Nov. 28, 1950 R. K. WELLMAN 2,531,797

EXTENSIBLE METALLIC STRUCTURE

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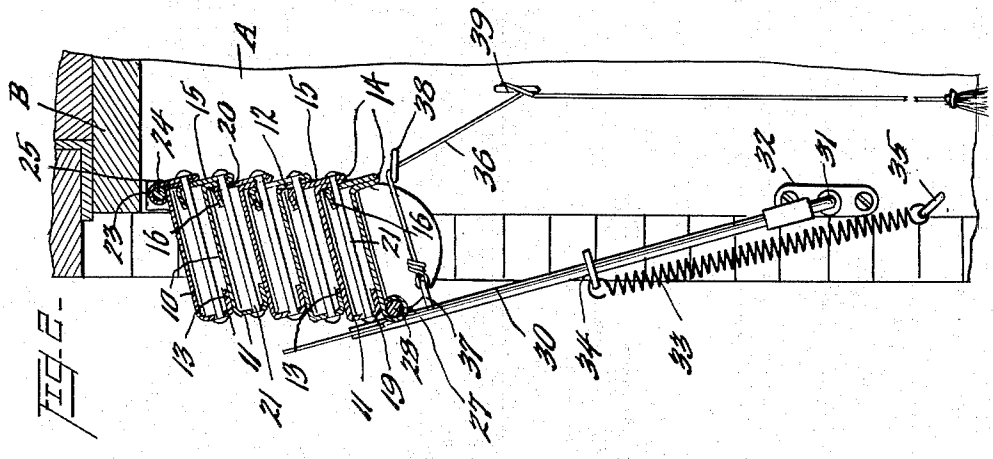

FIG. 2.

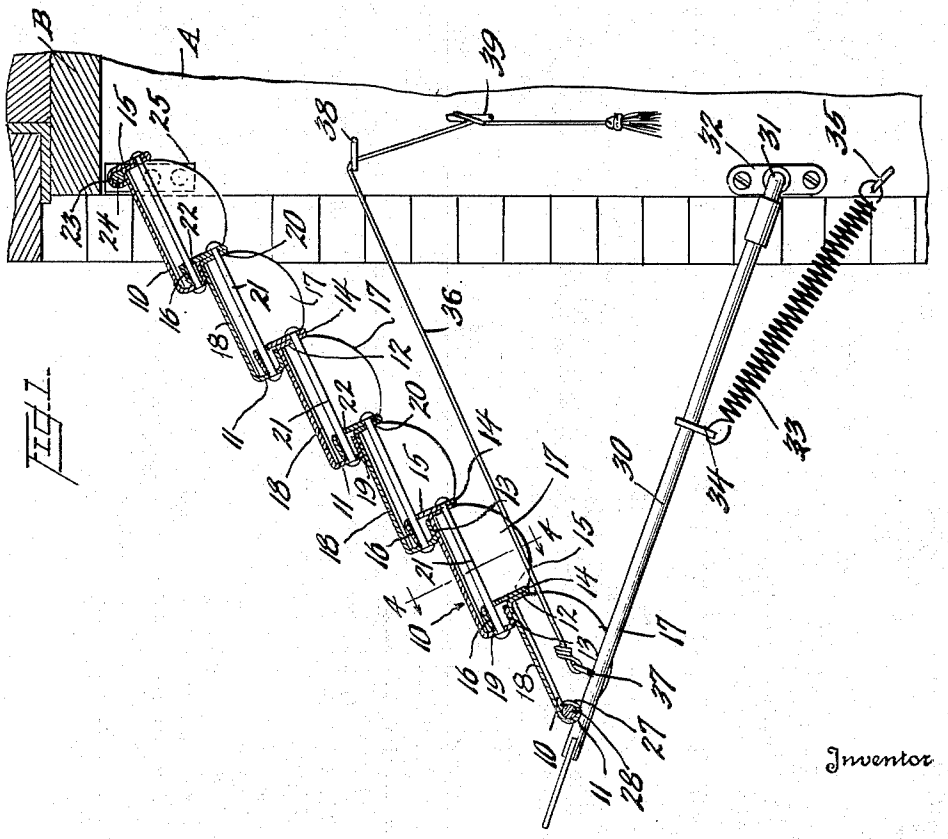

FIG. 1.

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FIG. 3.

