

(No Model.)

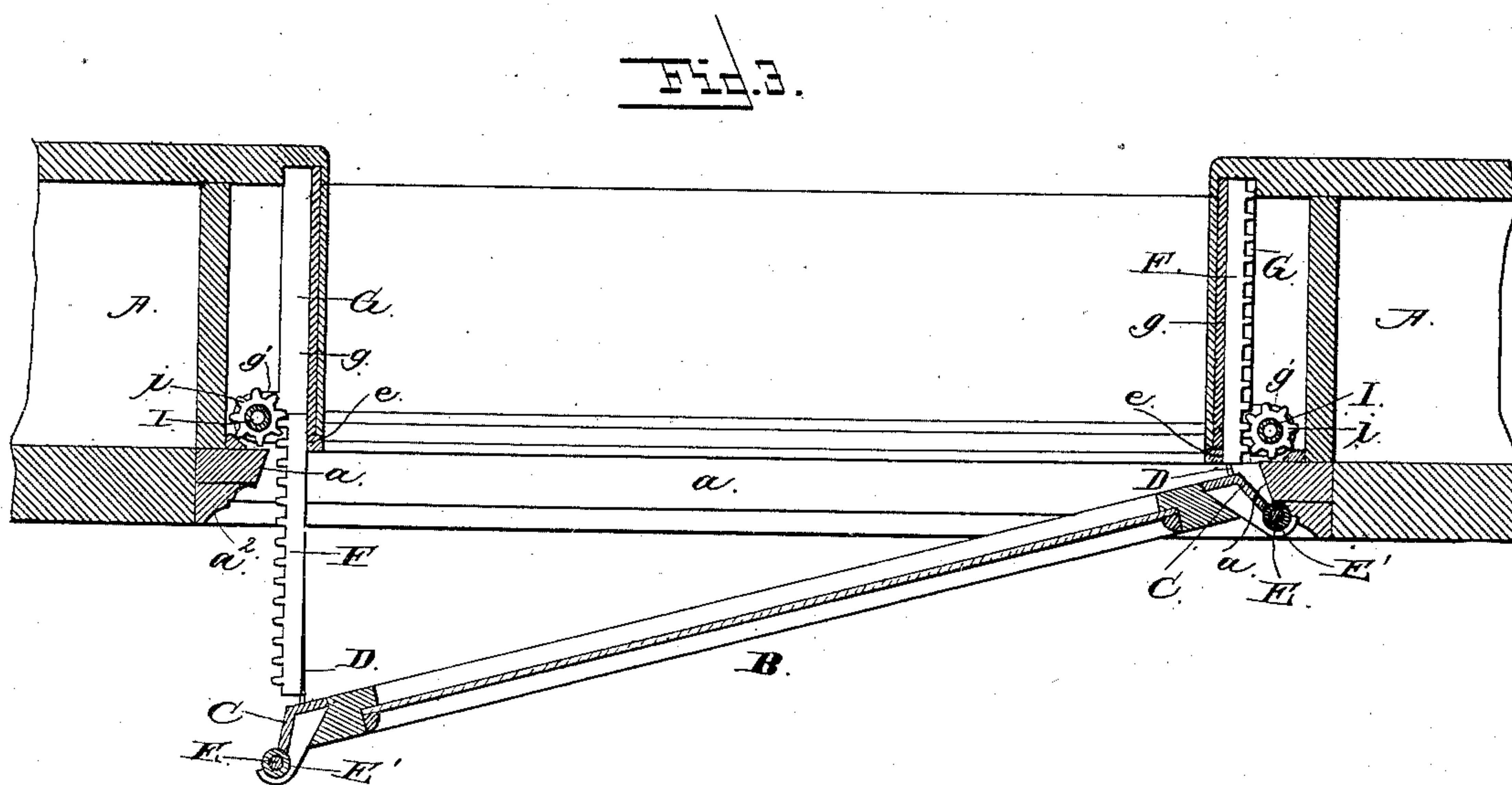
