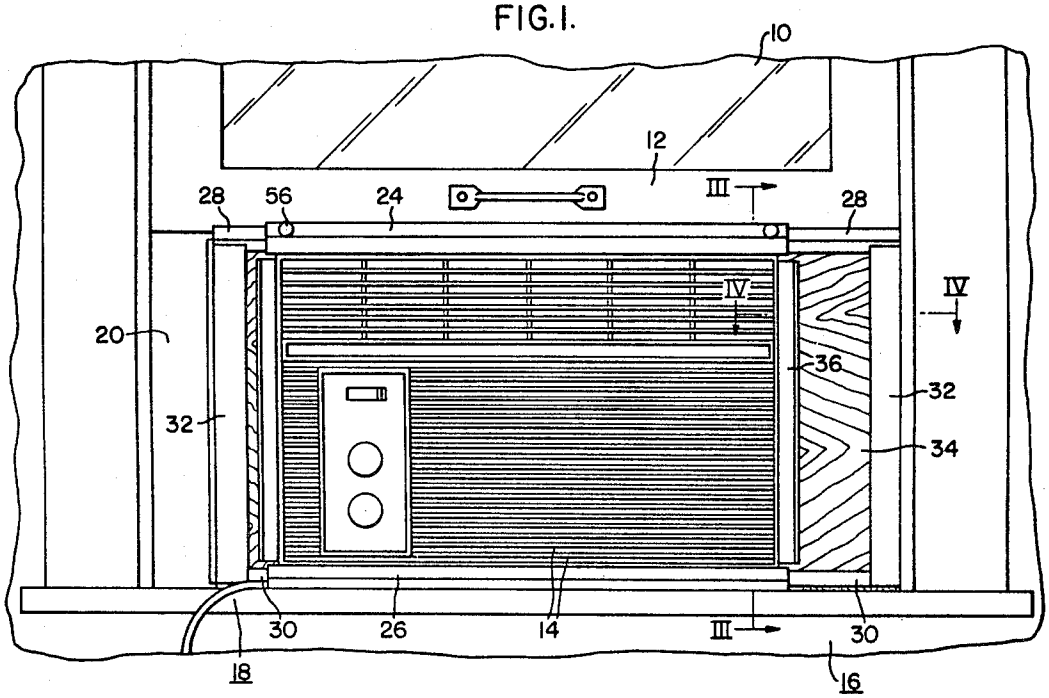
Nov. 4, 1969 M. D. ULICH 3,476,034

ROOM AIR-CONDITIONER IMPROVED MOUNTING ARRANGEMENT

Filed Nov. 24, 1967 3 Sheets-Sheet 1

FIG. 1.



