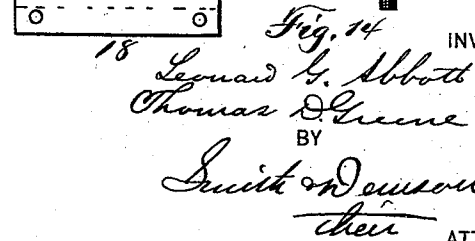
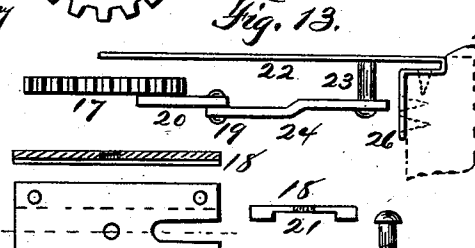
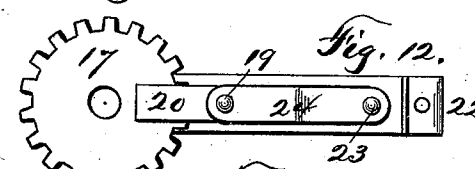
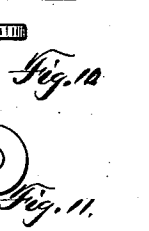
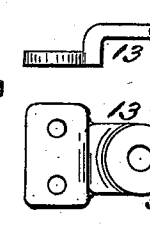
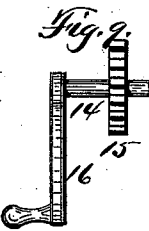
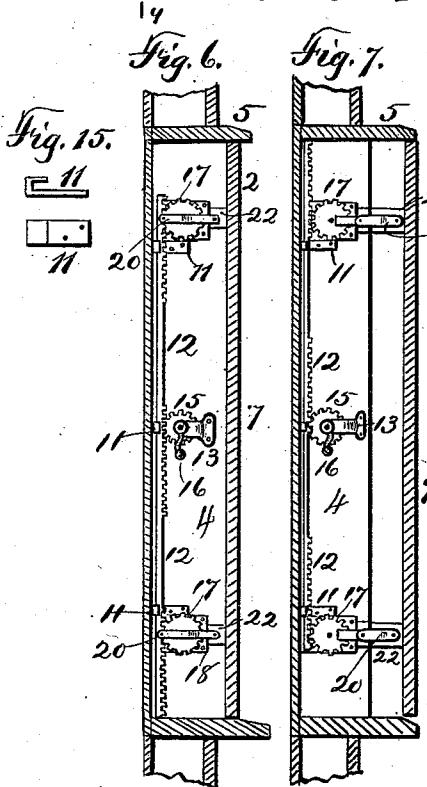
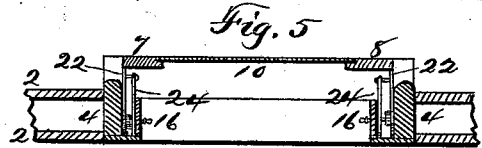
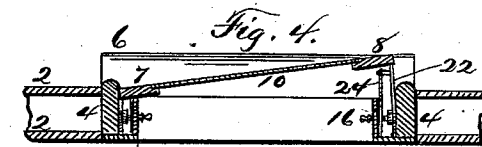
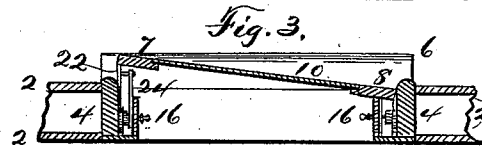
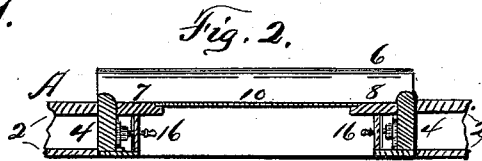
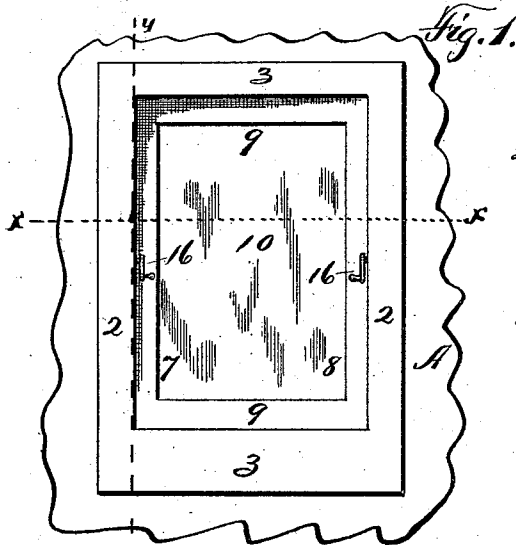


(No Model.)

