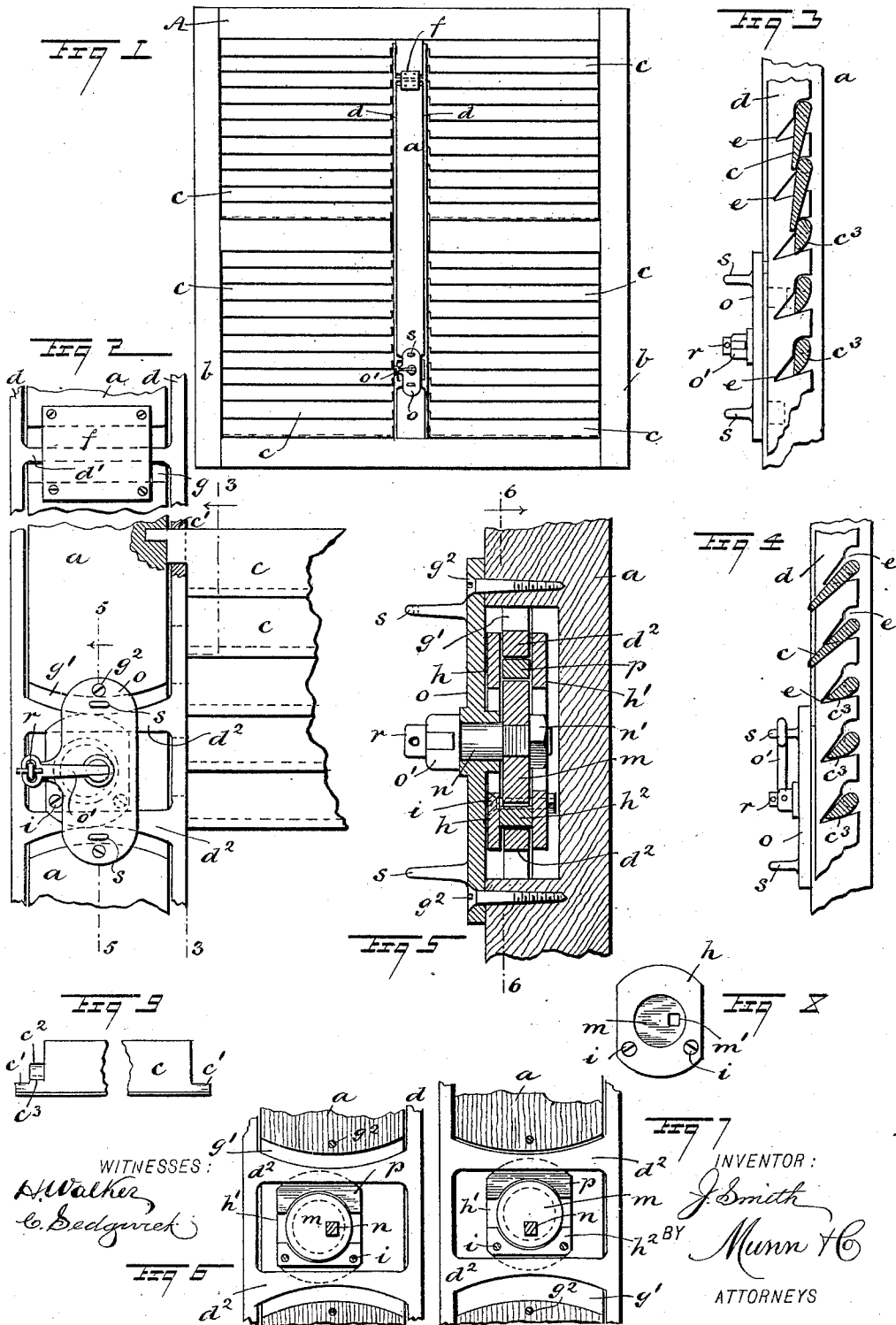


(No Model.)

J. SMITH.
CAR DOOR.

No. 468,703.

Patented Feb. 9, 1892.



UNITED STATES PATENT OFFICE.

JOHN SMITH, OF POOLER, GEORGIA.

CAR-DOOR.

SPECIFICATION forming part of Letters Patent No. 468,703, dated February 9, 1892.

Application filed May 23, 1891. Serial No. 393,805. (No model.)

