

July 27, 1937.

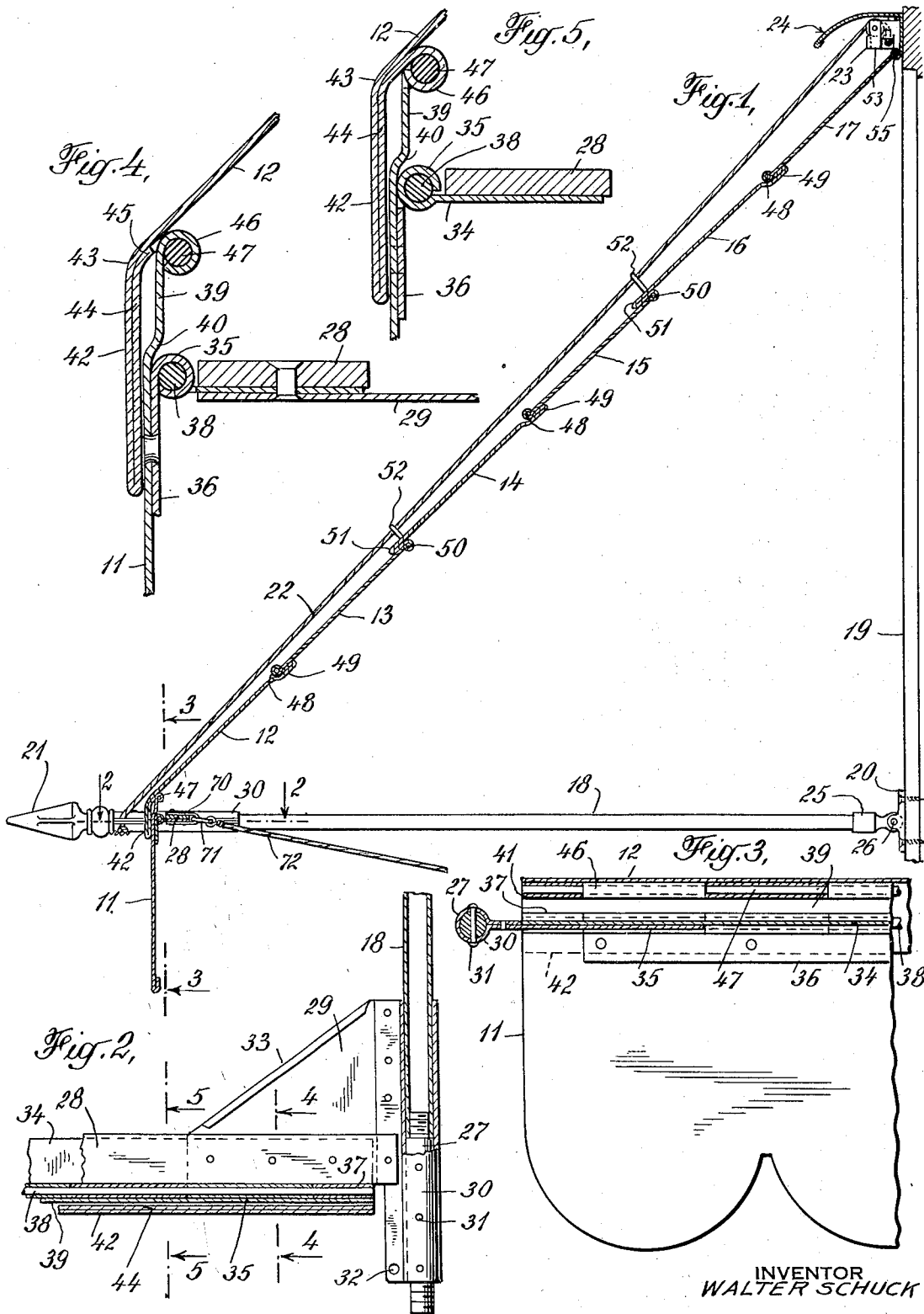
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2,088,349