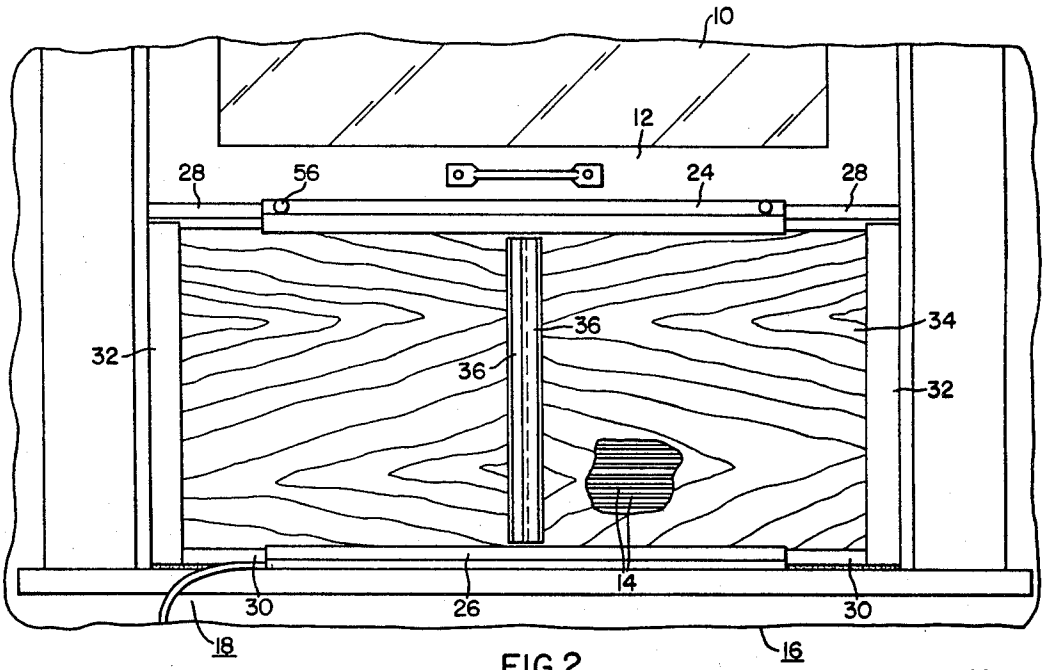


FIG. 2.

WITNESSES

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Nov. 4, 1969 M. D. ULICH 3,476,034

ROOM AIR-CONDITIONER IMPROVED MOUNTING ARRANGEMENT

Filed Nov. 24, 1967 3 Sheets-Sheet 2

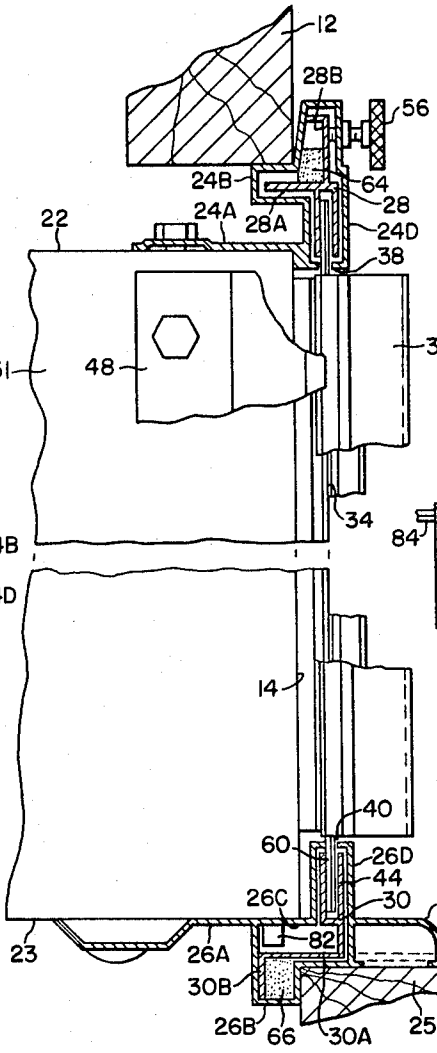


FIG. 3.

FIG. 7.

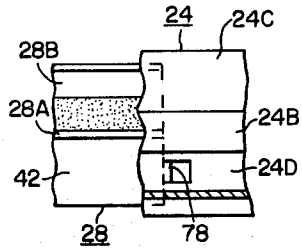
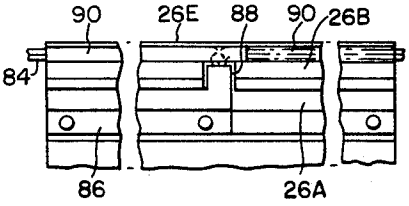


FIG. 9.