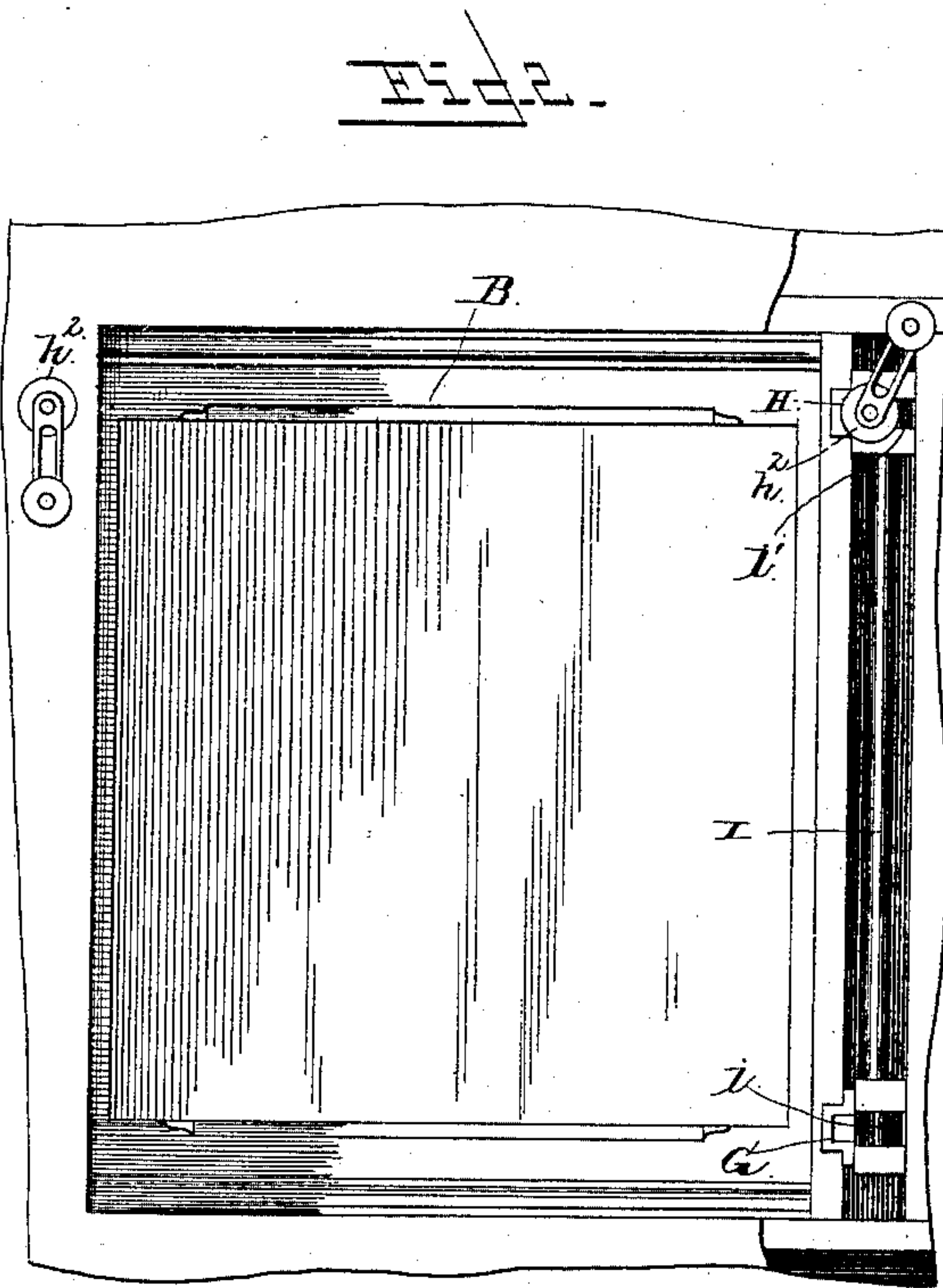
