Feb. 1, 1944. H. O. CHORPENNING 2,340,411

COMBINED WINDOW AND BLIND CONSTRUCTION

Filed April 10, 1941 2 Sheets-Sheet 1

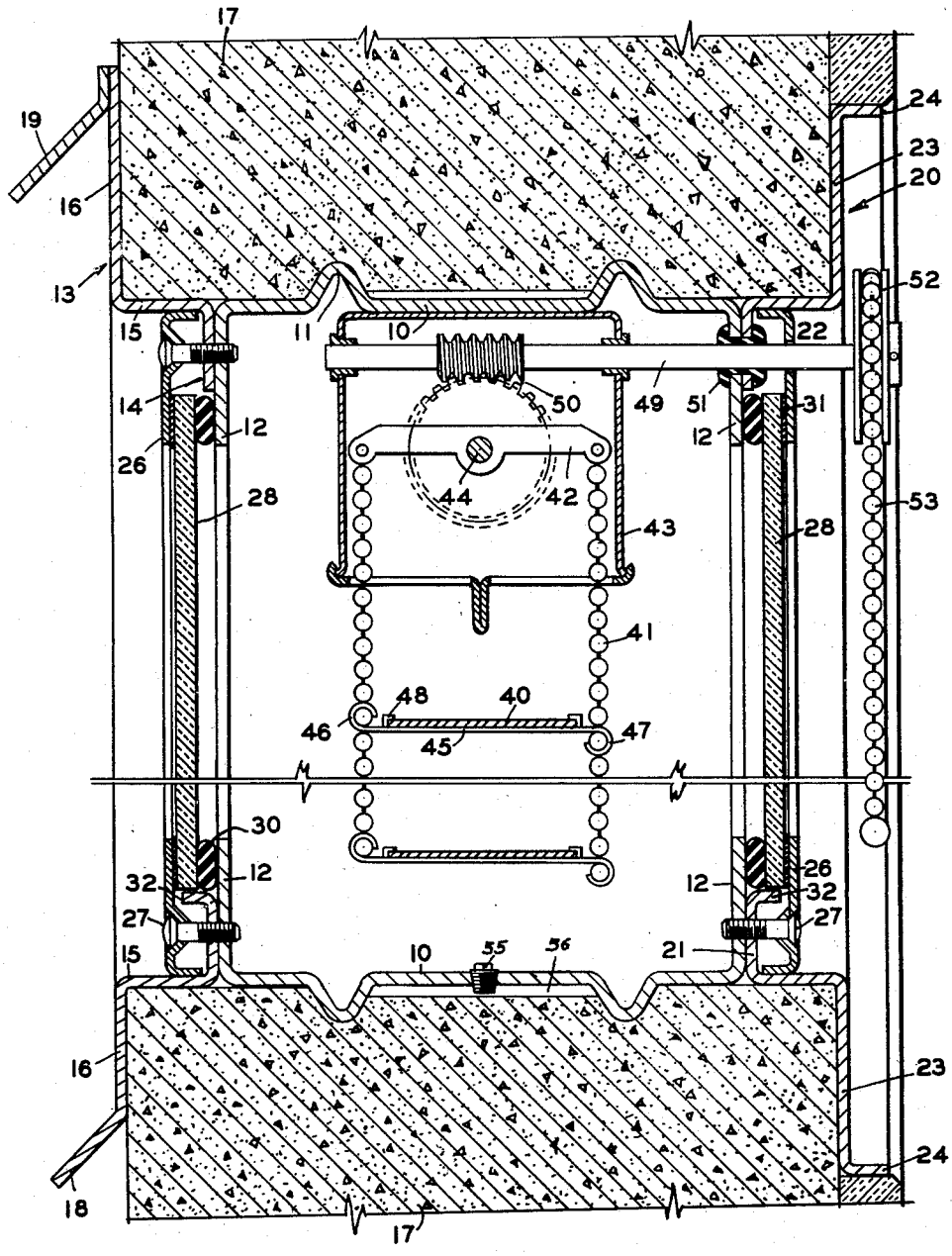


Fig 1.