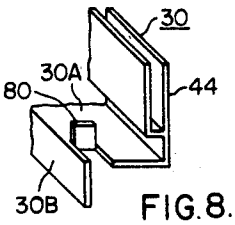
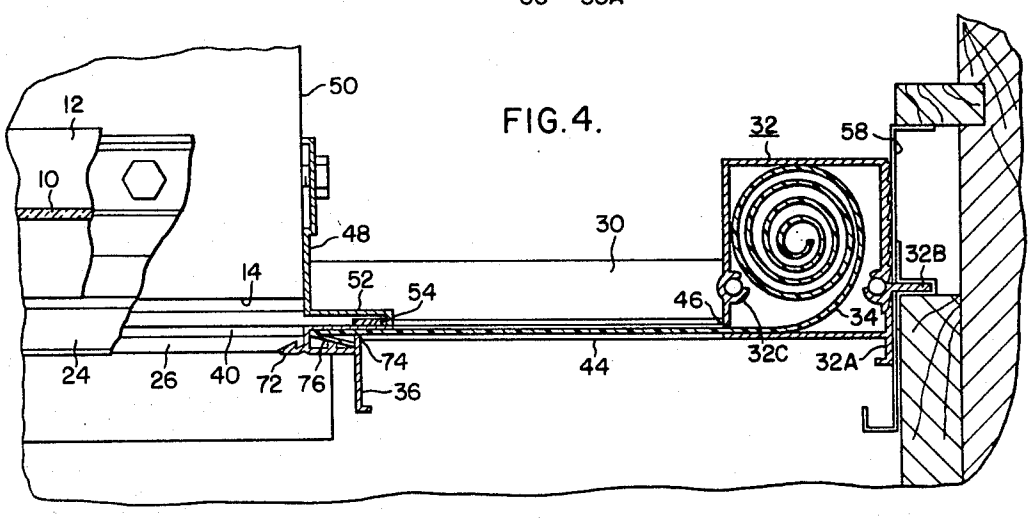


FIG. 8.

FIG. 4.



