Oct. 6, 1953 DE ELDON E. HAYNER 2,654,425

METAL AWNING OR SHUTTER.

Filed July 29, 1950 2 Sheets-Sheet 1

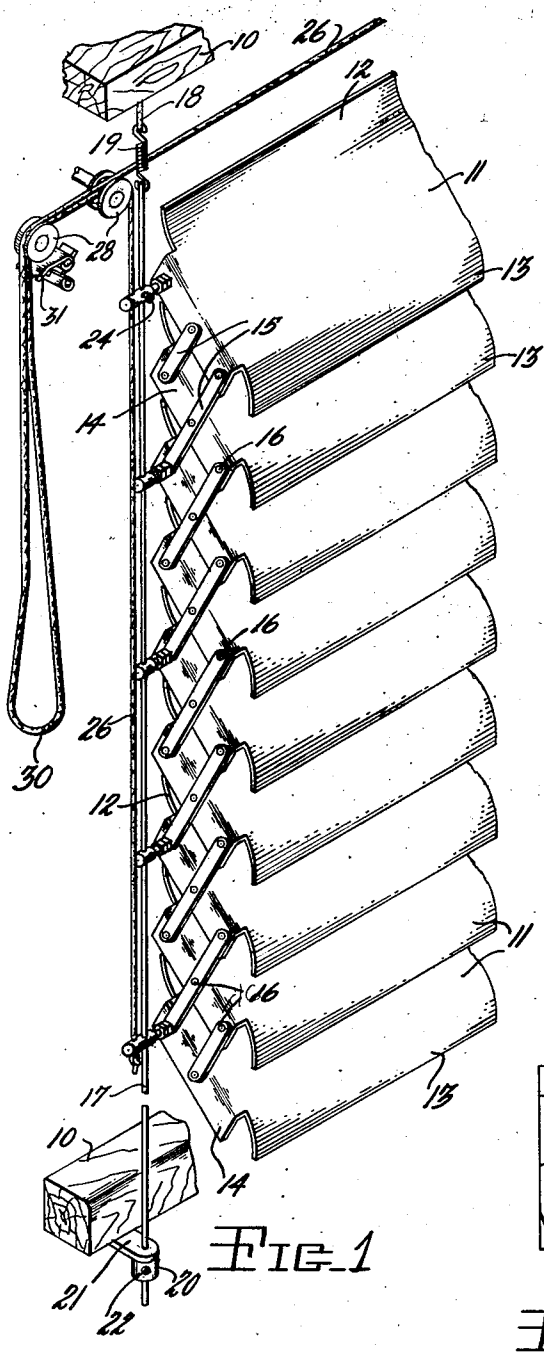


FIG. 1

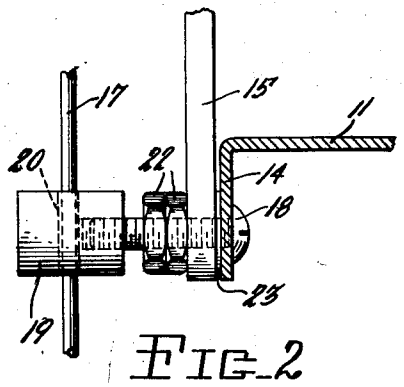


FIG. 2

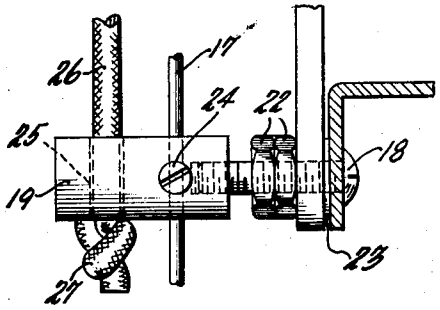


FIG. 3

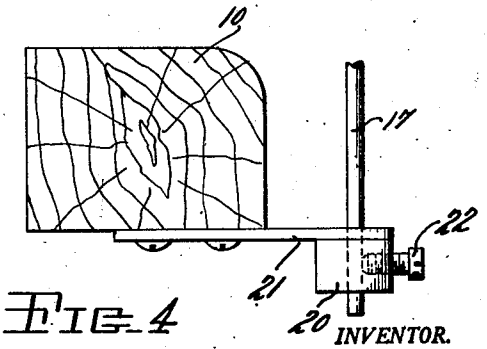


FIG. 4

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Oct. 6, 1953 DE ELDON E. HAYNER 2,654,425

