G. H. KNIGHT.

VENTILATING WINDOW SCREEN.

APPLICATION FILED AUG. 7, 1907.

906,142.

Patented Dec. 8, 1908.

4 SHEETS—SHEET 1.

Fig. 1.

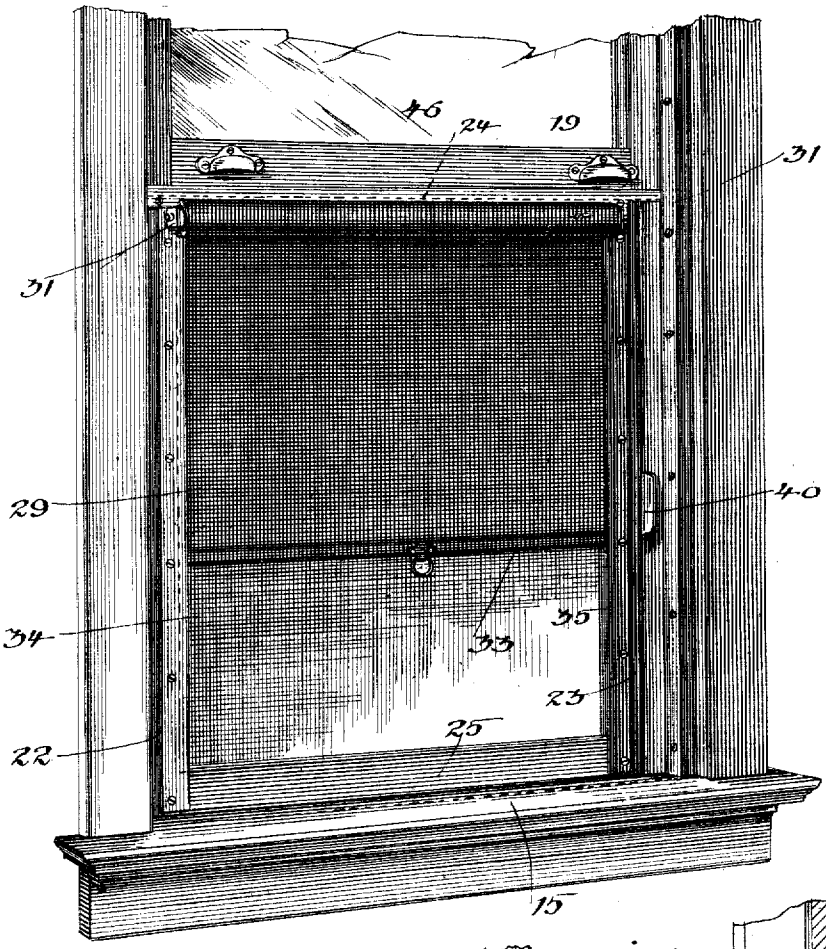


Fig. 2.

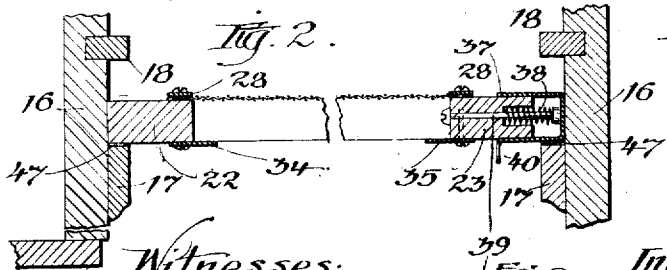


Fig. 3.

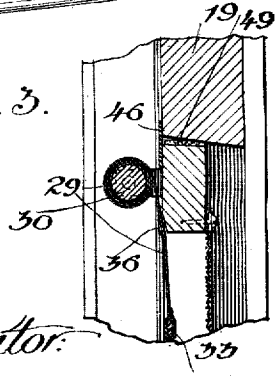
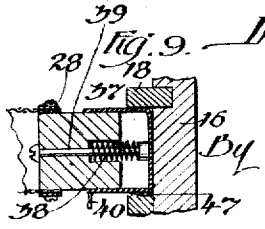


Fig. 9.



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4 SHEETS—SHEET 2.

Fig. 4.