Nov. 4, 1969 M. D. ULICH 3,476,034

ROOM AIR-CONDITIONER IMPROVED MOUNTING ARRANGEMENT

Filed Nov. 24, 1967 3 Sheets-Sheet 3

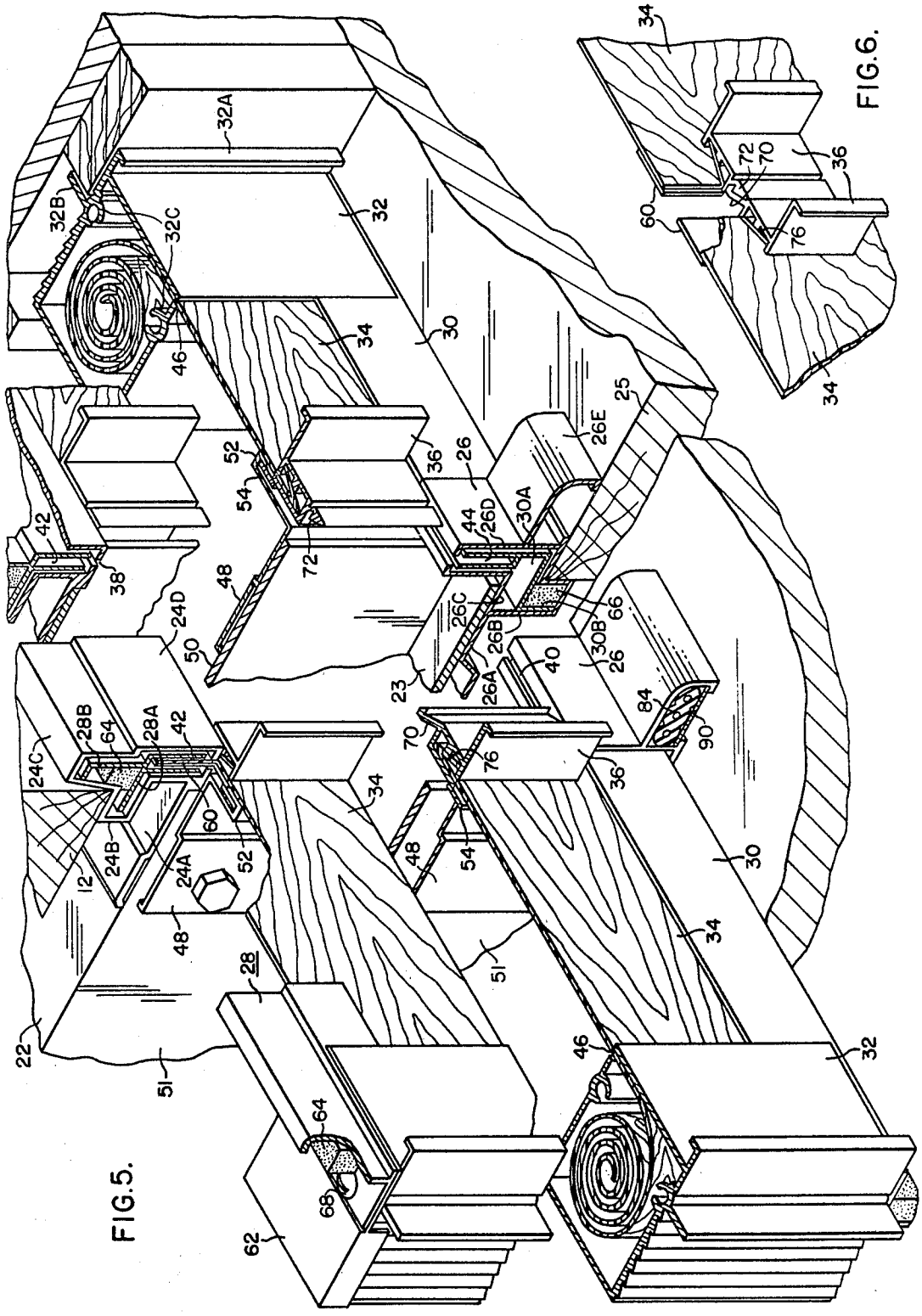


FIG. 5.

FIG. 6.

United States Patent Office

3,476,034
Patented Nov. 4, 1969

3,476,034

ROOM AIR-CONDITIONER IMPROVED MOUNTING ARRANGEMENT

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Filed Nov. 24, 1967, Ser. No. 685,699
Int. Cl. F24f *13/18*
U.S. Cl. 98—94 6 Claims

ABSTRACT OF THE DISCLOSURE

In titled apparatus of the type having a flexible sheet or curtain extendable to cover a gap at a side of the air-conditioner casing and also across the front of the casing to provide a decorative cover, track and frame structure for supporting the curtain and facilitating its manipulation.

CROSS REFERENCE TO RELATED APPLICATION

Copending, commonly-owned, Appel U.S. patent application Ser. No. 685,698 also entitled "Room Air-Conditioner Improved Mounting Arrangement," discloses considerable subject matter common to my application.

BACKGROUND OF THE INVENTION

Field of the invention

The invention pertains to room air-conditioner mounting arrangements in which provision is made for closing the space formed between the air-conditioner and the building structure defining the open space in which the air-conditioner is mounted.

Description of the prior art

Known room air-conditioner mounting arrangements in which one or more retractable-extendable wings are provided on the air-conditioner casing for extension into a position closing the gaps defined between the air-conditioner casing and the facing building element are exemplified by the U.S. Patents 2,814,244, 2,946,274, 3,030,873, 3,134,319, and Metcalfe U.S. patent application Ser. No. 476,105. As shown, these arrangements provide for the extended wings to lie in a generally vertical plane which intersects the air-conditioner casing at some intermediate location along the casing depth (front-to-rear dimension).

SUMMARY OF THE INVENTION

In contrast therewith, in the noted Appel patent application it is proposed that a flexible curtain or sheet be arranged in compact form adjacent a front edge of an air-conditioner front in a disposition that the curtain may be extended out to cover the gap between the casing and the facing building element for normal air-conditioner operation, and also drawn across the face of the air-conditioner front to provide a decorative cover during non-operative periods.

My invention is concerned with the structural arrangement and configuration of parts for best carrying out the concept of the Appel invention. As such, my invention provides open-edged track means and slidably received frame members therein which guide the opposite longitudinal marginal edges of the curtain or sheet as it is drawn out of the curtain housing carried by the frame members, and as it is drawn across the face of the air-conditioner by pull handle means secured to the lateral

outer edge of the sheet. Means are provided to limit movement of the pull means beyond a position which would either pull all of the sheet out of the housing or, as the housing is being extended outwardly, permit the outer lateral edge of the sheet to follow the housing. The pull means is fashioned to permit the sheet to be readily separated therefrom by sliding the pull longitudinally off the lateral edge of the sheet.

