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J. SYLVAN

VENTILATING SKYLIGHT

Filed Jan. 9, 1924

2 Sheets-Sheet 1

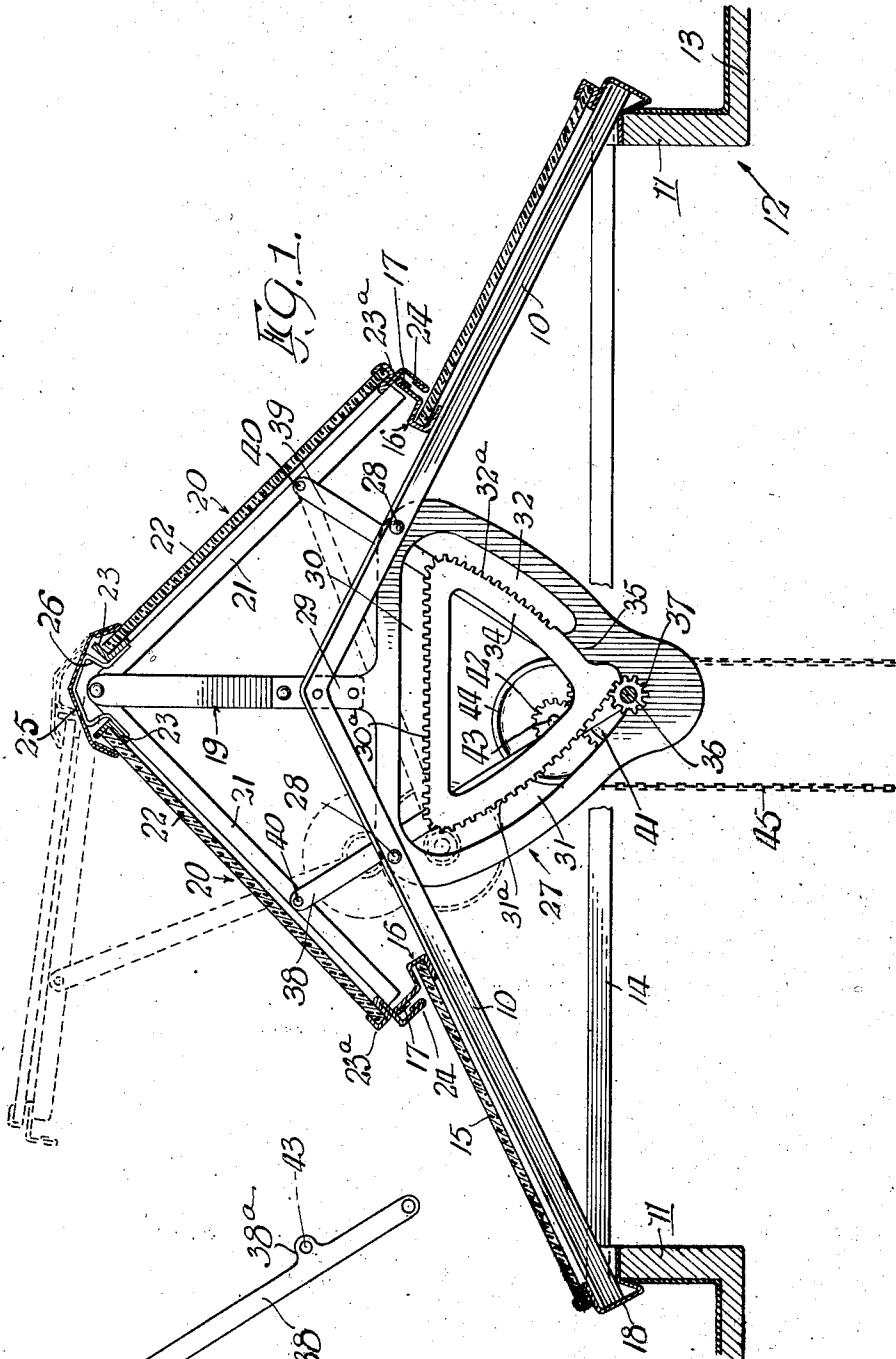


FIG. 1.

