Dec. 6, 1960 J. BAUER 2,963,290

CANOPY STRUCTURE

Filed Aug. 27, 1958 2 Sheets-Sheet 1

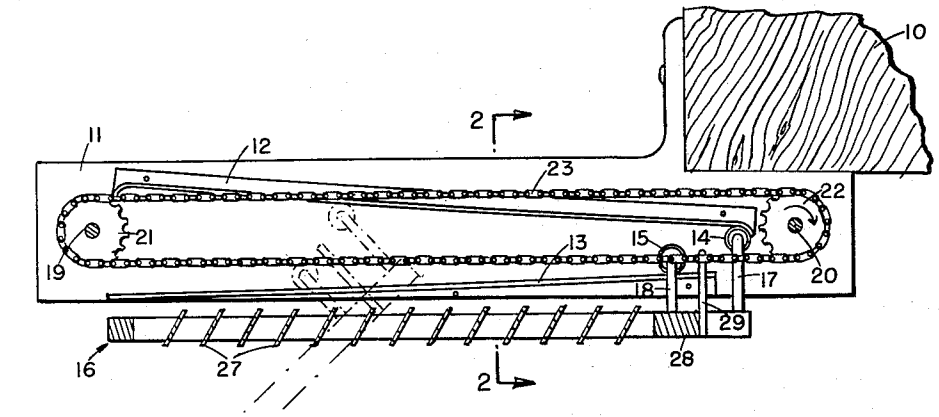


FIG. 1

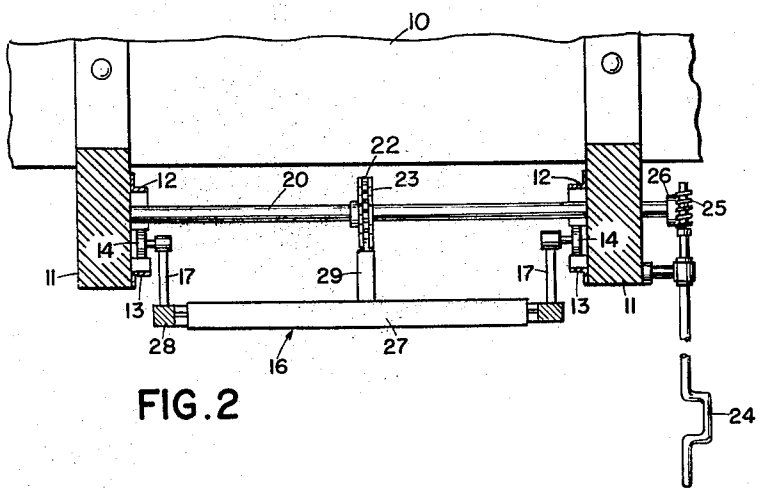


FIG. 2

Josef Bauer.
INVENTOR.

BY Karl F. Ross

AGENT.