METAL AWNING

Filed May 11, 1935

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

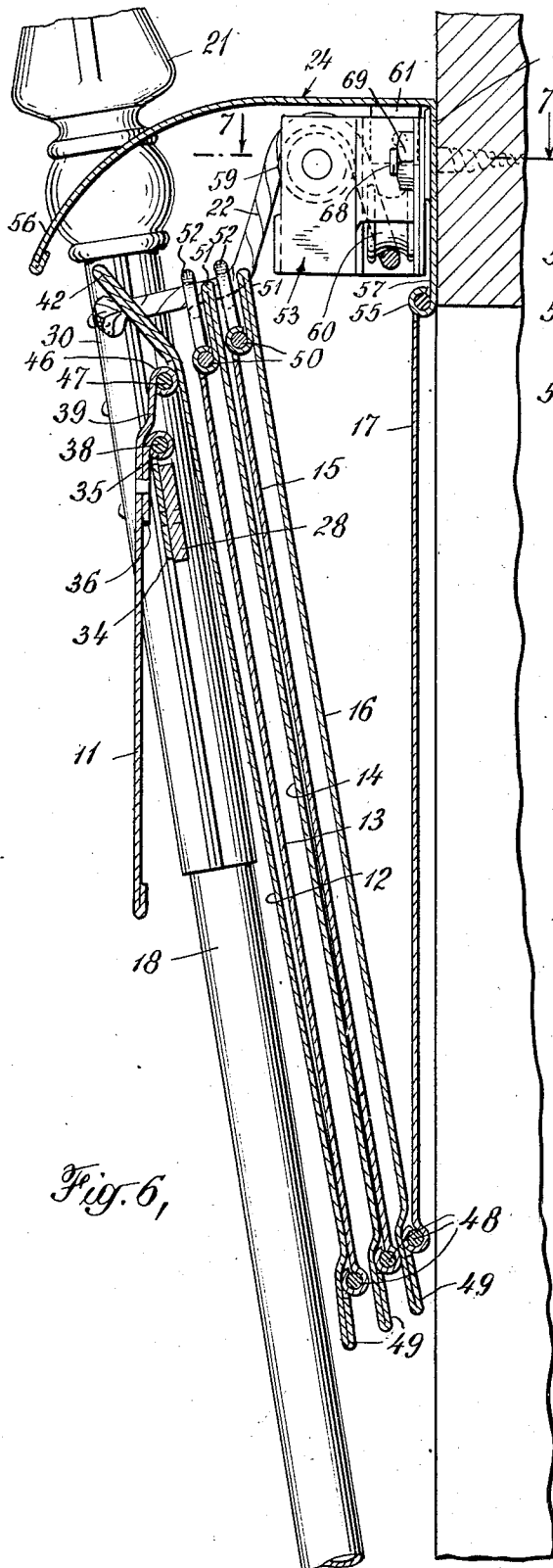


Fig. 6,

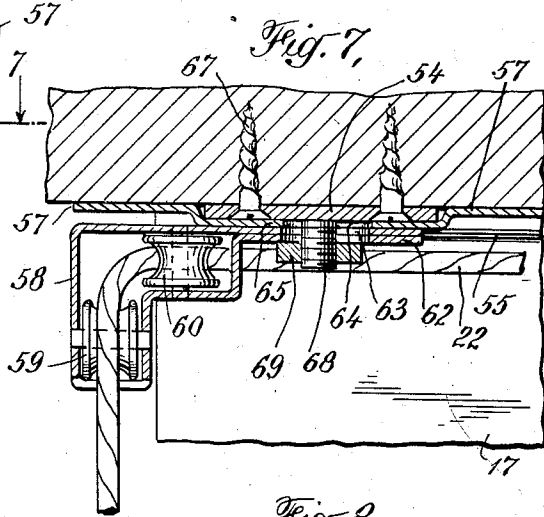


Fig. 7,

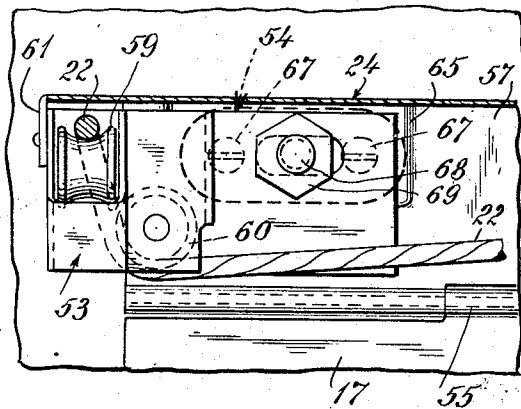
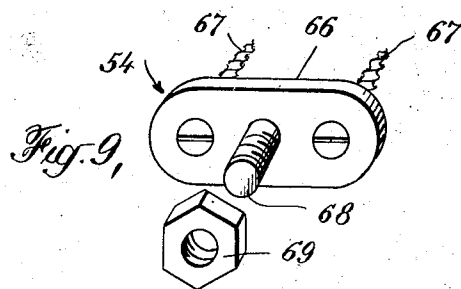


