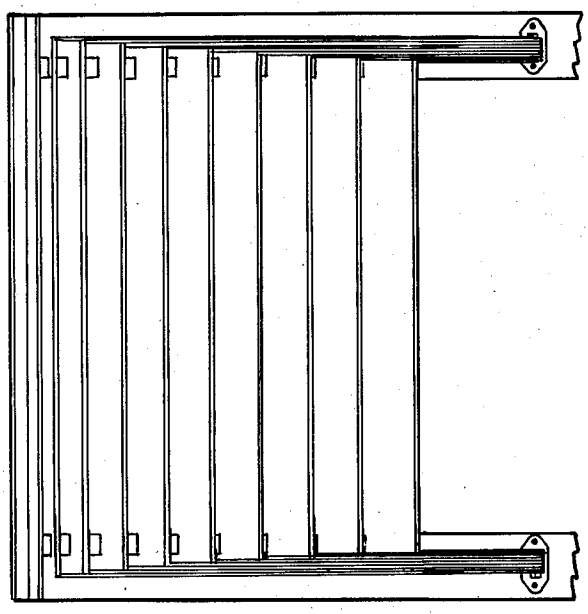


FIG. 9

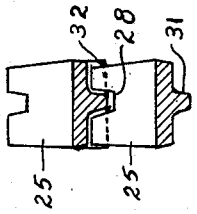


FIG. 12

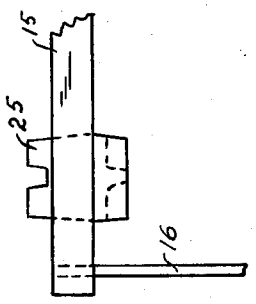


FIG. 11

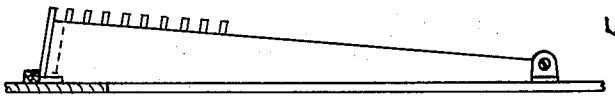


FIG. 8

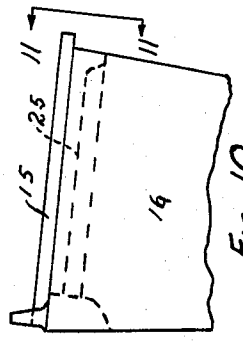


FIG. 10

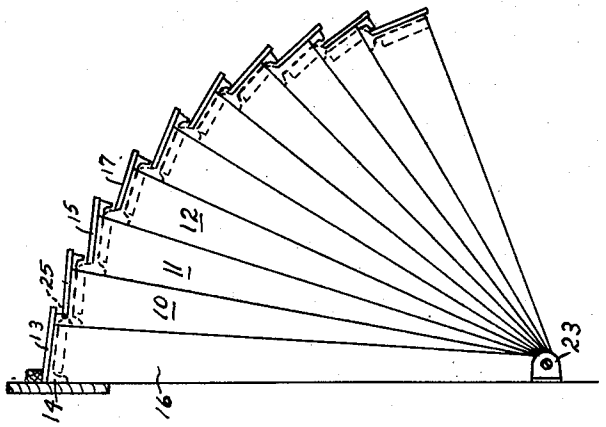


FIG. 7

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2,511,364

FOLDING STRUCTURE

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Application April 2, 1948, Serial No. 18,680

4 Claims. (Cl. 160—132)

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My invention relates to folding structures and to awnings which may be folded or telescoped together.

Many different types of folding structures and awnings have been constructed to shade the sun from the windows. However, in these prior awnings the construction has been such that the awning could not be folded or telescoped against the wall of the house during the winter time or at the convenience of the home owner. Awnings which could be folded are made of canvas and soon deteriorate or become damaged by the weather. I have constructed an awning which may be telescoped or folded against the house and which is not damaged by the weather.

Therefore one of the objects of my invention is to construct an awning structure which is economical to manufacture and which is sturdy in construction.

Another object of my invention is to provide an awning structure with U-shaped members pivotally and telescopically connected together and with cooperating means between the U-shaped members to control the movement of one member relative to the other.

Another object of my invention is to provide an awning structure with a plurality of slats and guide members fastened to each slat and cooperative with the guide member on the next adjacent slat to limit the movement of a slat relative to the next adjacent slat.

Another object of my invention is to provide a tongue and groove interassociated means to position each slat at a spaced distance from the next adjacent slat.

A further object of my invention is to provide an awning structure which is easy to mount on the window casing and which will withstand severe wind storms.