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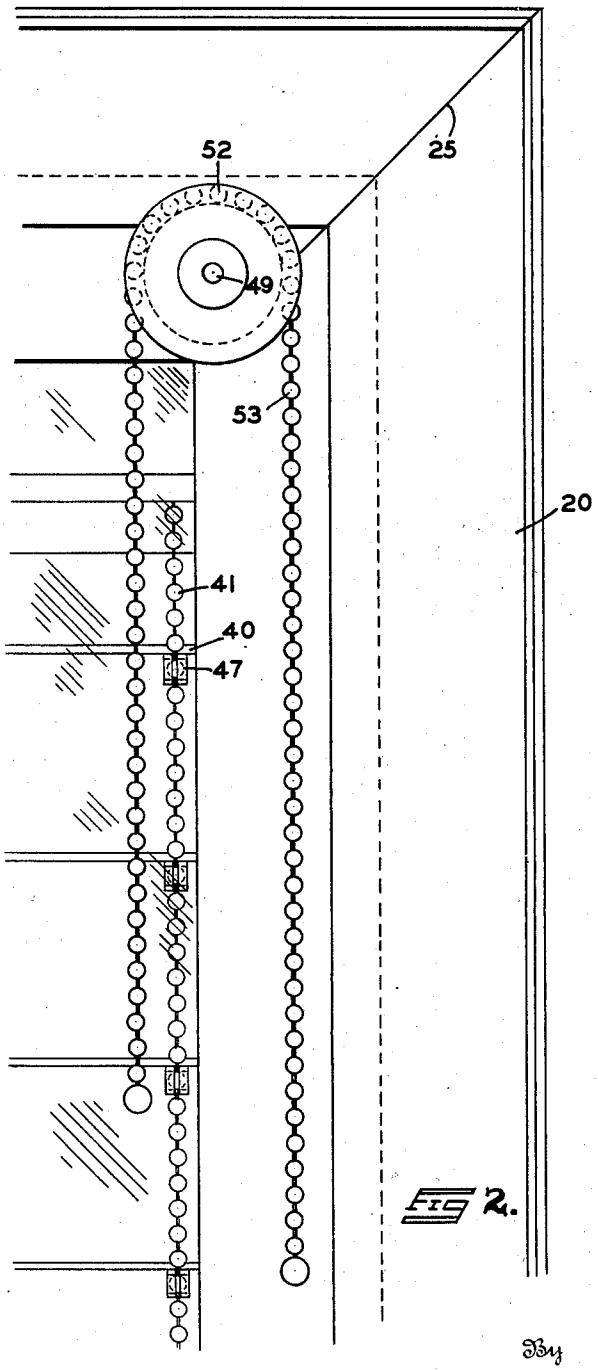


FIG 2.

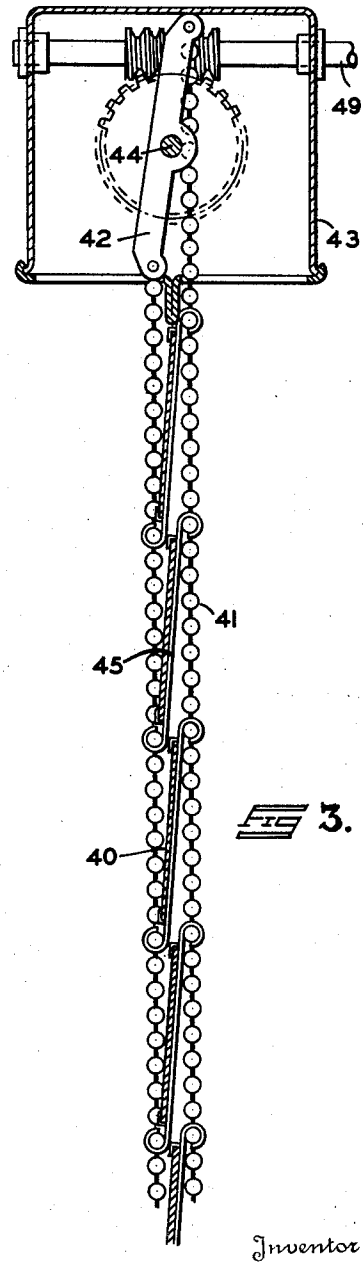


FIG 3.

