

(No Model.)

J. W. FOWLER.
CAR VENTILATOR.

3 Sheets—Sheet 1.

No. 415,360.

Patented Nov. 19, 1889.

Fig. 1.

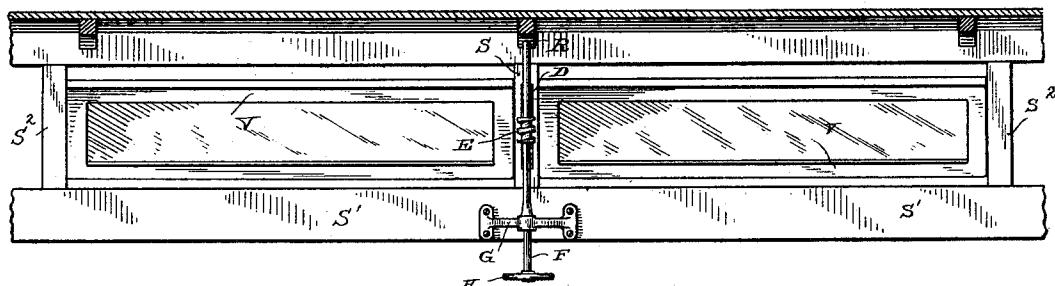


Fig. 2.

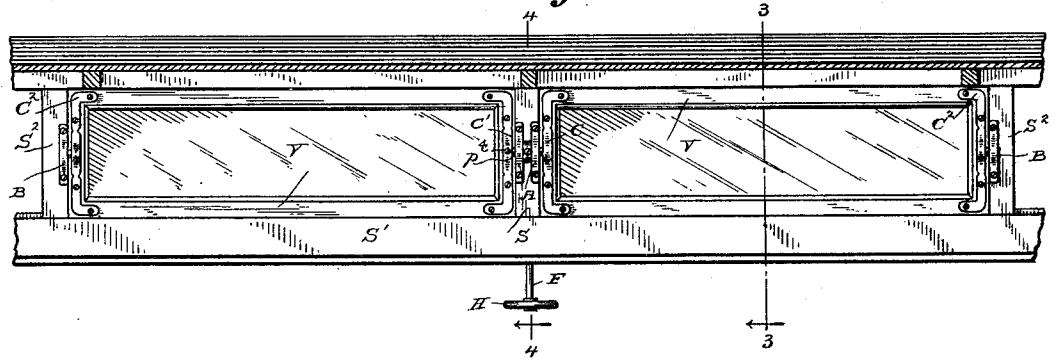
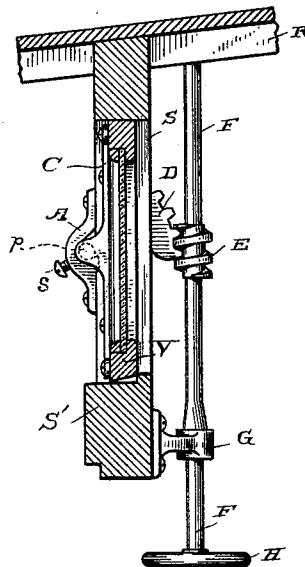


Fig. 3.



Witnesses

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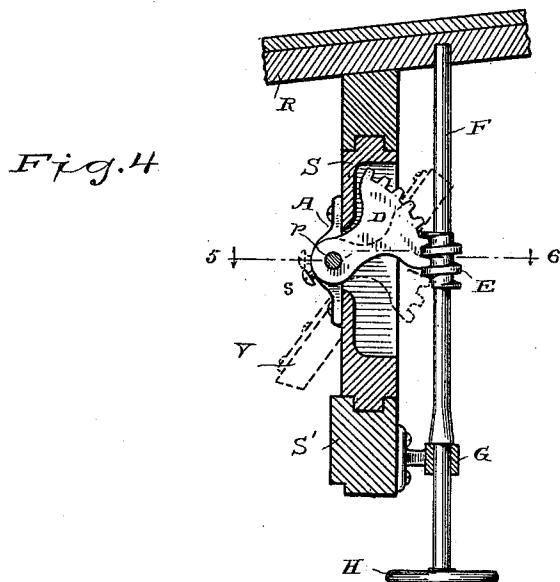


Fig. 5.

