(No Model.) 4 Sheets—Sheet 1.

G. H. COUCH.

WINDOW.

No. 458,222. Patented Aug. 25, 1891.

Fig 3

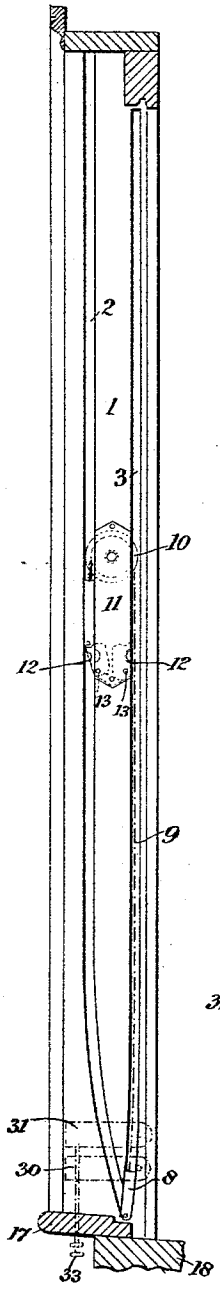
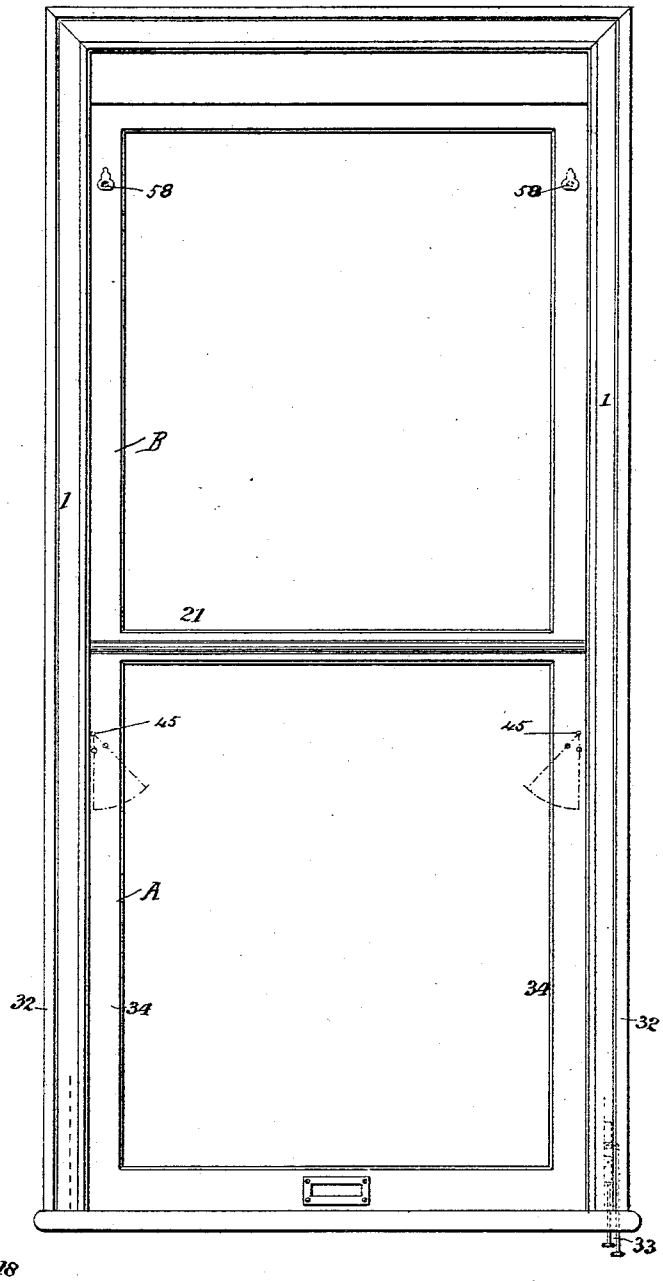