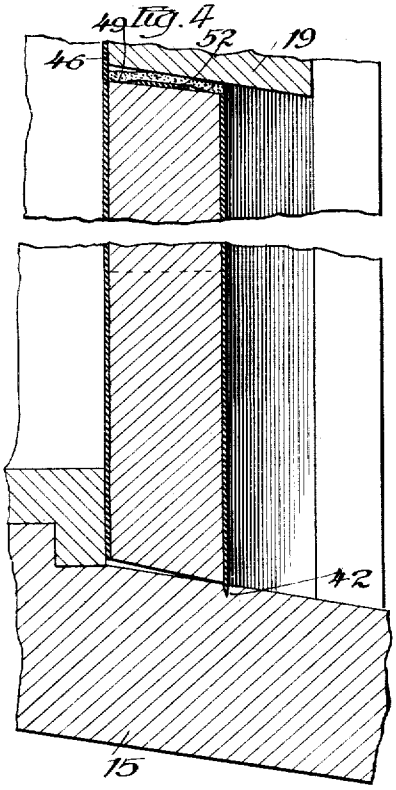


Fig. 5.

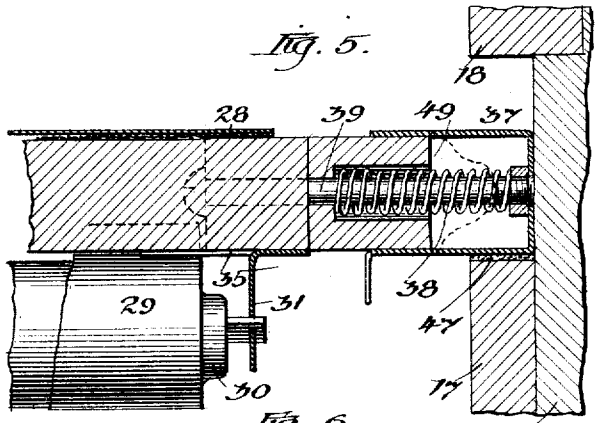


Fig. 6.

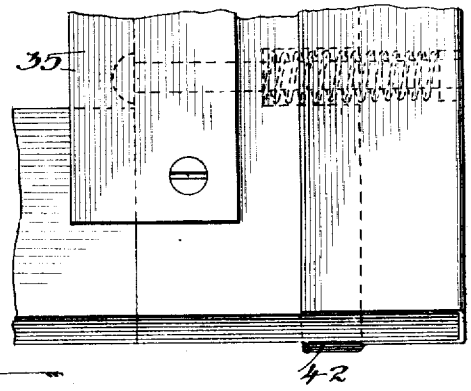


Fig. 7.

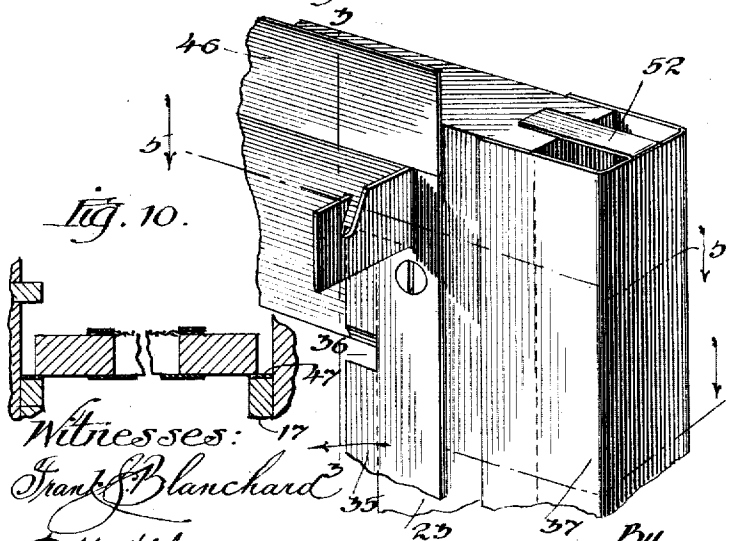


Fig. 8.

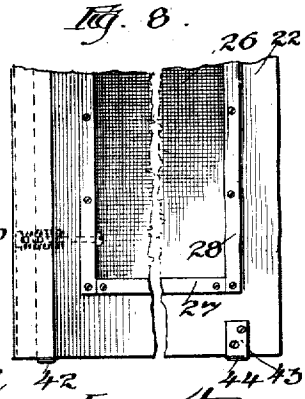


Fig. 10.

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4 SHEETS—SHEET 3.

Fig. 11.