METAL AWNING OR SHUTTER

Filed July 29, 1950 2 Sheets-Sheet 2

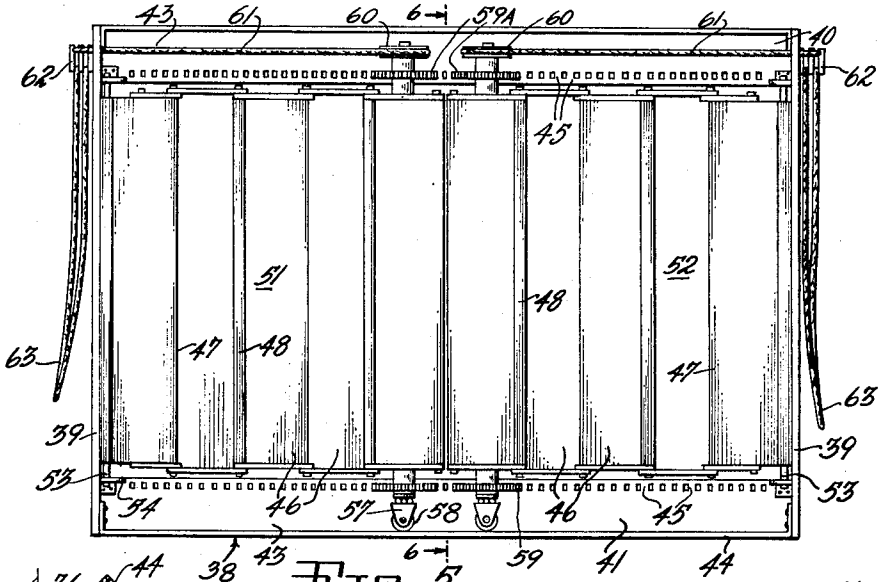


FIG. 5

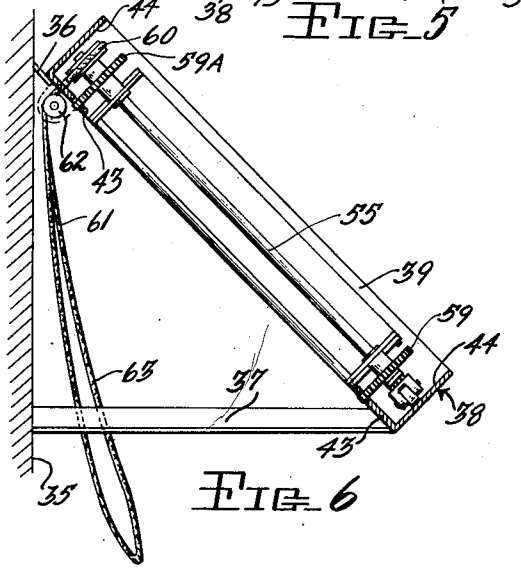


FIG. 6

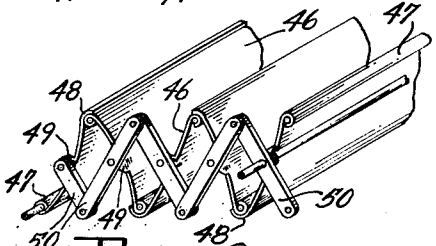


FIG. 9

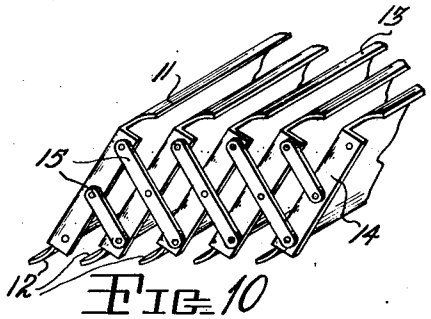


FIG. 10

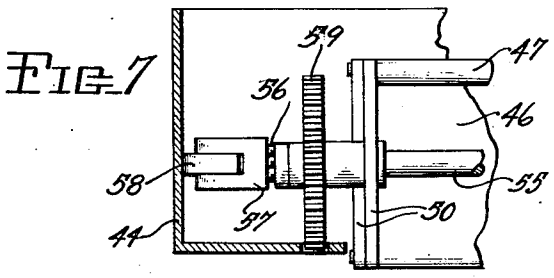


FIG. 7

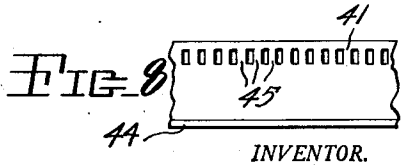


FIG. 8

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METAL AWNING OR SHUTTER

De Eldon E. Hayner, Floral Park, N. Y.

