H. C. FORD.

VENTILATED COMPARTMENT.

APPLICATION FILED DEC. 14, 1909.

1,137,473.

Patented Apr. 27, 1915.

6 SHEETS—SHEET 1.

Fig. 1.

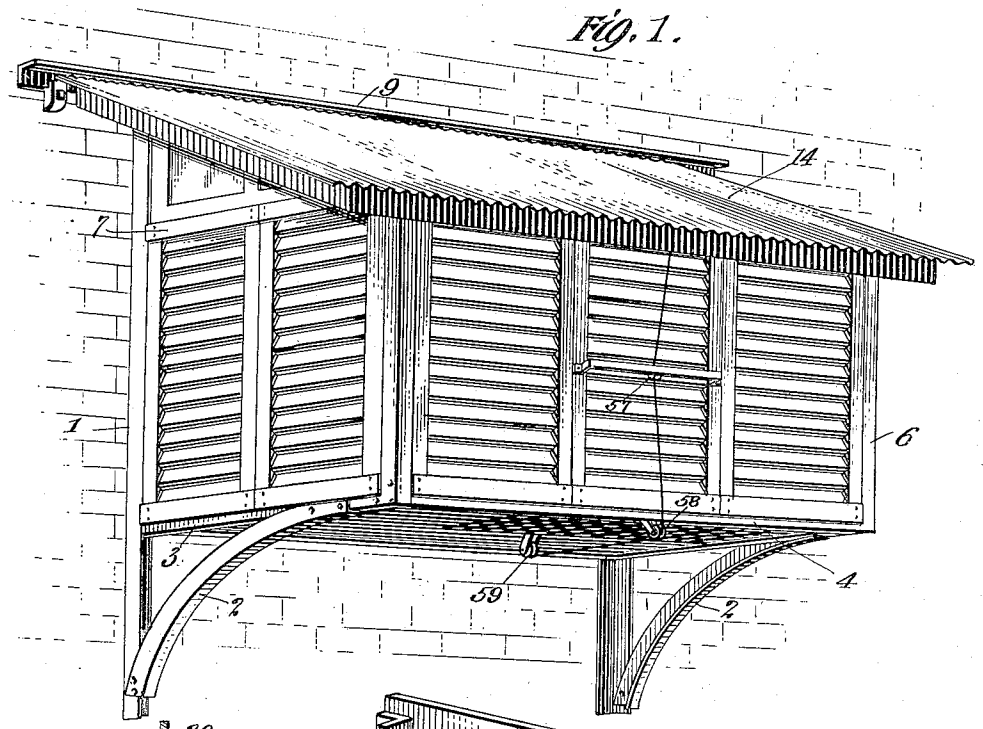


Fig. 12.

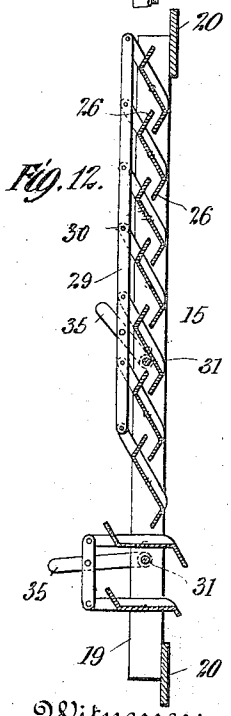


Fig. 11.

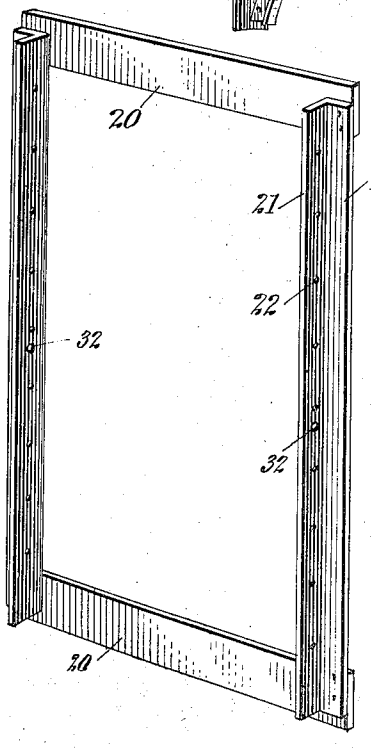
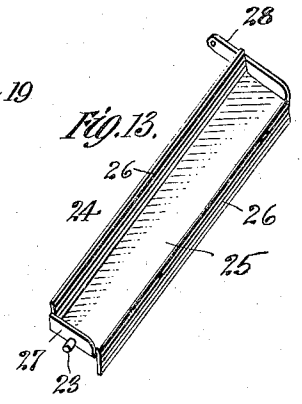


Fig. 13.