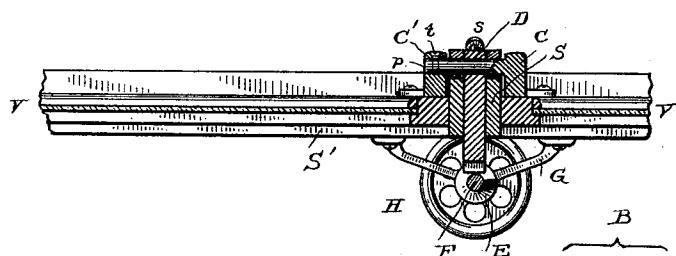


Fig. 7.

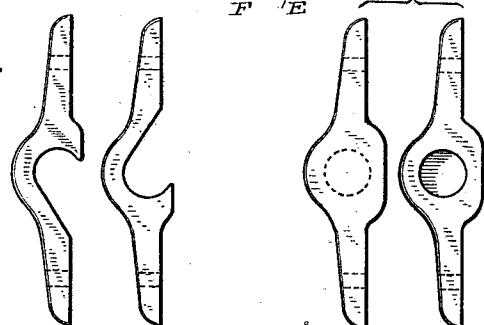


Fig. 6.

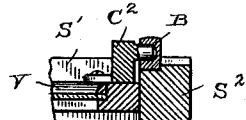


Fig. 8.

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3 Sheets—Sheet 3.

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Fig. 9.

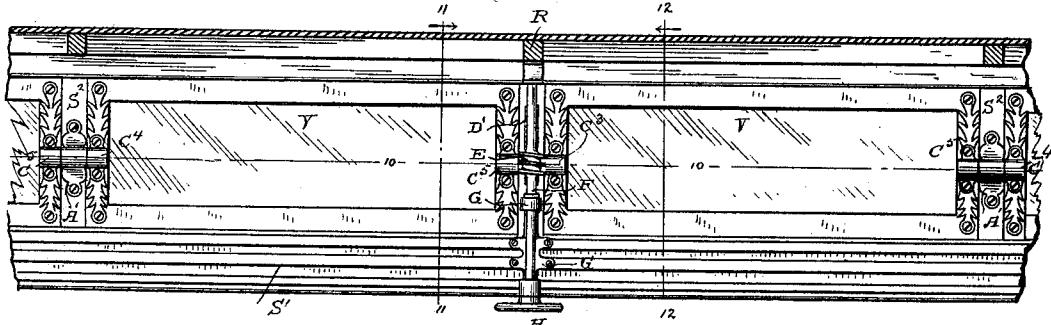


Fig. 10.

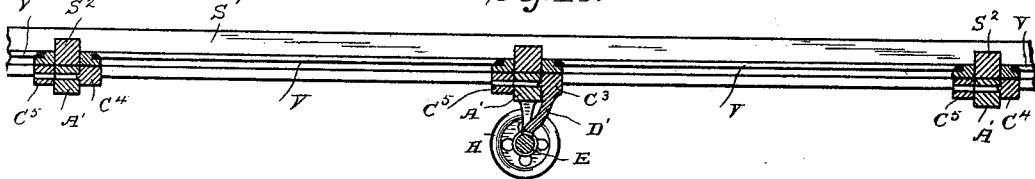
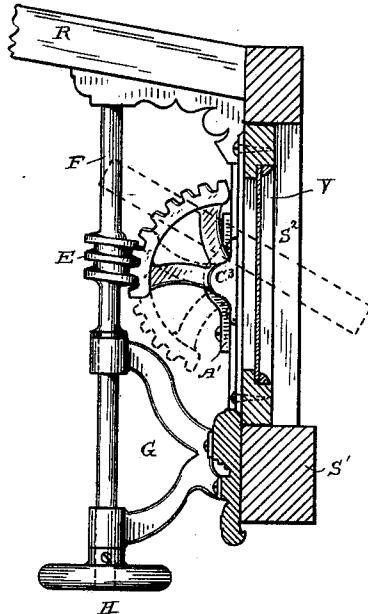
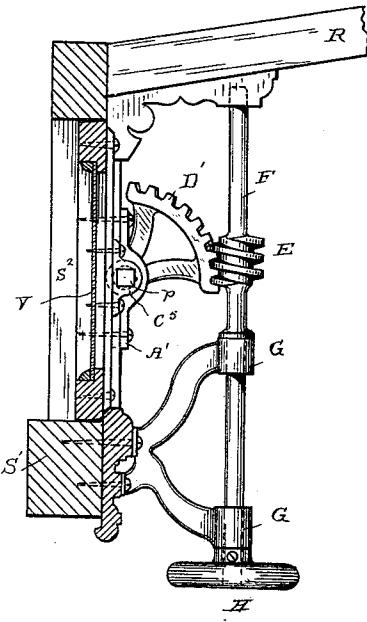


Fig. 11.

