Feb. 1, 1955 G. M. GRAHAM 2,700,803

CLOSURE SHUTTER FOR WINDOW OPENINGS

Filed Oct. 21, 1953 2 Sheets-Sheet 1

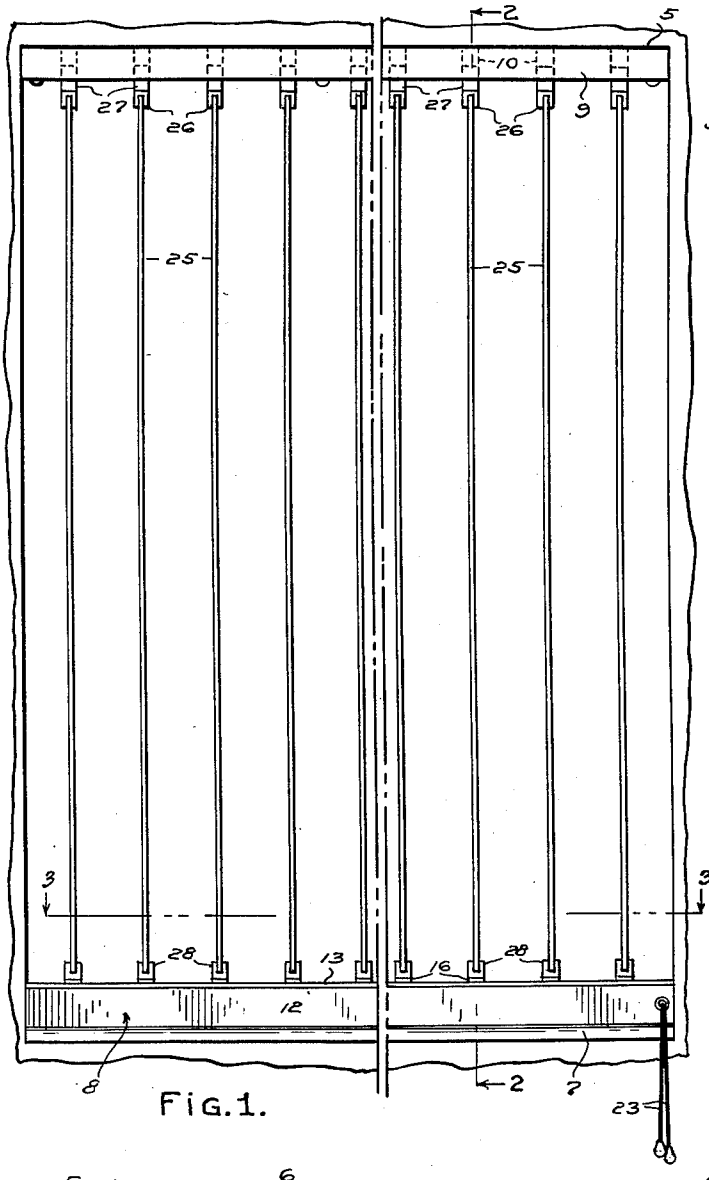


Fig. 1.

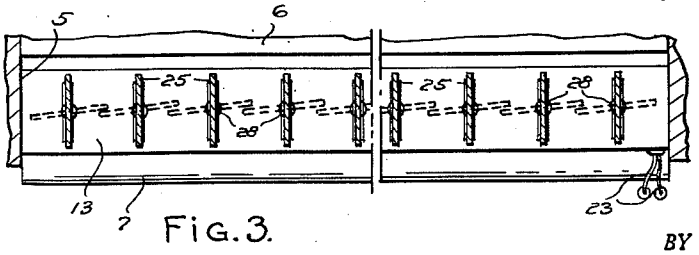


Fig. 3.

