May 15, 1956 H. NELSON 2,745,486

VENETIAN BLIND CONSTRUCTION

Filed July 24, 1951 2 Sheets-Sheet 1

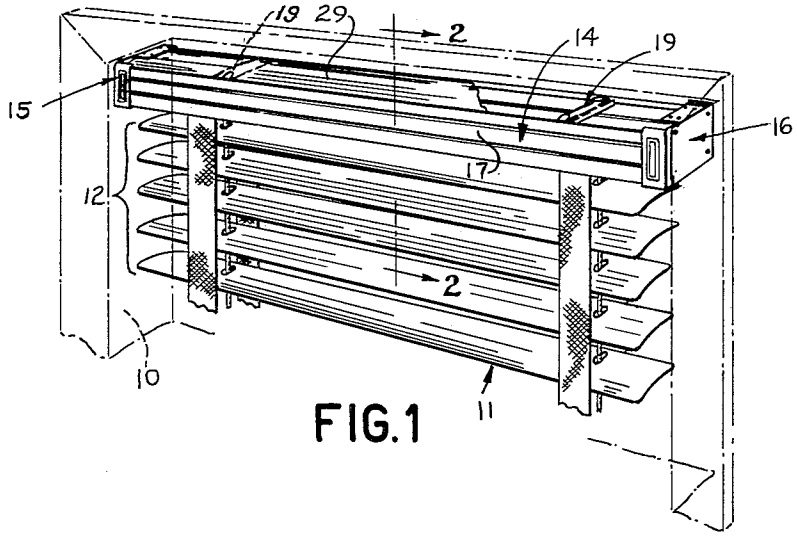


FIG.1

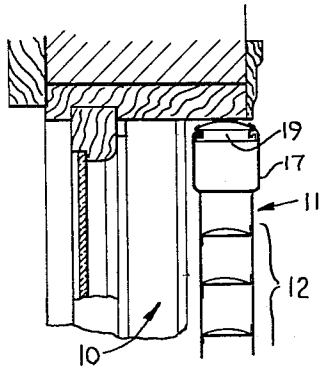


FIG.2

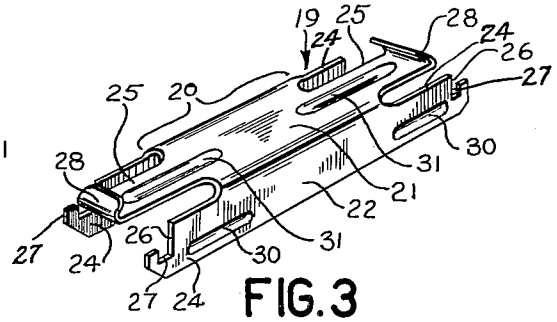


FIG.3

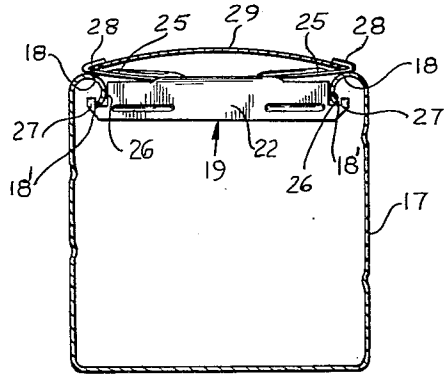


FIG.4

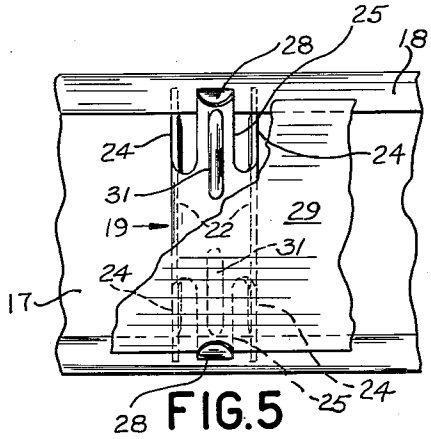


FIG.5

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VENETIAN BLIND CONSTRUCTION

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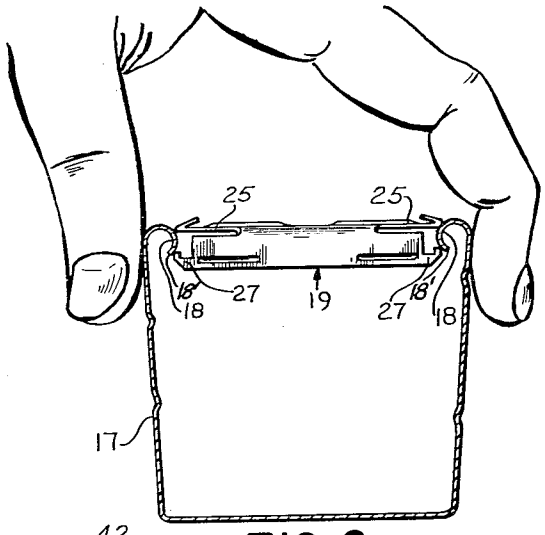