Witnesses:

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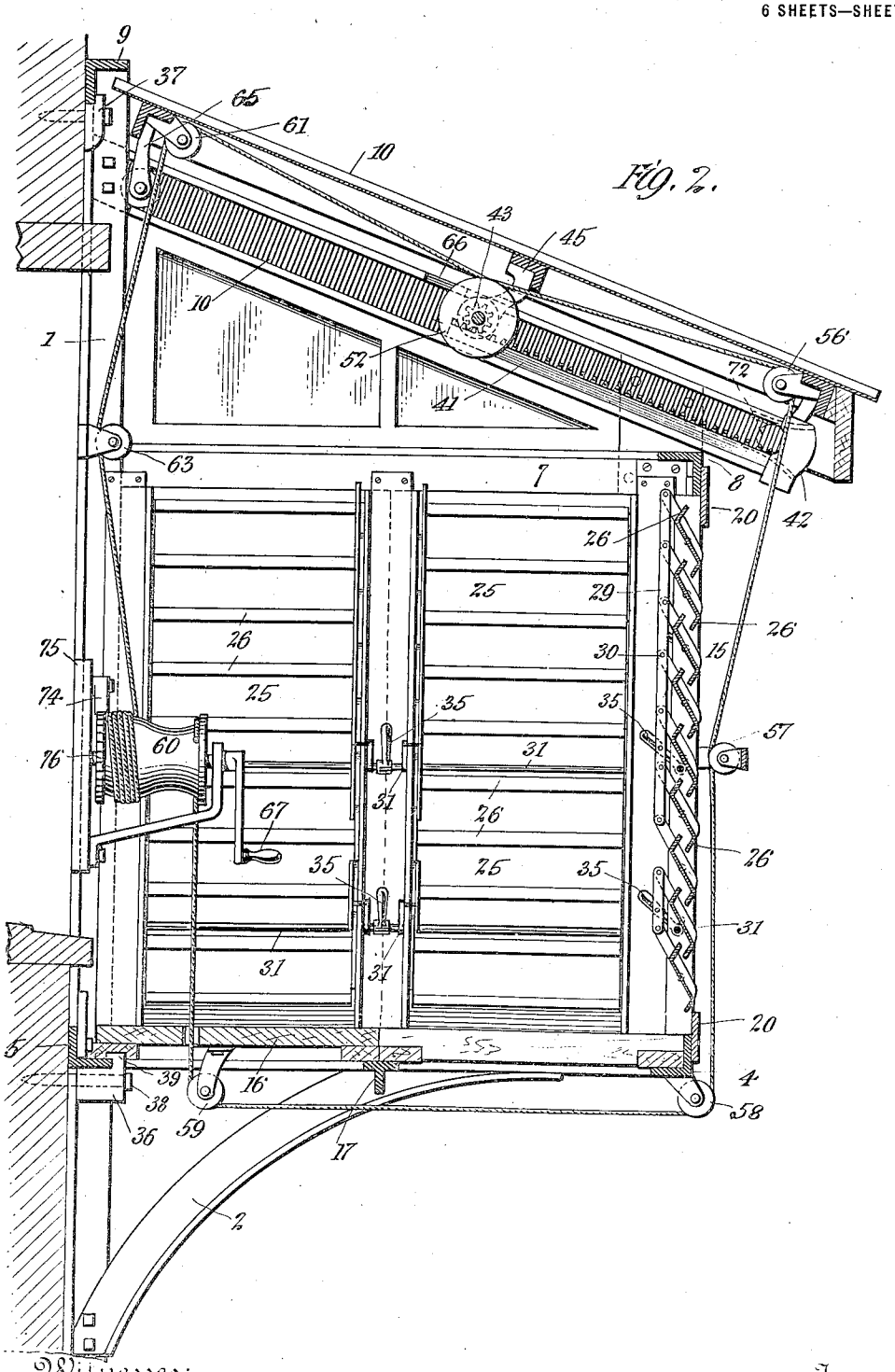
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6 SHEETS—SHEET 2.

Fig. 2.



Witnesses:

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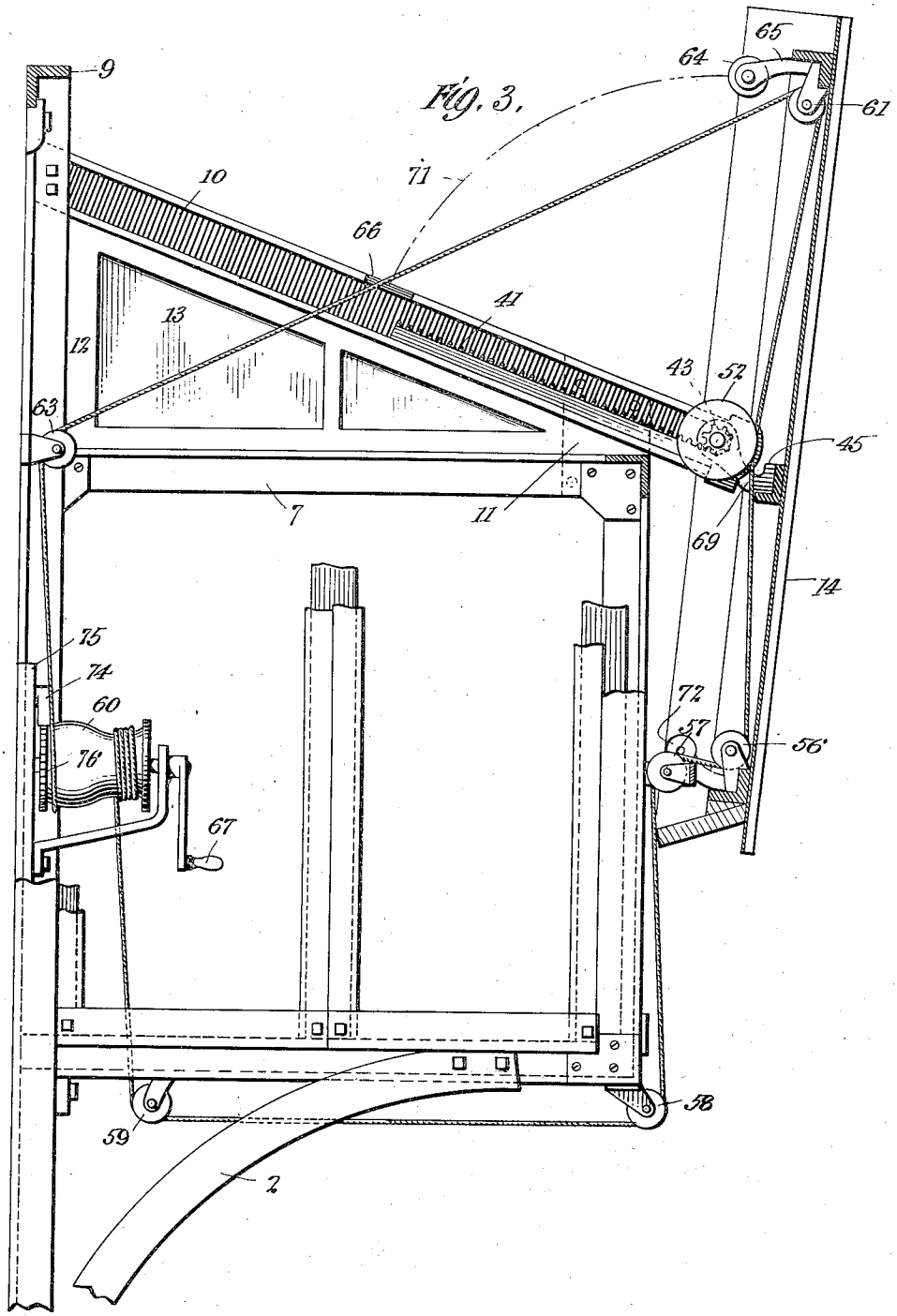
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6 SHEETS—SHEET 3.

Fig. 3.