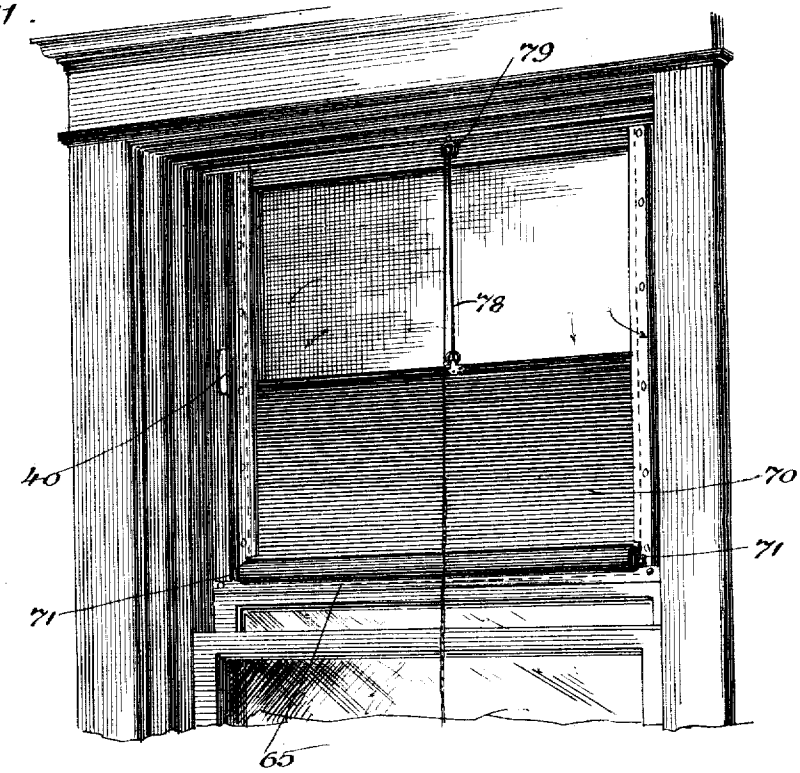
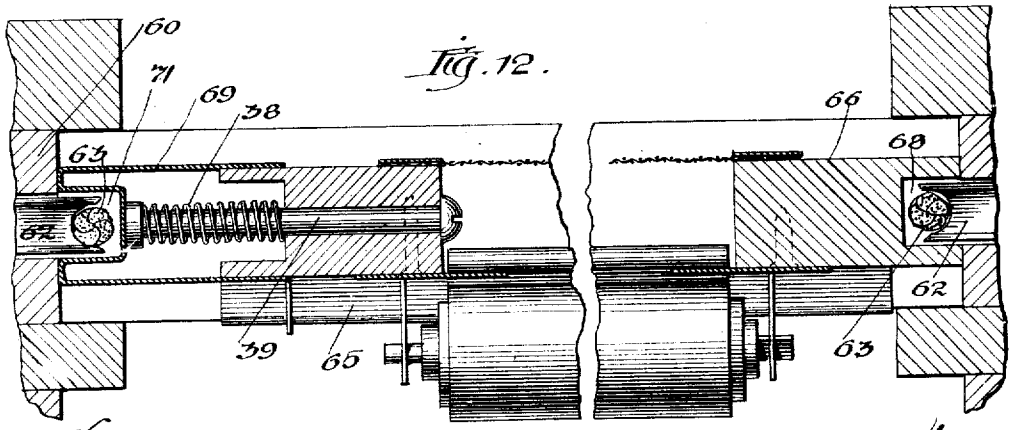


Fig. 12.



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4 SHEETS—SHEET 4.

Fig. 13.