Fig 1



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Fig 2

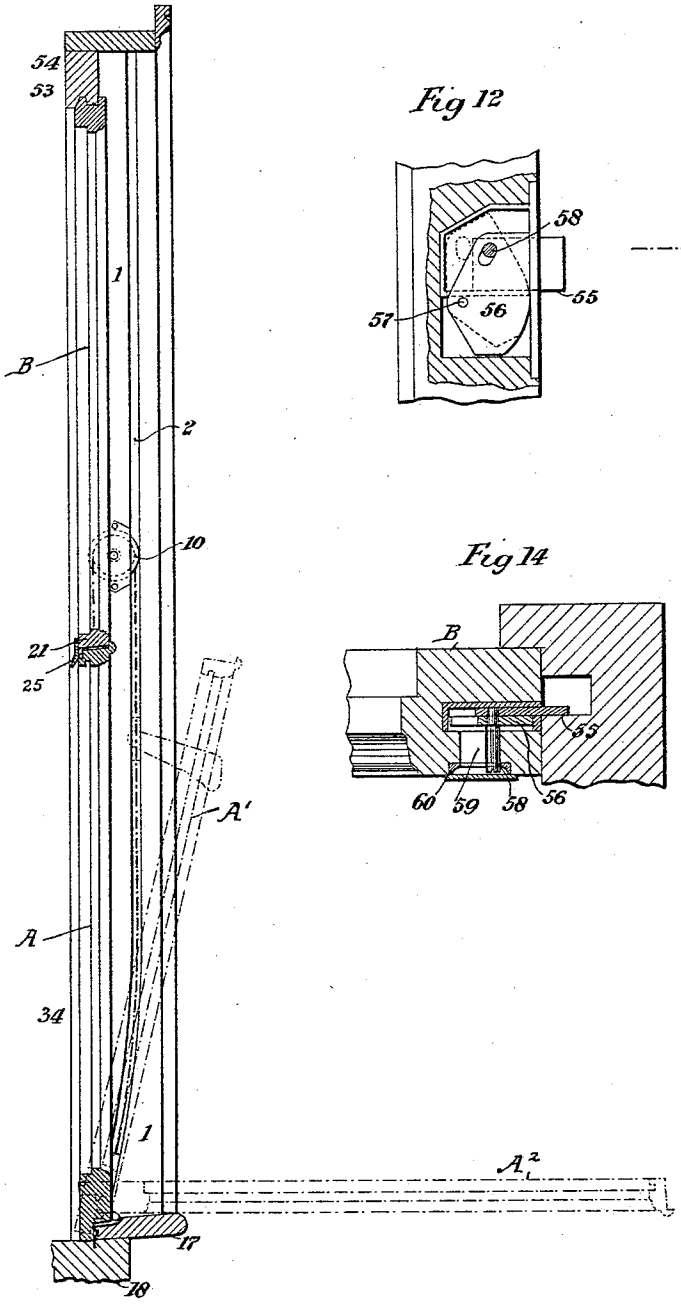


Fig 12

Fig 13

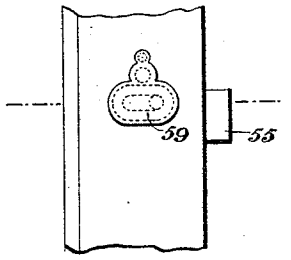


Fig 14

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No. 458,222. Patented Aug. 25, 1891.

Fig 6.

