

May 16, 1939.

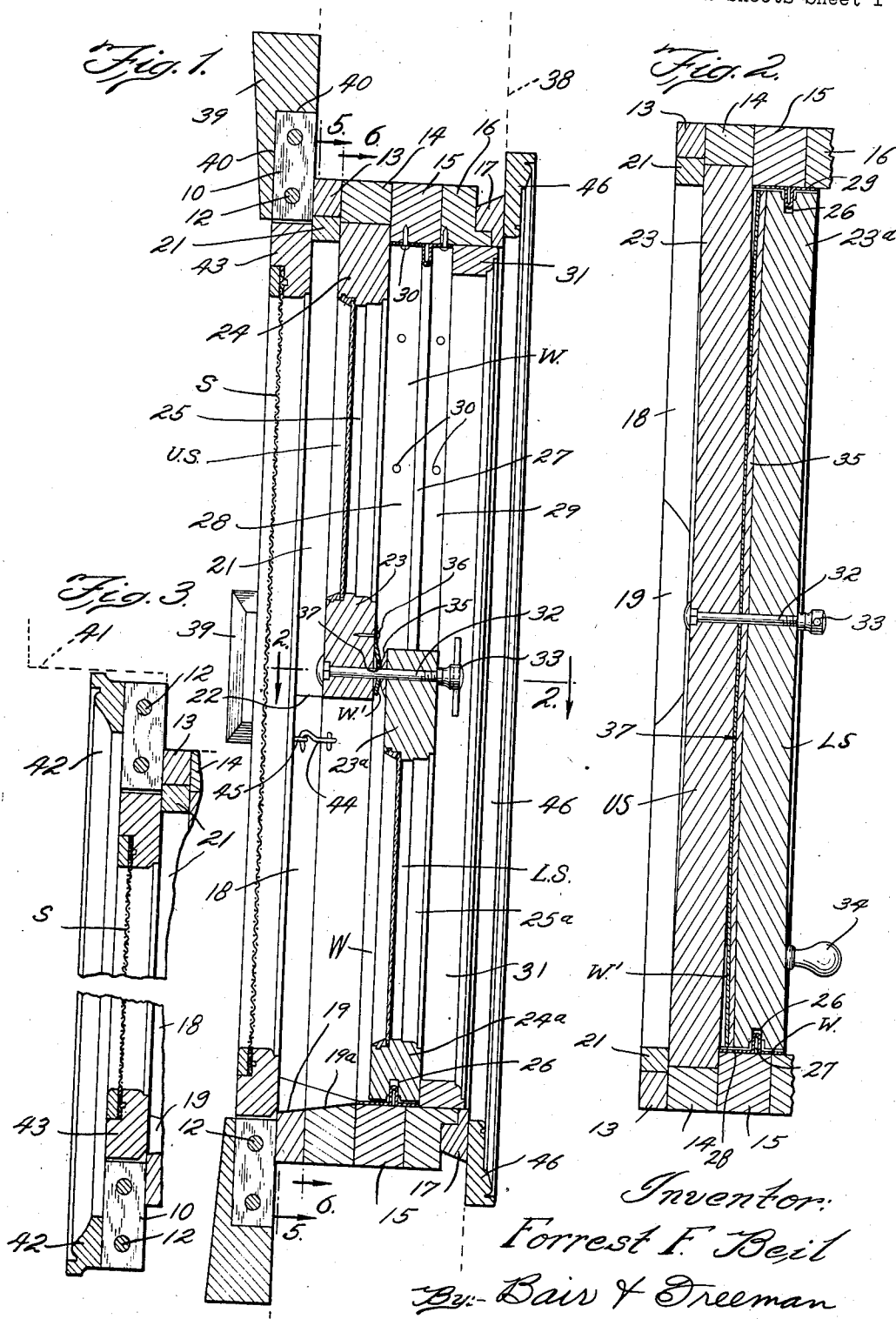
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2,158,395