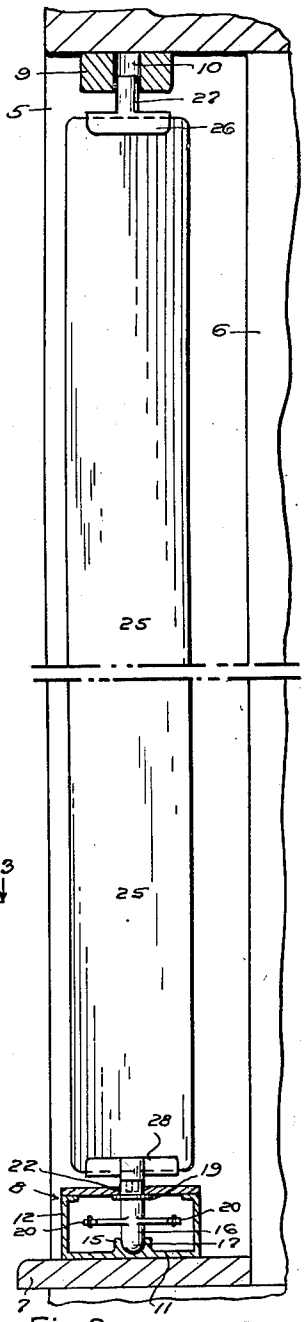


Fig. 2.

INVENTOR.
GEORGE M. GRAHAM,
BY
James M. Lyle
ATTORNEY.

Feb. 1, 1955 G. M. GRAHAM 2,700,803

CLOSURE SHUTTER FOR WINDOW OPENINGS

Filed Oct. 21, 1953 2 Sheets-Sheet 2

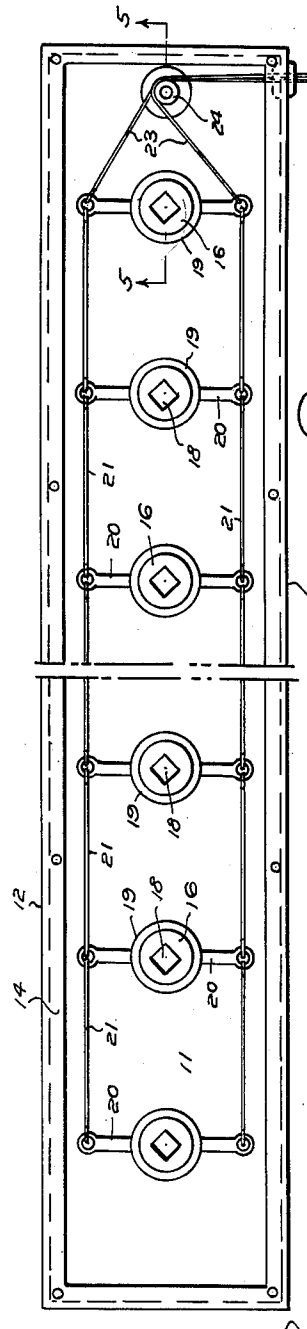


Fig. 4.

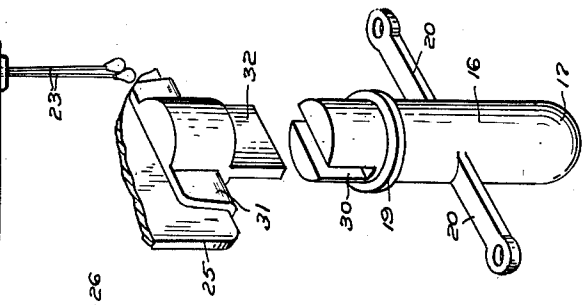


Fig. 8.

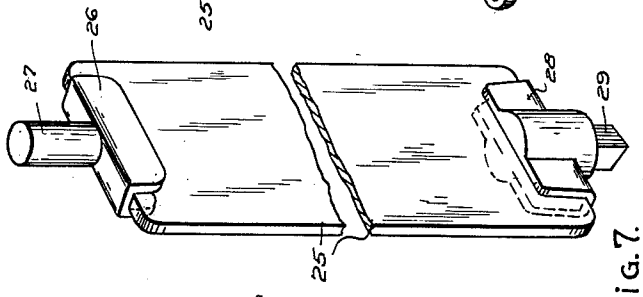


Fig. 7.