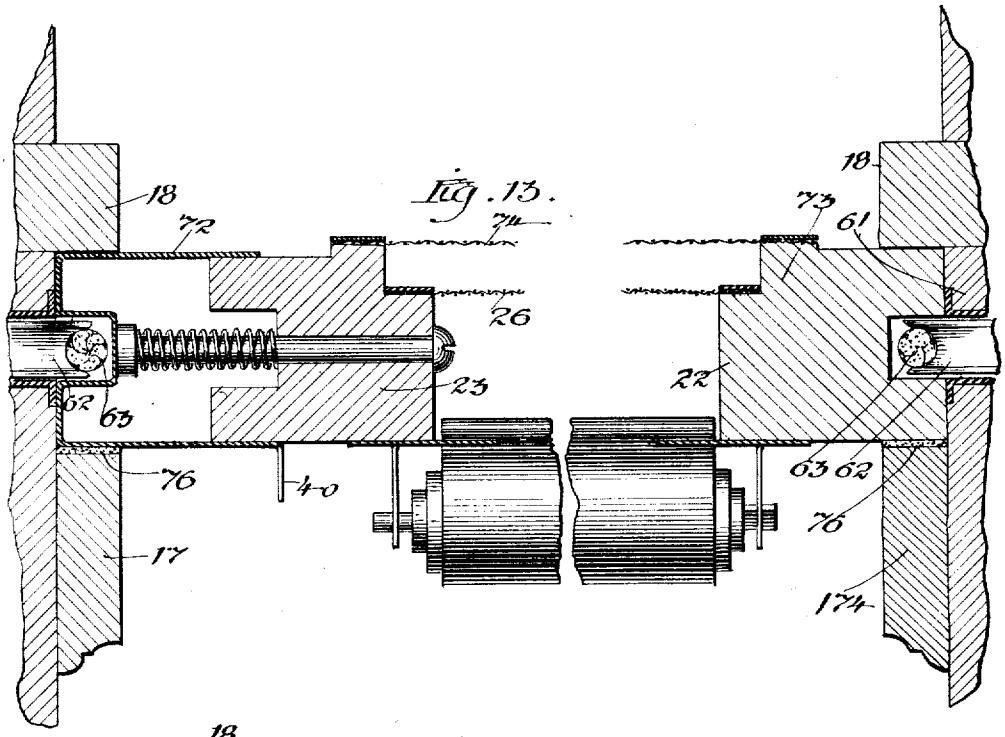


Fig. 14.

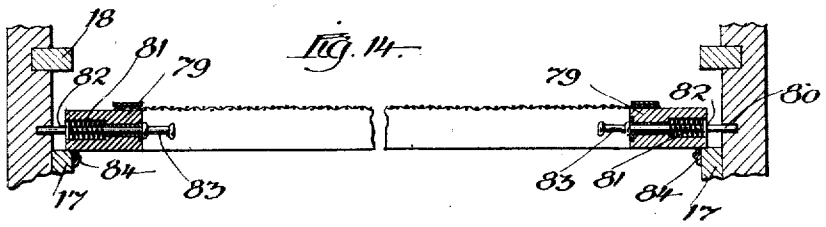
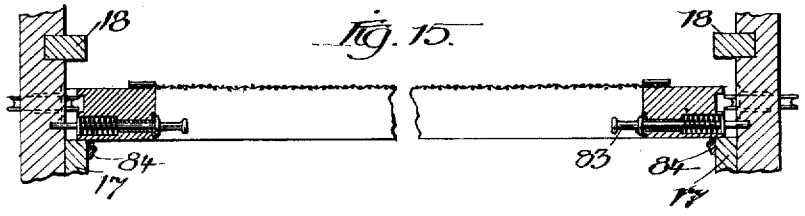


Fig. 15.



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UNITED STATES PATENT OFFICE.

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VENTILATING WINDOW-SCREEN.

No. 906,142. Specification of Letters Patent. Patented Dec. 8, 1908.

Application filed August 7, 1907. Serial No. 387,401.

To all whom it may concern:

Be it known that I, GEORGE H. KNIGHT, a citizen of the United States, and a resident of Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ventilating Window-Screens; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to a ventilating window screen and more especially to a screen which can be removably placed in position in the frame of a window in the opening left by the raising or lowering of one of the window sashes and which is provided with means for regulating or controlling the amount of air passing therethrough.

The invention consists in the matters hereinafter more particularly set forth and pointed out in the appended claims.

My invention may be better understood by reference to the accompanying drawings, in which,—

Figure 1 is a perspective view of the inside of a window casing showing the lower window sash raised and my novel ventilating screen in place therebelow. Fig. 2 is a horizontal section through the side members of the screen frame. Fig. 3 is a vertical section, on line 3—3 of Fig. 7. Fig. 4 is a transverse vertical section through the right hand side member of the screen frame, looking toward the center thereof. Fig. 5 is a horizontal section, on the line 5—5 of Fig. 7. Fig. 6 is an inside face view of the lower right hand corner portion of the screen frame. Fig. 7 is a view in perspective of the upper right hand corner portion of said frame. Fig. 8 is an outside face view of the lower portion of the screen frame. Fig. 9 is a horizontal section through the right hand side member of the screen frame showing a modified form of construction thereof. Fig. 10 is a horizontal section through the side members of the screen frame showing a modified form of construction thereof. Fig. 11 is a view in perspective showing a modified form of my novel ventilating screen in place in the upper part of a window frame in the space left by the lowering of the upper sash. Fig. 12 is a horizontal section through the side members of the frame thereof. Fig. 13 is a view similar to Fig. 12, showing a slightly modified form of the device shown in Figs. 11 and 12. Figs. 14 and 15 are horizontal sections through the side members of the screen frame showing two other modified forms of construction.

