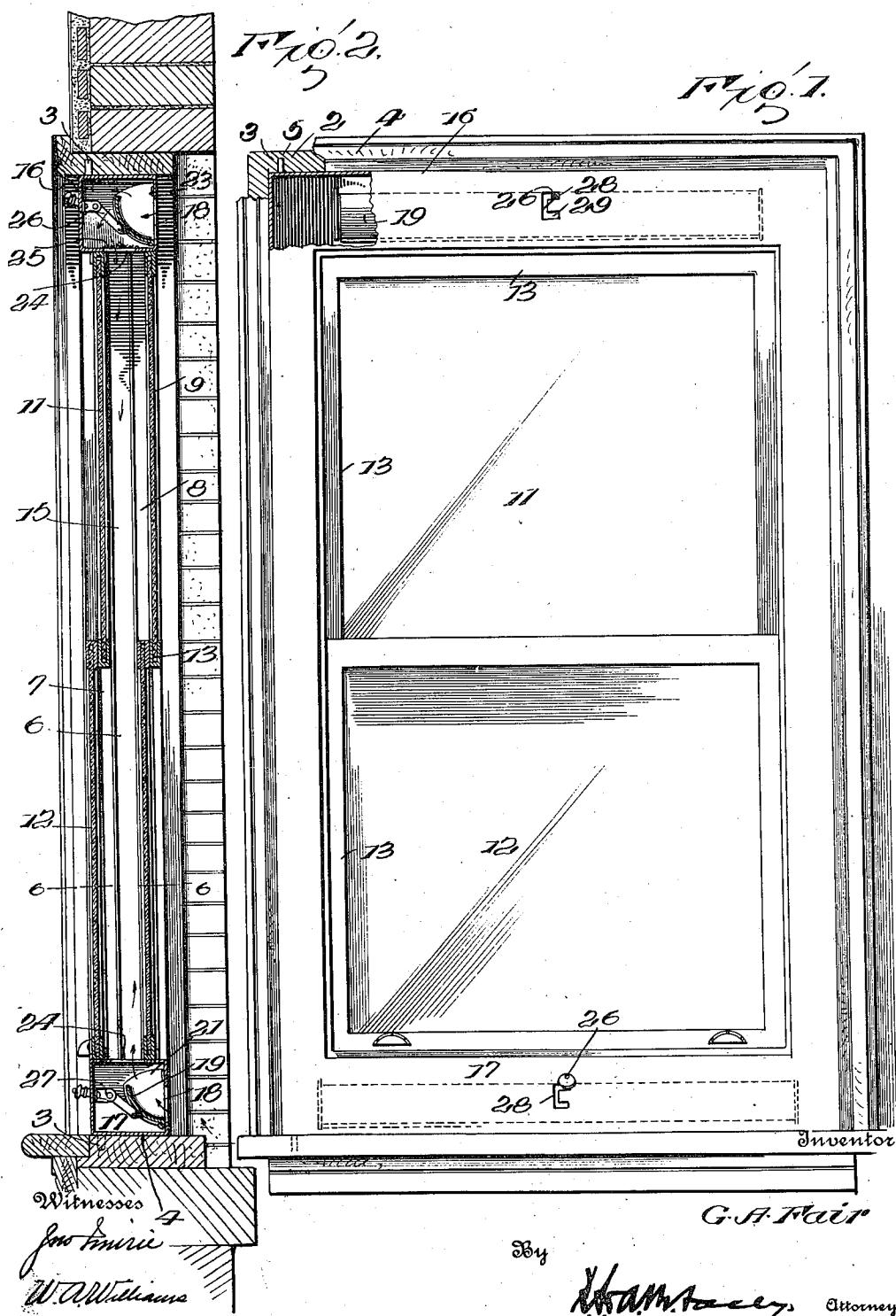


1,136,784.

G. A. FAIR.
VENTILATING WINDOW OR DOOR.
APPLICATION FILED MAY 26, 1914.

Patented Apr. 20, 1915.