CIRCLE WINDOW

Filed Sept. 7, 1937

2 Sheets-Sheet 1



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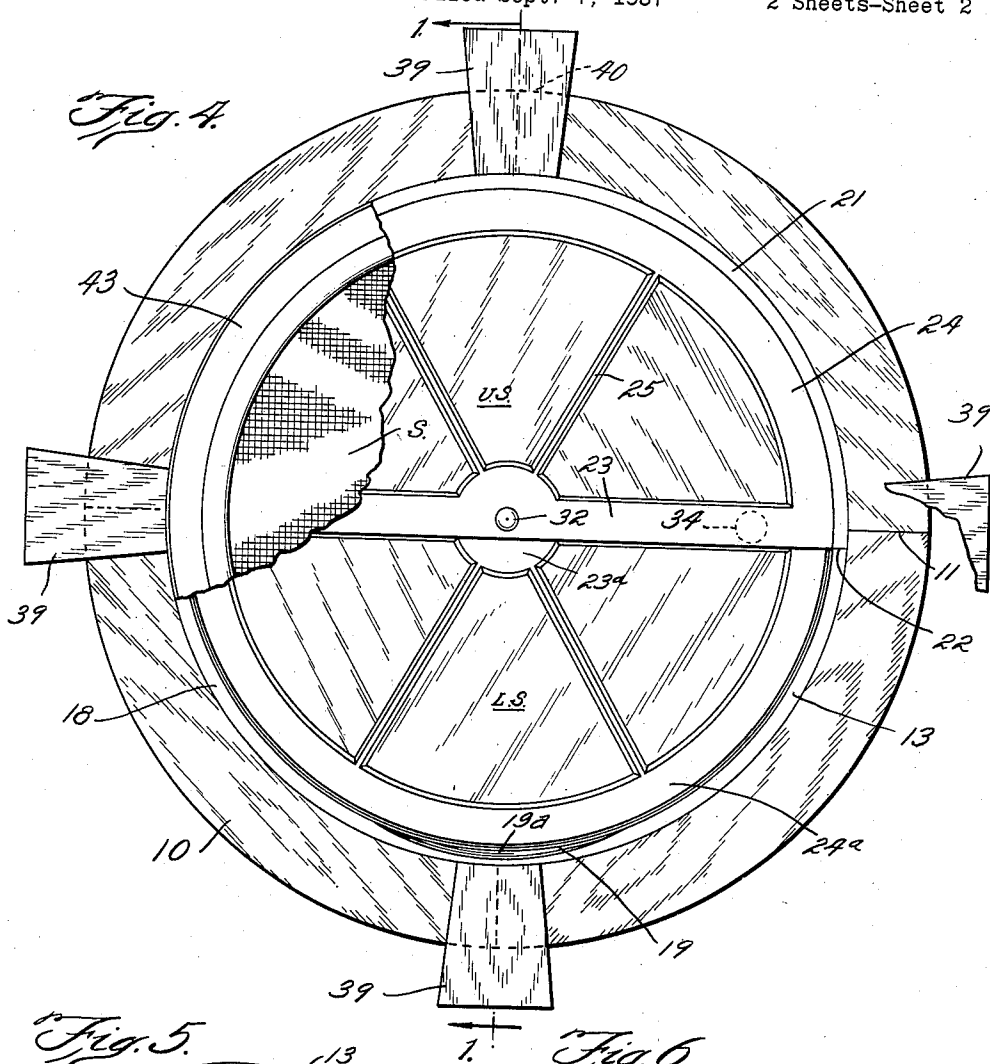
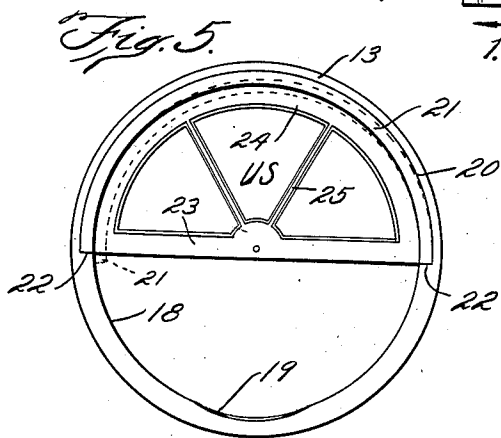
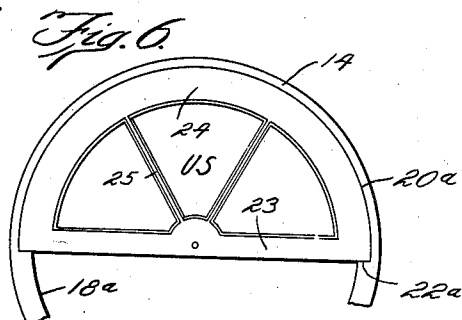
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,158,395

CIRCLE WINDOW

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Application September 7, 1937, Serial No. 162,722

11 Claims. (Cl. 20-40)

One object of my present invention is to provide a circle window of simple and inexpensive construction which has the desirable feature of being openable without the necessity of providing a recess in the wall adjacent the window frame to receive the sash of the window.