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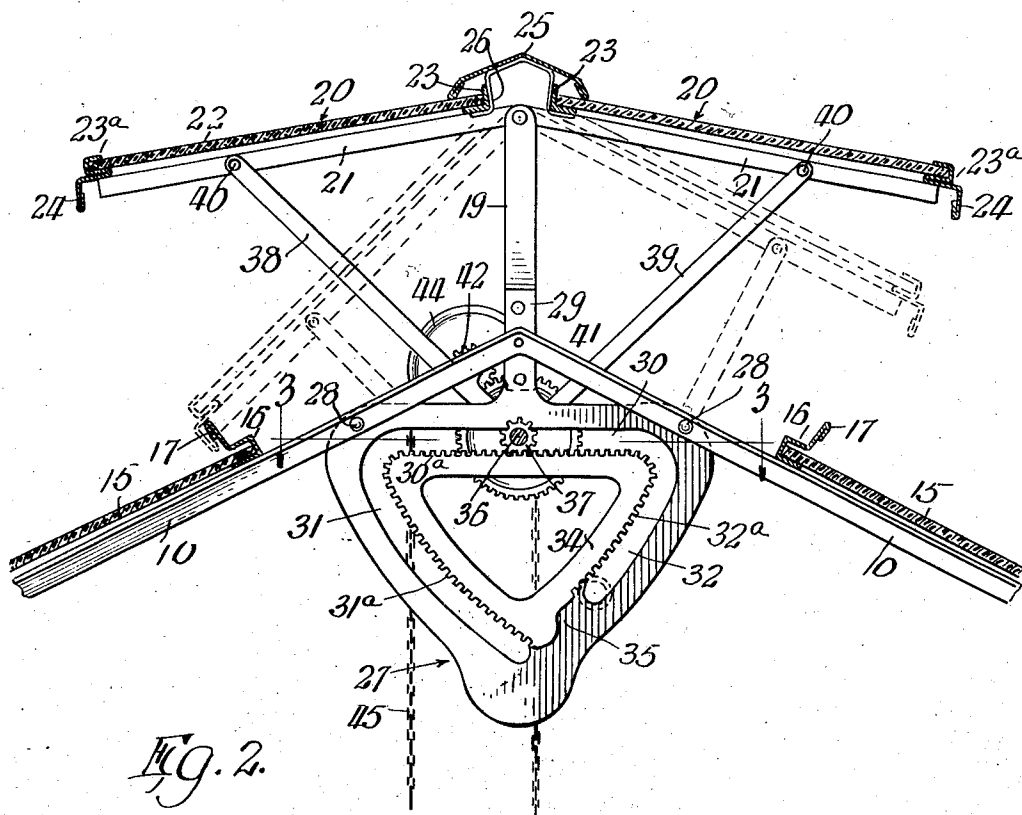


Fig. 2.

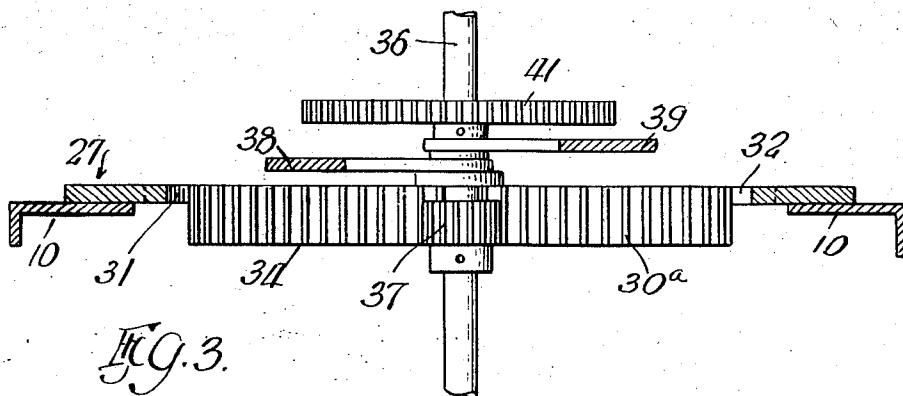


Fig. 3.