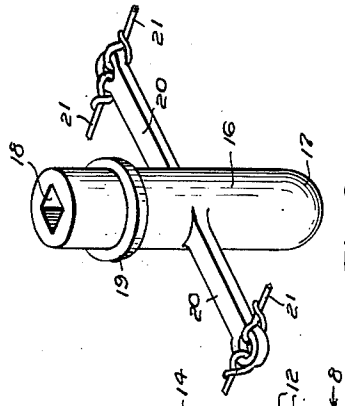


Fig. 6.

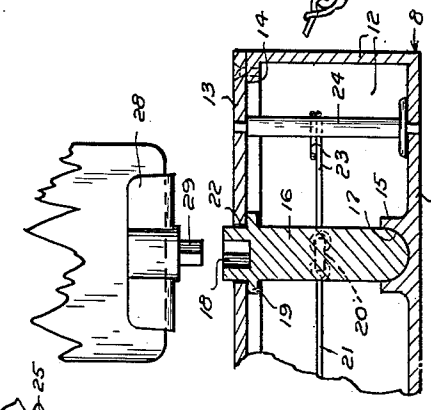


Fig. 5.

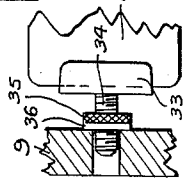


Fig. 9.

INVENTOR.
GEORGE M. GRAHAM,
BY
ATTORNEY

United States Patent Office 2,700,803 Patented Feb. 1, 1955

2,700,803

CLOSURE SHUTTER FOR WINDOW OPENINGS

George M. Graham, Fort Lauderdale, Fla.

Application October 21, 1953, Serial No. 387,370

5 Claims. (Cl. 20—62)

This invention relates to closure devices broadly and has particular reference to a slatted blind device for installation within a window opening as a protective means against sun and air.

The invention has for its prime object a plurality of preferably vertically arranged slats that are supported in a manner for simultaneous shifting movement from an open to a fully closed and overlapping position.

An object of the invention resides in novel mounting means for the blinds in a window opening whereby the device may be adapted to presently installed window openings and with the device embodying an upper and a lower header that extend for substantially the full width of the window opening.

A further object of the invention resides in novel pivotal support means for the slats that are rotatable in the lower header simultaneously from a single point of operation and with the pivotal means constructed in a manner to permit a quick and easy connection of the slats therewith and with the slats carrying at their upper ends cylindrical studs that are freely rotatable in the upper header device, the construction being such as to permit the installation of the upper and lower headers and the subsequent assembly of the slats therein in a simple and expeditious manner requiring no additional fastening devices.

The invention further contemplates the use of a group of shiftable slats that may be mounted within a window opening either in a vertical position or in a horizontal position.

Novel features of construction, operation and arrangement of parts will be more clearly apparent during the course of the following description, reference being had to the accompanying drawings wherein has been illustrated preferred embodiments of the device and wherein like characters of reference are employed to denote like parts throughout the several figures.

Referring to the drawings:

Figure 1 is a side elevation of a group of vertically arranged slats as disposed in a window opening,

Figure 2 is a slightly enlarged vertical section taken substantially on line 2—2 of Figure 1,

Figure 3 is a horizontal section taken substantially on line 3—3 of Figure 2,

Figure 4 is a top plan view of a lower header with its cover plate removed,

Figure 5 is an enlarged fragmentary vertical section taken substantially on line 5—5 of Figure 4,

Figure 6 is a perspective view of one slat pivotal support,

Figure 7 is a perspective view of one slat illustrating upper and lower connecting means,

Figure 8 is a perspective view of a modified form of pivotal support and the associated connecting means for the lower end of a slat and

Figure 9 is a slightly modified form of connecting means for the upper end of the slats.