L. G. ABBOTT & T. D. GREENE.
SWINGING SASH MOUNTING.

No. 531,244.

Patented Dec. 18, 1894.



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UNITED STATES PATENT OFFICE.

LEONARD G. ABBOTT AND THOMAS D. GREENE, OF SYRACUSE, NEW YORK.

SWINGING-SASH MOUNTING.

SPECIFICATION forming part of Letters Patent No. 531,244, dated December 18, 1894.

Application filed May 10, 1894. Serial No. 510,688. (No model.)

To all whom it may concern:

Be it known that we, LEONARD G. ABBOTT and THOMAS D. GREENE, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Swinging-Sash Mountings, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

Our invention relates to swinging window sash, and to mechanisms for mounting and swinging the same to open either edge, leaving the other closed, or, if desired to open both edges, so that the sash will stand either at a diverging angle to, or parallel with, the casing.

Many means have been devised in the way of roof-ventilation in conjunction with sash adapted to be raised or dropped for the purpose of ventilating railway cars or other vehicles, either with or without screens and appliances to exclude cinders, smoke and dust, which are more or less objectionable, and particularly as the open windows raised or dropped create strong drafts, and by their blowing into the car carry in the smoke, dust and cinders. The object of our invention is to provide means whereby all this is averted and avoided, in that the motion of the train creates and maintains a suction which draws or sucks the air out of the car and thus prevents the strong blowing-in draft, and the constant out-draft prevents the entrance of smoke, dust and cinders; in which the sash is hinged at both edges, each hinge having an extensible leaf, and means are provided whereby either edge of the sash can be swung outward, swinging upon the hinges which support the other edge, thereby permitting the opening of the rearward edge of the sash, and whereby the motion of the train creates a suction of air out from the car, and the cinders and other flying objects are deflected away from the car by striking the inclined and outwardly projecting face of the sash, and the outward suction and out-draft prevents them and the smoke also from entering even though the wind may be blowing strongly and squarely against the side of the car; in which a vertically reciprocated rack bar mounted in each side of the casing rotates a pair of stationary gears, which actuate the

connecting rods connected at one end to a crank-pin upon each of said gear or carried thereby, and at the other end to the reciprocating leaf of each hinge, said leaf being of spring material, and upon which more or less spring tension is produced by the outward swing of the sash; and in which the window sash is locked, open or shut, by the connecting rod being on the center, or in direct alignment with said sliding or reciprocating leaf and with the diameter of the axis of the arbor of said gear.

Our invention consists in the several novel features of construction and operation hereinafter described and which are specifically set forth in the claims hereunto annexed. It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1, is an elevation of a window casing and of the inner face of the sash therein. Fig. 2, is a horizontal transverse section thereof on line $x-x$, showing the sash closed. Fig. 3, is a like view of the same showing the sash opened at one edge. Fig. 4, is a like view showing it opened at the opposite edge. Fig. 5, is a like view showing the sash thrown outwardly so as to open both edges. Fig. 6, is a vertical sectional elevation on line $y-y$ in Fig. 1, showing that edge closed. Fig. 7, is a like view on same line showing that edge of the sash opened. Fig. 8, is a front elevation of the drive gear and crank handle. Fig. 9, is a side elevation thereof. Fig. 10, is a side elevation of the bracket in which the drive gear shaft is mounted and journaled. Fig. 11, is a front elevation of the same. Fig. 12, is a front elevation of the driven pinion, the crank arm, connecting rod, and extensible hinge leaf. Fig. 13, is a top plan of the same, showing the casing in dotted lines. Fig. 14, is a front elevation, a longitudinal section, and an end elevation of the base plate upon which the driven pinion is mounted to rotate, and under which the extensible leaf slides and reciprocates and in which it has its supporting bearing. Fig. 15, is a side elevation and front elevation of a guide bracket in which the rack-bar is reciprocated.