DRAWING DESCRIPTION

FIGURE 1 is a face view of one type of room air-conditioner and one mounting arrangement according to my invention installed in a conventional double-hung window opening but with only the right wing extended out to its installed position;

FIG. 2 is a face view of an installation as in FIGURE 1 but with both of the wings extended out to their installed position, and with the sheet means moved to a position providing a decorative cover for the front face of the air-conditioner;

FIG. 3 is a vertical sectional view through the mounting arrangement parts corresponding to one taken along the line III—III of FIG. 1, but with the left side of the casing being in elevation and partly broken;

FIG. 4 is mainly a horizontal section corresponding to one taken along the line IV—IV of FIG. 1 with certain parts of the air-conditioner casing being shown in plan and partly broken;

FIG. 5 is a partly broken and sectioned perspective view illustrating numerous details of the mounting arrangement;

FIG. 6 is a fragmentary perspective view of the upper ends of the sheet pulls and the associated portions of the sheet when the sheet is disposed to provide a decorative cover for the front of the air-conditioner;

FIG. 7 is a fragmentary elevational view of the rear center section of the upper track;

FIG. 8 is a fragmentary perspective view of an inner end of the right lower slide member; and

FIG. 9 is a fragmentary bottom view of the forward margin of the air-conditioner illustrating the manner in which the electrical wiring is conveniently held in place.

Referring to FIG. 1 the room air-conditioner is shown mounted in a window opening in which a vertically-slidable inner sash **10** is lowered until its rail **12** seats upon the mounting arrangement structure which generally frames the front face **14** of the air-conditioner. The right closure wing generally designated **16** is shown extended outwardly to the facing right side of the window frame, while the left closure wing generally designated **18** is shown in its retracted position which leaves a gap **20** between the air-conditioner and facing left side of the window frame. It will be appreciated that with the final installation of the air-conditioner in the window using the mounting arrangement, the left wing is also extended out to engage the left side of the window frame.

In FIGURE 2, both wings **16** and **18** are shown extended outwardly to close the gaps between the air-conditioner and facing window frame sides, and the closure curtains or sheets are also drawn across the front face of the air-conditioner to provide a decorative cover for the face of the air-conditioner. This is the position of the closure which may be used for storage of the air-conditioner in the window during non-operating seasons, or to cover the air-conditioner face when not in use during an operating season.

The main parts of the mounting arrangement seen in FIGS. 1 and 2 include: the top and bottom guide tracks

24 and 26 secured to the top and bottom walls, respectively, of the air-conditioner casing; the three-sided frames for each closure wing 16 and 18 comprising top and bottom horizontal slide members 28 and 30 having their outboard ends rigidly connected to the top and bottom ends, respectively, of the vertically-disposed, hollow, sheet housing 32; the flexible sheet 34 retractable into a compact form in the housing and adapted to be pulled out of the housing into generally planar form; and, the vertically-disposed sheet pull members 36 attached to the one vertical sheet edge which always remains outside of the housing 32. The opposite closure wings 16 and 18 are substantially mirror images of each other and therefore corresponding parts of both wings are identified by the same numerals.

As may be seen from FIGS. 3 and 5, both the top and bottom guide tracks 24 and 26 include hollow sections in which are telescopically received the top and bottom slides 28 and 30, respectively. The tracks 24 and 26 have open slits 38 and 40, extending for the lengths of the tracks and facing each other, for slidably capturing the top and bottom margins of the sheets 34. The substantially vertical plane defined between the slits of the tracks lies closely in front of the front face 14 of the room air-conditioner casing. The slides 28 and 30 include narrow channel sections 42 and 44, respectively, having their open edges facing each other and aligned with the track slits to also capture the top and bottom margins of the sheets in slidable relation. Thus, with this arrangement, the sheets may be slid relative to the channels, relative to the tracks, and the channels themselves may also be slid relative to the tracks with or without the sheets being carried along.