Referring specifically to the drawings, the numeral 5 designates a window opening wherein is disposed any conventional type of window device 6. The window opening is provided with the usual sill 7.

Positioned upon the sill 7 for substantially its full length is a lower chambered header 8. The header 8 may be rigidly supported in parallel resting support upon the sill in any desirable manner. Arranged within the upper end of the window opening is an upper header 9 supported therein in parallel and overlying relation to the

header 8. The header 9 is provided with a plurality of equidistantly spaced and vertically arranged cylindrical openings 10, for a purpose to be presently described.

The header 8 embodies a boxlike structure having a bottom 11 and side and end walls 12. The upper side of the header 8 is formed open for its full length and normally closed by a cover plate 13 that is secured in covering position upon inwardly directed flanges 14 carried by the side and end walls of the device. Cast or otherwise formed upon the bottom wall 11 are a plurality of equidistantly spaced semispherical bearings 15. The bearings 15 are equidistantly spaced from the side walls of the header 8 and the spacing of the bearings 15 is identical with the spacing of the openings 10 of the upper header. Rotatably supported within the bearings 15 are slat supporting and rotating devices 16, more clearly illustrated in Figures 5 and 6. Each device 16 comprises an elongated cylindrical body portion having its lower end formed semispherical as at 17, for rotative support within the bearings 15. The upper end of the support 16 is provided with an axially arranged recess 18 that is formed either square, hexagonal or otherwise. A stop collar 19 is formed upon the body of the supports 16 below its upper end. The supports 16 are provided with a pair of diametrically oppositely arranged and horizontally disposed arms 20 having their outer ends apertured for connection with operating cables 21. With the slats arranged in a vertical position within the window opening, the supports 16 as clearly shown in Figure 5 will be vertically arranged and have a rotatable support within the bearings 15 whereby all of the supports 16 may be actuated simultaneously in the desired direction by the cables 21. The cover 13 is provided with equidistantly spaced cylindrical openings 22 that are positioned over the upper end of the supports 16 and serve as the bearings for the upper ends of the supports. The collars 19 underlie the cover 13 at assembly and prevent vertical shifting of the supports 16.

The cables 21 may be continuous between the several arms or the cables may be substituted for any desirable link mechanisms. Connected with the arms 20 of an end support 16 are a pair of flexible operating cables 23 that are trained about a roller 24 that is journalled in the bottom wall 11 and the cover plate 13. Cables 23 pass through a suitable opening in one side wall of the header 8 and are equipped at their free ends with control knobs. It will be apparent from the structure so far described that when one of the cables 23 is actuated, it will pull upon its respective arm 20 and through the medium of its adjacent cable 21 causes the entire group of supports 16 to rotate on a vertical axis to a predetermined degree. Obviously by pulling upon the opposite cable 23 a reverse motion will be imparted through the group of supports 16 to cause them to shift in a reverse manner to a predetermined degree. The supports 16 may be formed of any desirable material, such as metal, plastic or the like, and the header 8 will obviously be formed of a material calculated to withstand an intermittent rotative support of the supports 16 within the bearings 15.

Rotatably supported upon the several supports 16 are a plurality of preferably flat slats 25 formed of wood, metal, plastic or any other desirable material. The slats 25 may be of a width generally corresponding to the conventional Venetian blind or may obviously be formed in any desirable width. Connected with the upper end of each slat is a generally U-shaped clip device 26 that is preferably frictionally held upon the end of the slat. The clip 26 carries a vertically arranged cylindrical stud 27 that is axially arranged with respect to the vertical center line of the slat. The stud 27 has a diameter calculated to have a freely rotatable engagement within the openings 10 of the header 9. Connected with the lower end of the slats 25 is a clip device 28 preferably having frictional engagement therewith. The clip device 28 carries a preferably integral depending stud 29 that is shaped in cross section to correspond with the opening 18 of the support. The stud 29 at assembly has resting engagement within the recess 18 and with the body of the clip 28 having a resting support upon the upper flat end of the supports 16 with the lower end of the slat held in slightly spaced relation to the cover plate 13. Thus the supports 16