Another object is to provide a circle window in which there are a pair of semi-circular sashes, one of which is fixed and the other of which is rotatable so that it can assume either a closed position opposite the fixed sash or an open position when rotated to register with the fixed sash.

Another object is to provide a circle window in which the movable sash is guided in its movement by a combined guide means and weather strip arranged annularly of the window frame.

Still another object is to provide the two sashes with meeting rails, one of which has a convex portion and the other of which has a weather strip extending therealong and adapted to engage the convex portion and thus seal the joint between the meeting rails against air infiltration when the movable sash is in closed position, the convex portion serving to prevent distortion of the weather strip as the movable sash, during the closing operation thereof, approaches closed position.

A further object is to provide a combined clamping and supporting bolt for the movable sash, which predetermines its path of rotary movement and which can be utilized to urge the meeting rails to bend toward each other, thus providing frictional engagement of sufficient magnitude between the movable sash and its guide means to lock the window in any desired position of adjustment.

A further object is to provide a circular window frame built up of lagging, the sections of which are so formed that the fixed sash is supported against movement, due to a distinctive shape of one section of the lagging and retained in position by a semi-circular blind stop which can be sprung into position in a groove especially provided therefor by another section of lagging of distinctive shape.

Still a further object is to provide an outer casing for the frame having joints which are effectively protected against the weather by rabbeted key blocks and which is of such internal diameter that it permits insertion of a screen having a circular frame to a position limited partially by the blind stop mentioned in the preceding object and partially by the section of lagging in which the blind stop is mounted.

With these and other objects in view my in-

vention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, in which:

Figure 1 is a vertical sectional view through a circle window embodying my invention and showing a screen mounted therein.

Figure 2 is a horizontal sectional view on line 2-2 of Figure 1, showing the frame mounted in the wall of a frame house.

Figure 3 is a sectional view similar to Figure 1 showing the frame arranged for application to a brick or masonry wall.

Figure 4 is an outside elevational view of a circle window, one of the key blocks being removed and only a small section of the screen being shown in position.

Figure 5 is a sectional view on line 5-5 of Figure 1 showing a semi-circular blind stop for the upper sash of my window; and

Figure 6 is a sectional view on line 6-6 of Figure 1 showing how the upper sash is mounted and supported in the frame of the window.

On the accompanying drawings I have used the reference numeral 10 to indicate an outer casing member. The member 10 is formed of several sections, the joints between which are indicated at 11. These joints may be glued and doweled together in the usual manner, the dowels being indicated at 12.

The frame of the window is made of annular pieces or rings of lagging indicated at 13, 14, 15, 16 and 17, respectively. The shape of the ring of lagging 13 is shown in Figure 5. It comprises a lower half having an inner surface of a predetermined radius, such surface being indicated at 18. This surface is cut away as at 19 adjacent the lower part thereof to provide a sloping sill for water drainage, as will hereinafter appear. The upper half of the ring is formed at a relatively larger radius indicated at 20. The purpose of this arrangement is so that a semi-circular blind stop 21 may be mounted and supported therein. Support of the blind stop is secured by shoulders 22 which form the transitions from the radius 18 to the radius 20. The blind stop 21, as indicated by dotted lines, may first have one end inserted in position, whereupon the dotted end may then be sprung on to its shoulder 22 and the blind stop will thereafter remain in this position.

The blind stop 21 normally retains an upper sash US in position in the window frame but may

be sprung out of the position shown by full lines when it is desired to remove the sash US from the window frame. The upper sash US includes a bottom rail 23, a semi-circular stile 24 and radial mullions 25.

As shown in Figure 6 the ring 14 is provided with a lower half of a radius indicated at 18a and an upper half having a radius indicated at 20a. This provides shoulders 22a, the same as in the case of the ring 13. It will be noted by referring to Figure 1 that the radius at 20 is slightly larger than the radius at 20a, while the internal radius of the outer casing 10 is substantially the same as the radius 20a. Accordingly, when the rings of lagging forming the window frame are fastened together, the upper sash US can be inserted through the members 10 and 13 to its position in the ring 14. Its inner face will then rest against the ring 15 which, it will be noted, has a smaller inside radius than the radius 20a of the ring 14. Thereafter when the blind stop 21 is sprung into position, the sash US is effectively supported and normally retained in its desired position but can subsequently be removed if necessary for repair or replacement.