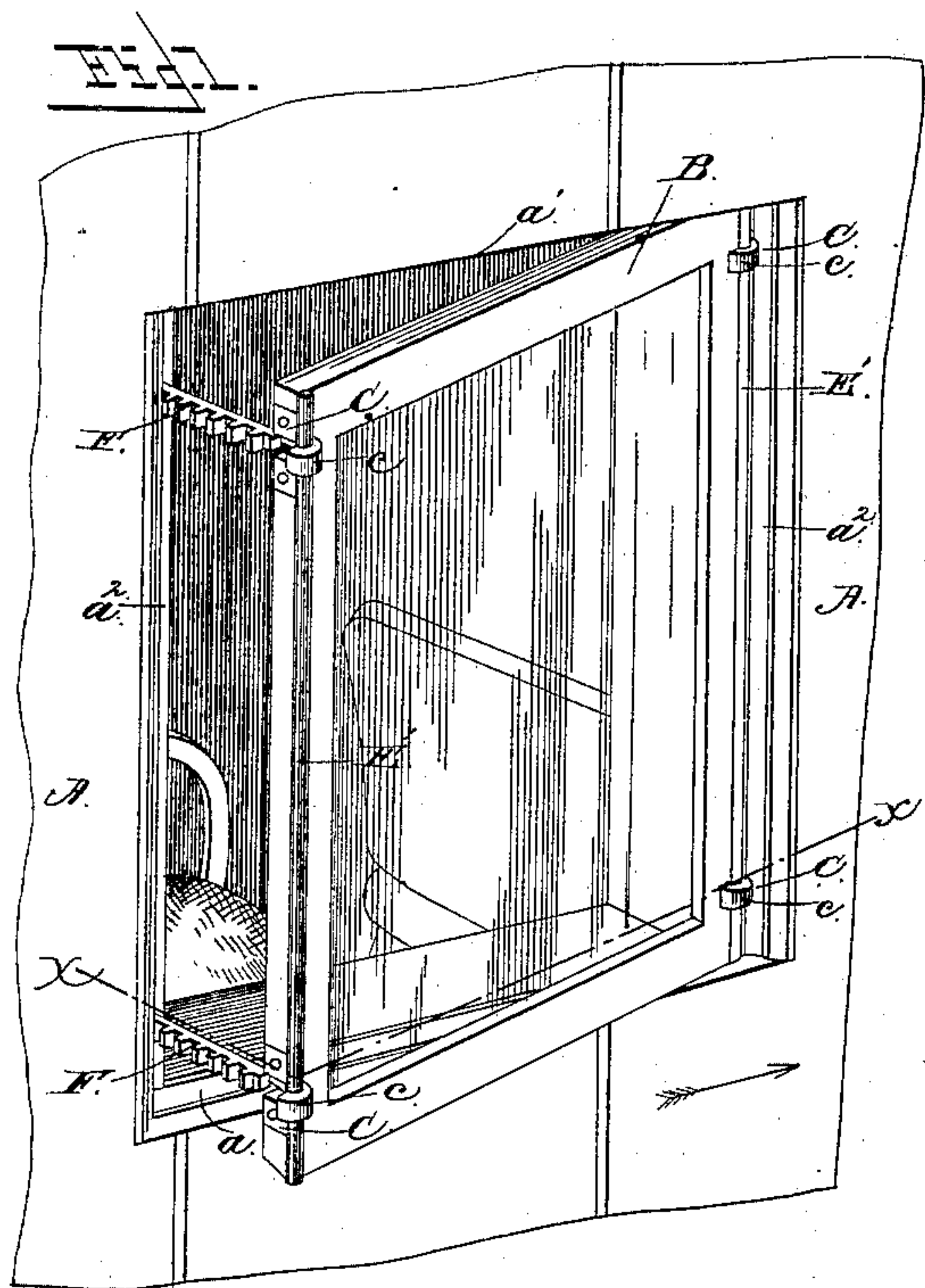
2 Sheets—Sheet 1.