2 SHEETS—SHEET 1.



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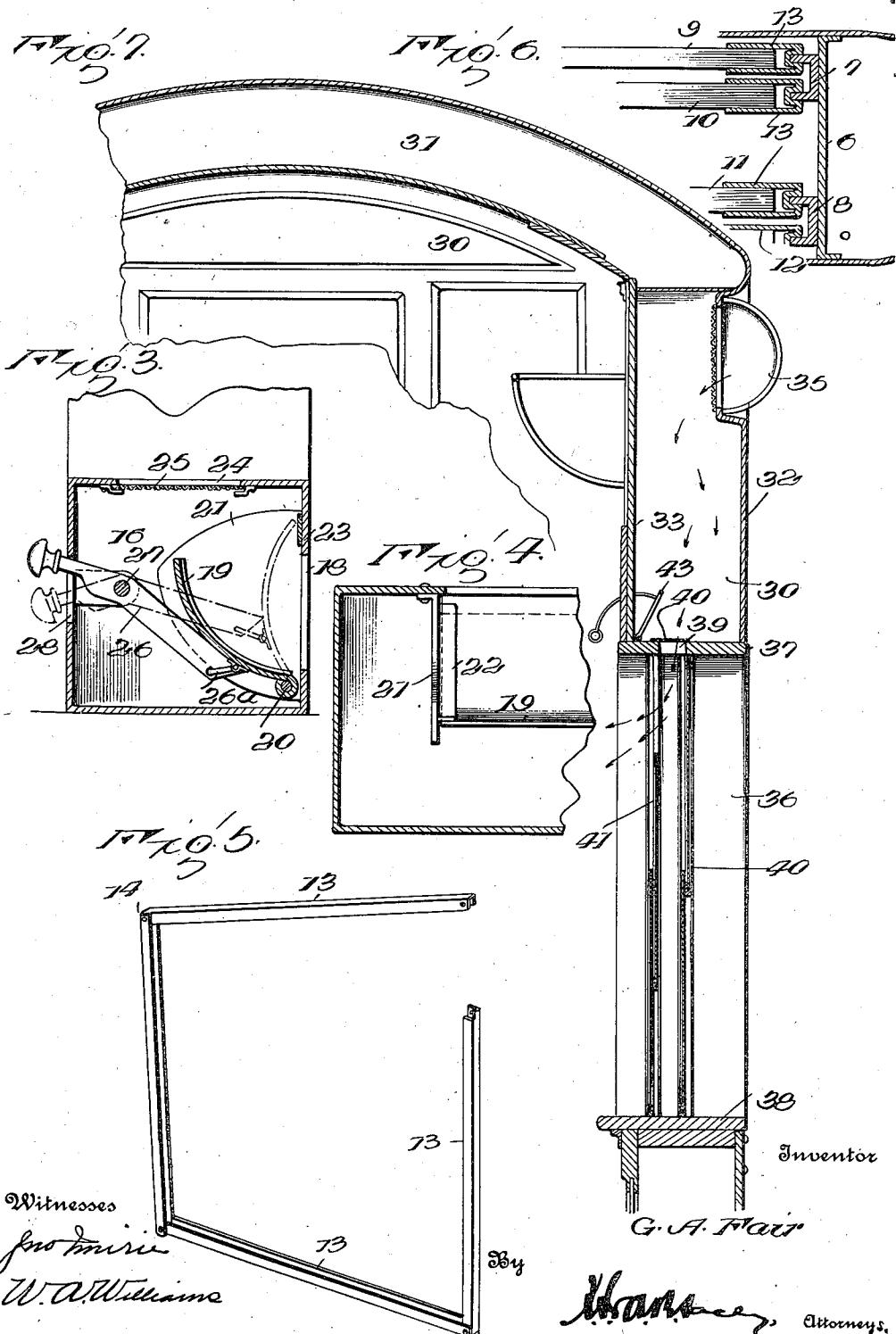
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2 SHEETS—SHEET 2.



Witnesses

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GEORGE A. FAIR, OF LOS ANGELES, CALIFORNIA.

VENTILATING WINDOW OR DOOR.

1,136,784.

Specification of Letters Patent. Patented Apr. 20, 1915.

Application filed May 26, 1914. Serial No. 841,107.

To all whom it may concern:

Be it known that I, GEORGE A. FAIR, citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Ventilating Windows or Doors, of which the following is a specification.

My invention relates to windows and particularly to windows so constructed as to provide for a proper ventilation of the apartments in which the windows are used.

The primary object of my invention is the provision of means whereby the inlet of fresh air or the outlet of vitiated air into or from a room or other apartment may be readily regulated, the construction being such that direct drafts of air are prevented.

A further object of the invention is the provision in a window of spaced sashes inclosing between them a normally dead air space, the spaces between the sashes, however, being connected with means whereby fresh air may enter between the sashes and by a proper regulation of the inner sashes be allowed to enter the room.

A further object of the invention is the provision of a window so constructed that diffusion boxes are formed at the upper and lower ends of the window, these diffusion boxes admitting air between the outer and inner sashes and being provided with controlling dampers so that the amount of air so entering may be readily controlled.