FIG. 6

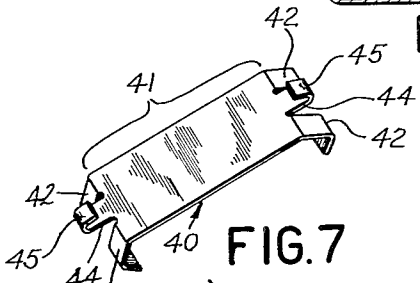


FIG. 7

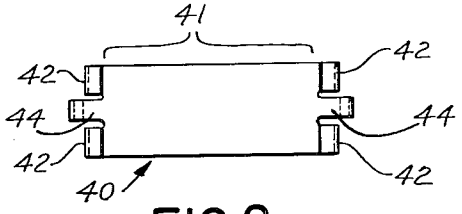


FIG. 8

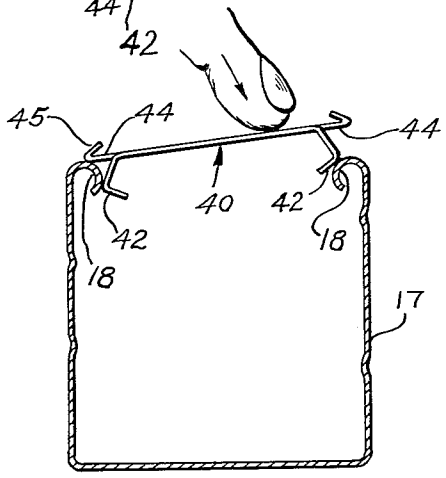


FIG. 9

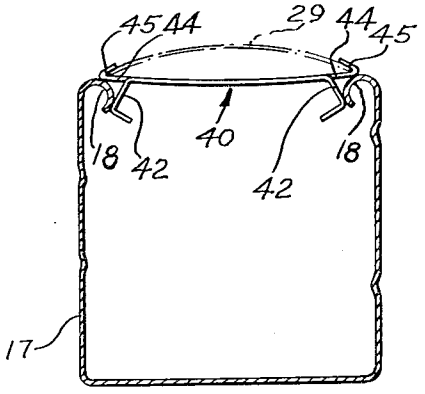


FIG. 10

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VENETIAN BLIND CONSTRUCTION

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Application July 24, 1951, Serial No. 238,241

2 Claims. (Cl. 160—166)

The present invention relates to Venetian blinds; and it contemplates an improved blind organization, an improved head bar organization, and certain improved components for the head bar organization.

In most Venetian blinds the array of slats hangs from a head bar or "head" that is mounted near the top of a window opening. In a widely used type of Venetian blind this head is composed, in addition to other parts, of an upwardly opening sheet metal channel which encloses much of the operating mechanism of the blind; see, for example, U. S. patent to Nelson 2,455,135, issued November 20, 1948. Blinds of this type are known in the trade as "enclosed metal head" blinds.

In a so-called inside mount of a Venetian blind, which is probably the most frequently used mount, the blind hangs within the window opening. The head bar is supported by installation brackets that are attached to the jamb of the window frame, and these brackets are so placed that the head bar is positioned adjacent to the top surface of the window opening. To place the head bar against the top surface of the window opening would require precision workmanship, both in the manufacture of parts and in the installation of the blind. Thus, in actual practice the head bar is so mounted that it is merely adjacent to the top surface of the window opening, i. e., immediately below the top surface of the window opening with a slight space between the top of the head bar and the top surface of the window opening. This results in an objectionable light crack which is present at all times.

The U-shaped metal channels used in head bars are customarily made of very thin metal. To impart sufficient rigidity to the channel, it is often desirable to employ top braces that span the open side of the channel and connect the two free edges of the channel to each other. Braces of this sort have been used heretofore, but they have left room for improvement as regards cost of manufacture, ease of installation, and the rigidity imparted to the head bar channel.