—A— represents part of the side of a car, vehicle or building in which the casing is mounted comprising the vertical stiles —2—

the top and bottom rails —3—, the verticals —4— between the stiles, the weather board —5— at the top, and the sill —6— at the bottom, both outwardly projecting.

5 A sash is constructed of the stiles —7—, —8—, the top and bottom rails —9— and glass —10—. Upon the verticals —4— brackets —11— are mounted which receive and guide the rack-bar —12— when it is verti-

10 cally reciprocated as herein described. A bracket —13— is secured upon said vertical, in which the shaft —14— is journaled, the drive gear —15— being secured upon said shaft and in engagement with said rack-bar

15 so that when said shaft and gear are rotated by the crank-arm —16— said rack-bar is reciprocated vertically, and thereby rotates the drive pinions —17— journaled upon central arbors erected in or upon base-plates —18—,

20 mounted upon the verticals —4—. Each pinion is provided with a crank-pin —19— either upon the body of the gear or upon an arm —20— radial to and projecting beyond said gear. Each base-plate is grooved longi-

25 tudinally as at —21— and —22— is the hinge leaf, one end of which is mounted and adapted to be reciprocated in said groove and under said base-plate, the other end being secured to the stile of the sash; and a stud —23— is

30 secured to said hinge leaf, and —24— is a connecting rod, pivoted upon said stud and said crank-pin. Said hinge leaf is preferably constructed from spring sheet metal, and is shown as bent upon itself as at —25—

35 and then bent inwardly to create the flange —26—, and secured in a rabbet cut in the sash stile and also on to the inner face of said stile, thereby firmly securing it, and also permitting it to spring with more resiliency on

40 account of the bends at —25—; or it may be secured in any other desirable and durable manner.

When the drive gear is rotated from the position shown in Figs. 2 and 6, which is

45 when the sash is closed, the motion imparted to the connecting rods, forces the hinge leaves outward carrying with them the edge of the sash to which they are connected and opens that edge, the sash swinging upon the hinge

50 leaves upon its other edge, creating a spring tension upon the leaves so projected through their engagement with the base plates; and also creating a spring tension upon the opposite leaves, on account of the engagement

55 of the sash-stile with and its rocking upon the casing, and as the sash is primarily supported by said spring leaves, this double spring tension upon said hinge leaves aids

in supporting and steadying the sash when partly detached or disengaged from the casing; and thus either edge of the sash, the rear edge being the one usually opened, so that the outwardly inclined face of the sash will deflect all the dust and cinders, and prevent any indraft into the car to carry smoke and

60 dust therinto, but on the other hand the motion of the train will thereby create a suction or outdraft of air outward from the car, thereby also protecting the health and eyes and ears of the passengers, keeping them

65 clean from dirt, smut, coal, smoke, cinders, and preserving the purity and coolness of the air in the car.

It will be seen that both when the sash is so opened or closed, the connecting rod is

70 upon the center, and that the sash cannot be moved accidentally.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination with a casing of a sash 80 mounted therein, reciprocatory hinge leaves secured thereto upon its opposite sides, bearings for said leaves, pinions upon the casing provided with crank pins, connecting rods connected to said leaves and to said crank-

85 pins, and means to rotate said pinions, to open one side of the sash and leave the other closed.

2. The combination with the casing of a sash mounted therein, reciprocatory hinge 90 leaves secured thereto upon its opposite sides, bearings for said leaves and in which they are reciprocated, geared pinions upon the casing provided with crank-pins, a vertically reciprocated rack-bar engaging with said pin-

95 ions, and means to reciprocate said rack-bar and throw said connecting rods upon the center horizontally.

3. The combination with the casing of a sash mounted therein, hinge leaves secured 100 to said sash and bent substantially as at 25 and means to reciprocate said leaves comprising a vertically reciprocated rack-bar, pinions rotated thereby and provided with crank-pins and connecting rods connected 105 thereto and to said hinge leaves, whereby a half rotation of said pinion swings said connecting rods upon a horizontal center and locks the sash open or shut.

In witness whereof we have hereunto set our 110 hands this 7th day of May, 1894.

LEONARD G. ABBOTT.
THOMAS D. GREENE.

In presence of—
C. W. SMITH,
M. M. BORST.