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UNITED STATES PATENT OFFICE.

JOSEPH SYLVAN, OF CICERO, ILLINOIS, ASSIGNOR TO AMERICAN 3-WAY LUXFER PRISM CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

VENTILATING SKYLIGHT.

Application filed January 9, 1924. Serial No. 685,074.

To all whom it may concern:

Be it known that I, JOSEPH SYLVAN, a citizen of the United States, and a resident of Cicero, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ventilating Skylights; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in ventilating skylights and consists of the matters hereinafter described and more particularly pointed out in the appended claims.

The object of the invention is to provide a new, novel and improved operating mechanism for that type of ventilating skylight illustrated and described in my prior Patent No. 1,410,625, issued on March 28, 1922.

The many advantages of the improved operating mechanism will more fully appear as I proceed with my specification.

In the drawings:—

Fig. 1 is a transverse section through a ventilating skylight embodying my improved operating mechanism.

Fig. 2 is a view similar to Fig. 1 with the parts shown in a changed relation.

Fig. 3 is a horizontal sectional view on an enlarged scale as taken on the line 3—3 of Fig. 2.

Fig. 4 is a view in elevation of one of the links which connects one of the ventilator sections to the operating shaft.

Referring now in detail to that embodiment of the invention illustrated in the accompanying drawings:—10, 10 indicates the downwardly and outwardly inclined rafters of a skylight the outer ends of which rest upon and are secured to the curb walls 11, 11, said walls defining a skylight opening 12 in a building roof 13. The outer ends of each pair of said rafters of the skylight are connected together by a transversely extending brace bar 14.

Supported upon the outer ends of the rafters 10, 10 are the stationary panel sections 15 of the skylight. The inner ends of said panel sections rest upon panel stop strips 16 which extend longitudinally of the skylight and are secured to the rafters at a point midway between their ends in a manner

rigidly connecting them together. Said strips each include an upwardly and outwardly inclined flashing flange 17 which overhangs the adjacent margin of the panel 15. The outer ends of said panels engage upon panel or glass stops 18 which enclose the ends of the rafters and include parts to rest upon the top of the curb walls 11 to prevent the entrance of the weather elements along the top thereof. It is apparent that an opening is defined at the ridge of the skylight by the panel stop strips 16 at the inner ends of the skylight panel sections 15.

19 indicates an upright standard, one of which is associated with each pair of rafters 10 and which is operatively connected to the inner or ridge ends of the rafters 10, as will later appear.

20, 20 indicates the movable ventilator sections, which are pivotally connected to the top ends of the standards 19 in any suitable manner. Each movable ventilator section 20 comprises transversely extending angle bars 21 and glass panels 22 which are secured in place by inner and outer glass stops 23 and 23^a respectively, the inner stop bar 23 being an angle bar and the outer stop bar 23^a being made of sheet metal and including a downwardly facing flange 24. The inner adjacent ends of the ventilator sections 20, 20 are spaced apart, as shown in Figs. 1 and 2, and a flexible ridge strip 25 is employed to close the space between said sections. Said ridge strip is held in place by longitudinally spaced clips 26, the ends of which engage beneath the angle bars 23, said clips yielding to permit a floating movement of the ridge strip when a relative movement occurs between the panel sections 20.

27 indicates an inverted substantially triangular shaped rack plate which extends parallel with and is secured to certain of the rafters at points 28, 28 spaced an equal distance on each side of the longitudinal median line of the skylight. Said rack plate has an upright extension 29 to which the meeting ends of some of the rafters 10 and the bottom ends of the standards 19 are attached.