A. J. BARBER.

CAR WINDOW.

No. 371,245.

Patented Oct. 11, 1887.



Witnesses

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Inventor

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(No Model.)

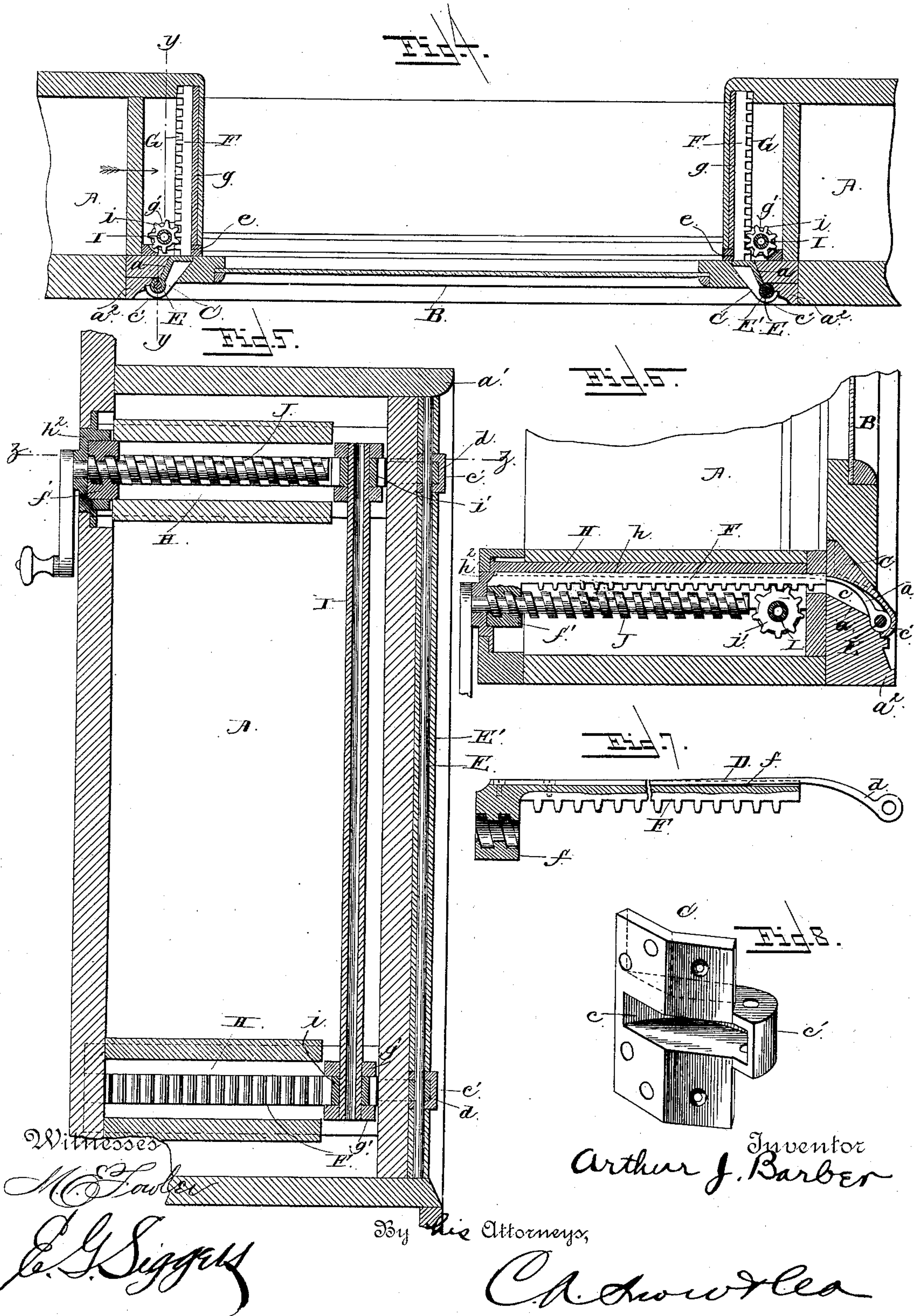
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# UNITED STATES PATENT OFFICE.

ARTHUR J. BARBER, OF AUBURN, ASSIGNOR OF ONE-HALF TO CHARLES D. GAYLORD, OF SODUS, NEW YORK.