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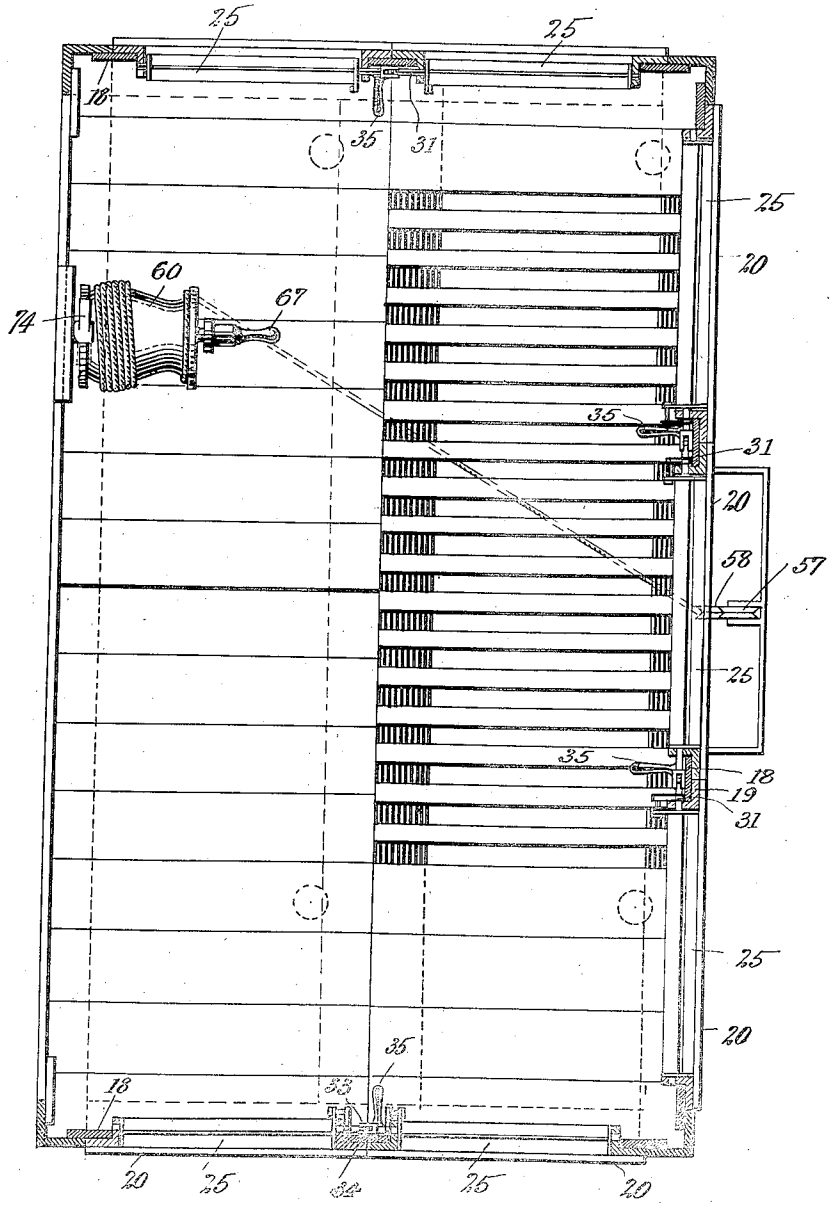
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6 SHEETS—SHEET 4.

Fig. 4.



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6 SHEETS—SHEET 5.