In said rack plate is a triangular slot which includes a main horizontal middle part 30 and two downwardly converging end parts 31 and 32, the part 31 being the longer and terminating at its bottom end in the

median line of said rack plate, while the other part 32 terminates short of this point, as shown in Figs. 1 and 2.

The inner part 34 of the rack plate defined by the slots 30, 31 and 32 is of a depth greater than the remainder of said plate and is connected thereto by a neck 35 which separates the slot parts 31, 32. The outer periphery of the part 34 of the plate has teeth to provide rack bars 30^a, 31^a and 32^a respectively.

36 indicates the main operating shaft of the skylight which extends substantially the full length of the skylight and through the slot or opening in each plate 27 employed in the skylight. Fixed to said shaft are pinions 37 one for each plate 27, which pinions are adapted to mesh with the rack bar parts 30^a, 31^a and 32^a respectively. Ordinarily only one of such rack plates need be employed at each end of the skylight but in skylights of great lengths, other rack plates may be arranged throughout the length thereof.

38 and 39 indicate links of the same length which operatively connect the shaft 36 with the movable ventilator sections 20, 20. As shown herein, the outer ends of said links are pivoted at points 40, 40 on the bars 21, 21 which points are spaced at equal distances from the inner ends of the ventilator sections 20, 20. The converging slot parts 31, 32 in the plates 27 are made on an arc having a radius equal to the length of the links 38 and 39 respectively, for a purpose to appear later.

Secured to the shaft 36 a short distance from the pinion 37 is a spur gear 41. This gear is engaged by a pinion 42 secured to one end of a short shaft 43 which is journaled in an extension 38^a (see Fig. 4) of the link 38. On the other end of the short shaft 43 is fixed a chain wheel 44 about which is trained an endless chain 45, which hangs in a loop so as to be conveniently actuated by a person standing on the floor of the building beneath the skylight.

When the ventilator sections 20, 20 are in their normally closed positions, as shown in full line in Fig. 1, the glass stops 23^a rest upon the flanges 17 of the glass stop 16 of the stationary panel 15 and the operating shaft 36 is located in the lowermost end of the slot part 31, which in this instance is in the plane of the standards 19. Should it be desired to swing the left hand section 20 into an open position, the chain 45 is actuated to rotate the pulley 44 which through the pinion 43, gear 41 and pinion 37 will rotate the shaft 36. As the pinion 37 is fixed to said shaft it will, of course, rotate with it and by reason of its engagement with the rack teeth 31^a, said pinion will move upwardly in the slot part 31. By reason of the fact that the slot parts 31^a, 32^a are made

on a radius equal to the length of the links 38 and 39, the right hand section 20 will remain closed until the dotted line position shown in Fig. 1 is reached, which position is at about the corner or junction between the horizontal part 30 and said downwardly and inwardly curved part 31.

Should it be desired to swing both sections into their wide open position, the chain 45 is further actuated until the shaft 36 is midway between the ends of said horizontal part 30, when the ventilator sections will be in the wide open position, shown in full lines in Fig. 2.

If it is desired that only the right hand ventilator section be open the chain is actuated until the shaft 36 reaches in the bottom end of the slot part 32, when the left hand section will be closed and the right hand section will be in the open position shown in dotted lines in Fig. 2.

The use of the gearing 37, 41 and 42 is advantageous in that it acts to prevent reverse movement of the actuating gearing under the weight of the open ventilator section when the shaft 36 is intermediate the ends of one or the other of the slot parts 31, 32. By reason of such construction, the ventilator sections are securely held in any intermediate open position.

The operating mechanism is simple in construction, is positive in its operation and consists of but a few parts which cannot readily get out of order.

While in describing my invention I have referred to certain details of construction and arrangement of parts, I do not wish to be limited thereto except as may be pointed out in the appended claims.