I provide a lower sash LS having an upper rail 23a, a semi-circular stile 24a and radial mullions 25a. The lower sash LS is provided with a peripheral groove 26 for guiding and weatherstripping purposes. Mounted in this groove is an inwardly directed flange 27 of an annular weather strip W. The weather strip W may be made of bronze or any suitable resilient and rust-proof metal and is annular in formation. It has attaching flanges 28 and 29 which may be fastened as by nails 30 to the lagging rings 15 and 16. During assembly the circular weather strip W is arranged in the groove 26 of the lower sash LS before the lower sash is placed in position in the frame. Before the circular inside stop 31 is mounted in the frame, the weather strip W together with the lower sash LS are inserted through the rings 16 and 17 until the outer edge of the flange 28 rests against the fixed upper sash US. The lower part of the flange 29 is aligned with the joint between the lagging rings 14 and 15. The nails 30 are then driven into position, the lower sash LS being rotated during this operation to permit progressive access to the full circumference of the weather strip W.

A clamp bolt 32 is mounted through the rails 23 and 23a and provided with a wing nut 33. This clamp bolt, as shown in Figure 2, is effective to urge the rails 23 and 23a towards each other at their center, thus slightly bowing them and producing sufficient friction between the ends of the rail 23a and the guide and weather strip W to prevent undesired rotation of the lower sash LS. When the wing nut 33 is released, the lower sash can be readily rotated a half turn to open position or returned to closed position, as desired. For convenience in the opening and closing operations, I provide a knob 34 substantially spaced from the center of rotation.

The rail 23a of the lower sash has a convex molding 35 extending throughout its length. Secured to the rail 23 of the upper sash is a weather strip W' of resilient bronze or the like. The weather strip W' comprises an elongated leaf anchored as by means of nails 36 along one side edge thereof, the free side of the leaf resiliently engaging the convex molding 35 when the lower sash is in closed position. At the center of the weather strip W' a perforation 37 is

provided for the clamp bolt 32. The coaction of the weather strip W' and the molding is such that an effective seal against infiltration of air and water is provided whenever the window is in closed position.

The resilience of the weather strip W' will permit the bending of the rails 23 and 23a, as shown in Figure 2, yet maintaining the weather seal contact between the weather strip W' and the molding 35. Due to the convexity of the molding 35, the lower sash LS may be rotated from an open to a closed position without distorting the weather strip W'. When the outer edge of the molding 35 engages the weather strip, it gradually and progressively springs the weather strip toward the rail 23 and finally permits full line contact between the elements W' and 35 adjacent closed position of the lower sash.

In Figures 1 and 4 I illustrate the window frame as being mounted in a wall 38 of a frame house. I provide key blocks 39 which serve the double purpose of the usual ornamentation for circle window frame casings and protect the joints 11 of the circular casing 10 from the weather. I rabbet the backs of the key blocks, as indicated at 40, so that they fit over the outer edge of the casing 10 instead of being mortised into it as in the usual construction. Thus the key blocks provide a protective cover for the joints and can be neatly mounted on the casing 10.

Where my window frame is to be used in a brick or masonry wall, as indicated at 41 in Figure 3, the key blocks 39 are omitted and a circular molding 42 substituted. The lagging ring 14 is also provided with a portion cut at a radius indicated at 19a in Figure 1. This portion and the portion 19 of the ring 13 provide a sloping sill for permitting drainage of water from within the window frame outwardly on to the casing 10 and finally down the outside of the house.

Within the casing 10 I mount a screen S, the frame of which is indicated at 43. The screen engages the stop 21 and also the ring 13 adjacent its radius 18, whereby the stop and ring serve as a screen stop. The screen may be held in position by any suitable means, such as hooks 44 and eyes 45 at the sides of the screen and window frame. The lagging ring 17 serves as a plaster reception groove to interlock the whole frame in the wall. An inner circular molding 46 serves as an inner casing for the circle window. In addition to the clamp bolt 32 a lock (not shown) can be provided, spaced from the center of rotation, if desired.

I have provided a circle window frame which has many advantages of construction and assembly from a manufacturing standpoint. At the same time the fixed sash is effectively supported and retained in position and the movable sash is arranged for ready adjustment. The joints between the sashes and between the movable sash and the frame are effectively sealed against infiltration of air. These joints are such that the movable sash can be made substantially smaller than the frame, thereby providing sufficient play to eliminate the possibility of the movable sash swelling and binding in the frame. The parts of the structure are so arranged that installation of the window frame and of the sashes in the frame is a comparatively simple and easy matter.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use

of mechanical equivalents which may be reasonably included within their scope.