As shown in the drawings, in Figs. 1 to 8, inclusive, 15 designates the sill and 16, 16 the upright side members of a window frame, said latter members being provided each with inner and outer stops 17 and 18, between which is slidably mounted the lower or inner window sash 19. Said window sash is shown in a raised position to allow the placing thereunder of a screen frame comprising two upright side members 22 and 23, an upper horizontal member 24 and a lower horizontal member 25. On the said screen frame is stretched a piece or layer 26 of porous or foraminous sheet material, which may consist of muslin, cheesecloth, closely woven wire cloth, or other sheet material having such minute perforations as to permit the passage through it of air for ventilation, but which will act as a barrier to the passage of wind or strong drafts, and also serve to exclude from a room particles of dust. As illustrated in said Figs. 1 to 8, the sheet material is secured at its edges to the outside faces of the upper, lower and side members of the screen frame. 27 and 28 (Fig. 8) indicate strips of wood or other material which may be applied to cover the edges of the sheet material 26 and which are shown as secured to the members of the screen frame by means of screws. On the inner face of said screen frame is located a movable curtain 29 which is made of flexible sheet material which is impervious to air and is adapted to cover to any desired extent the opening through said screen frame, in order to regulate or control the size of the area for the passage of air therethrough. Said curtain may consist of any suitable flexible sheet material, as a closely woven fabric or sized or painted cloth. Moreover, said curtain may be made of more than one thickness, and if desired of waterproof material, or have a coating or layer of waterproof material on its outer face. The said curtain 29 as illustrated is secured at its upper edge to and is rolled upon a spring actuated curtain roller 30 of common form. Said roller 30 is arranged horizontally at the upper part of the screen frame, being mounted in brackets 31 which are fixed to the upper ends of the side members 22 and

23 of the screen frame. The lower free margin of said curtain is stiffened by an attached rod or stick 33. The ends of said stick, and the side margins of the curtain are confined beneath a pair of guide strips 34 and 35 which are secured to the inner faces of the side members of the screen frame and are extended toward each other past the inner faces of said side members. By this means the lower free margin of the curtain, as well as the side margins thereof, are prevented from flapping or fluttering in currents of air. Near their upper ends said strips are laterally notched or recessed, as indicated in Fig. 7 by the reference numeral 36, for the passage of the side margins of the curtain. Said strips are also horizontally slitted near their upper ends to form prongs which are bent outwardly to form the two roller-supporting brackets 31.

Referring now to the means illustrated for securing the screen frame removably in place in the window frame, said means comprises features of construction as follows: The side member 23 is provided with a vertically extending guide bar 37 which is arranged in telescopic relation therewith and adapted to be moved inward and outward in order to decrease the width of the screen frame and allow for its being inserted between the stops 17 and 18; and also to widen the frame in order that it may fill the space between the upright members 16, 16 of the window frame when the screen is in position. Said guide bar member 37 consists of a piece of sheet metal bent into U-form and arranged with its parallel side flanges in overlapping relation to the inner and outer faces of the frame member 23. Said bar 37 has sliding engagement with the faces of said frame member 23 and is pressed outwardly or toward the vertical member 16 of the window casing by means of coiled springs 38 interposed between the outer face of the frame member 23 and the inner face of the said bar 37. Said springs 38 encircle and are held in place by pins or rods 39 which are fixed to the inner face of the bar 37 and extend through horizontal openings in the side member 23. Said pins are provided at their inner ends with heads by means of which the outward movement of the movable bar 37 is limited. The inner flange of the said bar 37 is provided at its margin with an integral laterally extending ear or tab 40, which forms a handle by means of which said bar may be pressed or drawn inwardly.