## CAR-WINDOW.

SPECIFICATION forming part of Letters Patent No. 371,245, dated October 11, 1887.

Application filed March 12, 1887. Serial No. 230,635. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR J. BARBER, a citizen of the United States, residing at Auburn, in the county of Cayuga and State of New York, have invented new and useful Improvements in Car-Windows, of which the following is a specification.

The invention relates to improvements in means for operating windows, having especial reference to car-windows; and it consists of the peculiar combination of devices and the novel construction and arrangement of the several parts for service, as will be hereinafter fully described, and pointed out in the claims.

The primary object of my invention is to provide means for operating car-windows, by which said windows may be easily and readily opened by the person occupying the seat opposite or adjacent to the said window to throw or adjust one edge of the window away from the jamb or casing, and thus cause the window to assume an inclined position and leave openings for the admission of air at the top, bottom, and side of the window for the purposes of ventilation. Either edge of the window can be extended or projected beyond the jamb, thus allowing the said window to be adjusted in an inclined position in an opposite direction to that in which the car is moving, thereby effectually excluding cinders and other annoying matter from the car, while at the same time the free entrance and circulation of air are not interfered with.

A further object of my invention is to provide improved operating means for the window, which is mainly housed within the sides of the car, and which will hold the window in its inclined position very securely and without the objectionable rattling noise common to the majority of windows of this class.

The hand operating devices of my improved window are the only parts which are exposed to view from the inside of the car, and they are within easy reach of the person sitting in the seat opposite or adjacent to the window, so that the latter can be easily opened or closed by the said person without leaving or rising from the seat.

The window-sash is adapted to fit very

tightly and closely in the frame or casing to form air-tight joints therewith at all points, which effectually excludes drafts, smoke, and cinders, and the window is locked in its closed position by the operating devices provided therefor, so that it cannot be opened on the outside of the car.

A further object is to provide means for operating the sash in the manner described, which may be applied to any sash now in use, thus obviating the necessity of providing a sash especially constructed to suit the said means.

In the accompanying drawings, which illustrate a car-window embodying my invention, Figure 1 is a perspective view looking from the outside of the car and showing only a portion of the latter and the window in an inclined position. Fig. 2 is an elevation from the inside of the car, with the opposite edge of the window thrown outwardly from the jamb or casing. Fig. 3 is a horizontal sectional view on the line *x x* of Fig. 1, with the window in its opened position. Fig. 4 like view with the window closed. Fig. 5 is a vertical sectional view on the line *y y* of Fig. 4. Fig. 6 is a horizontal sectional view on the line *z z* of Fig. 5. Fig. 7 is a detail view of the rack-bar and the integral nut, with the spring-hinge attached in the proper position. Fig. 8 is a detail view of the casting to be secured on the outer edge of the sash in which the said spring is pivoted.

Referring to the drawings, in which similar letters denote corresponding parts in all the figures, A designates the jamb or casing of an ordinary car-window, and B the window-sash thereof, which is adapted to be moved or adjusted horizontally at either side to cause it to assume an inclined position, as will be more fully pointed out hereinafter. The jamb or casing is provided on its outer side with a continuous beveled offset or ledge, *a*, and the edges of the window-sash are correspondingly inclined or beveled to adapt the window to fit snugly and tightly in the jamb and thereby provide an air-tight joint. A cap-piece, *a'*, projects outwardly from the side of the car above the window, to prevent cinders, rain, &c., from entering the car above the sash when



the latter is opened, and a molding,  $a^2$ , is affixed to the outer side of the car, on opposite sides of the window-jamb, to impart a finished and ornamental appearance to the window.