Still another object of the invention is to provide a sash frame of a very simple construction so formed that it may be readily opened to permit the insertion or removal of a pane of glass.

Other objects will appear in the course of the following description.

Certain improvements of my invention are illustrated in the accompanying drawings, wherein:

Figure 1 is a face view of a pivoted window constructed in accordance with my invention. Fig. 2 is a vertical section on the line 2—2 of Fig. 1. Fig. 3 is an enlarged section of the lower diffusion box shown in Fig. 2. Fig. 4 is a fragmentary horizontal section on the line 4—4 of Fig. 2. Fig. 5 is a perspective view of one of the sash frames. Fig. 6 is a fragmentary sectional view on the line 6—6 of Fig. 2. Fig. 7 is a fragmentary vertical section through a portion

of a railway car showing my improved ventilating window as applied thereto.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawings by the same reference characters.

In Figs. 1 to 6 I show my improvement as applied to a particular form of window construction, such a window construction as is illustrated in my pending application, Serial No. 807,527, filed on the 18th day of Dec., 1913. In this form of window, the main frame of the window is rectangular and is pivoted at the corners so that the window opens outward in the manner of a casement window. Disposed within this main window frame and movable therewith are outer and inner sliding sashes. In this prior invention, above referred to, the diffusion boxes or ventilating boxes are disposed in the window casing above and below the pivoted window frame by which the passage of fresh air into the room could be controlled. I have shown my invention as applied to such a pivoted window frame, as is disclosed in my prior application, but I do not wish to be limited to this construction, as it is obvious that the invention might be applied to windows which were not pivoted.

Referring to Figs. 1 to 6, 2 designates a window casing of any usual or approved form. In the lintel and sill of the window casing are formed sockets 3 for the engagement of the pintles. The outer window frame proper is designated 4 and is rectangular in form and is preferably made up of sheet metal sections. This outer window frame is provided with pintles 5 and its upper and lower ends engaging the sockets 3 so that the window frame is pivoted for movement in a horizontal plane. The inner wall

6 of the window frame, as illustrated in Fig. 6 is provided with the channel irons 7 and 8, 7 designating the outer channel iron and 8 the inner channel iron for the guidance of the outer and inner pairs of sashes. The outer upper sash is designated 9 and the outer lower sash designated 10. The inner upper sash is designated 11 and the inner lower sash is designated 12. Each of the panes of glass forming the sashes is inclosed and supported by a sash frame, illustrated in Fig. 5. This sash frame may be formed in any suitable manner but preferably comprises four pieces designated

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13, U-shaped in cross section, the four pieces or sections 13 being pivotally connected to each other as at 14 at the corners of the frame. The sash frame is so formed that 5 when one of the pins 14 is removed, the frame may be opened out for the reception of the glass pane and then closed and pinned together in a manner which will be obvious to all those skilled in the art. My reason 10 for forming the sash frames in this particular manner is that thereby I make the sashes very light and the sash frame itself can be made relatively thin so as to secure as much dead air space between the windows as is 15 necessary. As illustrated in Fig. 6 there is a space of a half inch or two inches between the outer pair of sashes and the inner pair of sashes, this space being designated 15 and constituting normally 20 a dead air space. The upper rail 16 of the outer frame 4 constitutes a diffusion box and the lower rail 17 of the window frame also constitutes a diffusion box, these boxes being hollow and having openings leading 25 to the outside air and being also provided with dampers, as will now be explained. Each of these boxes 16 and 17 has an opening 18 upon its outer face through which air may enter, and pivotally supported within 30 the bar or hollow member 16 is a damper plate 19, illustrated most clearly in Figs. 3 and 4. This damper plate is pivoted at 20 so as to swing toward and from the opening 18 and preferably the damper plate 35 swings between inwardly projecting flanges 21 formed on or carried upon the outside wall of the members 16 and 17. The edge of the damper plate may be provided with felt or rubber backing 22 which will have 40 air-tight engagement with the flanges of the wings 21. A transversely extending strip of felt or rubber designated 23 is likewise so disposed above the opening 18 as to contact with the free edge of the damper 45 plate when the latter is closed as shown in dotted lines in Fig. 3. As illustrated, the damper plate is curved transversely of its length, but the particular form of this damper plate is not essential to my invention. 50 Each of the boxes 16 and 17 is also formed with an opening 24 which opens from the hollow bar or box into the space 15 between the outer and inner ends of the window sashes. This opening 24 is preferably 55 crossed by a screen 25 of gauze or like material, so as to prevent the entrance of dust into the space between the window sashes. While I may provide any suitable means for 60 operating the damper plates 19, I have illustrated in Fig. 3 a lever 26 pivoted at 27 and having one arm projecting out through an opening 28 formed in the front wall of the members 16 and 17. The inner arm or end of the lever bears against the curved under 65 face of the damper plate and is linked there-