Both the tracks and the slides are conveniently made as aluminum extrusions. As viewed in section, (FIG. 3) the upper track 24 includes the horizontally-disposed rear flange 24A secured to the forward margin of the casing top wall 22 to support the hollow portion of the track above and slightly forwardly of the front face 14 of the casing, with the slit 38 of the track paralleling the front face 14. The general overall shape of the hollow portion is that of a T on its side, with stem portion 24B receiving the window rail 12 thereon, the upper bar portion 24C carrying the lock screws 56, and the lower bar portion 24D containing the slide channel section 42. The upper slide 28 includes, in addition to the channel section 42, a rearwardly-directed leg 28A lying in the stem portion 24B of the track, an upwardly-directed leg 28B in the upper bar portion 24C, and a spongy gasket strip 64 extending for the length of the slide and lying in the corner defined between the legs 28A and 28B so that it will seal with the corner of the window rail 12 to the extent that the slide is pulled out of the track.

The lower track 26 (FIG. 3) includes the rear support flange 26A secured to the forward margin of the casing bottom wall 23 to align the slit 40 with the slit 38 in the top track, and to locate the lower rear corner part 26B of the hollow portion to abut the rear face of the window stood 25 with the air-conditioner installed. The remaining parts of the lower track hollow portions include the intermediate section 26C, the upper portion 26D accommodating the slide channel 44, and an electrical wiring raceway portion 26E adapted to seat on the top surface of the window stool 25. The lower side 30 received in the lower track 26 includes the channel portion 44, an intermediate web portion 30A, and a rear flange portion 30B. Another strip of spongy gasket 66 extends for the length of the slide in the corner defined by the web 30A and the flange 30B for engagement against the rear surface of the window stool 25 for the extent that the slide 30 is pulled out of the track 26.

The various legs, webs, flanges and such of the track and slide structure are designed to impart rigidity to the members, as well as being designed to accommodate fitting the mounting arrangement to the window structure and the room air-conditioner casing.

As shown in FIGS. 4 and 5, the housing members 32 for housing the sheets 34 in retracted form are hollow structures into which most of the self-coiling sheets retract through slots 46 to assume their compact form. To the extent that the sheets are pulled out of their housing, they are held in a generally planar form by their top and bottom margins being captured by the slide channels and track slots. The leading lateral edge of the sheet is held flat by the pull handle 36, while the housing slot 26 holds the opposite lateral margin of the exposed material. The currently preferred sheet material is described in the noted copending Metcalfe patent application and is a material identified by the trademark as "Mylar" and manufactured by Du Pont. It lends itself to taking various decorative patterns on its exposed side, such as wood graining, etc.

Each housing 32 (FIGS. 4 and 5) is also an aluminum extrusion of generally square cross section with a forwardly-directed vertical flange 32A, and an outwardly-directed vertical flange 32B. The flange 32B seats against the forward face of the sash track, and as such is aligned with the top and bottom track structure engaging the window rail front face and the window stool rear face. The walls of the housing 32 may be advantageously provided with the integrally extended bores 32C into which self-tapping screws 68 (FIG. 5) are turned to hold the slide 28 outer ends to the housing top and bottom.

It will be observed from FIGS. 4 and 5 that a vertically disposed lock retainer member 48 is provided on each side wall 50 and 51 of the casing and includes an interference portion 52 disposed in a plane to engage with an offset flange 54 on the pull handle 36. The interference portion serves as a stop to retain the handle and its captured edge of the sheet adjacent the air-conditioner side as the sheet housing 32 is moved out to its position engaging the window frame side. To lock the closure wings out in their installed position, the lock screws 56 are tightened to secure the top slide 28 relative to the top track 24. To stabilize the sheet housing 32 at the window frame side, various arrangements may be used; the preferred one illustrated includes an adjustable clip 58 accommodating various thickness sash tracks and is treated in detail in my separate copending patent application Ser. No. 696,354.