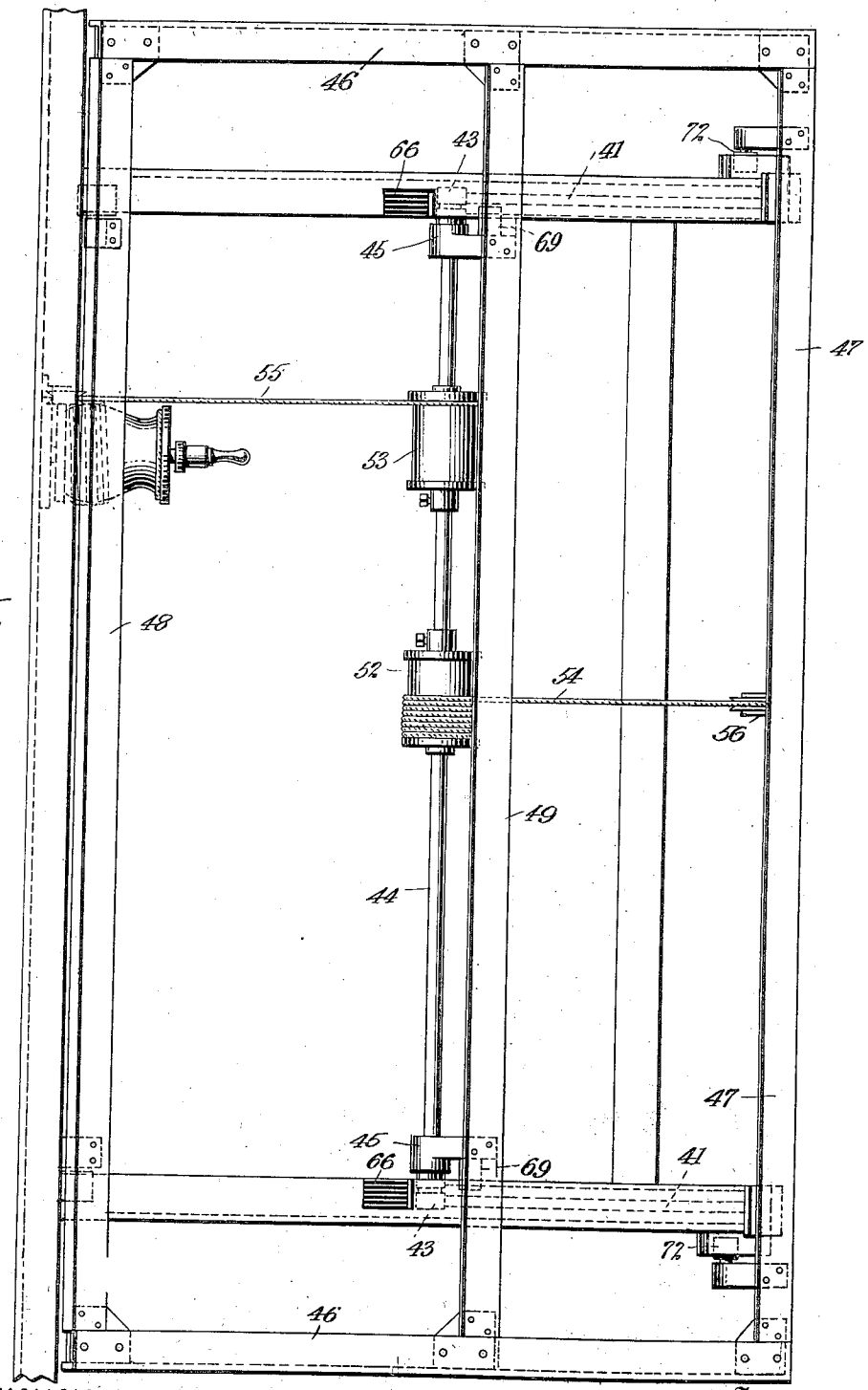


Fig. 5.

Witnesses:

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6 SHEETS—SHEET 6.

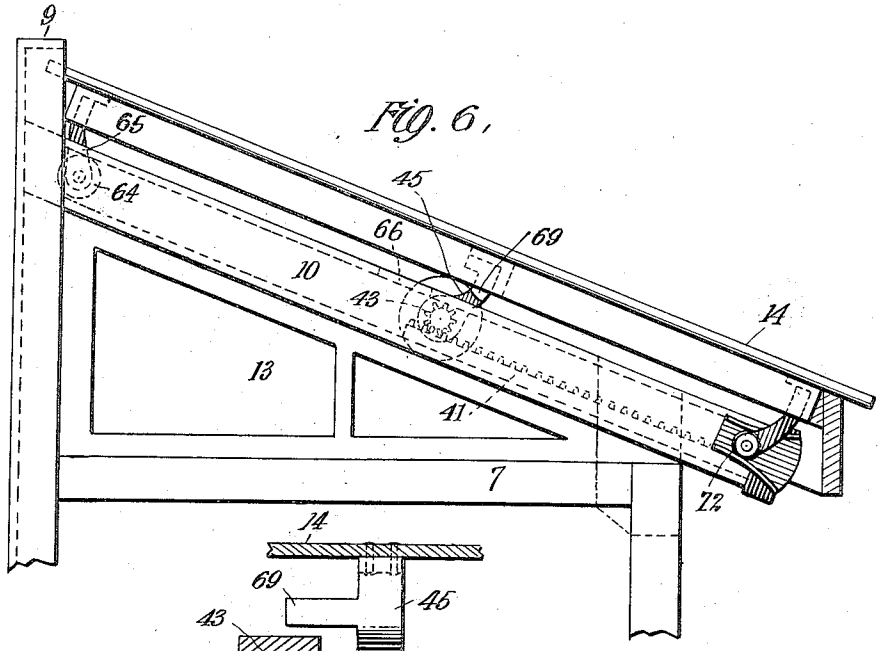


Fig. 6.

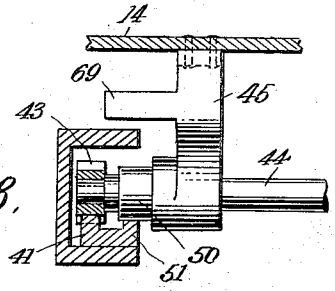


Fig. 8.

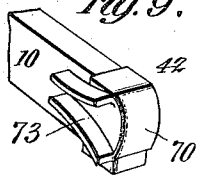


Fig. 9.

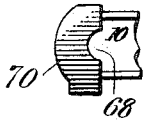


Fig. 10.

Fig. 7.

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UNITED STATES PATENT OFFICE.

HANNIBAL C. FORD, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO CHARLES FLOYD BURROWS, OF SYRACUSE, NEW YORK.

VENTILATED COMPARTMENT.

1,137,473. Specification of Letters Patent. Patented Apr. 27, 1915.

Application filed December 14, 1909. Serial No. 533,034.

To all whom it may concern:

Be it known that I, HANNIBAL C. FORD, a citizen of the United States, residing at the city of New York, in the borough of Queens and State of New York, have invented certain new and useful Improvements in Ventilated Compartments, of which the following is a full, clear and exact description.

This invention relates to ventilated compartments, and more particularly to sleeping out chambers adapted to be attached to a building or supported in an elevated position above the ground, and is of especial value in view of the disposition among physicians to prescribe the "open air" treatment for persons suffering from various complaints. It is preferably intended that the compartment described in the succeeding specification and claims shall be secured to the wall or roof of a building, or it may be supported by uprights from the ground in such manner that the open side thereof incloses or faces a window or door of such building. The compartment may be made small so that it is large enough to receive merely the head and shoulders of the patient, and an end of the bed upon which he is reclining; but I prefer to make it of sufficient size to permit the introduction thereinto of a bed or cot, and of sufficient height to permit the occupant to stand upright.