Fig. 9,

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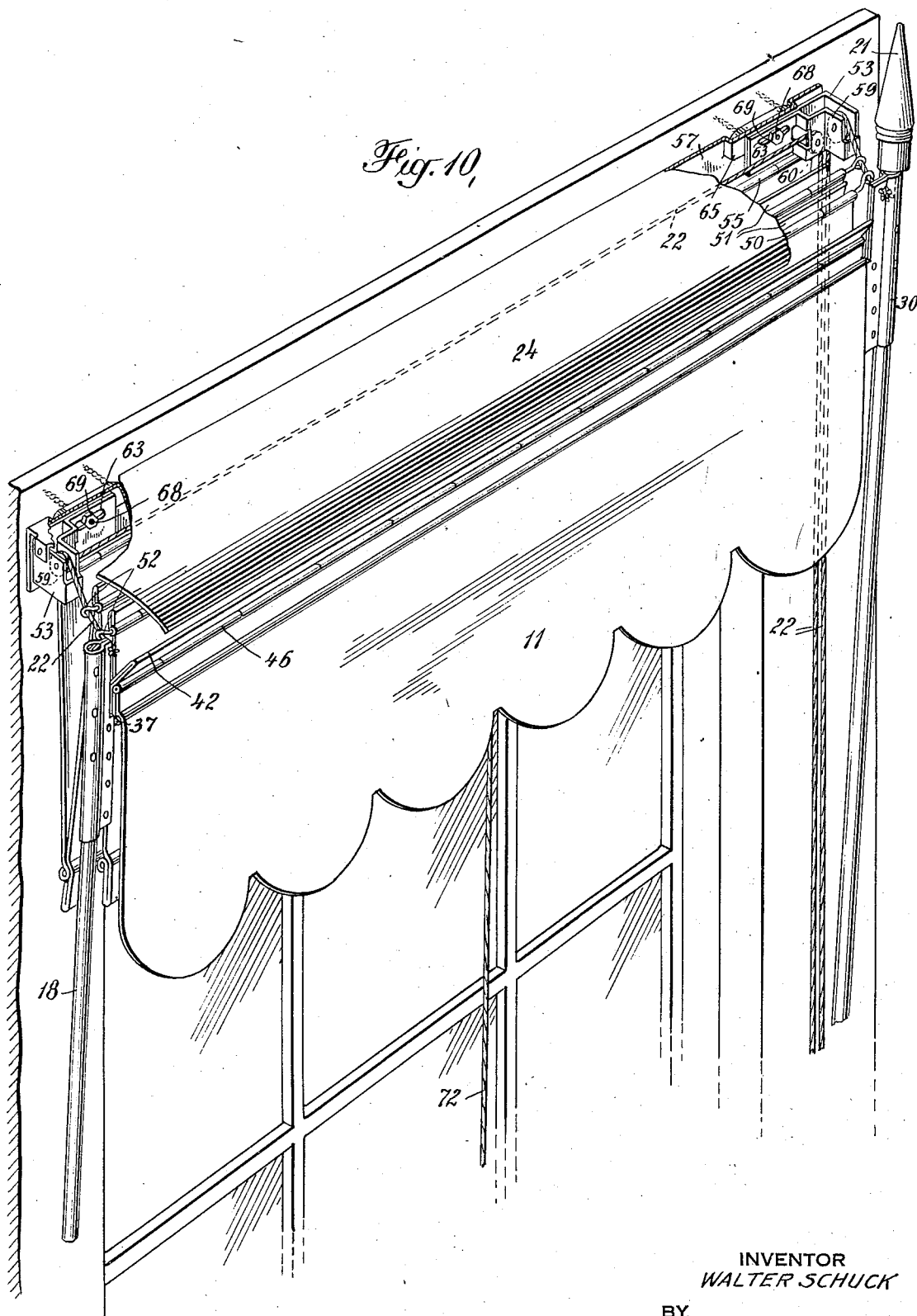
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Filed May 11, 1935

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Fig. 10,



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2,088,349

METAL AWNING

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Application May 11, 1935, Serial No. 20,911

6 Claims. (Cl. 156—15)

This invention relates to metal awnings and has for its object certain improvements in the construction of metal awnings. The invention relates more particularly to improvements in the construction of sheet metal awnings.