Since the head bar channel opens upwardly, the head bar of a Venetian blind gradually collects a large amount of dust—which is detrimental to the operating mechanism, and is undesirable from the standpoint of household cleanliness. Accordingly, it is desirable to provide the channel with a dust cover and also to provide simple inexpensive means for mounting the dust cover.

An object of the present invention is to provide a Venetian blind organization such that, when the blind is mounted within a window opening in the usual manner, the light crack at the top of the blind is obviated.

Another object of the invention is to provide a Venetian blind head bar organization in which there is means to yieldingly close the gap between the top of the head bar and the top surface of a window opening.

A further object of the invention is to utilize a single member both as a dust cover and as a means for advantageously obviating the usual light crack at the top of the blind.

Additional objects of the invention are to provide an improved top brace fitting for Venetian blind head bar channels, to provide a top brace fitting which also serves as a dust cover support, to provide such fittings which are adapted for rapid inexpensive manufacture on a quantity production basis, to provide such fittings which can be rapidly and satisfactorily manufactured as sheet metal stampings, to improve the ease of installation of top braces, and to provide a combined top brace and dust cover support which can be inexpensively manufactured and readily installed and which serves both of its functions effectively.

Further objects and objects relating to details and economies of construction, manufacture, and use will more definitely appear from the detailed description which follows.

My invention is clearly defined in the appended claims. In the claims, as well as in the dscription, parts may at times be identified by specific names for clarity and convenience, but such nomenclature is to be understood as having the broadest meaning consistent with the context and with the concept of my invention as distinguished from the pertinent prior art. The best forms in which I have contemplated applying my invention are illustrated in the accompanying drawing forming part of this specification, in which:

Fig. 1 is a fragmentary perspective view of a Venetian blind embodying the present invention, the upper portion of a window frame being indicated in dot-dash lines. The relationship between the blind and the window opening is that of a so-called inside mount.

Fig. 2 is a fragmentary vertical cross section taken generally on the line 2—2 of Fig. 1, portions of the window and window frame being shown in full lines.

Fig. 3 is an isometric view showing a first form of a combined top brace and dust cover support embodying the present invention.

Fig. 4 is a vertical cross section through the head bar channel, showing the fitting of Fig. 3 in place on the channel and the dust cover installed.

Fig. 5 is a plan view of a portion of the head bar channel, showing the fitting of Fig. 3 installed and also showing a fragment of an installed dust cover.

Fig. 6 is a view similar to Fig. 4 illustrating a step in the installation of the combined top brace and dust cover support shown in Fig. 3.

Fig. 7 is an isometric view of a second form of combined top brace and dust cover support embodying the present invention.

Fig. 8 is a bottom plan view of the fitting shown in Fig. 7.

Fig. 9 is a vertical cross section through a head bar channel showing the fitting of Fig. 7 being applied thereto.

Fig. 10 is a view similar to Fig. 9 showing the fitting of Fig. 7 in applied position on the head bar channel.

Figs. 1 and 2 show a window opening 10, which is illustrated as being framed in a conventional manner. However, the framing of the opening may be omitted, as is often done in modern construction. Located within the window opening is a Venetian blind designated as a whole by 11, and the blind includes an assembly of slats 12 suspended in a customary manner from an enclosed metal head bar 14. The head bar 14 is mounted adjacent to the top of the window opening 10 being supported by installation brackets 15 and 16 which are attached to the jambs of the window frames in a usual manner. The brackets 15 and 16 may be of any suitable type, e. g., the type shown in my copending U. S. application S. N. 89,881, filed April 27, 1949, now Patent 2,670,167 issued February 23, 1954. Brackets of the type shown in such application are of an open-ended box-like structure, the

ends of the head bar of the blind being received in the open ends thereof. In an "inside" mounting, such brackets are attached to the window frame or opening by screws through the top flange of the bracket or through the plate portion from which the top flange protrudes.

The head bar 14 comprises an upwardly opening U-shaped sheet metal channel 17, and the free edges of the channel are formed into open inturned beads 18, 18 which are best seen in Fig. 4. Extending across the top of the channel and serving to impart rigidity to the same are a plurality of sheet metal fittings or cross members 19, each constituting a brace and dust cover support. Each of these fittings is of the form shown in Fig. 3 and is made as a one-piece sheet metal stamping.