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Patented Feb. 1, 1944 2,340,411

UNITED STATES PATENT OFFICE

2,340,411

COMBINED WINDOW AND BLIND CONSTRUCTION

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Application April 10, 1941, Serial No. 387,853

4 Claims. (Cl. 189—64)

This invention relates to a combined window and blind construction and has for its principal object the provision of an improved window frame and mounting construction which may be incorporated in a wall of a dwelling or other structure and which is provided integrally with improved means for regulating the amount of light passing through the window.

A further object of the invention is the provision of an improved window frame and mounting construction which is simple in design and economical to construct, which may be readily incorporated in a new or existing wall, and which possesses certain definite advantages in ease of installation, strength and rigidity of construction, reduction of heat loss or transfer, and in more pleasing appearance.

Another object of the invention is the provision of an improved construction for a window, which construction eliminates the necessity for certain ancillary structural and trim members heretofore required in building construction, and which possesses a high degree of flexibility in its adaptation. To this end the design of the window is such that the structural elements of the window frame possesses sufficient strength and rigidity to oppose any lateral thrust imparted by the wall against the sides of the window opening and to support the weight of the wall above the window opening. In this manner the necessity for rough open frames and lintels is eliminated. Further, certain of the structural elements of the window frame which contribute to the strength and rigidity of the assembly also serve as interior and/or exterior trim members thereby further contributing to the simplicity and economy of the assembly. In practice the majority of the component parts of the assembly are standard for various thicknesses of frames and to make up the windows for different wall thicknesses, it is only necessary that one member be varied in dimension.

Yet another object of the invention is the provision of an improved adjustable blind construction and of an improved arrangement for incorporating such blind in a window.

These and other objects and advantages of the invention will become apparent upon a consideration of the following detailed specification and the accompanying drawings wherein there is specifically disclosed a preferred embodiment of the invention.

In the drawings:

Figure 1 is a broken vertical section through a combined window and blind assembly constructed in accordance with the principles of the invention;

Figure 2 is an inside elevation of an upper corner of the assembly of Figure 1; and

Figure 3 is an end view, partly in section, of the improved adjustable blind construction of the invention, the blind being shown in closed position.

The window unit of this invention is intended primarily for use in building structures equipped with mechanical ventilating and air-conditioning systems and, therefore, in the preferred and illustrated embodiment of the unit, no means is provided for opening and closing the window, but it should be apparent that if provision for this purpose is desired, the same may be incorporated in the structure although at a sacrifice of simplicity and economy.

The window unit, in its preferred and illustrated embodiment, comprises a continuous frame 10 provided with spaced outwardly directed strengthening and anchoring ribs 11 and continuous inwardly directed flanges 12 at both the inner and outer faces of the frame. Frame 10, of course, is shaped in outline to correspond with the rough window opening and in practice this frame may be constructed from a continuous section accurately cut to length, notched and bent at its corners, and securely fastened at its end preferably by welding. The section of the frame 10 is such that it may be economically produced in large quantities by a continuous rolling process. It should be observed that the inwardly directed flanges 12 and the outwardly extending ribs 11 provide, in effect, boxed sections in each of the horizontal and vertical reaches of the frame thus insuring the strength and rigidity of the completed frame.

Secured to one of the flanges 12, by spot welding or otherwise, is an outer frame 13 having a flange 14 to overlie a portion of the flange 12, an integral ring 15, and an integral face 16 which in practice is adapted to overlie the outer surface of the wall 17 in which the window unit may be positioned. Frame 13 is fabricated of a continuous length of uniform section which is accurately mitre cut and welded together along the mitre lines at its corners. The lower horizontal reach of the face 16 of the frame 13 is bent outwardly at 18 to provide a drip flange which prevents drippings from the window from streaking the outer surface of the wall below the window. A downwardly and outwardly extending drip cap 19 is welded or otherwise suitably secured to the head of the upper horizontal reach of the face 16.