Fig. 12.



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UNITED STATES PATENT OFFICE.

JOHN W. FOWLER, OF BROOKLYN, NEW YORK.

CAR-VENTILATOR.

SPECIFICATION forming part of Letters Patent No. 415,360, dated November 19, 1889.

Application filed July 24, 1889. Serial No. 318,477. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. FOWLER, a citizen of the United States, and a resident of Brooklyn, in the State of New York, have invented a new and useful Improvement in Car-Ventilators, of which the following is a specification.

This invention relates to means for pivoting, operating, and fastening the side windows or ventilator-sashes in the "domes" of street-cars and other railway-cars having "Bombay" and "monitor" roofs.

The invention consists in certain novel combinations of parts, hereinafter set forth and claimed.

The objects of the invention are, first, to so pivot such ventilator-sashes that two or more on one side may be securely coupled together, so as to be operated and fastened by one and the same device without obstructing the glass and without subjecting it to torsional strain, so that oblong sashes of any required length may be so coupled together end to end; secondly, to provide for readily operating such sashes, and at the same time for securely fastening them in any of their positions by a simple screw-and-sector device, and, thirdly, to combine the pivoting, operating, and fastening devices above named in a compact and sightly arrangement of parts.

Three sheets of drawings accompany this specification as part thereof.

Figure 1 of the drawings, Sheet 1, represents a face view from inside a car of a pair of partly-opened ventilator-sashes, their frames and adjoining parts provided with my devices. Fig. 2 represents an outside view of the same car portion, showing the ventilator-sashes closed; and Fig. 3 represents a vertical section on the line 3 3, Fig. 2, enlarged one diameter. Fig. 4, Sheet 2, represents a like section on the line 4 4, Fig. 2. Figs. 5 and 6 represent longitudinal sections through the pivot-bearings on the line 5 6, Fig. 4; and Figs. 7 and 8 represent large scale views of the respective pivot-bearings detached in the two positions of each. Fig. 9, Sheet 3, represents a face view from inside a car of a modified arrangement of my ventilator-operating devices. Fig. 10 represents a plan view of the same sectionized in a

broken plane, which is indicated at 10 in Fig. 9. Fig. 11 represents a vertical section on the line 11 11, Fig. 9, enlarged one diameter, showing details with the aid of dotted lines; 55 and Fig. 12 represents a like vertical section on the line 12 12, Fig. 9, showing the opposite side of the screw-and-sector device and illustrating the open position of the ventilator by dotted outlines. 60

Like letters of reference indicate corresponding parts in the several figures.

In carrying this invention into effect in either of the ways illustrated by the drawings the stiles S S² of the side frames of the car-dome are provided with horizontal pivot-bearings A, B, or A', and two or more endwise-adjoining ventilator-sashes V are provided correspondingly with pivot attachments C C' C² or C³ C⁴ C⁵, which rigidly connect the sashes 70 by horizontal pivots p and brace the same against torsional strain by attaching-plates extended across the corner-joints of the sashes, as shown in Figs. 2 and 9. All the sashes on one side of a dome may thus be coupled together, as indicated in Figs. 9 and 10; or they may be coupled together in separately-adjustable pairs, as indicated in Figs. 1 and 2. A toothed sector D or D' is rigidly connected with one of the pivots, and preferably with 80 the central pivot of the pair or series of ventilator-sashes V, and is meshed by an endless screw or worm E, which is carried by a short vertical shaft F within the dome. The shaft F is held in place and supported against displacement downward by a bearing-bracket G, attached to the inner face of the longitudinal sill S' of the dome, its bearing or bearings embracing the shaft below a shoulder on the latter. The shaft is supported at its upper 90 end by an inverted step-bearing formed in or attached to a rib R of the dome-roof. A hand-wheel H, made fast on the lower end of the shaft F, provides for readily turning the shaft by hand, and thereby turning the worm 95 E and working the sector D, so as to simultaneously operate the pair or series of ventilator-sashes V, as may be desired. At rest the worm E, supported endwise by the shaft F and its bearings and coacting through the 100 sector D with the connected sashes, automatically and securely fastens the latter open, as

shown in Fig. 1 and in dotted lines in Figs. 4 and 12; closed, as shown in Figs. 2, 3, 9, and 11, and in full lines in Figs. 4 and 12, or in any other position in which they may be left 5 when the hand is removed from the hand-wheel H.