to by a link 26^a so that when the outer end of the lever is depressed the damper plate will be raised and shifted to the dotted line position in Fig. 3. I may provide any suitable means for holding the lever 26 in position to close the damper but for the purpose, however, I have illustrated the slot 28 as being formed with an offset 29 at its lower end and providing a shoulder. The lever is loosely pivoted upon its pivot pin 70 so that after it has been turned down it may be shifted slightly to one side and thus locked. The operation of this portion of my invention will be perfectly obvious from what has gone before. If it is desired that 75 the space 15 shall be filled with dead air then of course, the damper plates 19 are to be closed so as to prevent the entrance of air into the opening 18. If it is desired that slight ventilation should be secured the one 80 or the other of the damper plates can be opened, allowing fresh air to enter, pass through the diffusion box and pass into the space 15. Either the lower or upper inner sashes may be raised or lowered, or the 85 lower sash may be raised or the upper sash lowered, and thus the air entering one or the other of the diffusion boxes and passing into the space 15 will be either allowed to enter directly into the apartment by raising 90 the sash adjacent to the diffusion box or may be allowed to enter indirectly by shifting the sash farthest away from the diffusion box. If a greater ventilation is desired, then both of the dampers in the two 95 diffusion boxes will be opened and air allowed to enter through both of the openings 18 and the lower sash may be raised and the upper sash lowered so as to secure an entrance of fresh air both at the top and 100 bottom of the window. Of course, if a greater amount of air is necessary, then both of the lower sashes may be entirely opened and if a still greater amount is necessary then the entire window may be opened and 105 swung upon its pivot after the manner of a casement window.

It will be seen that my construction is particularly applicable to vehicles such as 110 Pullman palace cars, where in winter there is ordinarily provided an outer fixed sash and an inner sliding sash. In these cars it is extremely difficult to secure proper ventilation without permitting a too direct inlet of cold air.

In Fig. 7 I show my improvement as applied to a car having outer and inner sashes. In this figure, 30 designates the side wall of a car and 31 a portion of the roof. The side of the car, as illustrated, is formed with 115 outer and inner walls 32 and 33. At the spring of the roof there is an inlet hood designated 35, whereby air may enter into the space between the outer and inner walls. The window frame 36 is provided with the 120

lintel 37 and the sill 38. This lintel 37 is formed with an inlet opening 39 protected by a screen 40. The outer sash 41 is illustrated as fixed in position so that it cannot be shifted. This is an ordinary and common arrangement in Pullman cars. It is obvious, however, that this sash might be made sliding without affecting the merits of the invention. The inner sash 42 is preferably composed of two sashes sliding with relation to each other so as to control the entrance of air into the car from the space between the sashes. If now both the upper and lower inner sashes be closed it is obvious that no air can enter. If now, on the other hand one of these sashes be opened it will be obvious that air passing down through the aperture 40 will enter in the car by the manner shown in Fig. 7. In order to prevent the passage of air into the space between the outer sash and the inner sashes, I provide a damper 43 which is operated by means of a rod, lever, or other suitable instrumentalities projecting into the car. The sill of the window is designated 56 and forms the top of a transversely extending hollow casing 57 which extends entirely across the window and forms the lower bar thereof. This lower hollow bar 56 and casing 57 at its outer portion extends above the sill 56 so as to form a ventilation box 58. The outside face of the hollow bar 57 is formed with an air inlet opening 59 and an inner wall 60 deflects the air entering through this opening into the ventilation box 58. The inner wall of the ventilation box is formed by a screen 61. It will be seen that the lower sash 51 of the inner pair of sashes when closed rests upon the sill 56 but that when the lower sash 51 is raised sufficiently, the upper sash will lower so as to rest upon the upper wall of the ventilation box 58. It will likewise be seen that in the lowered position of the box the sash 51 when resting upon the sill 56 will close the opening across which the screen 61 is disposed but that when the lower sash is raised air will be admitted from the ventilation box 58 into the room. The lintel of the sash frame is formed by a hollow casing 62 having a portion 63 at its upper end which overhangs the sill 56. The front of the casing 62 is formed below the overhanging portion 63 with the opening 64 screened by a wire gauze 65. The outer face of the casing has an opening 66 for the admission of fresh air and fresh air is directed upward into the upper portion of the casing which forms a ventilator box by means of the deflector plate 67. It will be noted that when the inner sashes are in their closed position the upper sash 50 will engage with the under wall of the overhanging portion 63 and will close the opening 64, but that when this upper sash is lowered this opening will be unclosed and fresh air will be admitted into the room. It will be seen then that by raising the lower sash the upper sash will be lowered, and thus air will be admitted through the screened opening 61 and the hot air will pass out through the upper opening 64 or fresh air may enter through this upper opening, just as circumstances dictate. The rear sashes operate between the upper wall of the ventilation box 58 and the lower wall of the box or casing 62 and preferably, one sash counterbalances the other. Ordinarily, during the winter months, the outer pair of sashes are not opened and the inner pair of sashes only opened to an extent which will inclose the openings 61 and 64. Thus the dead air space 68 between the inner and outer sashes is at all times preserved, thus preventing the warmth of the room from being dissipated and also preventing the moisture gathering upon the sashes. It is a very important matter that the dead air space should be preserved through the cold months of the year, particularly in the cold climates, as by this method frost is kept off the windows. After the weather grows warmer, however, all the windows may be fully opened and the dead air space eliminated.