Application July 29, 1950, Serial No. 176,623

4 Claims. (Cl. 160—62)

1

This invention relates to awnings and in particular to a collapsible awning or shutter structure.

A particular object of the invention is to provide an awning structure in which the louver slats may be made of rigid material such as metal and may be so mounted relatively to each other as to be readily compacted in closed position or fully opened to provide shade in a window or door opening.

Other objects of the invention are to produce a metal awning, the parts of which can be easily kept clean; readily painted; easily dismantled for storage purposes; will allow air to enter; will keep out direct rays of the sun while also diffusing the light; will keep rain from window and door openings; may be readily manipulated for opening and closing through a rope and pulley system; and one which may open and close vertically or horizontally and may serve as a shutter to protect windows when adjusted.

A still further object of the invention is to provide a structure that is simplified, is easy to operate, gives complete protection, is inexpensive to make and can be attached to window or door frames with a minimum of effort and time.

With these and other objects in view, the invention comprises certain construction hereinafter described and then particularly pointed out in the claims and a preferred embodiment of my invention is illustrated in the accompanying drawings in which:

Figure 1 is a view in perspective of one side edge of an awning structure made in accordance with my invention;

Figure 2 is a side view of one of the guide members used at the ends of alternate louvers to mount the awning,

Figure 3 is a view similar to Figure 2 of the lower guide member which also serves as the lift member in opening and closing the awning,

Figure 4 is an enlarged view of the anchoring means for the lower end of the wire or bar on which the awning is supported,

Figure 5 is a front view in elevation of an awning or shade structure that opens horizontally and which may be controlled in any desired opening movement,

Figure 6 is a sectional view of the awning structure taken on the line 6—6 of Figure 5,

Figure 7 is an enlarged side view of the gear and bearing mounting of the awning,

Figure 8 is an enlarged fragmentary section of the rack on which the operating gear travels,

Figure 9 is a view in perspective of one side of an awning structure showing a complete closure made up of interfitted strips arranged for folding operation, and

Figure 10 is a view similar to Figure 9 showing the structure of louver strips that are free along their edges and open with respect to each other.

In connection with my structure, the features of both forms may be interchangeably used and the disclosure shows advantageous methods of mounting an awning or the like so that it can be collapsed vertically or horizontally.

Referring to the drawings in detail, and in particular to Figures 1 to 4 inclusive, 10 indicates parts of a sash frame or support structure adjacent a window or door (not shown) on which is to be mounted my novel awning. The awning comprises louver strips 11 turned up along the rear or top edges as at 12 and turned down along the front or lower edge as at 13. These strips are of metal, plastic or other suitable material and at their ends are provided with downwardly bent flanges 14 which are connected by a series of links 15 pivoted to the flanges at 16 and arranged in parallel relation to each other to produce a lazy-tong arrangement for collapsing closing movement of the strips to a nesting arrangement at and along the top of the window and for opening movement in the well known manner.

A flexible mounting means for the metal structure is desirable to reduce rattle and facilitate assembly and dismantling of the parts and to this end a guide bar, wire or rod 17 is positioned vertically adjacent the side edges of the window or door opening and is hung from an eye-bolt 18 through a coil spring 19. The lower end of the rod 17 passes through the sleeve 20 of a bracket 21 secured to the frame 10, the sleeve having a set-screw 22 for holding the rod or wire 17 as taut as desired.

The alternate louvers 11 are provided with bolts 18, which constitute pivots for some of the links 15, and pass through the flanges 14 outwardly to have adjustable threaded connection with guide sleeves 19 which are vertically bored as at 20 to permit free sliding movement of the sleeves along the rod or wire 17. The bolts or studs 18 are secured to the louvers by lock nuts 22 which provide control of the pivotal resistance of the links to swinging movement through a washer 23 disposed between the louver strip flange and its associated link. The uppermost guide sleeve 19 is provided with a set-screw 24 and an additional bore 25 through the latter of which a rope, chain or wire 26 passes to be knot-

ted as at 27 so that the lowermost louver can be lifted simultaneously at opposite ends by the rope and pulley system of which 26 forms a part.