In the arrangement illustrated by Figs. 1 to 8, inclusive, Sheets 1 and 2, the stiles S S² are provided outside with peculiar pivot-bearings A B, Fig. 2, &c. (Shown detached by Figs. 7 and 8.) Two patterns of these suffice, each being invertible for different positions, as illustrated in the figures. The ventilator-sashes V are also provided externally with 15 their peculiar pivot attachments C C' C². The pivot-bearings A and the pivot attachments C C' coact at the adjoining ends of the sashes, and said pivot attachment C carries the pivot p, Figs. 3 to 5, common to both attachments, 20 the attachment C' having a socket, within which its end of the pivot is secured against turning by a through-screw t, Fig. 5. The pivot-bearings B and the pivot attachments C² coact at the outer ends of the pair or series 25 of sashes, and one pattern of each suffices, as illustrated by Figs. 2 and 8. Between its pair of pivot-bearings A the pivot p, or one such pivot, as the case may be, of each pair or series of ventilator-sashes, is provided with a 30 toothed sector D, made fast upon the pivot in proper position by a screw s, and extending inward through a recess in the stile S to the worm E, as shown in Figs. 1, 2, and 4.

In the arrangement illustrated by Figs. 9 to 12 on Sheet 3 of the drawings all the attachments are brought within the dome, so as to assist in decorating the interior, and so as to be protected against the weather. In this arrangement suitable pivot-bearings A', 40 which may be of one pattern, are affixed to the stiles S² inside, and pivot attachments C³ C⁴ C⁵ are affixed to the inner surfaces of the ventilator-sashes V, the attachments C³ and C⁴, having the pivots p integral therewith, 45 and the attachments C⁵, having sockets fitted to squares, for example, on the extremities of the pivots p, while the toothed sector is conveniently formed on said attachment C³, as shown at D', and thus in the most simple 50 manner rigidly connected with its pivot.

Details in both arrangements, which have not been specified, are clearly shown in the drawings, or may be of an ordinary description.

My devices are shown applied to the ventilator-sashes of monitor car-roofs. Their application to those of Bombay roofs and other like modifications will be readily effected by car-builders without further description. 55

Having thus described the said improvement, I claim as my invention and desire to patent under this specification—

1. In combination with two or more oblong ventilator-sashes adjoining each other end to end and with the car-dome stiles between 60 which they are fitted, pivot-bearings attached to said stiles, and pivot attachments affixed to the respective sashes and having attaching-plates extended across the corner-joints of each sash, one of said pivot attachments 65 carrying the pivot common to two at each point where two of the sashes adjoin, and another of them having a socket which receives said pivot and provided with means whereby it is made to turn with the pivot, 70 and thus to turn the sash to which it is affixed, substantially as hereinbefore specified. 75

2. In combination with a car-dome frame and its movable ventilator-sashes, a horizontal pivot common to two endwise-adjoining 80 sashes and rigidly connected with both, a toothed sector rigidly connected with said pivot, a worm meshing said sector, a vertical shaft which carries said worm, bearings for said shaft which limit it to rotation, and 85 means for turning it by hand, substantially as hereinbefore specified.

3. The combination, in a car-dome, of side frames the stiles of which are provided with horizontal pivot-bearings, endwise-adjoining 90 ventilator-sashes provided with pivot attachments which rigidly connect and brace the sashes and comprise a pivot common to two at each point where two of the sashes adjoin, a toothed sector rigidly connected with one 95 of the pivots, a worm within the dome meshing said sector, a short vertical shaft which carries said worm, bearings for said shaft which limit it to rotation, and a hand-wheel fast on its lower end, substantially as herein- 100 before specified.

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Witnesses:

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