Similarly, an inner frame 20 is spot welded or otherwise suitably secured to the inner flange 12 of the frame 10. Frame 20 is provided with an inwardly directed flange 21 which overlies a portion of the adjacent flange 12, an integral ring 22, an integral face 23 and an integral inwardly directed stop 24. Frame 20 may conveniently be fabricated from a continuous length of uniform section mitre cut to length and welded along the mitre lines at its corners as, for example, along the line 25 of Figure 2.

Overlying each of the flanges 14 and 21 and projecting inwardly therebeyond, an extent corresponding with the inner edges of the flanges 12, are the metal trim and glass retainer strips 26 which are, as indicated in Figure 1, L-shaped in cross section with the shorter leg thereof bearing against the outer faces of the flanges 14 and 21 contiguous to the rings 15 and 22. Strips 26 are secured to the flanges aforesaid by the countersunk screws 27 which have screw-threaded engagement with the flanges. Clamped between the strips 26 and the flanges 12 of the frame 10 are the glass panes 28 and to provide a hermetically sealed space between the glass panes, a strip 30 of cushioning and sealing material is interposed between the panes 28 and the flanges 12 and a sealing strip 31 is interposed between the metal retaining strips 26 and the glass panes 28. It should be apparent that when screws 27 are drawn up tight, an effective seal is provided between the glass and the flanges 12. Since the latter are an integral part of the unitary frame 10, the space between the glass panes 28 is effectively sealed against the entrance of air, moisture and dust. The lower horizontal reaches of the flanges 14 and 21 are provided with ledges 32 to aid in supporting the glass panes while the same are being secured in the frame. Insofar as the window structure is concerned, a horizontal section of the assembly would be identical with Figure 1 with the exception of the ledges 32 and the drip members 18 and 19.

The section making up the frame 10 may be of varying width so that the interval between the flanges 12 may be varied to accommodate walls of different thicknesses. In the embodiment illustrated, the frame is dimensioned for a masonry wall having a thickness of approximately nine inches. If now it is desired to construct the window for use in a stud wall of conventional construction, the frame 10 would be narrower and the interval between the flanges 12 decreased. All of the other parts of the window assembly, however, may remain of the same size and shape.

Ribs 11 in frame 10 are provided primarily to strengthen the frame section and it should be apparent that the outwardly extending ribs 11 and inwardly extending flanges 12 provide a box section to lend strength and rigidity to the assembly. The upper horizontal reach of the frame 10 possesses sufficient strength to support the masonry or other building material above it and the vertical reaches of the frame are likewise sufficiently strong to oppose any lateral thrust against them by the building material. This eliminates the necessity of using lintels and other rough framing sections and has the further advantage of allowing the frame 10 to be used as a form in the construction of the wall. In other words, the frame may be built in during the process of construction of the wall. Outer face 16 and inner face 23 of the trimming frames 13 and 20 guide and retain the edges of the wall building material about the window openings. Ribs 11 have the further advantage of providing anchors in the wall structure to further prevent movement of the frame 10 relative to the wall. If the window structure is to be applied to an existing wall, one of the frames 13 or 20 is left detached and is secured to the adjacent flange 12 upon installation of the window.

Within the hermetically sealed space between the glass panes 28 is positioned a light controlling device preferably of the Venetian blind type. In accordance with the usual practice, the blind may consist of a plurality of super-imposed slats 40 suspended in vertically spaced relation for rotation about their individual principal axes and, in accordance with the present invention, the suspension means consists of bead chains 41 arranged in pairs on opposite sides of the slats and depending from rocker arms 42. The latter are encased in a metal box 43 attached to the upper horizontal reach of the frame 10 and are keyed to a shaft 44 journaled in the box.

Referring to Figures 1 and 3 of the drawings, each slat is immediately supported on metal carriers 45 one end of each of which is curved at 46 up and over about one of the beads of the supporting chain which moves downwardly upon closing of the blind, while the other end 47 is curved down and over about one of the beads of the chain 41 which travels upwardly upon closing of the blind. Carriers 45 are each provided with integral clips 48 to engage the side edges of the slats 40 and it should be apparent that upon flexure of the slats 40, which are preferably of light gauge metal construction, the edges of the slats may be engaged in the clips 48 and thus retained. By properly proportioning the parts, the slats 40 will be retained under pressure in the clips 48 to prevent longitudinal movement of the slats relative to the carriers 45 but if desired, apertures may be provided in the slats 40 to receive lugs projecting upwardly from carriers 45 to prevent such relative movement. End portions 46 and 47 of the carriers 45 are slotted to accommodate the pins interconnecting adjacent beads of the chains 41.