Although metal awnings have heretofore been proposed, they have had little or no commercial use. This is, of course, due in part to the fact that it costs more to make metal awnings than the conventional cloth awnings. While the cost of metal is greater than that of the cloth, fabricating costs are also involved. A metal awning is proposed in United States Patent 1,030,493. Its construction, however, is so involved that it has probably never had any commercial application. Another metal awning is proposed in United States Patent 1,795,521, the construction of which is somewhat simpler. In both awnings, a series of horizontal sheet metal strips, including a curtain, are hinged and adapted to be folded against one another.

The present invention is concerned with improvements that simplify the construction of metal awnings, while at the same time making them rugged. They may be easily operated. In accordance with the invention, the bottom portion of the awning is so constructed as to add considerable rigidity to the whole structure. A special cross-bar construction is employed for this purpose. The awning curtain is doubly hinged along its upper portion with the cross-bar and the lower horizontal sheet metal cross strip, so as to tend to lock the curtain and the lower metal strip when the awning is in its "open" or "down" position. This gives a combination of rigidity and flexibility to the assembly, prevents the curtain from flapping and thus insures a noiseless structure.

The main body of the awning is composed of a plurality of intermediate horizontal metal strips, preferably of substantially uniform width, which are so hinged that they overlap in the same position when the awning is closed. This overlapping is so arranged that the metal strips always fold relatively to one another in a predetermined direction.

In a preferred practice, a pair of opposed pintles is provided in selected joints of the horizontal metal strips. These pintles are provided with a ring at their exterior ends to support an awning cord. The pintles may be withdrawn to break the awning into smaller units for packing and shipment. They may be readily reinserted in their hinges for assembly and installation of the awning.

The invention also contemplates an improved canopy construction. It functions not only as a canopy to cover the awning when in its closed position, but also as a means for supporting the awning against a window frame or the like.

The canopy also shelters and supports a pulley housing arrangement that is highly useful and offers an improvement in the operation of awnings. Each housing is provided with a pair of pulleys specially positioned to accommodate an awning cord and to insure easy running of the same.

These and other advantages of the invention will be better understood by referring to the accompanying drawings, and the following description, in which:

Fig. 1 is a side elevation in section of a metal awning illustrative of the invention, shown in its open position;

Fig. 2 is a fragmental section on the line 2—2 of Fig. 1, showing a detail of the construction of the awning at one of its lower corners;

Fig. 3 is a fragmental section on the line 3—3 of Fig. 1, showing a detail of the double hinge construction of the awning curtain;

Fig. 4 is a fragmentary and enlarged detail in section on the line 4—4 of Fig. 2, showing the double hinge construction of the awning curtain in conjunction with the cross-bar and gusset construction in one of the lower corners of the awning;

Fig. 5 is another enlarged fragmentary detail in section on the line 5—5 of Fig. 2, showing the double hinge construction of the curtain in conjunction with the cross-bar;

Fig. 6 is an enlarged fragmentary side elevation in section of the awning in its closed position;

Fig. 7 is a fragmentary detail in section on the line 7—7 of Fig. 6, showing the left hand pulley housing and canopy holding means;

Fig. 8 is a front elevation of the pulley housing and canopy holding means shown in Fig. 7;

Fig. 9 is a perspective view of the canopy holding means shown particularly in Figs. 6, 7 and 8;

Fig. 10 is a perspective view of the awning in its closed position, with fragments broken away to disclose the pulley housings and canopy holding means.