5 C designates a casting, which is fitted in the vertical edge of the sash, in a recessed portion thereof, and fitting flush with the edge, as shown. Two of these castings are provided for each side of the sash, and they are fitted  
10 therein near the upper and lower edges, in the manner pointed out. Each casting is provided on its inner rear side with a horizontal recess or slot,  $c$ , in which is fitted an angular arm,  $d$ , of a straight flat spring-arm, D, which  
15 extends rearwardly into and through a slot,  $e$ , in the front outer edge of the jamb or casing. Each casting C is provided, further, with an integral recessed portion or lug,  $c'$ , which communicates with the slot  $c$  at its rear  
20 end and projects beyond the front face of the sash. A vertical spindle or rod, E, is arranged at the outer edge of the sash, and it passes through the recessed lugs  $c'$  of the castings C on the sides of the sash, and a tubular  
25 sleeve, E', is fitted over this spindle or rod, that portion of the sleeve between the projecting recessed lugs serving to connect and brace the same.

It will be noted that each of the sides of the  
30 jamb is provided with the moldings  $a^2$ , which lie in a plane on the outside of the beveled offset  $a'$ , so that when the window-sash is closed it fits between these moldings; and it will be further noted that the tubular sleeves  
35 E' of the window-sash are adapted to fit tightly and snugly in vertical grooves formed in the moldings  $a^2$ , whereby the said sleeves serve to close the joint between the side edges of the sash and the strips  $a^2$ , and thereby prevent  
40 water from entering the joint, in addition to forming a neat and ornamental appearance to the outside of the car. The angular arm  $d$  of the spring arm D is extended or projected into the recessed lug  $c'$  of the casting, and it  
45 has an eye at its free end, through which the vertical rod or spindle passes to thereby pivotally connect the outer end of the spring and its arm to the sash, as is obvious.

F designates a longitudinally-moving rack  
50 or slide, four of which are provided for each window, and these racks or slides are arranged in pairs on opposite sides of the window-jamb, one rack of each pair being arranged near the upper end and the other near the lower end  
55 of the window-jamb. These racks are arranged within the walls of the side of the car, and they are adapted to move back and forth or reciprocate through the slots or openings  $e$  made in the front of the jamb or casing. One  
60 of these racks F is provided for each of the flat springs or spring-arms D, which are rigidly connected thereto, the rear or reverse side of the rack having a longitudinal groove,  $f$ , formed therein, in which the inner end of the spring  
65 is fitted and secured by one or more screws. The lower racks work and are guided in cast-

tions within the walls of the car-body, and are rigidly secured therein by suitable means. Each of the castings or guides G is provided  
70 with a longitudinal groove,  $g$ , in which the rack and the rear end of the spring-arm connected thereto work, and near the outer end each guide has an upper and lower integral  
75 lug,  $g'$ , through which passes and in which is journaled or stepped the lower end of a vertical shaft, I, which has a pinion,  $i$ , affixed thereto at a point between the lugs, said pinion meshing with the lower rack to reciprocate the same back and forth. 8c

Each of the upper racks is provided on its inner end with a fixed nut or boss,  $f'$ , in which works a threaded shaft or worm, J. Each upper rack is supported by and is guided in  
85 a longitudinal groove,  $h$ , formed in the fixed guide H, similar in construction to the guides G. The outer ends of these guides H for the upper racks are provided with the integral parallel lugs in which the upper ends of the ver- 9c  
tical shafts I are journaled, and to these upper ends of the said shafts are affixed pinions  $i'$ , which mesh with the upper racks and are rotated thereby, so as to revolve the shafts and simultaneously operate the lower racks, so that both the upper and lower racks are projected 95  
from or withdrawn in the side of the car.

The rear end of the upper guide, H, for each rack is provided with an integral boss or plate,  $h^2$ , which fits flush with the inner panel of the car, and in this boss is fitted or jour- 10  
naled the rotary threaded shaft or worm J, which passes through the fixed nut  $f'$  of the upper rack to reciprocate the latter in either a backward or forward direction, the inner end of the threaded shaft having a suitable operating 105  
device—such as a crank, band-wheel, or the like—rigidly connected thereto, so as to be within convenient reach of the person occupying the seat adjacent to the said window.

It is obvious that the position of the upper 110  
and lower racks of each pair provided for one window can be easily and readily reversed, if desired, to cause the crank to be at the lower instead of at the upper part of the said window.