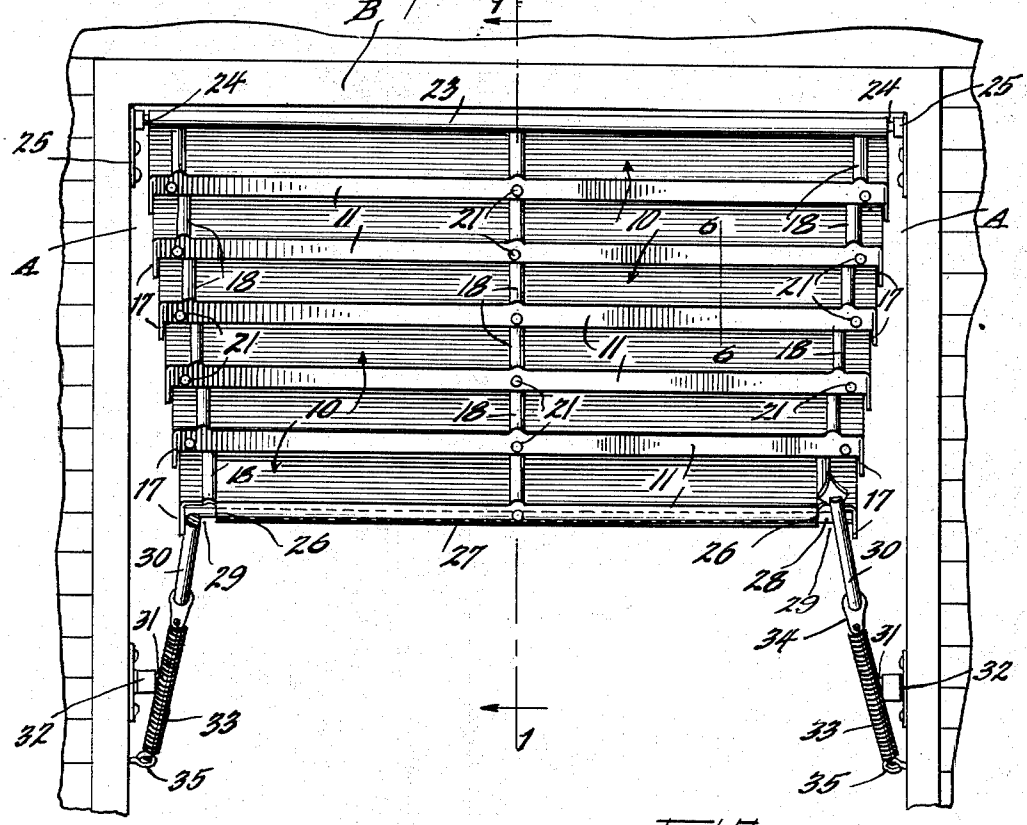


FIG. 4.

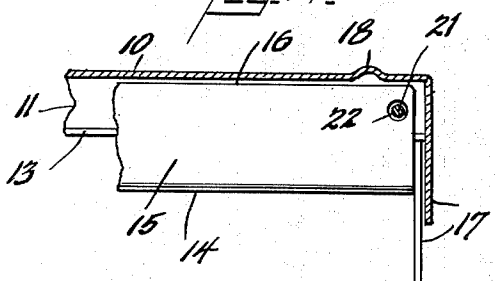


FIG. 5.

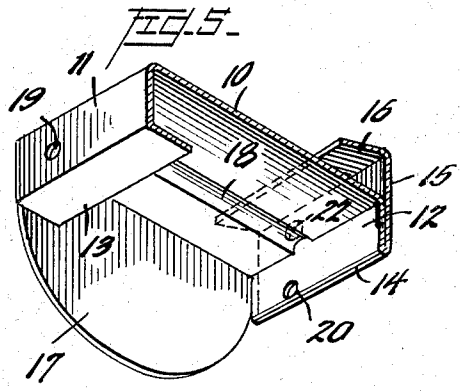
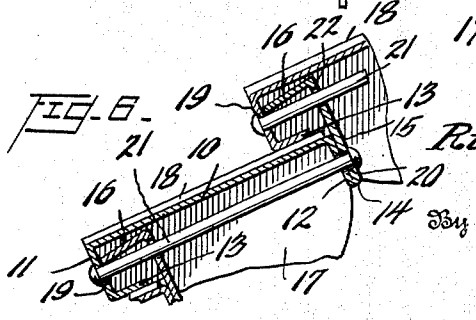


FIG. 6.



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EXTENSIBLE METALLIC STRUCTURE

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4 Claims. (Cl. 160—222)

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The invention relates to extensible articulated metallic structures, particularly designed for use as an awning, roofing or shutter assembly, and which may also be employed to advantage as a garage door, air conditioning outlet or as a heat regulating closure for automobile radiators, and has for its objects to provide certain new and useful improvements in metallic structures of this character.

A principal object of the invention is to provide a structure or device of the character described which is of light weight and capable of convenient manipulation and wherein provision is made for extending or collapsing the articulated elements of the structure with a minimum of friction.

A further object of the invention is to provide integral means on the individual slat elements of the awning or closure, for reenforcing the same against undue distortion and relative twisting or turning movement, while permitting the essential parts to be constructed of thin or light gauge pressed or rolled sheet metal, such for example as aluminum.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

In said drawings wherein the invention has been illustrated for example as an improved metallic awning structure:

Fig. 1 is a view in vertical section showing the awning in extended or lowered position, taken substantially on line 1—1 of Fig. 3.