Referring more particularly to Fig. 1, the awning shown comprises a curtain 11, a lower horizontal sheet metal strip 12, intermediate horizontal sheet metal strips 13, 14, 15, 16 and an upper horizontal sheet metal strip 17. The curtain is shown with a scalloped lower fringe. Its sides are preferably turned back to form an over-

lap, which strengthens the curtain. It is clear that the curtain and strips may be treated to show any desired design for ornamental purposes. The awning is provided on each side with a side arm 18 attached to a window frame 19, or the like, by means of a clevis 20. The far end of the side arms terminates in side rod ends 21, such as ornamental spear heads. Running flexible cores 22 extend from the inner ends of the spear heads across the horizontal sheet metal strips to pulley housings 23 located directly underneath a canopy 24 at the upper end of the awning.

The side arm 18 is preferably made of metal tubing, the end fastened to the window casing being screwed into a side rod end 25 that is pivotally connected to the clevis by means of a clevis screw 26. The other end of the side arm 18 is provided with internal screw threads adapted to receive the indented end of a side rod stud 27. The diameters of the stud and side arm are the same. The other end of the side rod stud is threaded to receive the spear head. The side rod stud may thus be regarded as an extension of the side arm itself.

The side arms 18 are spaced a predetermined distance by means of a spacer- or cross-bar 28. A sheet metal gusset plate 29 connects each end of the spacer-bar with the remote end of the side arm 18 and its side rod stud 27. The gusset plate is riveted along one side thereof to the spacer-bar. The outer edge portion of the gusset plate is bent over itself, as shown in Fig. 2, to form a hollow interior or cylindrical side 30 adapted to receive the remote end of the side arm 18 and its side rod stud 27. The bent over edge portion of the gusset plate is riveted or otherwise attached to itself, such as by spot welding. The side rod stud 27 is permanently fastened on the inside of the cylindrical side 30, such as by rivets 31 extending completely through the side walls of the cylindrical portion and the stud. Means, such as a hole 32, are provided near the remote end of the cylindrical portion of the gusset plate for attaching the running flexible cord 22. The hypotenuse edge 33 of the gusset plate is advantageously bent over itself in order to stiffen the gusset plate.

A spacer-bar hinge section 34 (Figs. 4 and 5), preferably constructed of thin sheet metal, is attached to the under side of the spacer-bar 28, such as by means of rivets or spot welding. A so-called "piano" hinge is formed by means of notched portions of the sheet metal extending beyond the far side of the spacer-bar and turned over into the form of small cylindrical sections to form pintle eyelets 35. A curtain secondary hinge section 36 is attached to the curtain 11, such as by rivets or spot welding, directing below the spacer-bar 28. The secondary hinge section 36 is provided with notched side portions bent around into small cylindrical sections to form pintle eyelets 37, so alternated as to be in alignment with the pintle eyelets 35 of the spacer-bar hinge sections. A pintle 38, in the form of a round bar of metal, extends completely through the aligned pintle eyelets. The ends of the pintle preferably terminate with the side edges of the curtain 11.

The upper portion 39 of the curtain extends an appropriate distance above and over the spacer-bar 28 and the pintle 38. This upper portion of the curtain is advantageously bent in or indented to form a rounded shoulder 40, protruding over the hinge forming around the pintle 38. The upper portion of the curtain is bent

around along its longitudinal edge in notched sections to form pintle eyelets 41.

The lower sheet metal strip 12 has its lower longitudinal portion 42 bent in the form of an obtuse angle 43. This lower longitudinal portion is in turn bent back over itself in the form of an under lap 44, the upper edge portion 45 of which is bent to conform to the obtuse angle 43. This upper edge portion is notched in spaced sections, the notched sections being bent around to form pintle eyelets 46 adapted to be aligned with the pintle eyelets 41 of the curtain 11. A pintle 47 extends completely through the aligned pintle eyelets, to form another piano hinge that may be regarded as a curtain primary hinge. In the construction shown, the curtain primary hinge is stationed directly above the curtain secondary hinge and above the obtuse angle 43. The lower longitudinal portion 42 of the metal strip 12, together with its underlap 44, leans against the outside of the curtain 11 along its upper longitudinal portion, and thus operates as an effective stop to movement of the curtain. In other words, the construction shown tends more or less to lock the curtain 11 and the lower sheet metal strip 12 when the awning is in its open position, conforming to the obtuse angle 43. The size of the obtuse angle is fixed so that the curtain hangs vertically when the awning is down, and the lower metal strip 12 has a slant conforming substantially to that of the other metal strips.