Dec. 6, 1960 J. BAUER 2,963,290

CANOPY STRUCTURE

Filed Aug. 27, 1958 2 Sheets-Sheet 2

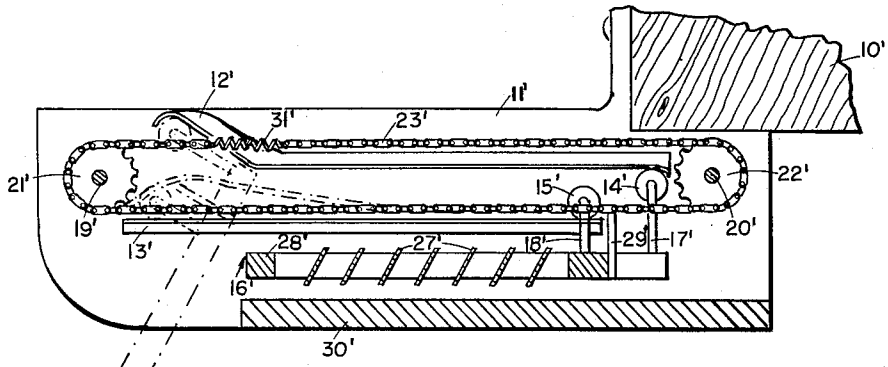


FIG. 3

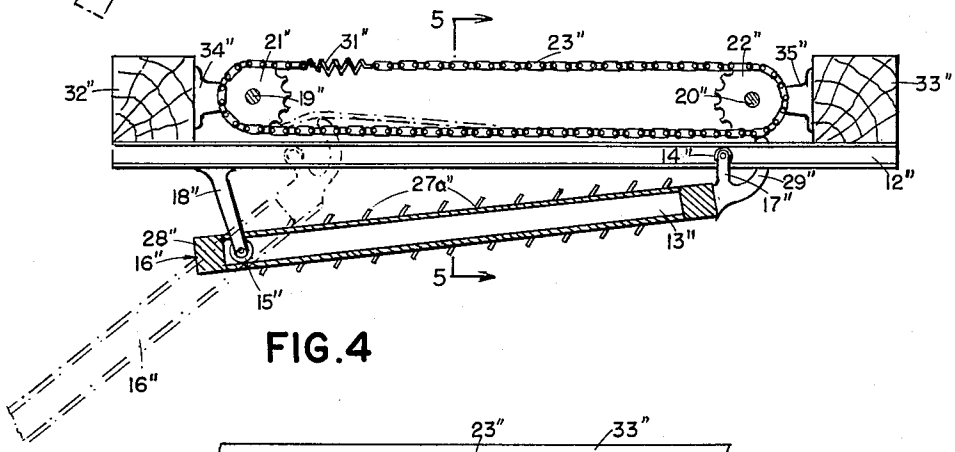


FIG. 4

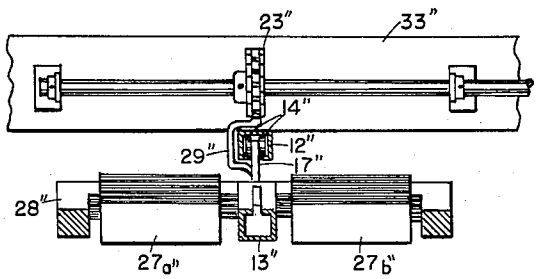


FIG. 5

Josef Bauer
INVENTOR.

BY

Karl F. Ross
AGENT.

United States Patent Office

2,963,290
Patented Dec. 6, 1960

2,963,290

CANOPY STRUCTURE

Josef Bauer, Am Langensiepen 6, Essen-Heisingen, Germany

Filed Aug. 27, 1958, Ser. No. 757,628

12 Claims. (Cl. 268—30)

My present invention relates to a canopy adapted to be installed above windows, balconies, entrance doors and the like so as to offer effective protection against sunshine, rain and other inclemencies of the weather.

Conventional canopies of this description usually require complicated adjustments whenever it is desired to move them from a retracted into an extended position or vice versa. Also, auxiliary supporting means are often needed in order to brace the extended canopy and to prevent its collapse under its own weight or by the action of strong winds or heavy snow.

The general object of this invention is to provide an improved canopy structure in which the above disadvantages are avoided. A more specific object of my invention is to provide a canopy which utilizes the same supporting means in all of its operating positions and can be conveniently extended or retracted.

In accordance with a principal feature of the instant invention I provide a canopy which is mounted at two points, as a cantilever, on a suitable supporting structure which may form part of the forefront of a building, the mounting being effected by means of two rollers (or roller pairs), or equivalent suspension means, which permit a sliding displacement of the canopy along one or two guide rails (or guide-rail pairs). Two stationary rails or rail pairs will be used if the rollers or roller pairs are both journaled on the canopy; a single such rail or rail pair will suffice if one of the rollers or roller pairs is secured to the stationary supporting structure in sliding engagement with a co-operating, rail-like formation on the canopy itself.