Further objects and a fuller understanding of my invention may be had by referring to the accompanying drawings in which:

Figure 1 is a side view of my awning in its open position;

Figure 2 is a side view of my awning in its telescoped or closed position;

Figure 3 is a front elevational view of my awning in its open position;

Figure 4 is a plan view illustrating one of the guide members which space the awning slats;

Figure 5 is a view along the lines 5—5 of Figure 4;

Figure 6 is a diagrammatic view to illustrate the tongue and groove interrelation of two adjacent guide members;

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Figure 7 is a side view of my modified awning in its open position with ends closed;

Figure 8 is a side view of my modified awning in its telescoped or closed position;

Figure 9 is a front elevational view of my modified awning in its open position;

Figure 10 is a plan view illustrating one of the guide members which space the awning slats;

Figure 11 is a view along the lines 11—11 of Figure 10; and

Figure 12 is a diagrammatic view to illustrate the tongue and groove interrelation of two adjacent guide members of the modified awning.

My awning structure, which I describe with a certain degree of particularity without limiting the scope of my invention, generally comprises a plurality of similar U-shaped members including the U-shaped members 10, 11 and 12. I have illustrated in my drawings a plurality of these U-shaped members, but in actual construction the exact number of U-shaped members depends entirely upon the desires of the home owner. The U-shaped member 10 is constructed from an awning slat 15 supported near each end thereof by radius arms 16. Similarly, the U-shaped member 11 is constructed of an awning slat 17 and supported by radius arms 18 fastened on the ends thereof.

In referring to my drawings and in particular Figure 3 it is noted that the radius arms 16 of the U-shaped member 10 are spaced apart a greater distance than the radius arms 18 of the U-shaped member 11, thus permitting the U-shaped member 11 to telescope or pivot at least partly into the U-shaped member 10. It is also noted that the radius arms 18 are shorter than the radius arms 16, thus the U-shaped member 11 may move in a circular path of smaller diameter than the circular path of the U-shaped member 10. I have provided the radius arms 16 with a pivot opening at the pivot end 20 thereof and the radius arms 18 with a pivot opening at the pivot end 22 thereof. The pivot ends 20 and 22 respectively are pivotally connected together by a support 23 which may be fastened to the window casing by screws or other suitable fastenings. When the awning is fastened to the house or window casing both U-shaped members may be pivotally moved outwardly from the house into the awning's open position as illustrated in Figure 3, with the U-shaped member 11 disposed farther from the house than the U-shaped member 10. When the awning is moved into a closed position as shown in Figure 2, the U-shaped

members are resting on the support 23, and the U-shaped member 11 is telescoped into the U-shaped member 10.

I have discovered that the positioning of each awning slat relative to its next adjacent slat may be controlled by guide members 25 fastened to each slat. These guide members control the positioning of the slats relative to each other to provide space between the slats for air current when the awning is in its open position. I have also discovered that by constructing these guide members 25 with tongue and groove interrelated portions, the guide members will keep the awning from swaying when it is open during wind storms. When the awning is open the upper U-shaped member which is numbered 10 in this instance partially supports the immediately lower U-shaped member which is numbered 11 in this instance.

The guide members 25 are preferably constructed of metal from casting, however they may be constructed by stamping sheet metal. Since the guide members are all substantially identical I will describe the structure of only one of them as it is connected to awning slat 15. The guide member 25 comprises a slat engagement portion 26 which may be screwed or otherwise fastened to the bottom side of the awning slat. A grooved portion 28 of the guide member 25 is integral with the slat engagement portion and extends past the back edge 29 of the awning slat and outwardly from the top side 30 thereof. This guide member 25 also has a tongue portion 31 extending substantially perpendicular to the awning slat and lengthwise of the slat engagement portion 26. The tongue portion 31 extends between stop portions 32 and 33 respectively, which are located at opposite ends of the slat engagement portion.

When the awning is assembled, the grooved portion 28 of the guide member 25 on the U-shaped member 11 is aligned with and cooperates with the tongue portion 31 of the guide member 25 on the U-shaped member 10, as is illustrated in Figure 6. In observing Figure 1, I illustrate that the grooved portion 28 on the U-shaped member 11 abuts the stop portion 32 of the guide member 25 on the U-shaped member 10. Similarly, each guide member on each slat is interrelated and cooperates with the guide member on the next adjacent slat. The abutting of the grooved portion on one guide member against the front stop portion 32 of the next adjacent guide member causes each U-shaped member to support the next adjacent lower U-shaped member. The cooperation between the grooved portion 28 of one guide member and the tongue portion 31 of the next adjacent and related guide member also prevents sidewise movement of one U-shaped member relative to another, thus forming a sturdily constructed awning. When the awning is being telescoped or folded the grooved portion 28 abuts the back stop portion 33 on the next adjacent higher U-shaped member to telescope or pivotally move that member therewith and toward the window casing.