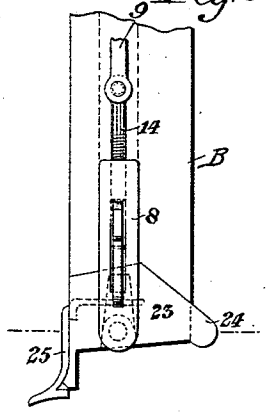


Fig 7

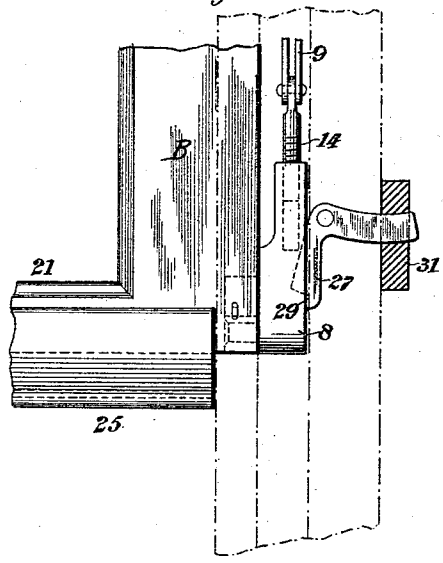


Fig 8

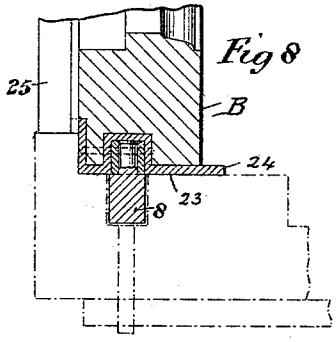


Fig 4

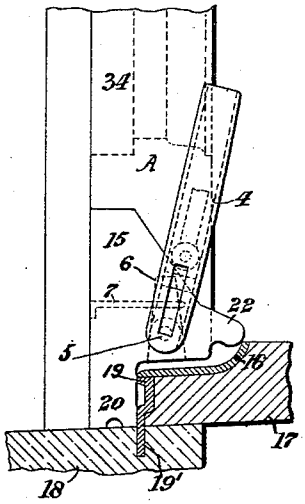
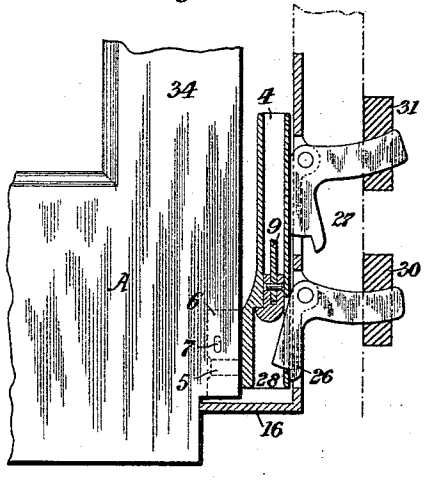


Fig 5



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G. H. COUCH.

WINDOW.

No. 458,222. Patented Aug. 25, 1891.