Another feature of my invention resides in the provision of a transport mechanism in the form of a conveyor, preferably an endless chain, displaceably mounted on the supporting structure in operative engagement with the canopy so as to be actuatable to move the latter into any desired position between two limits. Both manual and automatic drives may be used for this purpose.

With at least one of the elongated guide elements or rails carried by the fixed supporting member (the other being carried either by the same member or by the canopy, the canopy will pivot about its forward suspension point, in the course of its displacement by the transport mechanism, if the two guide elements diverge over either all or part of their length. Thus, the guide elements might enclose an acute angle with each other, or they may in part be parallel to each other while diverging at their extremities. The latter solution will be particularly useful where it is desired to mask the canopy, in its retracted position, by a stationary roof or awning extending substantially horizontally above the building part which is to be shielded.

The invention will be described in greater detail with reference to the accompanying drawing in which:

Fig. 1 is a side-elevational view, in central section, of a canopy constituting a first embodiment;

Fig. 2 is a cross-sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a view similar to Fig. 1, illustrating a second embodiment;

Fig. 4 is a view similar to Figs. 1 and 3, showing a third embodiment; and

Fig. 5 is a cross-sectional view taken on the line 5—5 of Fig. 4.

Reference will first be made to the embodiment shown in Figs. 1 and 2. A beam **10**, which may be part of a window or door frame, supports a pair of brackets **11** extending substantially horizontally outwardly from the forefront of a building. Two first rails **12** and two second rails **13**, enclosing acute angles with each other, are fixedly supported on these brackets and serve as guides for respective rollers **14**, **15** rotatably mounted on a canopy **16** by means of rods **17**, **18**. Two shafts **19** and **20**, journaled in the brackets **11**, carry two sprockets **21**, **22** engaged by an endless chain **23**; shaft **20** is rotatable by a mechanism here shown to comprise a crank **24**, a worm **25** driven by the crank and a worm wheel **26** on the shaft in engagement with the worm.

The canopy **16** is advantageously of the louver type, consisting of a frame **28** in which there are disposed a series of slats **27** of opaque or translucent (e.g. colored) material. The frame may consist of steel, aluminum, other light metals or alloys, or plastic; aluminum or plastic are also preferred for the slats, although it will be understood that the frame may also be given a covering of fabric or other sheet metal in lieu of the louvers. The slats **27** may be individually or collectively adjustable, in a manner not further illustrated but well-known per se, to vary their angular setting within the frame. A finger **29**, extending centrally upwardly from the rear of the frame, engages the chain **23** so as positively to couple it with the canopy **16**.

As the crank **24** is operated to rotate the shaft **20** and the sprocket **22** in the direction of the arrow in Fig. 1, the chain **23** advances the canopy outwardly (to the left in Fig. 1), the rails **12** and **13** at the same time causing the canopy to pivot about its rollers **15** in a counter-clockwise sense until it assumes a more or less inclined position as illustrated in dot-dash lines in the figure. It will be apparent that the angle of inclination progressively increases with the outward movement of the canopy.

The embodiment of Fig. 3 is generally analogous to that of Figs. 1 and 2, the elements **10'**—**23'** and **27'**—**29'** corresponding to the similarly designated elements of the preceding embodiment. Unlike the rails **12**, however, the rails **12'** extend parallel to their companion rails **13'** over most of their length, curving away from them only at their outer extremities. As a result of this arrangement, the canopy **16'** remains horizontal over the greater part of its travel and assumes its inclined position (dot-dash lines) only at the last stage of its displacement. It is, accordingly, possible to provide a fixed supplemental roof **30'** which underlies and conceals the canopy in the retracted position of the latter.

The arrangement of the guide rails illustrated in Fig. 3 involves a certain deformation of the chain **23'** as the canopy is deflected, it being therefore desirable to insert a tension spring **31'** in series with the links of the chain.