serve to form a lower thrust bearing for the slats while at the same time serving as the means whereby the slats are simultaneously rotated upon their vertical axis. As shown in Figure 2, with the slats in fully engaged and resting support upon the supports **16**, the body of the clips **26** will be disposed below the lower base of the header **9** and with the stud **27** having an adequate length to be rotatably engaged within the openings **10** during the movement of the slats.

In the use of the device, assuming that the lower header **8** has been fully assembled with its several supports in rotative engagement within their respective bearings **15** and with the cover plate **13** in position, both the lower and the upper headers are installed within the window opening as before described. The several slats **25** are then engaged with their respective upper and lower clips **26** and **28**. The slats are then installed by first engaging the studs **27** within the openings **10** and by shifting the slat vertically adequate clearance will be provided to permit the stud **29** to be axially disposed over the openings **18**. The slats are then permitted to drop downwardly until the studs **29** are fully engaged within their respective openings **18**, at which time the studs **27** will remain in rotative engagement with the header. With the several supports and their respective openings **18** being identically formed and with the clips **28** and their respective studs **29** being likewise identically formed, it will be apparent that when the slats are dropped into connecting engagement with the supports **16**, all of the slats will be disposed in the same plane and in such position they will be simultaneously shifted to a predetermined degree from an open to an overlapping position by the cables **23**, such overlapping position being indicated in dotted lines, Figure 3. Thus a very simple and effective means has been provided for the rotative support of a group of closure slats **25**. The slats **25** may be easily and quickly removed individually from their mountings for cleaning, painting or replacement.

The modified form of the device illustrated in Figure 8 shows the upper end of the supports **16** as being slotted as at **30**, with the bottom wall of the slot terminating adjacent the collar **19** and below the upper surface of the cover plate **13**. In this form of the invention a modified form of end clip **31** is provided for the lower end of the slat **25** and with the clip provided with a flat vertically arranged tongue **32** that has a width corresponding to the diameter of the supports **16**. Thus when the slat is lowered into connecting engagement with the supports **16**, the tongue **32** extends downward to the bottom of the slot in which position it will be prevented from shifting laterally by its engagement with the side wall of the cylindrical openings **22** of the cover plate **13**. In all other respects the support is identical with the supports previously described.

Since it is possible that the closure device may be installed within a window opening and with the slats in the horizontal position, the same headers **8** and **9** will be employed. However, the headers **8** and **9** will be disposed in rigid position upon the side walls of the window opening and may or may not extend for the full height of the window depending upon the degree of closure desired for the window. In this form of the invention modified forms of upper end clips are provided, here illustrated by the numeral **33**. The end clips **33** are provided with threaded studs **34** similar in diameter to the studs **27**. The studs **34** at assembly of the slats has freely rotative engagement within the openings **10**. Now since the slats are arranged in horizontal relationship without a positive connection to the supports **16**, means are desirable to prevent the shifting of the slats whereby their studs **29** may become disengaged with the supports **16**. To provide for this contingency, a nut **35** has been threaded upon the stud **34** and a washer **36** may be disposed over the nut in use. Thus when the slat is to be installed, the nut **35** is rotated inwardly against the clip **33**, providing adequate clearance to permit the insertion of the stud within the opening **10** to a degree whereby the slat may be shifted in a reverse manner to engage its stud **29** within the openings **18**. After the slat has been fully engaged with its respective supports **16**, the nut is rotated in a reverse direction toward the header **9** and with the washer **36** disposed thereon will prevent shifting of the stud inwardly and thus avoid a disengagement of the stud **29** from the support. In removing the slats of this modified form of the device, it only becomes necessary that the nuts **35** be rotated inwardly to permit clearance to shift the slat axially to disengage the stud **29**. In all other respects the operation of the device will be identical.