Various novel features are presented in connection with my device, comprising as it does, a separable or knockdown structure, the walls of which are capable of being separated one from the other, and in turn the panels or shuttered frames, which go to make up the said walls, are capable of being separated. The floor also is preferably formed in sections and ventilated by gratings or the like, and the roof is of particularly novel construction, in that the manner of mounting the same admits of movement in its own plane and also of oscillation about a given axis of rotation, all of such movements being controlled by a single operating member in such fashion that said roof may be substantially locked in any position desired. A construction is introduced in the roof mounting fixtures, such that the movement thereof is practically noiseless, and the said construction further readily admits of the complete removal of the roof from the building.

A further feature of my invention is the novel control of the shutters which afford ventilation around the sides of my compartment and co-act with the movable roof and grated flooring to permit a most free circulation of air.

Further novel combinations of parts will be hereinafter disclosed in the specification and claims.

It will be understood that the accompanying drawings merely present one embodiment of my invention, which is only to be limited by the scope of the appended claims.

Referring to the drawings in which like reference characters designate like parts: Figure 1 is a perspective view of the assembled structure; Fig. 2 is a vertical section therethrough showing the roof in closed position; Fig. 3 is a fragmentary partial vertical section of the structure showing the roof in its outermost position, the shutter vanes in the panels being omitted; Fig. 4 is a transverse sectional view showing the floor construction and arrangement of uprights; Fig. 5 is a plan of the roof; Fig. 6 is an end elevation of the roof; Fig. 7 is a fragmentary end view showing the roof in partly withdrawn position; Fig. 8 is a detail of the roof mounting; Fig. 9 is a perspective view of a guide casting, which is mounted at the end of a roof guide channel; Fig. 10 is a detail of said casting; Fig. 11 is a detail of a shutter-unit frame; Fig. 12 is a vertical section of said frame with the vanes in position therein, and Fig. 13 is a perspective view of one of said vanes.

Referring to Fig. 1, the compartment comprises a frame structure, made of angle iron or of wood, having vertical uprights which form the respective edges of the compartment; the rear uprights 1 being extended downward below the floor of the compartment to afford connection for oblique struts 2, which extend outwardly and upwardly therefrom and are riveted or otherwise secured to the end horizontal frame members 3. These horizontal members are united at their ends with longitudinal horizontal members 4 and 5; member 5 being secured against the wall of the building in the manner hereinafter described. Uprights 6 extend from the junction of said members and are in turn united at their upper extremities by side members 7 and front member 8. The vertical frame supports or bases

1 are united at their upper extremities, which extend some distance above the extremities of uprights 6, by a cross piece 9. Guide channels 10 are fastened to members 1 by being riveted or bolted thereto; and extend obliquely downward toward the upper extremity of the outer uprights. These channels are secured to the frame by plates 11, or the like, and a triangular frame 12 closes the apertures at the ends of the compartment between the under side of said channels and end members 7. Frames 12 are preferably provided with lights 13.

It will be seen that the above described structure provides a supporting frame for a roof 14 and a plurality of unitary shuttered panels 15, which when in position from the walls of my compartment. A sectional flooring is provided which rests upon the bottom of said frame; the flooring being supported, if so desired, by suitable cross members 17, which may also form a part of the frame proper. The said flooring is preferably grated, at least in part.

Referring now to Fig. 4, it will be noted that the frame is provided with plates 18 which are vertically positioned around the respective sides thereof and the exposed portions of these plates are substantially inclosed by the angle irons 19, which form the uprights of panels 15. The frame of each of these panels is completed by cross members 20, preferably united thereto by riveting. The inwardly extending flanges 21 of panel uprights 19 are perforated at intervals, as at 22, for the reception of trunnions 23 of the shutter vanes 24. These vanes are of peculiar construction, each comprising a body 25 having angularly disposed upwardly and downwardly extending flanges 26. As shown in Fig. 12, the flanges of adjacent vanes overlap and when the shutters are substantially closed, provide ample ventilation while affording protection from rain, snow, or the like. They may be closed together entirely, however, if desired. Trunnions 23 extend outwardly from the up-turned flanges 27, one of said flanges being extended to the rear to form a lever arm 28, and it will be noted that the vanes 24 may be struck-up from a single sheet of metal, the trunnions being riveted therein. They may, however, be of cast metal or wood. The up-turned end flanges 27 further serve to form, together with the body of the vane, a gutter, so to speak, for rain or the like. A connecting bar 29 connects the respective lever arms by means of bolts 30, in such manner that any desired number of vanes in a given panel may be actuated thereby in unison. I prefer to divide the vanes into at least two sets, as shown in Fig. 12, so that the upper portion may be substantially closed in the event of inclement weather, while the lower portion, which should come below the bed of the occupant, may be left open, thereby affording the best of ventilation under such conditions. The panels are adapted to be positioned side by side, being as aforesaid secured to plates 18. Short rods 31 extend through holes 32 in the sides of the panel frames and are formed at their ends in such fashion as to clutch or engage with each other when the panels are assembled side by side. These rods are operatively connected with the canes 26. Fig. 4 shows one form of such an arrangement, a collar 33 being placed upon each left hand end of the rods in a given unit and a pin 34 being driven through each of the right hand ends, said pins engaging slots in collars 33. Handles 35 may be provided upon these collars, and it will be seen that owing to the engagement of successive rods it is possible to operate, if desired, all of the vanes upon a given side of the compartment. This principle may be extended of course so that one handle may control all of the vanes around the compartment.