The embodiment of Figs. 4 and 5 represents a modification in which a single, centrally positioned rail **12''**, **13''** replaces each of the rail pairs of the preceding figures. The rail **12''** spans a pair of beams **32''**, **33''** which again may form part of a building structure and carry the supporting arms **34''**, **35''** for shafts **19''**, **20''**, respectively. The frame **28''** of canopy **16** is here shown bisected by the rail **13''** on the two sides of which the slats of the canopy are disposed in two groups **27*a*''**, **27*b*''**.

A carrying rod **17''** for the roller **14''** and a coupling finger **29''**, engaging the chain **23''**, both project from

the rear of frame 28'' in line with rail 13''. The carrying rod 18'' for roller 15'' depends rigidly from rail 12'', being thus fixedly held on the stationary supporting structure, roller 15'' constituting an immovable pivot for the canopy 16''. The chain 23'', which embraces the sprockets 21'' and 22'' on shafts 19'' and 20'', is again provided with a tension spring 31'' to allow for a certain deformation thereof as the canopy is displaced between its retracted position (solid lines) and an extended position (dot-dash lines) under the control of a suitable driving mechanism not shown.

It will be noted that the rails 12'' and 13'' are of channel-shaped cross-section and embrace the associated rollers, this being particularly important for the rail 12'' as the roller 14'' will bear sometimes on the upper and sometimes on the lower guiding surface of this rail. Naturally, the system of Figs. 4 and 5 could also be modified by a replacement of either or both of its two rails with rail pairs on opposite sides of the frame, as suggested in the preceding figures, even as the embodiments of Figs. 1–3 could be redesigned in an obvious manner to utilize but one rail in lieu of each or either pair. These and other modifications will be readily apparent to persons skilled in the art and are intended to be embraced in the spirit and scope of the invention as defined in the appended claims.

I claim:

1. A canopy structure for windows, doors and the like, comprising a stationary supporting member extending outwardly from a building front at an elevation above the ground, a rigid protective canopy member extending outwardly from said building front for a distance equaling at least a major part of the length of said supporting member, a first elongated guiding element extending outwardly from said building front on said supporting member, a first suspension element slidingly displaceable along said first guiding element and secured to said canopy member near the inner edge of the latter and at a fixed distance from its surface, a second elongated guiding element on one of said members, a second suspension element on the other of said members slidingly displaceable along said second guiding element and maintained at a substantially invariable distance from the surface of said canopy member, and drive means for displacing said canopy member relatively to said supporting member in the general direction of said first guiding element, said guiding elements diverging from each other over at least part of their length whereby said canopy member pivots about one of said suspension elements upon its displacement by said drive means toward and away from said building front, said second suspension element being located near said inner edge at least in an extreme outward position of said canopy member.

2. A structure according to claim 1 wherein each of said guiding elements comprises at least one rail.

3. A structure according to claim 2 wherein said rails extend at an acute angle to each other.

4. A structure according to claim 2 wherein said rails extend substantially parallel to each other over a major part of their length and diverge from each other at their extremities.

5. A structure according to claim 2 wherein each of said suspension elements comprises at least one roller bearing upon the respective rail.

6. A structure according to claim 1 wherein both of said guiding elements are carried on said supporting member.

7. A structure according to claim 1 wherein said second guiding element forms part of said canopy member.

8. A structure according to claim 1 wherein said drive means includes a conveyor carried on said supporting member and operatively coupled with said canopy member.

9. A structure according to claim 8 wherein said conveyor is an endless chain extending in the general direction of said first guiding element.

10. A structure according to claim 9 wherein said chain incorporates a tension spring.

11. A structure according to claim 1, further comprising a roof member fixedly mounted on said supporting member and underlying said canopy member in a retracted position of the latter.

12. A structure according to claim 1 wherein said canopy member comprises a frame and a series of inclined slats held in said frame.

References Cited in the file of this patent

UNITED STATES PATENTS

2,589,480 Curtis ---------- Mar. 18, 1952