Lower sheet metal strip 12 is pivotally attached to the intermediate sheet metal strip 13 by means of a piano hinge 48. The upper longitudinal portion of metal sheet 12 is provided with an indented shoulder portion 49 bent back over itself in an overlap to form a double thickness of sheet metal. The lower edge of the overlap is notched in sections, which are bent around into pintle eyelets. The eyelets in turn fit at least in part within the indented shoulder portion of the metal strip 12. The lower longitudinal edge portion of intermediate metal sheet 13 is also notched and bent around into pintle eyelets, which are aligned with those of sheet 12. A pintle extends completely through the aligned eyelets. The indented shoulder portion 49 of the metal sheet 12 extends an appropriate distance under the lower portion of the intermediate metal sheet 13, to assist in locking the two adjacent metal sheets along their joint when the awning is down and thus cause the two sheets always to fold toward one another in the same pre-arranged direction. In the case of sheets 12 and 13, their outer surfaces will always adjoin one another when the awning is closed. The indented shoulder portion 49 effectively prevents the two metal sheets from folding in the opposite direction.

A similar form of piano hinge construction is provided between intermediate horizontal metal strips 14 and 15, as well as between intermediate metal strip 16 and upper metal strip 17.

Intermediate metal strips 13 and 14 are likewise joined by means of a piano hinge 50. In this case the upper edge of metal sheet 13 is notched and the sections thereof are bent around into pintle eyelets. Sheet metal strip 14 has its lower portion 51 bent back under itself to form a double bend, the upper edge of the underlap being notched and the sections thereof are bent around into pintle eyelets, which are aligned with the pintle eyelets of sheet metal strip 13. Two pintles 52 are fitted into these eyelets from opposite directions, each pintle extending halfway across the metal strips. Each pintle is provided

with an outer ring (see Fig. 1), through which the awning cord 22 is run. As in the case of the piano hinge 48, the bent over portion 51 of the metal strip 14 serves to stiffen the piano joint 50 when the awning is down.

Intermediate metal strips 15 and 16 are joined in a similar manner, two opposed pintles, likewise, being used, so that the awning cord may be supported through the outer rings of the pintles. These opposed pintles have the advantage that they may be pulled out of their pintle eyelets, and the adjacent metal strips may then be disconnected, so that the awning may be broken into smaller units for packing into a relatively small space for convenient shipping. At the same time this pintle construction permits easy assembly of the units when the awning is to be installed. Since the awning cords are drawn tautly, the pintle halves will stay in position.

It will be noted that the hinges are alternatively disposed with respect to their return-bend portions. This construction insures a semi-rigid arrangement of the metal strips, and causes the strips always to fold in the same predetermined direction.

The canopy 24 serves a four-fold function. In addition to acting as a cover to the awning when closed, it accommodates a pulley housing 53, holding means 54 for attaching the awning to a window frame, or similar support, and a hinge 55 to connect with the upper metal strip 17.

The canopy comprises a bent over roof portion 56 adapted to cover the awning when in its closed position. The outer edge of the roof is preferably beaded to give added rigidity. The back wall 57 of the canopy is integral with the bent over roof portion. In the construction shown, the roof portion of the canopy covers a left hand pulley housing at one end, and a right hand pulley housing at the other end. The pulley housing consists of an outer metal casing 58 in which are located an upper pulley 59 and a lower pulley 60. The first pulley is located close to the roof, and to the front of the canopy, preferably clear of the side edges of the metal strips, and is attached to the housing by means of a rivet. This pulley is aligned to accommodate the flexible cord 22 extending through the pintles. A portion of the metal housing is cut away, as shown, so that the cord may have free and unimpeded access to the pulley. The second pulley is located at the rear of the metal housing, at a right angle to the first pulley. This pulley is located at a convenient level below the first pulley so that the awning cord may be drawn across the top of the first pulley and underneath the second pulley,—in the case of the left hand pulley housing.