I claim as my invention:

1. In a circle window, a circular frame having in one vertical plane thereof a lower half of predetermined radius and an upper half of a relatively greater radius, a semi-circular upper sash in said upper half of said frame and supported at the ends of its bottom rail on the shoulders of the frame which are provided by the transition of the frame from said lower half of one radius to said upper half of greater radius and a semi-circular lower sash supported in said frame in a second plane spaced from said first plane.
2. In a circle window, a circular frame having in each of two vertical planes thereof spaced from each other, a lower half of predetermined radius and an upper half of relatively greater radius, a semi-circular upper sash in said upper half and supported on the shoulders formed by transition of said frame in one of said planes from one radius to the other and a semi-circular blind stop in the upper half of said frame and supported on the shoulders formed by transition of said frame from one radius to the other in the second of said planes.
3. In a circle window, a circular frame having in one vertical plane thereof a lower half of predetermined radius and an upper half of a relatively greater radius, a semi-circular upper sash in said upper half of said frame and supported on shoulders of the frame which are formed by transition of the frame from said lower half to said upper half of greater radius and a semi-circular lower sash supported in said frame in a second plane spaced from said first plane, said lower sash having a grooved periphery, a circular weather strip arranged around the inner surface of said frame and having an inwardly projecting flange received in said groove and thereby guiding said lower sash in its circular adjustment to open and closed positions.
4. In a window of the character described, a circular frame having in one vertical plane thereof a lower half and an upper half of relatively different radii, a semi-circular upper sash in one of said halves of said frame and having the corners thereof engaging shoulders of the frame which are formed by transition of the frame from one of said radii to the other to prevent rotation of said sash relative to said frame and a second semi-circular sash supported in said frame in a second plane spaced from said first plane.
5. In a window of the character described, a circular frame having in two vertical planes spaced from each other, a lower half of predetermined radius and an upper half of a different radius than the lower half, a semi-circular sash in said frame and engaging shoulders formed by transition of said frame in one of said planes from one radius to the other and a semi-circular blind stop in the said frame and engaging shoulders formed by transition of said frame from one radius to the other in the second of said planes.
6. In a window of the character described, a circular frame having in one vertical plane thereof a lower half and an upper half of relatively different radii, a semi-circular upper sash in one of said halves of said frame and having the corners thereof engaging shoulders of the frame which are formed by transition of the frame from one of said radii to the other to prevent rotation of said sash relative to said frame and a second semi-circular sash supported in said frame in a second plane spaced from said first plane, said second sash having a grooved periphery, a circular weather strip arranged around the inner surface of said frame and having an inwardly projecting flange received in said groove and thereby guiding said second sash in its rotary adjustment to open and closed positions, and a clamp bolt extending through said sashes at the center of rotation of said movable sash.
8. In a circle window, a circular frame having a lagging ring in one vertical plane thereof having a lower half of predetermined radius and an upper half of a relatively greater radius, a semi-circular sash in said frame, a semi-circular blind stop for said sash supported at the ends of its bottom rail on the shoulders of the frame which are provided by the transition of the frame from said lower half of one radius to said upper half of greater radius, a screen supported in said frame, said blind stop and the lower half of said lagging ring engaging said screen to limit inward movement thereof relative to said frame and means to retain said screen in engagement therewith.
9. In a circle window, a circular frame having an outer casing member formed of sections with the ends thereof joined together and key blocks having rabbeted portions overlying the joints between said sections.
10. In a circle window, a circular frame having a lagging ring in one vertical plane thereof provided with a lower half of predetermined radius and an upper half of a relatively greater radius, a semi-circular sash in said frame and a semi-circular blind stop for said sash supported at the ends of its bottom rail on the shoulders of the frame which are provided by transition of the frame from said lower half of one radius to said upper half of greater radius.
11. In a circle window, a circular frame having in one vertical plane thereof, a lower half of predetermined radius and an upper half of a relatively greater radius, a semi-circular upper sash in said upper half of said frame and supported at the ends of its bottom rail on the shoulders of the frame which are provided by the transition of the frame from said lower half of one radius to said upper half of greater radius, a semi-circular lower sash in said frame on a second plane spaced from said first plane and a bolt through the lower rail of said upper sash and through the upper rail of said lower sash to support the lower sash from the upper sash on said shoulders when the lower sash is in open position.

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