Fig 9

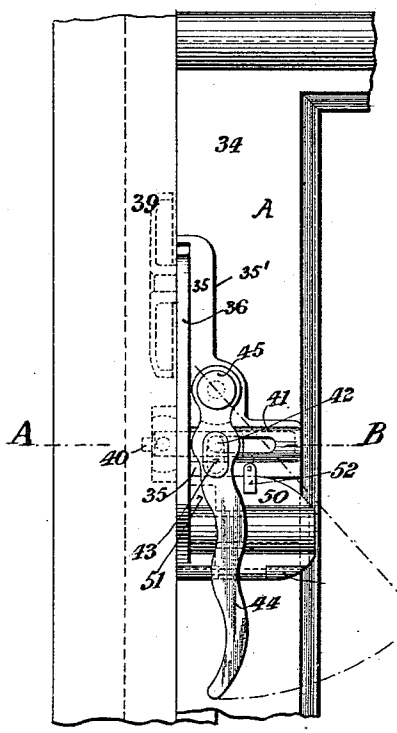


Fig 10

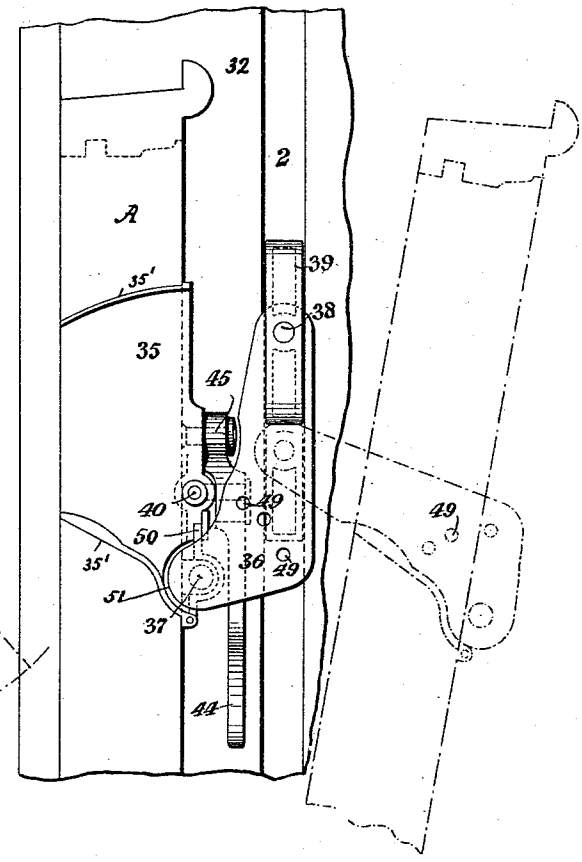


Fig 11

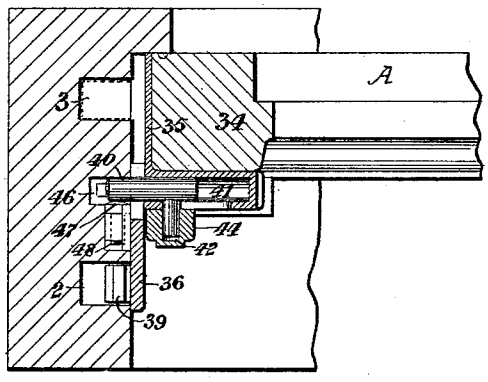
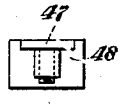


Fig. 11a.



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UNITED STATES PATENT OFFICE.

GEORGE HENRY COUCH, OF CROYDON, ENGLAND.

WINDOW.

SPECIFICATION forming part of Letters Patent No. 458,222, dated August 25, 1891.

Application filed July 30, 1890. Serial No. 360,369. (No model.)

To all whom it may concern:

Be it known that I, GEORGE HENRY COUCH, a subject of the Queen of Great Britain and Ireland, residing at Croydon, in the county of Surrey, England, have invented certain new and useful Improvements in Window Sashes and Frames and in Fittings therefor; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to windows; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the accompanying sheets of drawings, Figure 1 represents a front elevation of a window with two sashes constructed according to this invention. Fig. 2 is a vertical section of the same, the lower sash being shown in dotted lines partially open for ventilating purposes and rotated into a horizontal position to facilitate the cleaning of its outside surface from the inside of the room. Fig. 3 is a vertical section of the sash-frame with the sashes removed and showing the grooves or races in which the runners to which the sashes are hinged work. Fig. 4 represents an end elevation of the bottom of the lower sash, with the window-board and sill in cross-section. Fig. 5 is a front elevation of the same on an enlarged scale, showing the runner and chain-fastening in section, and catches for holding the sash in two given positions. Figs. 6, 7, and 8 are side elevation, front elevation, and horizontal section, respectively, of the bottom end of the upper sash, showing its hinged connection to the guide-runner, with chain-fastening and catch-lever for securing it in a given position. Figs. 9, 10, and 11 are respectively front elevation, side elevation, and horizontal section on the line A B, Fig. 9, of the upper part of one stile of the lower sash, and showing devices for securing it in its closed position or in partially-open positions for ventilating purposes. Fig. 11ª is a detail view of the bracket 48. Figs. 12, 13, and 14 are a vertical section, front elevation, and horizontal section, respectively, of the top part of one stile of the upper sash showing a construction of catch for fastening the upper sash in its closed position.

In carrying out this invention the pulley-stiles 1 of the sash-frame are each provided with two grooves or races 2 3, running its entire length and converging into one at their lower extremities.

In the race 2 of each stile works a runner 4, to which is hinged the bottom part of the lower sash A by the pin 5, working in the block 6, secured by the pin 7. The upper sash B is similarly hinged to the runner 8, working in the race 3, the two sashes being connected together and balancing one another by the chains 9, secured to the runners 4 8 and passing over the pulley 10, as clearly shown in Fig. 3.