The right hand pulley housing is constructed in substantially the same manner, except that the pulleys are oppositely arranged. In the case of the right hand housing, the awning cord from the left hand housing extends across the top of the second or lower pulley in the right hand pulley housing. The awning cord on the right hand side of the awning passes over the first or upper pulley of the right hand housing. Both cords drop vertically alongside of one another, and are jointly pulled or released to operate the awning.

In the case of both pulley housings, in the construction shown, a bent over shoulder portion 61 of the roof of the canopy is riveted to the pulley housing, to keep the housing in position.

The inner end 52 of the pulley housing adjacent to the back wall of the canopy is advantageously provided with a slotted hole 62 registering with a similarly slotted hole 64 in the back wall of the canopy, adapted to cooperate with the holding means 54. The back wall 57 of the canopy is provided with an indented portion 65, as shown, to accommodate the holding means 54, so that the back wall and the holding means may be substantially flush with the window casing or other support.

The holding means comprises a flat faced holding stud base 66 adapted to fit within the indented back wall portion 65 of the canopy. The holding base is provided with two countersunk holes to accommodate securing screws 67, countersunk bolts or the like, which fit into the window frame or other awning support employed. One side of the holding base is provided with a stud bolt 68 and a nut 69. A self-locking nut 20 is preferably employed.

A ring holder 70 is attached to the cross- or spacer-bar 28 at its midsection. A ring 71 is held by the holder, and carries a cord 72 which is employed to hold the awning taut when it is in its closed position, such as by fastening the cord to a window sill in the conventional manner.

In closing the awning, the cords 22 are simultaneously pulled. They support the hinged, horizontal metal strips at the pintle rings 52. As shown, the hinges are so arranged that when the metal strips are folded the alternate hinges with pintles 52 are always uppermost (see Fig. 6). The folded part of the awning may be pulled under the roof of the canopy.

When closed or open the awning offers protection against rain and snow in the use of an upper window as a ventilator. The upper window may for example be lowered several inches or more. The awning provides a passageway for the movement of air through the lowered upper window, but keeps out rain or snow. This arrangement is particularly desirable with the awning in its closed position.

From the foregoing description, it will be seen that the improvements in the awning of the invention offer a number of important advantages. The awning is so constructed that it may be packed in a relatively small space for shipment; it may be readily assembled and installed. It may be taken down easily. The metal strips are so jointed or hinged that the awning as a whole is substantially noiseless in wind or storm.

I claim:

1. In a metal awning, the improvement comprising a canopy provided with a back wall and an overhanging roof, and a series of pivotally connected horizontal sheet metal strips, the first metal strip in the series being pivotally connected to the back wall of the canopy.

2. A metal awning according to claim 1, in which means are associated with the back wall of the canopy for attaching the awning to a window frame or the like including a holding base provided with a bolt, the base fitting against the outside of the canopy back wall, and the bolt extending through an enlarged hole in the canopy back wall.

3. A metal awning according to claim 1, in which means are associated with the back wall of the canopy for attaching the awning to a window frame or the like including a holding base provided with a bolt, the base fitting within an indented portion of the canopy back wall so that the base and the wall are flush, the bolt extend-

ing through an enlarged hole in the canopy back wall.

4. A metal awning according to claim 1, comprising a left hand and a right hand pulley housing mounted underneath the roof and against the back wall of the canopy at opposite ends thereof, the back wall of the canopy being provided with an enlarged hole registering with a similarly enlarged hole in the back wall of each pulley housing adapted to receive an awning holding means.

5. In a metal awning, the improvement comprising a canopy provided with a back wall and an overhanging roof, and a pulley housing mounted underneath the roof, the back wall of the canopy being provided with an enlarged hole registering with a similarly enlarged hole in the back wall of the pulley housing adapted to receive an awning holding means, said pulley housing

being provided with an upper and a lower pulley arranged at right angles to one another to accommodate a single running cord.

6. In a metal awning, the improvement comprising a canopy provided with a back wall and an overhanging roof, a left hand and a right hand pulley housing mounted underneath the roof and against the back wall of the canopy at opposite ends thereof, the back wall of the canopy being provided with an enlarged hole registering with a similarly enlarged hole in the back wall of the pulley housing adapted to receive an awning holding means, each pulley housing being provided with an upper and a lower pulley arranged at right angles to one another, the lower pulleys being disposed parallel and the upper pulleys perpendicular to the back wall of the canopy.

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