Various forms of rope and pulley systems may be employed and the one shown is of simple form and includes the rope 26 having its opposite ends knotted beneath the lower guide sleeves 19 and passing over the pulleys 28 to be looped as at 30 for convenient handling in raising and lowering the awning. For adjustment of the awning to any vertical position a detent 31 may be used with the rope to grip the same and hold the awning at any desired position of vertical adjustment.

Referring to Figures 5 to 10 of the drawings, an awning or shutter structure is shown that opens horizontally and, while applicable as a window awning, can be employed as a porch or terrace covering. The support wall or frame on which the awning is mounted is indicated generally as at 35 and carries the brackets 36 and 37 to which is secured in any suitable manner a rectangular frame 38 having side or end pieces 39, upper and lower channels 40 and 41 respectively each including a bottom flange 43 and a side flange 44. The bottom flange 43 of each channel is perforated adjacent the inner edge thereof to provide rack teeth 45 for engagement by gears to be later referred to. These perforations prevent the gears from sliding laterally out of the teeth and avoid the necessity of having a separate rack strip.

In either type of mounting, the open form of louver as shown in Figures 1 and 10 or the closed type shown in Figure 9 may be used. The latter is illustrated in Figure 5, the louver strips 46 being laterally curved for close nesting fit and each having one beaded edge 47 and an opposite curled edge 48 for rotating fit over the beaded edge 47 of the adjacent strip to provide a completely closed structure from one end to the other. At the center of each end, the edge of each louver 46 is provided with a bearing tab 49 to which is pivoted the fold links 50. The awning, as shown in Figure 5, includes right and left hand sections 51 and 52 respectively each having an anchor bar 53 mounted in brackets 54 secured at the ends of the bottom flanges 43. The bars 53 are encircled by the beaded edges 47 of the outer end louvers of each section 51 and 52. The inner end louvers of each section carry a shaft 55 to which the links 50 are pivoted. The projecting ends of the shafts 55 overlie the bottom flanges 43 of the upper and lower channels 40 and 41 respectively and the lower ends of the shafts terminate in thrust bearings 56 carried by trunnions 57 in which rollers 58 are journaled. The rollers ride on the flange 44. At the lower ends of the shafts 55 sleeved gears 59 engaging the rack teeth 45 propel the free end of the awning. At the upper ends of the shafts 55 sleeved gears 59A including pulleys 60 also simultaneously propel the free end of the awning. The rollers 58 support the shafts 55 so that the gears 59 and 59A are in register with the racks and the weight of the louver sections is off the gears so that smooth and easy operation, without the binding thereof, is had.

The pulleys 60 may be rope or chain operated and the rope 61 for each section 51 and 52 is guided over pulleys 62 so that a loop 63 formed therein may be conveniently manipulated to open, close or adjust either section 51 or 52 of the awning.

It is evident that I have provided a novel awning structure of metal or other suitable material that can be readily dismantled and assembled, can be easily kept clean, keeps out direct light and allows diffused or reflected light in. It also helps keep rain off windows and may be locked at full open position to afford protection to the window or door opening.

My invention is not to be restricted to the precise details of construction shown since various changes and modifications may be made therein without departing from the scope of the invention or sacrificing the advantages to be derived from its use.

What I claim is:

1. In an awning structure having a louver section including louvers and lazy-tong links for opening and closing the louvers of said section, a rectangular frame including upper and lower horizontal channel portions, an anchor bar at one end of each louver section, means for securing the bar to the frame, a shaft at the opposite free end of said louver section, gears on said shaft, a perforated rack formed in each channel portion with which the gears mesh, a roller on the lower end of said shaft engaging a wall of the lower channel for supporting the louver section and sustaining the gears in aligned relation with said racks, and manually controlled means for rotating the shafts and gears to adjust the relative position of the free end of said louver.

2. An awning structure of the character set forth in claim 1 in which the roller is mounted in a trunnion and a thrust bearing is interposed between the lower end of each shaft and said trunnion.

3. An awning structure of the character set forth in claim 1, in which each rack includes a row of perforations in each of said channel portions providing rack teeth for engagement by said gears, and said manually controlled means includes pulleys on said shafts and cord means associated with said pulleys for operating the same.

4. In a collapsible awning structure including awning sections having louvers and lazy-tong louver opening and closing means, a rectangular frame having upper and lower horizontal portions each perforated to form rack teeth, means for anchoring an end of each section to the frame, a shaft in the adjacent free end of each section, gears on said shaft in mesh with said rack teeth, and means for manually operating the shafts individually to adjust the louvers of any desired section.

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