To all whom it may concern:

Be it known that I, JOHN SMITH, of Pooler, in the county of Chatham and State of Georgia, have invented a new and useful Improvement in Car-Doors, of which the following is a full, clear, and exact description.

This invention relates to the sliding doors of freight-cars, and has for its objects to provide a car-door which will contain means for affording free ventilation to the interior of the car and when necessary enable the close sealing of the ventilator, thereby affording a combined close door and ventilator, avoiding the use of a special door to ventilate the car.

To these ends my invention consists in the construction and combination of parts, as is hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is an outside view of the improved car-door detached from a car. Fig. 2 is a side view, enlarged, of portions of the center rail of a car-door having parts of the improvements thereon. Fig. 3 is a transverse section of the parts shown in Fig. 2, taken on the broken line 3 3 in said figure, showing slats in closed adjustment. Fig. 4 is a cross-section of parts shown in Fig. 2 on the same line as Fig. 3 with the ventilator opened. Fig. 5 is a transverse section of important features of the improvement, taken on the line 5 5 in Fig. 2. Fig. 6 is a partly sectional face view of parts shown in Fig. 5, taken on the line 6 6 in said figure, showing the ventilator in a closed condition. Fig. 7 is a similar view of the parts shown in Fig. 6 adjusted to seal the ventilating portion of the door. Fig. 8 is a detached side view of an eccentric-block that is one of the parts embodied in the improvement, and Fig. 9 is a broken side view of one of the slats used to afford air-inlets in the door and close the same.

The car-door frame A is rectangular in form, as is usual, and in dimensions is proportioned to the size of the car whereon it is placed, said door being adapted to slide longitudinally on the car by any well-known method, and thus open or close the door-aperture in the side of the car, which details, being of ordinary construction, are omitted from the drawings.

The frame of the car-door is provided with a center rail *a*, that is affixed in place midway between the side rails *b* and parallel with them. A series of slats *c* are provided for the closure of the spaces bounded by the margin and the center rail *a*, which slats are provided with the trunnion ends *c'*, (shown in Fig. 9,) that align with one edge of each slat. There are socket-holes formed at evenly-spaced intervals in the edges of the center rail *a* and oppositely in the inner edges of the side rails *b* for the reception of the trunnion ends *c'*, and the spaces between the socket-holes, considered longitudinally of the rails wherein they are formed, are proportioned to the width of the slats *c*, so as to permit the assembled slats in series to lap, one on the adjacent edge of the next, as indicated in Figs. 2 and 3. On each side edge of the center rail *a*, a longitudinally-extending bar *d* is located, which bars are of similar form and are adapted to engage with each slat *c* of the door, there being a series of notches *e* cut in the edge of each bar to permit such an engagement. To facilitate the loose connection of the bars *d* with the slats *c*, said slats are reduced in width, forming a shoulder at *c²* on the end of each slat that is nearest one of said bars, the reduced portions having one edge rounded, as at *c³* in Figs. 3 and 4. As shown in the figures named, the lower edges of all the notches *e* are inclined downwardly, and are intersected at a proper point, where they terminate, by the upper-notch edges, that are of a more abrupt inclination, and form acute angles where they join the lower-notch edges. Near the side edges of the bars *d*, which are entered by the notches *e*, there are curves formed in the upper-notch edges to loosely conform with and rest upon the rounded edge of each slat *c*, as indicated in Fig. 3, such a contact taking place when the slats are in closed adjustment. The similar bars *d* are joined together by cross-bars *d'* *d²* near their upper and lower terminals and are held parallel thereby, free to be slid a limited distance, which movement is controlled in a manner that will be explained. Two open transverse recesses *g* *g'* are produced in the center rail *a* at such points removed from each other and of such a width, vertically considered, that the cross-bars *d'* *d²* may lie in them and be moved toward either terminal of the recesses,

as may be required for the proper operation of the device. It will be seen that the sliding movement of the connected bars d will rock each engaged series of slats c on their trunnion ends and separate them, as represented in Fig. 4, or tightly close them, as shown in Fig. 3, the movement of the bars working the slats simultaneously. When the slat-working bars d are moved toward the top rail of the door-frame A, so as to cause the curved surfaces c^3 of the slats to be impinged upon by the lower edges of the notches e , the slats c will be elevated and a space for air to pass through into the car can be thus afforded between each pair of slats in both series of the same. A keeper-plate f is secured upon the center rail a to cover the recess g at its upper end, retain the cross-bar d' of the connected bars d from outward displacement, and allow a free movement of the cross-bar longitudinally of the recess in which it is seated.