It will be observed that when the threaded 115  
shaft or worm of one of the window-operating devices is rotated the threaded nut and the rack to which it is affixed will be moved either inwardly or outwardly and rotate the pinion  $i'$  and the vertical shaft I, so as to likewise op- 120  
erate the lower rack, which is geared to the shaft, thereby simultaneously moving both racks in the same direction. The springs or spring-arms which are connected with the racks are likewise actuated with the latter to 125  
move one side or edge of the sash B either outwardly from or inwardly toward the jamb or casing, according to the direction in which the racks are moved, the opposite side or vertical edge of the window turning or moving, as 130  
upon a pivot or hinge, to accommodate or permit of one side to swing either inwardly or outwardly with the vertical rod or shaft as a center. It will be further noted that the an-



gular arms of the springs will bear against the inner side of the slots in the castings C, and that the outer ends of the springs will be drawn away from the corresponding ends of the racks as the window-sash is forced outwardly, as shown in Fig. 3, and the springs are thereby caused to press or bear against the outer ends of the racks to hold them against movement, and thereby be held themselves from play, which entirely overcomes the objectionable rattling noise common to car-windows of the ordinary class.

By the employment of the two racks and the mechanism for simultaneously operating them I provide means whereby the sash is securely held and supported in its adjusted position and is prevented from any undue straining or wrenching; and the springs or spring-arms serve to effectually prevent rattling and provide a safe and reliable connection between the racks and the sash.

The operation of my invention will be readily understood. To open the window to admit air to the car and at the same time exclude cinders, one of the threaded shafts or worms J is operated to incline the sash in the reverse direction to that in which the car is moving. Spaces are thus left at the top, bottom, and one of the sides of the sash to permit air to freely enter the car and thus supply the occupant of the seat with fresh air which is free from cinders and other impurities, as the cinders, &c., from the engine will strike the inclined sash and be thereby deflected. If the direction of the motion of the train should be changed suddenly, the open side of the window can be quickly and easily closed and the reverse side as easily and quickly opened.

It will be noted that the fresh air is supplied from the top as well as from the bottom and side of the window, so that the air will not strike only the chest of the occupant of the seat opposite the window, as is the case when the ordinary sliding car-windows are but slightly raised, and that the air entering the window opposite one seat will not annoy the occupant of the seat in front or in rear of the same.

If desired, in warm weather both sides of the window can be projected beyond the jamb of the car by merely operating both of the threaded shafts J, to thereby insure a plentiful supply of fresh air, and the window is securely and firmly sustained and supported against displacement and rattling by the racks and springs, as has been shown.

The window can be operated by a lady or child, as the threaded shaft can be readily and easily turned, (the screw furnishing immense power with little exertion,) and when the window is closed the threaded shafts can be turned with force to draw the window tightly in the jamb and lock it in place.

The same mechanism which operates the sash serves to lock it in place in any situation, thus enabling the sash to be adjusted at any desired angle to the side of the car without the incon-

venience of operating any supplemental locking device.

It will be seen that my invention does not alone relate to improvements in car-windows, as my operating device may be readily applied to any sash now in use by simply attaching the castings C to the edges thereof; also, when the window or door provided with my operating means is closed it may, by reason of the immense power possessed by the crank and worm, be drawn into the jambs with such force as to make them perfectly air-tight, and also when in such a position, as hereinbefore mentioned, there is no necessity for any supplemental means of securement, as the worm, operating in the nut to which the rack-bar is attached, serves as a perfect lock, making it absolutely impossible to open the window from the outside of the car, or in any way except by turning the said worm.