Fig. 2 is a similar view of the awning in collapsed, stacked or telescoped elevated position.

Fig. 3 is a front elevation of the extended awning as viewed from the left in Fig. 1.

Fig. 4 is an enlarged detail sectional view on line 4—4 of Fig. 1.

Fig. 5 is a perspective view through one of the awning slats adjacent an end thereof.

Fig. 6 is a view similar to Fig. 1 on an enlarged scale, illustrating two of the connected louver slats in extended position.

Referring to the drawings the awning structure comprises a plurality of substantially identically formed die pressed or rolled metallic louver slats 10, of thin gauge and weight, each slat having an integral depending forward wall 11 and a depending rear wall 12. The forward wall 11 terminates in an integral rearwardly extending flange portion 13 defining an open channel structure at the front portion of each slat. The depending rear wall 12 is sharply bent upon itself as at 14 and thence extended reversely as a vertical or upstanding flange 15 terminating in an integral forwardly projecting angular flange portion 16. By virtue of such construction, the lower rear wall portion of each slat 10 is composed of a reenforced double wall thickness, while at its upper portion sets off an open channel above the slat proper in a manner similar to the forward channel disposed below such main body portion of the slat. Each slat 10 at its opposite ends is preferably provided with an integral depending flange 17 and as a means of further reenforcement, the body portion 10 of the slat is preferably provided with a plurality of longitudinally spaced upstanding die pressed integral corrugations 18. Adjacent its opposite ends the slat members 10 are provided with transversely aligned apertures 19 and 20 respectively disposed in the depending forward and rear wall portions or flanges 11, 12 and 15.

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If desired similar transversely aligned apertures may be provided in the said forward and rear flange portions 11, 12 and 15 of the slats at the central or intermediate portion of the structure as best seen in Fig. 1. Said aligned apertures are for the purpose of receiving therethrough a plurality of fixed headed guide rods 21 by means of which the forward and rear slat walls, as well as wall portions of the adjacent slats, are connected together, and upon which rods the said slats are mounted for slidable movement in one direction into outward extended position (Fig. 1), and in the opposite direction into inward stacked or telescoped relation (Fig. 2). The rods 21 are suitably enlarged or headed at their opposite ends preferably so as to be immovably connected to the forward and rear flange portions 11, 12 and 15 of a given slat. Each rod 21 is loosely extended through a single aperture 22 in the upstanding flange 15 of another or subjacent slat 10, so as to connect such slats for relative sliding movement into and out of nested or stacked relation. The arrangement is such that outward sliding movement into extended position of the connected or articulated slats is limited by contact of the forward edge of rear flange 16 of a lower or inner slat, with the inner surface of a depending forward flange 11 of an adjacent superposed connected slat 10. At such time the rear edge of flange 13 of the superposed slat is in position to contact or abut against the front face of upstanding flange 15 of the first mentioned subjacent slat (Fig. 1).

When in thus extended position it will be noted that forward and rear flanges 11 and 15 of adjacent connected slats are transversely spaced longitudinally of the rods 21, by means of the angularly disposed vertically spaced flange portions 13 and 16 of such connected slats, and the latter mentioned flanges lie closely against the outer surface of the main body portion of a slat, and against the upper surfaces of the rod members 21 respectively. In this manner undue tendency of the slats to twist or flex transversely relative to the rods and to one another is insured against. Stated otherwise, when in extended position the slats are maintained substantially rigid against axial turning or twisting, by their slat and rod contacting flange portions 13 and 16 respectively.

The rear upstanding flange portion 15 of the upper or innermost lower slat 10 is or may be bent into a loop 23 to constitute a journal or bearing for a support rod 24 in turn journaled or fixed at its opposite ends within suitable bracket members 25 fixed on opposite sides of the opening A of the window or door frame B adjacent the upper portion of the frame. The forward depending flange 11 of the lower outermost slat 10 is preferably cut away as at 26 (Fig. 1) and is similarly formed into an open loop 27 constituting a bearing support for a rigid forward rod or support member 28. The opposite ends of said rod are welded or otherwise secured as at 29 to the outer ends of a pair of oppositely disposed support rods 30, in turn pivotally secured at their inner ends as at 31 to suitable bracket members 32 fixed on the window or door frame adjacent the frame opening A. Suitable tension or coil spring members 33 are or may be provided for yieldably maintaining the awning structure in desired extended position against wind pressures, over the frame opening. The outer ends of said spring members may be secured to lug elements 34 respectively fixed or immovably mounted on the support rods 30, and the inner ends of said springs may be suitably secured as at 35 to the window or door frame.