The outer flange of the bar 37 is extended at its lower end below the bottom edge of the screen frame and is sharpened to form a spike or spur 42, and at its opposite side the lower member of the screen frame is provided on its outer face with a short downwardly extending strip of metal 43 which is likewise sharpened at its lower end to form a spike or spur 44. Said spikes or spurs are adapted to be forced into the wood of the sill, in order to hold the screen from being pushed outward and in contact with the inner stops 17, 17. The top of the screen frame is kept in position by means of a strip of sheet metal which is secured to the inner face of the top member of said screen frame and projects above the same to form a vertical flange 46 which is adapted to bear outwardly against the lower horizontal member of the window sash.

47, 47 indicate packing strips interposed between the stops 17 and the side faces of the screen frame.

49 indicates a like packing strip of felt or other suitable material which is interposed between the top surface of the upper member 24 of the screen frame and the bottom surface of the lower member of the window sash. Said packing strip is extended outwardly at its ends over the upper end of the movable frame member 37, as indicated by the dotted lines in Fig. 5, and said extended portion rests upon a short strip of sheet metal 52 (Figs. 4 and 7) which is formed integral with and extends horizontally from the upper end of said movable frame member 37.

In Fig. 9 is shown a modified form of construction of the device above described, wherein the screen-frame is made of such thickness as to entirely fill the space between the inner and outer window stops 17 and 18. When said modified form of construction is employed, the spikes 42 and 44 at the lower edge of the screen frame and the vertical flange 46 at the upper edge thereof may be omitted. Said modified form of construction is in all other respects similar to the device above described.

In Fig. 10 is shown another modified form of construction wherein the telescopic feature of one of the side members is omitted and the screen frame is made of such width as to permit its being inserted between the inner and outer window stops 17 and 18, respectively, and then placed in a central position with its side members overlapping and engaging with the inner window stops on both sides of the window casing. Said screen frame is provided at its lower edge with spikes similar to the spikes 44 above described, by means of which the screen frame is maintained in a central position in engagement with the stops at both sides of the window casing.

In Figs. 11 and 12 is shown a modified form of my novel ventilating screen which is designed to be placed in a window casing in either the upper or the lower part thereof. Said modified form of construction shown in Figs. 11 and 12, comprises a screen frame similar in all respects to the screen frame

above described except that the side members thereof are each provided with a vertically extending recess or groove, in order to allow them to engage with the side members 60 and 61 of the window casing without interfering with the proper action of a pair of sash pulleys and sash cords 62, 63, by means of which the window sash is counterbalanced; and the vertical flange 46 which is secured to the inner edge of one of the horizontal members of the frame is replaced by a flange 65 which extends outwardly from the said frame member and thence vertically upwardly. It is intended that said modified form of ventilating screen shall be inverted or turned with the said flange and the curtain roller at the bottom thereof and shall be placed centrally within the window casing between the inner and outer stops and with the said vertical flange 65 engaging with the top frame member of the upper window sash, said sash being lowered to allow the screen to be placed in position. As shown in Fig. 12, one of the fixed side members of the screen frame 66 is provided with a vertically extended recess 68 and at the opposite side of said screen frame the movable side member 69 is shown as having its end face bent inward to form a recess 71; into which recesses the pulleys 62, 62 extend and in which the sash-cords 63 operate.

The device shown in Fig. 13 is similar to that shown in Figs. 11 and 12 with the following exceptions. In this instance, the vertically extending recessed movable and stationary side members 72 and 73, respectively, are made thick enough to fill the spaces or grooves between the inner and outer window stops 17 and 18 whereby the screen frame is held firmly in place by its contact with said stops, and no other securing means is required to hold the frame from either inward or outward movement, and the screen-frame is provided with an external covering 74 of open mesh wire cloth, intended to protect the air-excluding sheet 26 from injury when said sheet is made of muslin or other textile fabric not itself strong enough to withstand rough usage. The protecting sheet 74 also serves as a guard to prevent accident through the giving away of the air-excluding sheet 26 when the latter is made of material of little strength, such as muslin or cheese-cloth. In the case of a car window, and in other cases, the supplemental sheet of woven wire fabric will prevent contact with the inner sheet 26 of hot cinders which might injure the same by burning. In this instance, moreover, packing strips 76, 76 of felt or the like, are interposed between the adjacent faces of the screen frame and the inner window stops 17.