On the plate 11, below the pulley 10, are two small finger-levers 12, turning on pins 13, which can be pressed into the paths of the runners 4 8 to intercept their descent, and so prevent one sash from descending when the chain is relieved of a part of the weight of the other sash, as is the case when a sash is rotated into a horizontal position to be cleaned, and also to retain both sashes in a raised position when desired. Each runner 4 of the lower sash is hollow, as shown in Fig. 5, and the chain 9 passes through the hollow runner and has a hook or button on its end for connecting it to the runner, so that the runner may slide upward over the chain, but the chain cannot be pulled upward out of the runner. When the lower sash is raised while the upper one is kept fixed, the chain simply drops through the runner 4, and the length of the chain may be adjusted by means of the screwed pin 14 in the runner 8 of the upper sash, as shown in Fig. 7.

To the bottom of each stile of the lower sash is secured a corner-plate 15, provided with a projecting horn 22, which, when the sash is rotated inward, slides upon the horn-plate 16 in the end of the window-board 17 and raises the sash free of the said window-board, thus preventing injury to the paint by scraping. A water-bar 19′ extends the whole length of the sill, and is recessed at 19 to prevent the passage of moisture, and a throat 20 is also cut along the bottom rail of

the sash. When the bottom sash is closed the bottom rail presses tightly against the water-bar, as clearly shown in Fig. 4. The meeting-rail 21 of the upper sash is provided with similar corner-plates 23, with horns 24, and a weather-board 25 extends along its length to protect the meeting joint and to form a stop for the bottom sash to abut against when closed.

In addition to the finger-levers 12, the sashes when lowered are prevented from rising by means of catch-levers 26 27, which engage with notches or slots 28 29 in the runners 4 8, being automatically pressed into engagement by vertically-sliding weights 30 31, which are arranged behind the sash-frame stiles 32 in a convenient position to be operated by finger-rods 33, when it is required to raise the weights to release the catches. It will be seen that by providing catch-levers 26 27, as shown, either sash can be secured at various heights, thus giving different slopes to the windows to be cleaned.

The lower sash is provided with devices for fastening it when closed and for retaining it in various positions for ventilation.

At the upper part of each stile 34 of the lower sash is secured a bracket 35, to which is fulcrumed a lever 36 by the pin 37, the opposite end being attached by the pin 38 to the runner-block 39, which is free to work in the race 2, the style 34 being recessed at 35′ to receive the said bracket 35 and the lever 36 and to allow the lever 36 to rotate past it into the position shown in dotted lines in Fig. 10. On the same bracket 35 is a sliding bolt 40, working in a socket 41, a pin 42 in the said bolt passing through the elongated hole 43 in the lever 44, fulcrumed at 45, so that when the sash is closed and the lever 44 turned into the position shown the bolt is caused to pass into a recess 46 in the pulley-stile and fasten the sash. At the back of the bolt 40 is an adjustable set-screw 47 in the bracket 48, which presses against the bolt and forces the sash tightly against the front of the pulley-stile. In the lever 36 are holes 49, into which the bolt can be inserted to secure the sash at any corresponding opening, as will be clearly seen.

When it is required to rotate the lower sash into the horizontal position for cleaning, it is necessary to remove the runner 39 from the race. To effect this the lever 44 is turned to the right into the position shown by the dotted center lines in Fig. 9, withdrawing the bolt 40. A hinged lid 50 is then opened, which permits the pin 37 to slide laterally, carrying the lever 36 in the semicircular recess 51 a sufficient distance to withdraw the runner 39 clear of the race 2. After cleaning the runner is replaced in its race and the lid secured by the catch 52. The movement of the lever 44 to the right out of the path of the lid permits the lid to be turned on its hinges, so that the pin 37 may be free to slide laterally.

The top rail of the upper sash is formed with an angled tongue 53, which fits into a corresponding groove in the frame-head 54 to resist the passage of moisture and to keep the window from rattling.