The frame is rigidly but adjustably secured to the side of the building by means of blocks or clamps 36—37, lag screws or expansion bolts 38 being driven through blocks 36 into said wall, and a flanged head 39 extends upwardly from each of said blocks 36 to engage the cross member 5. The upper portion of the frame is slidably secured to the fixed wall by the grooved blocks or clamps 37.

The above described construction is important by reason of the fact that the studding in a wall is placed at predetermined intervals and as the compartment frame may not always be securable directly thereto, the blocks or clamps may be fastened to the wall wherever desired, and the compartment frame may then be slid along or adjusted to properly inclose the window or door in said wall.

Referring now to the roof structure, the channels 10 carry upon the outer portions of their lower flanges, racks 41 and have secured at their outermost ends locking pieces, preferably castings, 42. Pinions 43 engage said racks and thereby secure a parallel movement of the roof by reason of shaft 44 upon which said pinions are mounted. Shaft 44 is journaled in brackets 45 and these brackets in turn are secured to and support the roof 14. The roof is preferably formed by covering a frame with corrugated iron, but may be made of other material and in various ways. I prefer to form the roof frame of end members 46 and side members 47, 48 riveted together and with a longitudinal intermediate cross piece 49 positioned substantially midway between the side members. Brackets 45 may be bolted to this cross piece. Collars 50 are keyed or otherwise secured to the shaft 44 and prevent the same from moving longitudinally

through the said brackets. These collars perform a further function and one of considerable importance. The rack 41 is provided with a rail-like flange 51 extending parallel to the rack proper, and collars 50 are adapted to ride on the said flange and so actually support the weight of the roof. The function of pinions 43 is, with this arrangement, to drive the roof steadily up or down, as desired, and to provide steadying means to force it to move parallel to itself. This construction obviates substantially all noise when the device is operated. The shaft 44 carries drums 52 and 53 adjustably mounted thereon. It is obvious, of course, that the said drums may be formed as a unitary structure, but for convenience two drums have been provided. Ropes 54 and 55, preferably of wire, are respectively secured to said drums; rope 54 proceeding from drum 52, extending around an idler 56 bracketed to the outer side of the roof preferably upon side member 47 and from thence around idler 57 bracketed to the outer side of the compartment. Said rope then extends downwardly around bracketed idlers 58 and 59, positioned preferably upon the bottom of the compartment, and passes from thence up and is secured to one end of the winch drum 60. Rope 55 extends from drum 53 around idler 61, bracketed to the inner end of the roof upon side member 48 and from thence to bracketed idler 63, which may be secured to the rear portion of the frame or directly to the house, and from thence down to the other end of winch drum 60. A roller 64 is mounted upon the bracket 65 upon each of the inner corners of the roof, and is adapted for travel upon the lower flange of channel 10. The upper flange of each of said channels is slotted at 66 approximately midway of the length thereof to permit of the passage of roller 64 therethrough. It will be seen that upon turning the handle 67 of the winch 60, let us say counter clock-wise, as shown in Fig. 2, the roof will be translated downward until the collars 50 engage pockets 68 in castings 42. Thereafter further movement of the rope effects a rotation of the roof about shaft 44 as an axis, the rollers 64 escaping from confinement in channel 10, and a lug 69 positioned upon each of brackets 45 passing around the outer curved faces 70 of each of castings 42. It may be here noted that the clearance between said lug and said casting is as small as possible. This arrangement provides an efficient lock for the roof, preventing the upward displacement of the axis thereof during rotation. It will be also observed that the oblique downward translation of the roof removes the upper end thereof from under the projecting and covering flange of upper cross member 9, and also removes the roof from possible interference with the eaves of a house should the window or door, about which the compartment is secured, be adjacent thereto. The path 71 of the rear rollers of the roof has been indicated in dotted lines in Fig. 3.