In order to prevent cold air from entering the room, at right angles to the plane of the windows I preferably provide a deflector plate designated 69 and illustrated in Fig. 2. This deflector plate is disposed in a slot 70 formed in the sill 56 and at its upper end is flanged as at 71 so that it cannot drop down too far through this slot 70. It is also provided with a ring or other form of handle whereby it may be pulled up. The lower extremity of the plate 69 is deflected as at 73 so that when the plate is pulled up to its full extent it may be tipped and will hold in place without the necessity of using any fastening device for the purpose.

Parting strips 74, are of course, disposed between the front and rear pairs of sashes, thus holding these front and rear parts of sashes separated. Preferably the window frame is reinforced by outer reinforcing members designated 75 forming channels 76 within which a shade may be disposed while the outer portion of the window casing is reinforced by the reinforcing members 77 (see Fig. 3) providing a channel within which a screen of wire gauze may slide.

This form of window is particularly applicable for use in Pullman cars which in winter require a dead air space between the outer and inner sashes and in which there is a great deficiency in proper ventilation. It is, however, obvious that the invention is not necessarily limited to its use in Pullman cars but may be applied to the windows of houses and other buildings, with equally good results.

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It will, of course, be understood that the window is shown deeper in proportion than it actually will be, in order to show the parts distinctly.

5 While this form of the invention has been shown as applied to windows I wish it distinctly understood that it might also be applied to doors.

Having thus described the invention what 10 is claimed as new is:—

1. In a window of the character described, outer and inner sashes, a frame in which said sashes move, one member of the frame being hollow and having communication 15 with the outside air and with the space between said sashes, and a damper arranged within the hollow member and controlling the passage of air therethrough.

2. In a window of the character described, 20 outer and inner sashes, a frame in which said sashes move, one member of the frame being hollow and having communication with the outside air and with the space between said sashes, a damper pivotally mounted within the hollow member and controlling the passage of air thereinto, and damper actuated means extending out of the front of said hollow member.

3. In a window of the character described, 30 an outer sash and upper and lower inner sashes, a frame in which said sashes move, said frame including hollow elements opening into the space between the sashes and communicating with the outside air, and 35 dampers controlling the entrance of air into said hollow elements.

4. In a window of the character described, outer and inner sashes spaced from each other, and an outer sash frame including a

hollow element having a lateral opening, 40 and an opening communicating with the space between the outer and inner sash frames, and a damper pivotally mounted within the hollow element and movable into position to cover or uncover said lateral 45 opening, and a lever pivoted to the exterior of the hollow member and having linked engagement with the said damper.

5. In a window of the character described, 50 outer and inner sashes, the inner sashes comprising an upper and a lower sash, shiftable with relation to each other, a frame inclosing said sashes and within which the sashes move, said frame having a hollow lintel and a hollow sill, each communicating with the 55 outer air, there being a screened opening leading into the space between the sashes, and dampers arranged one in each of said elements and controlling the passage of air through said hollow members into the space 60 between the outer and inner sashes.

6. In a construction of the character described, a member hinged at one side for movement in a horizontal plane, outer and inner sashes disposed in said member, the 65 inner sashes being shiftable, the said member being hollow and having an opening for the entrance of fresh air and an opening leading to the space between the sashes, and means within the hollow member for 70 controlling the passage of air into said space.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE A. FAIR. [L. S.]

Witnesses:

FREDERIC B. WRIGHT,
JOSEPH C. ZIRKLE.