The upper sash is held in a vertical position when sliding by a finger-bolt 55 let into the upper part of each sash-stile and projecting into the runner-race 3, and comprises a tumbler-lever 56, pivoted at 57 and to the bolt 55 by the pin 58, which projects through the slot 59 and the dished plate 60, from where it can be moved in either direction by the finger to insert or withdraw the bolt. The position of the tumbler-lever when the bolt is withdrawn is shown in dotted lines, and it will be seen that its natural tendency is to rotate around the pivot 57 in such a manner as to keep the bolt inserted in the race. In order to clean the outer surface of the upper sash, it is lowered to the bottom of the frame, the upper-sash finger-bolts being withdrawn and the sash rotated inward into the horizontal position required in a similar manner to the lower sash.

The windows are operated as follows: When the window is closed, both sashes are in the same vertical plane and neither of them can be raised or lowered. To effect ventilation, the lower sash may be turned to the position shown in dotted lines at A′ in Fig. 2, and for cleaning it the bottom sash may be turned as shown in dotted lines at A^2. When turned out of line with each other and freed from the retaining-catches, the bottom sash may be raised and the upper sash lowered to any desired extent, the runners of the top sash sliding in grooves 3 and the runners of the bottom sash sliding in grooves 2. The upper sash may be placed in a horizontal position for cleaning by first lowering it to the bottom of groove 3, which converges into the bottom of groove 2.

What I claim is—

1. The combination, with a sash-frame provided with grooves 2 and 3, converging into one at their lower ends, of the upper sash and the lower sash, each provided with runners pivoted to their lower ends and adapted to slide in the said grooves, substantially as and for the purpose set forth.

2. The combination, with a sash-frame provided with grooves 2 and 3, converging into one at their lower ends, of the upper sash and the lower sash, each provided with runners pivoted to their lower ends and adapted to slide in the said grooves, the pulleys journaled on pins projecting from the sash-frame, and the flexible supports passing over the said pulleys and connected to the said two sashes, substantially as and for the purpose set forth.

3. The combination, with a sash-frame provided with grooves 2 and 3, converging into one at their lower ends, of the upper sash provided with runners sliding in groove 3 and having a weather-strip at the outside of its lower rail, the runners sliding in said groove

2 and adapted to pass into the bottom of groove 3, and the lower sash having its lower end pivoted to the last said runners and adapted to be turned to a horizontal position or to be raised to a vertical position with its top rail bearing against the said weather-strip, substantially as set forth.

4. The combination, with the grooved sash-frame and the sliding runners, of the window-board, the curved horn-plate 16 let into the window-board, and a window-sash provided with corner-plates 15, having rearwardly-projecting horns 22 for engaging with the said horn-plates, the said sash and its corner-plates being pivoted to the said runners, substantially as and for the purpose set forth.

5. The combination, with the upper sliding sash, of a catch for supporting it, the lower sash, the hollow runners secured to the lower sash, the chain-pulleys, and the chains secured to the upper sash and passing over said pulleys and engaging with the said hollow runners, whereby the sashes are balanced and the said hollow runners are adapted to slide over the chain when the lower sash is raised and the upper sash is held stationary, substantially as set forth.

6. The combination, with the plate 35, provided with the recess 51 and secured to the sash, of the lever 36, adapted to slide in and out of the said recess and pivoted to the said plate, the retaining hinged lid 50, keeping the lever out of the recess when closed, and the sliding runner pivoted to the said lever and adapted to be withdrawn from engagement with the groove in the sash-frame, substantially as set forth.

7. The device for fastening the sash when closed and for retaining it in various positions for ventilation, comprising the bracket 35, lever 36, runner-block 39, working in the race 2 in the pulley-stile 32, the sliding bolt 40, working in socket 41, operated by the lever 44, and the adjustable set-screw 47 for forcing the sash tightly against the front of the pulley-stile, substantially as described.

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

GEORGE HENRY COUCH.

Witnesses:
THOMAS LAKE,
WILMER M. HARRIS.
Both of 17 *Gracechurch Street, London.*