I am aware that heretofore means have been provided to adjust a window or door at any angle to the jamb to admit of a circulation of air and prevent dust and cinders (if used in connection with a railway-car) from entering; but there have been no means provided to extend both sides of the sash at the same time; also, means have been heretofore provided to adjust the side of the sash by a screw operating in a nut; but the connection with the sash in the said case is such that it will in time become loose and rattle, while I provide a strong spring-connection to prevent all such rattling and hold the sash firm. Further, I provide a rack-bar at the upper and lower part of the sash, which are operated simultaneously by one means of power—in this case a crank on the inside of the jamb—thus enabling the said rack to be drawn into the frame with much more force, and therefore form a tighter joint than is possible with the means previously mentioned. Further, as hereinbefore mentioned, the operating means which I provide may be applied in a short time to any horizontally-moving window now in use, while heretofore it has been necessary to specially construct the said sash to suit the requirements of the operating means. Further, with adjusting means heretofore provided if one side of the sash is extended and it should for any reason be desired to extend the other side for a moment or permanently, to obtain a view in the opposite direction, it is necessary to first draw in the said extended side; but with the means which I provide if one side is extended the other side may be thrown out at any time without especially adjusting the said extended side, as the spring-connection of the rack-bars with the sash admits of any amount of extension of either or both sides of the sash.

Changes in the form and proportion of the parts can be made without departing from the spirit of my invention.

I do not wish to be limited to the construction of the spring-arms D of spring metal, as it is apparent that they may be constructed of cast metal and have a spring-bearing against



them and the same effect will be produced. The construction shown is considered the most practicable.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In combination with a horizontally-movable sash, the sliding bars, the springs connected therewith and pivotally attached to the sash to move the same, and mechanism, substantially as described, to be worked by hand for operating the slides, as set forth.

2. In combination with the horizontally-movable sash, the slides or bars F, a spring, D, connecting with each slide and pivotally attached to the sash, and hand operating mechanism, substantially as described, for working the slides, as set forth.

3. In combination with the sash and the vertical shaft, the horizontal longitudinally-movable racks arranged at an angle to the shaft and geared thereto, and the springs affixed to the racks and pivotally connected with the sash, as set forth.

4. The combination of a horizontally movable sash, the springs pivotally connected to opposite sides of the sash and at intermediate points of its height, an endwise-movable slide for each spring, and separate mechanisms for independently operating all of the slides on either side of the sash, substantially as and for the purpose set forth.

5. The combination, with a horizontally-movable sash, of the fixed guides, the racks working in the guides and arranged on opposite sides of the sash, one rack of each pair having a fixed nut, the vertical shafts geared to each pair of racks, the threaded worm-shafts working in the nuts of the racks, and the springs rigidly secured to the racks and pivotally connected with the sash on opposite sides thereof, substantially as and for the purpose set forth.

6. The combination, with the sash, of the casting C, let into the edge of the said sash and having the recess *c*, and the slide having the spring secured thereto, which spring is pivoted in and arranged to operate at the outer

end in the said recess, substantially as and for the purpose set forth.

7. The combination, with a sash, of the castings or hinges C, secured in the said sash at the upper and lower ends, and the shaft E, secured in vertical aligned openings in the said castings and having the sleeve E', surrounding the said shaft, and the slides having the springs secured thereto and pivoted on the said shaft, substantially as and for the purpose hereinbefore set forth and described.

8. In combination with the sashes, the castings C, secured thereto, the bars or slides F, the spring-arms D, separate from the bars or slides and pivoted to the castings C, said arms being actuated by the bars or slides, and a screw working through a fixed nut or boss on the bars or slides, as set forth.

9. In combination with the sashes, the rack bars or slides, the arms D, actuated by the rack bars or slides and pivoted to the sashes, the screws to work the rack-bars, the rack bars or slides and arms being duplicated for the top and bottom of the sash, forming duplicate sets, and the gearing connecting the duplicate sets, as set forth.

10. In combination with the sash, the rack bars or slides connected thereto for moving the same, the mechanism for actuating the rack bars or slides, the latter being duplicated on either side of the sash, and the vertical shaft geared to the rack bars or slides, whereby the movement of either rack-bar at the top or bottom of the sash moves the rack on the same side simultaneously, as set forth.

11. In combination with the horizontally-movable sash, the bars or slides F, pivotally connected to the sash, the threaded nut on the slides, and the screw J, working in the threaded nut and having an operating handle or crank, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

ARTHUR J. BARBER.

Witnesses:

WM. N. MOORE,  
E. G. SIGGERS.