It will be apparent from the foregoing that a very simple and highly effective type of closure slats has been provided. The device readily adapts itself to various sizes of window openings and permits of its production in various standard sizes for recognized standard openings. The width of the slat devices will obviously govern to a large extent the spacing of the supports **16** and the openings of the header **9** since it is only desirable that the slats have a slight overlapping engagement when in the fully closed position. The structure is extremely simple in design, is cheap to manufacture, is strong, durable, and easily assembled and disassembled. It readily lends itself to manufacture from various materials and in various colors to blend with the particular opening in which they are installed. It may be found desirable in certain instances for the closure device to be installed in a manner to cover individual sections of a window in which case suitable supports would obviously be provided for the headers **8** and **9**.

It is to be understood that the invention is not limited to the precise arrangement shown but that changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A slatted closure device for window openings comprising an upper header that is fixed at the top of the opening and with the header being vertically and cylindrically apertured at equidistantly spaced points, a lower box-like header that is fixed at the bottom of the opening and parallel to the upper header, the last named header having a bottom that is provided with inwardly disposed and upstanding semi-spherical bearings, the last named header being open at its top and closed by a cover plate that is cylindrically apertured and with the apertures being concentric to the bearings, the bearings and apertures being equal in number to and axially disposed with respect to the apertures of the upper header, cylindrical supports disposed in the lower header and with the supports having a lower semi-spherical bearing end that is rotatably supported in the bearings, the upper ends of the supports being rotatable also in the cylindrical apertures of the cover plate, the upper end of each support being flat and centrally and axially recessed, crank means formed upon each of the supports that are connected together by cable devices whereby the several supports may be rotated in unison, remote control cables connected with the cranks of an outermost support for simultaneously actuating all of the supports through the cable devices, a plurality of flat slats arranged in the window opening in parallel and equidistantly spaced relation, the upper end of each slat engaged with a U-shaped friction clip that carries an elongated cylindrical shaft vertically arranged and axially disposed with respect to the vertical center line of the slats, each of the shafts being freely rotatable and vertically shiftable in a cylindrical aperture of the upper header, the lower end of each slat being engaged with a U-shaped friction clip that carries a depending stud that has a sliding and interlocking engagement within the recesses of the supports, the studs being axially disposed with respect to the shafts, the slats being of a length whereby the clips at the upper end will be disposed below the bottom of the upper header a distance slightly greater than the length of the studs carried by the lower clips, the shafts being of a length as to maintain rotative engagement within the apertures of the upper header when the studs are fully engaged within the recesses of the supports.

2. The device according to claim 1, wherein the supports are each provided with an annular collar inwardly of its upper end, the said collar, when the support is rotatively seated within the bearings underlying and having a bearing against the under side of the cover plate to maintain the support against vertical shifting.

3. The device according to claim 1, wherein each of the cylindrical supports are provided with diametrically oppositely extending crank arms wholly disposed in the header and with all of the cranks being connected at each side by flexible cables, the opposite cranks of the end

support being connected with flexible cables that extend through an opening in the header, the last named cables being trained over a roller that is rotatably supported in the header.

4. The device according to claim 1, wherein the upper end of the supporting means is slotted and wherein the studs of the lower ends of the slats are in the form of flat keys that engage within the slots of the supports for rotatively supporting the slats.

5. The device according to claim 1, wherein the shafts carried by the upper friction clips are threaded for their major length, a nut threaded on each shaft that is adjustable toward and from the upper header, the nut when adjusted toward the header serving to prevent shifting movement of the slat to prevent the disengagement of the lower stud from the recess of the support.

References Cited in the file of this patent

UNITED STATES PATENTS

572,776	Shinsky	Dec. 8, 1896
1,888,522	Ward	Nov. 22, 1932
2,030,234	Villalobos	Feb. 11, 1936