Arms 42 are arranged to be rotated for opening and closing the blind by a shaft 49 coupled with the shaft 44 through worm gearing 50. Shaft 49 projects inwardly of the frame of the window and a suitable sealing grommet 51 is provided in the aperture through flanges 12 and 21 through which shaft 49 extends. As indicated in Figure 2, shaft 49 projects inwardly at an upper corner of the window and to the inner end of the shaft is keyed a pulley 52. An operating chain 53 is entrained over pulley 52 to provide readily accessible means for operating the blind.

By so proportioning the width of the slats 40 in relation to the vertical interval between them as measured along the chains 41 that the edges of one slat overlie the edges of the adjoining slats, it is possible to construct the blind so that it may be tightly closed. Obviously, the metal carriers 45 may be made very thin so as not to interfere to any substantial extent with the overlapping of the slats. While the slats 40 are preferably of metal, they may be of wood, plastic or other composition and may also be either flat or curved in transverse cross-section.

It should be understood that a circumferentially extending recess or groove is provided between the two ribs 11 of the frame 10 and in practice this recess or groove may be employed as a receptacle for calking compound which may be forced into the space thus provided through

an aperture in frame 10, which aperture may thereafter be closed by a plug 55. By way of example, the drawings illustrate such space at 56. Obviously, if the frame is installed in a stud wall, the two ribs 11 would rest against the inner faces of members making up the rough opening thereby providing a substantial space between the ribs which may be filled with calking compound as aforesaid. When so calked, a highly efficient weather seal is provided.

It should now be apparent that I have provided an improved window and blind construction which accomplishes the objects initially set out. The window frame and blind are simple in design and economical to construct and possess definite advantages in appearance, strength and durability, and in ease of installation. Also the spaced window panes as mounted provide improved heat and sound insulation and a space for the blind which is maintained free and clear of moisture, dust and dirt. The blind will, therefore, retain its clean and bright appearance without cleaning over a long period of time. This is particularly true since the blind operating connection is sealed where it passes into space between the glass panes. Another important advantage of the use of the window construction of the present invention is the elimination of condensation on the inner surface of the window which condition is undesirable but prevalent in buildings having forced air heating systems.

The above specifically described embodiment of the invention should be considered as illustrative only as obviously many changes may be made therein without departing from the spirit or scope of the invention. For example, the blind may be provided with pull up chains or cords to nest the slats in the upper end of the window if desired and it is contemplated that the operator for such means would also be sealed where it passes into the space between the glass panes. Also various other additions and changes in details of construction may be made within the purview of the invention. Reference should therefore be had to the appended claims in determining the scope of the invention.

What I claim is:

1. A window construction comprising in combination a unitary frame having continuous side and top and bottom walls, integral flanges projecting inwardly from the side edges of said walls to provide bearing surfaces for spaced parallel panes of glass, inner and outer trimming frames having inwardly directed flanges overlying the outer peripheral portions of said first mentioned flanges and secured thereto, continuous strips secured to the contiguous flanges at both the inner and outer sides of said window, said strips adapted to clamp said glass panes onto said bearing surfaces.

2. A window construction comprising in combination a unitary frame having side and top and bottom walls and a continuous flange projecting inwardly from one side of said walls, a trimming frame secured to said flange and having a flange overlying a portion of the outer surface of the first mentioned flange, and means to secure a pane of glass in overlying relation to the remaining portion of said first mentioned flange.

3. A construction according to claim 2 further characterized in that the lower horizontal reach of said trimming frame is bent outwardly to form a drip flange.

4. A construction according to claim 2 further characterized in that said second mentioned frame is provided with an outwardly extending flange along its lower reach to provide a support for said pane of glass.

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