The pull handles 36 for the sheets are constructed in the preferred embodiment with top and bottom tabs or projections 60, as best shown in FIGS. 3, 5 and 6, which fit in the slide channels and track slots for movement therein along with the sheet margins. This arrangement provides stability in guiding the handle during its movement, as well as preventing the self-coiling nature of the described sheet material from rotating the handles.

The pull handles 36 are also provided with means for latching themselves together when they are in the centered position as shown in FIG. 2 for covering the faces of the air-conditioner with the sheet. As best seen in FIGS. 5 and 6, the meeting flanges on the two handles have complementary shapes, as viewed in horizontal section, with a barb shape 70 on the left handle, and a half arrow shape 72 on the right handle, so that the shaped flanges can latch with each other in their overlapping relation. They may be unlatched readily by simply rotating the one handle relative to the other to a slight degree.

The closure structure is also designed for facilitating the replacement of the sheet means. Thus, each pull handle 36 is hollow and open-ended with a slot 74 (FIG. 4) extending for the length of the handle accommodating the sheet 34. The outer lateral edge of each sheet, which also may be considered the leading edge, is bent over upon itself as at 76 to form a barb which retains the sheet end within the pull handle interior during normal movement of the sheet in an unwinding or winding direction. However, the pull handle may be readily separated from the sheet end by sliding the handle longitudinally off the barb 76. The "Mylar" material noted before is extremely

tough, and therefore the barb portion may be provided and subjected to substantial manipulation without cracking or tearing.

The manner of replacing a sheet is generally as follows: The cap **62** (FIG. 5) on the upper end of each housing is removable by turning out the screws **68**. The top slide **28** also has its outer end held to the top of the housing by the screws and, after being released, may be slid inwardly in the top track to clear the top end of the housing. The lock retainer strap **48** is then loosened from the sides of the casing to an extent permitting the handle **36** to clear the interference portion **52** of the lock retainer and be moved out past the top and bottom track ends. Then the handle **36** and the attached sheet **34** is simply pulled up out of the housing. After the replacement sheet is slid onto the handle, its coiled portion is slid into the housing, the handle is pulled back into the tracks, and the other loosened portions of the structure are again fastened.

With respect to the means provided for limiting movement of the handles and wings, these are best seen in FIGS. 3, and 7–8. To limit movement of the pull handles **36** as they are moved toward the center, a tab **78** (FIG. 7) is punched inwardly in a rear vertical face of the track section **24D**, at its side-to-side center, to form a stop for the upper tabs **60** on the pull handles **36**. This prevents either of the handles, where two are used, from being moved entirely across the front and pulling the inner lateral edge (or trailing edge) of the coiled sheet out of the housing **32**.

In FIG. 8, it will be seen that the inner end of each bottom slide **30** is provided with an upwardly struck tab **80** which, as the slide is moved outwardly in the lower track **26**, engages a friction clip **82** (FIG. 3) which is slipped onto the outer end of the track section **26C**. This of course prevents the closure wings from being unintentionally pulled out to a degree that the slides leave the track structure.

FIG. 9 illustrates how the frame arrangement of the invention lends itself to providing raceway structure for the electrical wiring **84**. The wiring penetrates the casing interior near the left side and is lead under cover **86** to a cutout portion **88** in the bottom track portions **26B** and **26C** where the wiring is brought forward to the space formed by the raceway **26E**. As shown in FIG. 9, and the other views, the wiring extends along the raceway to the left side of the casing. The raceway **26E** has opposing stub flanges at the open bottom holding a slidable piece **90** in place to define the bottom wall of the raceway. If the wiring is alternately lead from the casing for connection to a room outlet on the right side of the casing, the slide **90** is removed, the wiring **84** is turned to extend in the other direction along the raceway, as indicated by the broken line showing of FIG. 9, and then the slide member **90** is replaced.

It will be appreciated that while the arrangement is shown applied to an air-conditioner of the type commonly used in single and double hung vertically sliding windows, the arrangement also is readily applicable to air-conditioners specially designed for installation in horizontal slider windows and casement windows, for example, in which a single gap may be defined between the top side of the casing and the top side of the window frame. In such an arrangement, the sheet housings would be horizontally disposed at the top side of the casing for vertical movement and would contain a single sheet of sufficient length to extend from the bottom side of the air-conditioner casing to the extended position of the housing abutting the top side of the window frame.