I claim as my invention:

1. A ventilator construction of the kind described, comprising in combination with means providing a ventilation opening, oppositely arranged angularly disposed, ventilator sections normally closing said opening, said ventilator sections being pivoted at their adjacent margins and being capable of a swinging movement away from and toward said ventilation opening, a longitudinally extending operating shaft capable of travelling movement in a substantially triangular shaped path, and links connecting said shaft with said ventilator sections.

2. A ventilator construction of the kind described, comprising in combination with means providing a ventilation opening, oppositely arranged angularly disposed ventilator sections normally closing said opening, said ventilator sections being pivoted at their adjacent margins and being capable of a swinging movement away from and toward said ventilation opening, a longitudinally extending operating shaft, means providing a triangularly shaped guideway

in which said shaft is capable of a lateral movement, said shaft and said means having coacting parts which compel the shaft when rotated to follow the guideway, links connecting said shaft with said ventilator sections, and means for rotating the shaft.

3. A ventilator construction of the kind described, comprising in combination with means providing a ventilation opening, oppositely arranged angularly disposed ventilator sections normally closing said opening, said ventilator sections being pivoted at their adjacent margins and being capable of a swinging movement away from and toward said ventilation opening, a longitudinally extending operating shaft, links connecting said shaft and ventilator sections, and means for causing said shaft when rotated to travel in a path of such contour that one ventilator section will swing away from said opening when said shaft is traveling in one part of said path, and the other ventilator section will swing away from said opening when said shaft is traveling in another part of said path, and means for rotating said shaft.

4. A ventilator construction of the kind described, comprising in combination with means providing a ventilation opening, oppositely arranged angularly disposed ventilator sections normally closing said opening, said ventilator sections being pivoted at their adjacent margins and being capable of a swinging movement away from and toward said ventilation opening, a longitudinally extending operating shaft, a pinion on said shaft, means providing a rack arranged transversely of said ventilator opening and having a horizontal middle part and downwardly and inwardly converging end parts, said rack being constructed to hold said pinion in mesh therewith, so that said shaft when rotated will follow said parts of said rack, and links connecting said ventilator sections with said shaft.

5. In combination with means providing a ventilation opening, oppositely arranged angularly disposed ventilator sections normally closing said openings, said sections being pivoted at their adjacent margins and capable of a swinging movement away from and toward said opening, a plate provided with a substantially triangular slot therein having a horizontal part and two converg-

ing end parts, a shaft adapted to travel in said slot, and links operatively connecting said ventilator sections with said shaft.

6. In combination with means providing a ventilation opening, oppositely arranged angularly disposed ventilator sections normally closing said openings, said sections being pivoted at their adjacent margins and capable of a swinging movement away from and toward said opening, a plate provided with a substantially triangular slot therein with a horizontal part and two converging end parts, said plate having rack teeth along one edge of said slot, a shaft adapted to extend through said slot, links connecting said shaft and ventilator sections, a pinion on said shaft and engaged with the rack teeth, and means for rotating said shaft.

7. In combination with means providing a ventilation opening, oppositely arranged angularly disposed ventilator sections normally closing said openings, said sections being pivoted at their adjacent margins and capable of a swinging movement away from and toward said opening, a plate having a substantially triangular slot therein with a horizontal part and two converging end parts, said plate having rack teeth along one edge of said slot, a shaft adapted to extend through said slot, links connecting said shaft and ventilator sections, said end parts of the slot being made on an arc corresponding to the length of said links, and means for rotating said shaft.

8. In combination with the rafters of a skylight, stationary panels on said rafters spaced apart to provide a ventilation opening, a pair of movable ventilator sections normally closing said opening and capable of a movement to open and close said opening, a rack plate secured to said rafters having a slot therein including a horizontal part and two converging end parts, said plate having rack teeth along one side of said slot, a shaft extending through said slot, a pinion on said shaft operatively engaging with the rack, links connecting said ventilator sections and said shaft, and means for rotating said shaft.

In testimony that I claim the foregoing as my invention, I affix my signature this 4th day of December, 1923.

JOSEPH SYLVAN.