In order to conveniently slide the slat-working bars d , as stated, and retain said bars at either end of their travel, a device is provided, which will be described. There are two cross-bars d^2 , provided at the lower end of the bars d , to hold them separated properly. Said cross-bars of like shape are parallel on their nearest edges, and both are located in the lower recess g' of the center rail a , which, as before stated, is of proper width to allow the bars d^2 to be moved therein. Between the cross-bars mentioned a frame consisting of two similar plates h h' and a spacing-strip h^2 is introduced, the inner frame-plate h' being embedded in the material of the center rail, as shown in Fig. 5, which will prevent the frame from moving laterally, while a longitudinal movement is permitted. The spacing-strip h^2 is preferably curved on its inner edge, as shown in Fig. 7, and secured in place between the plates h h' , and to them by the screws i . A circular disk m is located between the plates h h' loosely, said disk being perforated eccentrically, as at m' , in Fig. 8, to receive the body of the rocking shaft n , that is therein secured by a nut n' , the perforation m' and shaft portion that enters the same being preferably given a square form to prevent the disk from turning on the shaft. The portion of the rock-shaft n that projects outwardly from the frame-plate h is made cylindrical of a suitable length for a rotative engagement with the cap-plate o , which is apertured properly to loosely sustain the shaft, the end portion projecting beyond the plate having a handle o' secured at a right angle to the shaft and parallel with the cap-plate, which latter is attached by each end upon the outer surface of the center rail a , extending over the recess g' by screws g^2 . The space between the frame-plates h h' is so proportioned that the cross-bars d^2 will slide between them, the lowermost bar of the pair being adapted to impinge on the adjacent edge of the spacing-strip h^2 when the slat-working bars d are in lowered adjustment.

Between the plates h h' above the eccentric-disk m a presser-strip p is introduced, which is curved on the edge that engages the periphery of said disk and is of such a proportionate thickness as to allow it to be moved freely when the eccentric-disk is rotatively moved to effect the adjustment of the slats c ; or said presser-strip p may be secured between the plates h h' , loosely in contact with the disk m , if desired, and operate efficiently, as the movement of the eccentric will then slide the plates h h' along with the presser-strip.

The handle o' is secured on the shaft n , so as to project at a right angle to the edges of the center rail a when the eccentric-disk m is in the position shown in Fig. 6 and by dotted lines in Fig. 2, whereby the contact of said disk with the spacing-strip h^2 will cause the slat-working bars d to be slid downwardly and the slats pressed tightly one upon the other, as indicated in the upper portion of Fig. 3. The handle-bar o' is jointed where it engages the outer end of the shaft n , so that it may be folded upon a staple or ring-eye r when adjusted to depress the slats c , said staple being affixed to a lateral wing of the cap-plate o . Similar staples s are secured to the cap-plate o above and below at opposite points in a vertical plane or at right angles to or ninety degrees distant from the staple r , and it will be seen that if the handle-bar o' is moved upwardly and laterally, so as to permit its perforated body to pass over the upper staple s , a rocking movement of the slats c will be the result, which will separate them, as shown in Fig. 4.

The rotative adjustment of the handle-bar o' to open or close the slats c may be securely retained in either desired position by the use of a padlock, which can be hasped to the staples r or s , and thus secure the slats in opened or closed condition, the door as an entirety affording a safe barrier against predators, and when the slats are closed protecting the contents of the car against the intrusion of the elements, thus combining in one door all the advantages of a ventilating-door without requiring a separate structure.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a car-door, the combination, with a door-frame adapted to rotatably support a series of slats, of a set of slats, each having a projecting trunnion at each end adjacent to one longitudinal edge, and a lateral projection thereon that may be engaged by a notched slide-bar to rock the slats, substantially as described.

2. In a ventilating car-door, the combination, with a door-frame perforated edgewise in spaced order to rotatably support a set of journaled slats, and a set of slats, each having two trunnions or journaled ends oppositely projected and adjacent to one longitudinal edge, and a lateral projection from a

trunnion on each slat near its base, which projections are each curved on one side, of a slide-bar loosely secured to move longitudinally on the frame and notched along one edge in series to loosely engage the projections of the journal ends, and a device to slide the bar and lock it, substantially as described.