The arrangement is also applicable in connection with an air-conditioning unit of the character which is hung substantially completely outside of a window and a connecting duct between the window opening and the air-conditioning casing proper is provided. For such an air-conditioner, the closure frame structure of the invention is mounted at the room end of the duct located in the window opening. Hence, in such an arrangement the room end of the duct may be considered to be the casing front in the sense in which the term is used in this application.

Finally, the arrangement may be incorporated in a rigid frame unit apart from the air-conditioner casing itself, with the frame dimensioned to fit a particular size air-conditioner casing, following the concept of Metcalfe U.S. Patent No. 3,030,873.

Since the closure arrangement is located at the extreme front face of the air-conditioner casing, most of the weight of the air-conditioner must be supported from a location outside of the window opening. Thus, various support brackets for supporting the weight of the air-conditioner from the window sill or from the building structure in other ways shall be provided. Since these means for supporting the weight of the air-conditioner form no part of the present invention, no particular way of supporting the casing is shown.

In summary as to how the closure arrangement of the invention is used, the air-conditioning unit carrying the closure arrangement is placed in the window opening and seats upon whatever support means is provided. The sheet housings are in their retracted position adjacent the sides of the air-conditioner casing. After the lower sash of the window is lowered to engage the top track, the wings are extended by moving the opposite housings out into engagement with the respective sides of the window frame. The pull handles engaging the lock retainer bars at each side of the casing prevent the outer lateral edges of the sheets attached to the pull handles from following along with the housings and thus the sheets are drawn out of the housings. With the wings extended and held by the lock screws, the unit may be operated for air-conditioning purposes. If it is desired to cover the face of the air-conditioner as shown in FIG. 2, both of the pull handles are moved toward each other to draw additional curtain or sheet material out of the housings. The handles are held in their centered position by the overlapping engagement of mating parts of the handles, although the friction of the sheet material margins in their tracks also tends to maintain the sheet material at any position it is placed by movement of the handles.

I claim as my invention:

1. In an adjustable closure arrangement for a room air-conditioner casing having a flexible coiled curtain movable outwardly to cover a gap at the side of the casing and also across the front face of the casing for providing a decorative cover, and having track means and frame means supporting said curtain:

said track means comprise open-ended generally hollow members locater on a pair of opposite front edges of said casing, the open edges of said track members facing each other;

said frame means comprise a slide member in each track, and a curtain housing secured to the outboard ends of said slide members, each slide member including a channel portion aligned with the open edges of said track members so that the longitudinal marginal edges of said curtain may be slidably retained therein;

pull means connected to the movable leading lateral edge of said curtain and movable along said front face of said casing; and

means for engaging and holding said pull means adjacent a forward edge of said casing when said curtain housing is moved away from said casing.

2. In an arrangement according to claim **1**:

said pull means includes a hollow section having a slot accommodating said leading lateral edge of said curtain, said curtain edge being bent over upon itself to form a barb-shaped margin retained in said hollow section.

3. In an arrangement according to claim 2:
said pull means hollow section is open-ended to permit said curtain to be disengaged from said pull means by sliding said pull means longitudinally off said leading lateral edge of said curtain.

4. In an arrangement according to claim 1:
said pull means includes opposite end projections received in and movable in said slide channels and the open edges of said track means.

5. In an arrangement according to claim 4:
stop means limiting the outward movement of said frame means relative to said track means to prevent disengagement of said frame means from said track means; and
means limiting movement of said pull means across the front of said casing to a position such that said curtain is not pulled entirely out of said housing with said frame means extended outwardly to its said stop position.

6. In an arrangement according to claim 1:
said track means includes integral means forming a raceway for electrical wiring for said room air-conditioner.

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MEYER PERLIN, Primary Examiner

U.S. Cl. X.R.

62—262; 160—25