In the preferred embodiment of my invention I have connected the radius arm to a radius arm portion 34 of the guide member 25 by rivets or other suitable means. This radius arm portion 34 extends outwardly beyond the back stop portion 33 and may abut the casing of the window when the awning is closed, as illustrated in Figure 2. It is understood, however, that the radius arm may be fastened directly to the awning slat

in any suitable manner. The radius arms are preferably constructed of a metal, however it is understood that any suitable material which will pivotally support the arm and slats may be used for this purpose.

In mounting my awning on the window, an awning slat 13 and guide member 14 is fastened securely to the casing and above the window. As is illustrated in the drawing, this awning slat has a width greater than the pivotally mounted awning slats including slats 15 and 17 so that when the awning is folded the forward edge of every awning slat is the same distance from the window casing. The U-shaped members are then telescopically and pivotally mounted with the outside U-shaped member next adjacent this securely fastened awning slot 13 and with each grooved portion engaging the tongue portion of its respective guide member. The support 23 is then fastened on each side of the window by screws or other suitable means to pivotally support the telescopic U-shaped members so that each U-shaped member may be pivoted a predetermined distance relative to its next adjacent U-shaped member. In my drawings I have illustrated symbolically a pulley 40 which may be fastened at the top of the window and a rope 41 extending over the pulley and fastened to the bottom awning slat for closing the awning into its folded position, as illustrated in Figure 2. It is understood that any suitable means may be used to replace the pulley and rope which will close the awning.

In Figures 7 through 12 of my drawings I have illustrated a modification of my invention in which the radius arms are fastened directly to the awning slats and are constructed of sufficient width to prevent sun or rain coming in the ends of the awning. In this modification the radius arms fan in and out and completely enclose both ends of the awning. The construction of the modified awning otherwise is the same as the construction of the preferred embodiment of my invention and the operation is therefore the same.

It is understood that many modifications and changes may be made in my awning structure and that I have herein described the preferred embodiment of my invention with a certain degree of particularity and do not thereby limit the spirit and scope of my invention which is claimed as follows:

1. In an awning, a plurality of slats supported for the movement of one slat relative to the next adjacent slat, guide members carried by the slats, each guide member comprising, a slat engagement portion having a slat engaging side and an exposed side, a tongue rib on the exposed side and aligned to extend transversely of the slats, a grooved portion extending outwardly from the slat engaging side beyond the engaged slat and in cooperative alignment with the tongue rib of the guide member on the next adjacent slat.

2. In an awning, a plurality of slats supported for the movement of one slat relative to the next adjacent slat, guide members carried by the slats, each guide member comprising, a slat engagement portion having a slat engaging side and an exposed side, a tongue rib on the exposed side and aligned to extend transversely of the slats, a grooved portion extending outwardly from the slat engaging side beyond the engaged slat and in cooperative alignment with the tongue rib of the guide member on the next adjacent slat, and stop portions on each end of

the tongue rib abuttable by the cooperatively aligned grooved portion to limit movement of one slat relative to the next adjacent slat.

3. In an awning, a plurality of slats supported by radius arms for telescopic pivotal movement of one slat relative to the next adjacent slat, a guide member on each slat, said guide members each comprising a slat engagement portion having first and second surfaces with the first surface engaging a surface of its respective slat, a grooved portion integral with the slat engagement portion and extending outwardly from the first surface thereof beyond the said respective slat engaging the first surface, a tongue rib extending on the second surface of said slat engagement portion and transversely of said slat, the grooved portion of one guide member extending into cooperative engagement with the tongue rib of the guide member on the next adjacent slat.

4. In an awning, a plurality of slats supported by radius arms for telescopic pivotal movement of one slat relative to the next adjacent slat, a guide member on each slat, said guide members each comprising a slat engagement portion having first and second surfaces with the first surface engaging a surface of its respective slat, a grooved portion integral with the slat engagement portion and extending outwardly from the first surface thereof beyond the said respective slat engaging the first surface, a tongue rib extending on the second surface of said slat engagement portion and transversely of said slat, the grooved portion of one guide member extending into cooperative engagement with the tongue rib of the guide member on the next adjacent slat, and stop portions on each end of the tongue rib abuttable by the cooperative grooved portion of the guide member on the next adjacent slat to limit pivotal movement of one slat relative to the other.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
69,982	Foster	Oct. 22, 1867
82,569	Tyler	Sept. 29, 1868
1,393,560	Marriott	Oct. 11, 1921
1,648,851	Lapin	Nov. 8, 1927
1,839,052	Richardson	Dec. 29, 1931
1,970,886	Dowd	Aug. 21, 1934