In Fig. 14 is shown another modified form of construction wherein the telescopic feature of one of the side members of the screen frame is omitted and the screen frame is made of such width as to permit its being inserted between the inner and outer window stops 17 and 18, respectively, and then being placed in a central position with its side members overlapping and engaging with the inner window stops on both sides of the window casing. Said screen frame is held in place in engagement with the inner window stops by means of locking pins or bolts 80, 80, which have sliding engagement with horizontal openings through the side members and are yieldingly pressed outwardly and into engagement with openings in the side members of the window casing by means of springs 81. Said springs 81 are arranged within enlarged portions of the openings through the side members and engage at their ends with the bottom surfaces of said enlarged openings, and with collars 82, 82 which are fixed to the pins 80. Said pins extend beyond the inner edges of the side members 79 to form handles 83 by means of which the pins may be drawn toward each other to facilitate the placing of the screen frame in position; and by means of which the pins may be withdrawn from engagement with the openings in the window casing when it is desired to remove the screen. As a further modification, I have shown in said Fig. 14 the packing strips between the inner window stops and the inner face of the screen frame omitted and replaced by weather strips 84 of any ordinary, or preferred form.

In Fig. 15 is shown a form of construction similar in all respects to that shown in Fig. 14 except that the locking pins are placed closely adjacent to the inside faces of the side members of the screen frame, and said side members are provided with vertical grooves or recesses similar to those shown in Fig. 13, whereby the screen frame may be placed in the upper part of a window casing, in the space left by the lowering of the upper window sash, as well as in the lower part thereof.

A main feature of my invention consists in a ventilating screen provided with a porous or foraminous ventilating sheet and with an imperforate sheet or curtain which forms in effect a movable valve or closure by which the passage of air through the screen may be regulated or controlled as desired, and means by which the said curtain is at all times held in position adjacent to and parallel with the ventilating sheet. While the curtain referred to is shown as mounted on a spring curtain roller, yet, so far as the general features of my invention are concerned, said curtain may be wound or rolled in any desired manner in order to prevent the same from extending beyond the margins of the screen frame when moved into position to wholly or partially un-

cover the screen and any suitable or desired means may be employed for shifting or moving said curtain.

Another important feature of my invention is embraced in the construction by which the screen is provided, in addition to the sheet of porous or foraminous sheet material adapted to afford ventilation without the admission of drafts, with an additional protecting sheet or layer of woven wire cloth, and when said additional protecting sheet or layer is employed may be arranged outside of and at a distance from the ventilating sheet or layer as illustrated or otherwise as may be desired or preferred.

I claim as my invention:—

1. A ventilating screen constructed for removable insertion in a window casing, comprising a frame consisting of side, bottom and top members, a porous or foraminous sheet stretched on and secured at its margins to said frame, a movable imperforate curtain mounted on said frame closely adjacent to and parallel with said sheet, and means carried by the frame for maintaining said curtain parallel with said sheet.

2. A ventilating screen constructed for removable insertion in a window, comprising a frame consisting of side, top and bottom members, a porous or foraminous sheet stretched on and secured at its margins to said frame, a flexible imperforate curtain, a roller for said curtain mounted on said frame inside said sheet, and guides carried by the side members of the frame for engagement with the side margins of the curtain.

3. A ventilating screen constructed for removable insertion in a window casing, comprising a frame consisting of top, bottom and side members, a porous or foraminous sheet stretched on and secured at its margins to the outer side of said frame, a flexible imperforate curtain, a roller for said curtain mounted on said frame in a plane inside of said sheet, and guide strips fixed to the inner sides of the side members of the frame adapted for engagement with the side margins of said curtain.

4. A ventilating screen constructed for removable insertion in a window casing comprising a frame consisting of side, bottom and top members, a porous or foraminous sheet stretched on and secured at its margins to said frame, a movable imperforate curtain mounted on said frame closely adjacent to and parallel with said sheet, means carried by the frame for maintaining said curtain parallel with said sheet, and a yielding device carried by the side member of the frame adapted for engagement with the side member of the window casing to hold the frame in place.

5. A ventilating screen constructed for removable insertion in a window casing, comprising a frame consisting of side, bottom and top members, a porous or foraminous sheet stretched on and secured at its margins to said frame, a movable imperforate curtain mounted on said frame closely adjacent to and parallel with said sheet, means carried by the frame for maintaining said curtain parallel with said sheet, a longitudinal guide bar mounted on one of the side members of the frame, and yielding means for pressing said bar outwardly into engagement with the vertical member of the window casing.

In testimony, that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 16th day of July A. D. 1907.

GEORGE H. KNIGHT.

Witnesses:
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SAMUEL D. HIRSCHL.