Operating means for the awning structure is preferably provided in the form of a flexible pull cord 36 secured at its outer end as at 37 to one or both of the pivotally mounted support rods 30. Said cord is passed in the usual manner over a pulley or loop member 38 on the frame, the inner free end of the pull cord being adapted to be removably secured to a cleat or bracket member 39 on the frame, to maintain the structure in elevated or collapsed position as shown in Fig. 2.

When it is desired to extend and lower the awning into the position shown in Fig. 1, it will be apparent that release of the pull cord will permit the support rods 30 and stacked slats 10 connected thereto, to swing outwardly under the influence of gravity or slight pressure, said slat members moving relative to one another on the rod guide elements 21 with little or no friction. The awning is raised or elevated into the position shown in Fig. 2 by pulling on the cord 36, resulting in the slats 10 sliding relative to one another on the guide rods 21, in the opposite direction into stacked or telescoped position.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

What is claimed is:

1. A metallic awning structure comprising a plurality of connected slat members each having an integral depending forward wall terminating in a rearwardly extending flange spaced inwardly from the body portion of the slat, each of said slat members further including an integral depending rear wall portion merging into a reversely folded upstanding rear wall portion having spaced apertures therein and terminating in a forwardly extending flange spaced outwardly from the body portion of the slat, and a plurality of spaced guide rod members connected to and extending between said depending forward and rear slat walls, the intermediate portions of said guide rods respectively loosely extending through the spaced apertures in said upstanding rear wall of an adjacent slat to connect said slats for relative sliding movement in opposite directions respectively into extended and stacked relation, said forwardly extending rear wall flange of a said slat member when in extended position engaging against the depending forward wall of a connected slat member closely adjacent said rod members to space said rear wall inwardly on the rod members a substantial distance from said connected forward slat wall, to maintain the extended slats in substantially self supporting relation.

2. A metallic awning structure comprising a plurality of connected slats each having an integral depending forward aperture wall terminating in a rearwardly extending flange spaced inwardly from the body portion of the slat, each of said slats further including an integral depending rear wall merging into a reversely folded upstanding apertured rear wall terminating in a forwardly extending flange spaced outwardly from the body portion of the slat, and a plurality of spaced guide rod members connecting and extending through the apertures in said depending forward and rear slat walls, the intermediate portions of said guide rods respectively loosely extending through the apertures in said upstanding rear wall of another slat to connect said slats for relative sliding movement in opposite directions respectively into extended and stacked relations, said forwardly and rearwardly extending terminal flanges respectively on the rear and forward walls of adjacent connected slats being respectively engageable with said rod members and with the outer surface respectively of such adjacent slats to limit relative turning and twisting movement of the slats when the latter are in extended position.

3. A metallic awning slat comprising a body portion having an integral depending forward wall terminating in a rearwardly extending reenforcing flange spaced from the inner surface of said body portion, said slat further including an integral depending rear wall portion merging into a reversely folded upstanding rear wall portion terminating in a forwardly projecting reenforcing flange spaced from the outer surface of said body portion, and a plurality of spaced rod members connected to and extending between said depending forward and rear slat walls, said upstanding rear wall portion having spaced apertures therein for the slidable reception therethrough of the aforesaid spaced rod members of an adjacent connected slat.

4. A metallic awning slat comprising a body portion having an integral depending forward wall terminating in a rearwardly extending reenforcing flange spaced from the inner surface of said body portion, said slat further including an integral depending rear wall portion merging into a reversely folded upstanding rear wall portion terminating in a forwardly projecting reenforcing flange spaced from the outer surface of said body portion, a plurality of transverse integral reenforcing corrugations spaced longitudinally of the body portion of said slat, a plurality of spaced rod members connected to and extending between said depending forward and rear slat walls adjacent said corrugations, and a plurality of spaced apertures in said upstanding rear walls respectively disposed in vertical alignment with said rod members for slidably receiving therethrough the rod members of another slat to movably connect said slats together for relative sliding movement in opposite directions respectively into extended and stacked relation, said forwardly extending rear wall flange of a said slat member when in extended position engaging against the depending forward wall of

a connected slat member closely adjacent said rod members to space said rear wall inwardly on the rod members a substantial distance from said connected forward slat wall, to maintain the extended slats in substantially self supporting relation.

RUDYARD K. WELLMAN.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
140,674	Boughton	July 8, 1873
162,361	Eller	Apr. 20, 1875
427,287	Wood	May 6, 1890
888,433	Thompson	May 19, 1908
1,555,645	Ellis	Sept. 29, 1925
1,636,200	Vetterlein	July 19, 1927
1,648,851	Lupin	Nov. 8, 1927
1,832,966	Cook	Nov. 24, 1931
2,078,134	Goni	Apr. 20, 1937
2,263,540	Johnson	Nov. 18, 1941