The fitting 19 comprises an elongated body 20 having a horizontal top 21 and skirts 22, 22 depending from the opposite sides of the top. At each end of the body 20 there is a group of three terminal formations composed of the two terminal formations or members 24, 24, which are at the sides of the body and project from the ends of the skirts 22, 22, and an additional terminal formation or member 25 which projects from the end of the top 21 on the center line thereof. Each of the four terminal formations 24 includes a vertical edge 26 which, when the fitting is installed as shown in Fig. 4, engages the side of the head bar bead 18. Each of the terminal formations 24 also includes a hook 27 which, when the fitting is installed as shown in Fig. 4, engages beneath the bead 18 and interlocks with the open edge 18' of the bead. When the fitting is installed the two terminal formations 25, 25 overlie the beads 18, 18 as shown in Fig. 4. These terminal formations include hooks at 28, 28 formed by recurving the tips of the terminal formation; and the hooks are adapted to receive a cover member 29, as is best shown in Figs. 1, 4 and 5. Preferably, the terminal formations 24 are each stiffened by an inwardly pressed rib 30 which extends into the skirt 22 as shown in Fig. 3. Similarly, each terminal formation 25 is preferably stiffened by an upwardly pressed rib 31 which extends into the top 20 as is also shown in Fig. 3.

To install the fitting 19 in a head bar channel 17, it is first manually placed in the position shown in Fig. 6, the beads 18, 18 of the channel being sprung apart sufficiently to permit the fitting 19 to be brought into this position. Then the opposite sides of the channel 17 are pressed together by thumb and finger pressure, as indicated in Fig. 6, whereupon the terminal formations 25, 25 flex upwardly and the free edges 18', 18' of the beads 18 snap into the hooks at 27, 27.

When the head bar is to be equipped with a dust cover 29 at least two fittings 19 are installed in the head bar channel, one near each end of the head bar. Ordinarily, the head bar channel is provided with special end braces which are independent of the top brace fitting 19; see, for example, the end brace 21 in U. S. patent to Nelson 2,455,135, issued November 30, 1948. Such an end brace will prevent the channel walls adjacent to the end of the head bar from being flexed outwardly as shown in Fig. 6. However, the fittings 19, 19 that are to be installed near the ends of the head bar may either be installed before the end braces are put in place, or they may be snapped into the channel at points remote from the ends and then be slid lengthwise along the channel to bring them into desired position near the ends of the channel.

In the case of long head bars, it is desirable to use intermediate fittings 19, both for the purpose of imparting additional rigidity to the channel and for the purpose of providing additional support for the dust cover. In addition to the two fittings 19 which are placed near the ends of the head bar, I prefer to use an additional fitting 19 for each four or five feet of length of the head bar.

With two or more fittings 19 installed in the head bar channel, the cover 29, which is preferably a length of sheet metal Venetian blind slat stock corresponding to the slats of the blind, is telescoped lengthwise beneath the various hooks 28 of the several fittings 19. Preferably, the cover member 29 is of a length to span the space between the installation brackets 15 and 16, with only convenient operating clearance or tolerance between the ends of the cover 29 and the installation brackets. Thus, the dust cover substantially closes the open side of the channel.

The slat stock of which the cover 29 is made is arched transversely. Preferably, the two hooks 28, 28 of each fitting 19 are a little closer together than the unstressed width of the slat, and the slat is manually stressed (transversely compressed) to increase its arch as it is being inserted beneath the various hooks 28. Due to the resiliency of the slat material of which the cover is made, the installed cover 29 then yieldingly engages the hooks with the result that the cover is securely held in place. Thus, the cover does not shift its position during handling of the head bar and, in the installed blind, flutter of the cover due to action of the wind is obviated.

Since the cover 29 is upwardly arched and is resilient, the installed cover is vertically yielding. Thus, it yieldingly engages the top of the window opening 10 when the blind is installed within the window opening with the head bar adjacent to the top of the window opening. This is shown in Fig. 2. The cover acts as a self-adjusting filler which projects above the topmost horizontal plane of the channel and closes the gap between the top of the channel and the top of the window opening, thereby obviating the usual light crack.

It will be seen that the fittings 19 not only act as top braces for the channel but that they also constitute attachment means for securing the dust cover 29 of the head bar. In putting the cover in position on the fittings 19, I prefer to insert it telescopically beneath the hooks 28 as previously described. However, if the portions of these hooks which overlie the cover are made sufficiently short, the cover can also be installed by inserting one edge of the cover under the hooks 28 at one side of the head bar and then squeezing the two edges of the cover towards each other sufficiently to temporarily increase the camber to a point where the opposite edge can be entered under the hooks 28 at the other side of the head bar.