3. In a ventilating car-door, the combination, with a frame and a series of slats having trunnion ends near one longitudinal edge of each slat and a shouldered projection on one slat end of each slat joining the base of the trunnion thereon, of a slide-bar notched edgewise in series to receive the shouldered projections, and means to move the slide-bar longitudinally, substantially as described.

4. In a ventilating car-door, the combination, with a frame adapted to receive journal ends of slats and rotatably support them, a series of slats having trunnion ends that are nearer one horizontal edge of each slat, and a shouldered projection on one slat end of each slat at the base of the trunnion and integral therewith, of a slide-bar having a series of angular slats adapted to receive the shouldered projections on the slats and curved on their upper edges to conform with the surface of the slat-trunnions at their bases, and a device which will move the bar longitudinally and retain it, substantially as described.

5. In a ventilating car-door, the combination, with a rectangular frame oppositely perforated in series and parallel planes to receive slat-trunnions and rotatably support them, a series of slats, each having a trunnion projection at each end that axially align in pairs and are adjacent to one longitudinal edge of a slat, and a shouldered projection on one slat end of each slat that is integral with a trunnion thereon at its base and curved on one side, of a slide-bar having V-shaped notches in spaced order along one edge, which notches are each curved on the top edge near the edge of the bar they enter to receive and engage the trunnions and shouldered projections on the slat ends, and a device engaging the slide-bar near one end, which by manipulation will slide the bar and rock the slats, substantially as described.

6. In a ventilating car-door, the combination, with a door-frame having a center bar and perforated edgewise within to receive the trunnion ends of series of slats and two sets of trunnioned slats, each having a projecting shoulder on the trunnion that engages the center bar, of a slat-moving device composed of two parallel slide-bars having notches that loosely engage the shoulders on the slat-trunnions and joined near the ends and loosely secured on the center frame-bar, a cross-shaft, an eccentric thereon and frame therefor, which is located between joining cross-bars of the slide-bars, and a lever, which is on one end of the shaft, that by rotatable movement slides the bars and rocks the slats, substantially as described.

7. In a ventilating car-door, the combina-

tion, with a door-frame and slats rotatably supported thereon at their ends, of a notched slide-bar engaging the slats, an eccentric which will longitudinally move the bar when rotated, a hinged folding handle-bar, and projections on the door ninety degrees removed whereon the handle-bar may be locked, substantially as described.

8. In a ventilating car-door, the combination, with a car-door frame having two apertures divided by a center rail and a series of slats journaled by their ends in the frame-apertures, of two connected slat-working bars that engage the slats and rock them when the bars are slid longitudinally, an eccentric supported to rotate in the connections of the bars, a shaft and a crank to support and rotate the eccentric, a handle-bar hinge-jointed to fold and apertured to engage staples, and staples ninety degrees removed which may be separately engaged by the apertured bar, substantially as described.

9. In a ventilating car-door, the combination, with a rectangular frame having an intermediate center rail, of two series of spaced slats journaled in the center rail and side rails of the door-frame, a slat-worker having two similarly-notched bars held parallel by cross-bars and adapted to engage their notches with reduced portions of the slats, said bars having a sliding engagement with the side edges of the center rail of the door and loosely secured thereon to slide, an eccentric-disk loosely held in a frame on the center rail of the door near its lower end, a shaft projected at right angles to said disk and center rail and located between two cross-bars of the slat-worker device, a cap-plate on said center rail through which the eccentric-shaft passes, and a folding handle-bar adapted to engage one of two staples ninety degrees distant on the cap-plate and when interlocked therewith retain the slats in open or closed condition, substantially as described.

10. In a ventilating car-door, a device for actuating a series of spaced journaled slats in the door-frame, comprising a pair of parallel connected notched bars embracing the side edges of the center rail of the door and interlocking loosely with the spaced slats, an eccentric-disk supported on a frame and adapted to slide the slat-worker when rotatably moved, a shaft engaging the disk eccentrically and journaled in a cap-plate affixed to the face of the center rail of the door, having two staples located ninety degrees distant from each other respectively in a horizontal and a vertical plane, and a handle-bar hinged to the outer end of the eccentric-shaft, adapted to fold over either staple and retain the slats open or closed, substantially as described.

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Witnesses:

BARTHOLOMEW DONOVAN,
JOSEPH P. DAILY.