While rope 54 urges the roof downward and outward, rope 55 restrains the same and is only paid out in substantially corresponding amount to that taken up by the winch from rope 54. The irregular contour of the winch drum surface may here be referred to. Owing to the change in relative positions of the respective idlers with respect to each other, it is evident that a greater amount of rope must be paid out than that which is taken in by the winch during certain periods of the translation and rotation of the roof. The irregular surface of revolution of the winch provides for this, and is so formed that both ropes are substantially taut at all positions of the roof. Considering now the return of the roof to its normal position, handle 67 being turned in the opposite direction winds rope 55 and correspondingly unwinds rope 54. The pull upon said rope tends to cause an upward movement of the roof while it is being rotated again into a position parallel to that which it originally occupied, but lug 69 overcomes this tendency and prevents the oblique translation of the roof during this action and remains in engagement with surface 70 until collars 64 have passed through slots 66, and are hence adapted to engage the under surfaces of the upper flanges on guide channels 10. A further rotation of the winch now moves the roof steadily up into its original position, being materially aided in this by reason of the relatively large diameter of the drum 53. As the roof approaches the end of its travel, a roller 72 bracketed to each of the outer corners of the roof in corresponding fashion to rollers 64, engages guiding flanges 73 on the outer faces of castings 42. These flanges flare outwardly from each other so as to readily engage the said rollers, and at their innermost extremities are spaced from each other but little more than the diametral width of the said rollers. A pawl 74 is secured to the base 75 of the winch supporting bracket and is adapted to engage with the ratchet 76 secured to said winch, thereby preventing the same from unwinding when the handle 67 is not being held. The winch bracket is preferably attached to the frame, on account of the adjustability of the latter with respect to the fixed wall; but it may, of course, be directly attached to said fixed wall.

My roof construction affords a ventilating space around all four sides thereof while at the same time providing ample protection from inclement weather, and the means for operating said roof as herein described are particularly believed to be wholly novel and

to present many advantages. In the first place the roof is so balanced that even if burdened with snow, substantially no more effort is required to move it than if it were not so burdened, and further it is substantially balanced in all positions thereof. As aforesaid it avoids interference with overhanging or projecting parts of the house and admits of adjustment to permit any desired amount of sunlight to penetrate the compartment. Further when in its outermost and rotated position, it affords a screen to prevent observation of the occupant of the compartment by too inquisitive neighbors.

To resume, therefore, I have described a compartment which is admirably adapted by reason of its adjustably shuttered walls, translatable and rotatable roof, and grated flooring, to afford a most perfect circulation of air. The compartment may, as aforesaid, be secured around and outside of a window or door, or may be supported upon a piazza or roof. By reason of the overhanging of the roof, the shuttered walls are still further protected from rain or the like, and owing to the construction of the vanes and the shutters in the manner aforesaid, the perfect open air circulation is maintained during all conditions of weather. The device is of the knock-down type, and while I prefer to make it of metal in the manner described, it may be made of wood or other material, and unskilled labor will suffice for the erection thereof, all parts being ready for assembly in the field. The compartment affords a minimum of discomfort, exertion and exposure with the fullest possible degree of concealment and security for the occupant, protection against winds, storms and dampness, and the constant admittance of an abundance of fresh air.

What I claim, is:—

1. The combination with a ventilated compartment having a rack mounted on one of the side walls thereof, of a rotatable roof having a pinion mounted thereon for engagement with said rack, and an endless rope connection for rotating said pinion to effect the translation of the roof.

2. The combination with a ventilated compartment having a rack mounted on one of the side walls thereof, of a rotatable and translatable roof having a shaft, a pinion mounted thereon for engagement with said rack, an endless rope connection for rotating said pinion to effect the translating movement of the roof, a stop arranged on the side wall of the compartment, and means on said shaft for coöperating with said stop to limit the translating movement of said roof, said means and stop serving as a pivot upon which the rotation of the roof is effected.

3. The combination with a ventilated compartment having a rack mounted on one of the side walls thereof, of a translatable and rotatable roof having a pinion mounted thereon adjacent the transverse medial line of the roof, said pinion engaging with said rack, an endless rope connection for rotating said pinion and thereby effecting the translation of the roof, and means for preventing the disengagement of the pinion with the end of the rack, said means coöperating with the endless rope connection to effect the rotation of the roof.

4. The combination with a ventilated compartment having a guide channel mounted on one of the side walls thereof, of a translatable and rotatable roof, a roller on said roof engaging in said guide channel, said guide channel having a slot therein through which said roller passes when the rotation of the roof is effected, and means for effecting both the translation and rotation of the roof.

In witness whereof, I subscribe my signature, in the presence of two witnesses.

HANNIBAL C. FORD.

Witnesses:
WALDO M. CHAPIN,
WILLIAM C. LANG.