When the fitting 19 is snapped into engagement with the beads 18, 18 in the manner indicated in Fig. 6, the terminal formations 25, 25 are flexed upwardly within their elastic limit. Thereafter, due to the resiliency of the formations 25, 25, they are constantly urged towards their unflexed position; and the reactive force produced biases the fitting 19 upwardly with the result that the hooks 27, 27 are at all times firmly held in engagement with the edges 18', 18' of the beads 18, 18. The tips of the hooks 27 are interlocked with the beads, and thus the channel is braced against forces tending to separate the side walls of the channel. Also, the four vertical edges 26 lie against the inner sides of the beads 18, 18 and thus the channel is also braced against forces tending to collapse the channel.

The attachment of the fitting 19 to the head bar is very firm. In fact, this fitting, once installed, cannot be removed except by either telescoping it out of the end of the head bar or actually deforming it. A sharp blow struck on the top 21 of the installed fitting will force it downwardly, bending the terminal formations 25, 25 upwardly beyond their elastic limit and allowing the fitting to drop from the beads. If a fitting which has been once removed in this manner is to be reused, it is necessary to bend the terminal formations 25, 25 in the opposite direction beyond their elastic limit and thereby restore them to their initial position as shown in Fig. 3.

The second form of top brace and dust cover support, which is shown in Figs. 7–10, is also made as a one-piece

sheet metal stamping, designated as a whole by **40**. This fitting comprises a flat elongated body **41**. At each end of the body there is a group of three terminal formations, composed of two terminal formations or members **42, 42** which extend downwardly and backwardly at opposite sides of the body, and a horizontally extending terminal formation or member **44** which is located on the center line of the body. Each of the terminal formations **44** includes a hook **45** which, when the fitting is installed as shown in Fig. 10, is adapted to receive a cover member **29** as previously described in connection with the form of fitting shown in Figs. 1–6.

In applying the fitting **40** to a head bar channel **17**, it is first placed in the position shown in Fig. 9, with the terminal formation **44** at one end of the fitting on top of the bead and the terminal formations **42, 42** at that end of the fitting beneath the bead. Then thumb or finger pressure is applied to the opposite end of the fitting, snapping it into the position shown in Fig. 10. In applied position, the two terminal formations **44** of the fitting overlie the beads **18, 18** and the four terminal formations **42** engage beneath the beads **18, 18**.

The fitting **40** is in some respects more advantageous and in some respects less advantageous than the fitting **19**. Both fittings serve to support a dust cover in the same manner. Both fittings are one-piece sheet metal stampings which serve as top braces that support the channel against collapsing forces such as are likely to be imposed upon it during shipment of head bars. However, the fitting **19**, due to its channel-shaped cross section, has greater rigidity than does the fitting **41**. Also, the fitting **19** braces the channel against both collapsing and expanding forces whereas the fitting **41** only braces the channel against collapsing forces. However, the fitting **41** has the advantage that it can be installed by snap-in action close to the end of a channel which is provided with an end brace—since the four terminal formations **42** are capable of yielding sufficiently to enable them to be snapped under the beads.

It will be seen that by means of the present invention simple inexpensive parts are made to effectively do double duty. The dust cover effectively protects the mechanism within the head bar against dust, and this same cover constitutes a self-adjusting filler which, when the blind is installed in a usual manner, obviates the usual light crack at the top of the blind. The top of the head bar channel is effectively braced by simple cross members, and these same cross members act as supports to attach the dust cover to the channel.

I claim:

1. For a Venetian blind head bar having a metal channel of U-shaped cross section with the free edges of the channel formed into inturned, downwardly opening beads, a one-piece sheet metal fitting constituting a brace, said fitting comprising: a body having a horizontal top and skirts depending from the opposite sides of the top, terminal formations projecting from the ends of the skirts, each such terminal formation including a vertical edge to engage the side of the bead of the channel and a hook to engage the open edge of the bead, and additional members projecting from the ends of said top to overlie the beads of the channel, the members overlying the beads of the channel being made of resilient metal whereby the hooks of the terminal formations are constantly pressed against the bead.

2. For a Venetian blind head bar having a metal channel of U-shaped cross section with the free edges of the channel turned inwardly and downwardly to form open beads, a one-piece metal fitting constituting a brace, said fitting comprising: a rigid body having a generally horizontal center portion and skirts depending from the opposite sides of said center portion, the ends of the skirts being provided with upwardly opening slots for receiving the edge portions of the beads, and the terminal portion of the body being resilient and proportioned to resiliently engage the top outer surface of the head bar beads to retain the slotted portions of said fitting in engagement about the edge portions of the beads.

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