A. C. SOULE.

REVERSIBLE WINDOW.

APPLICATION FILED FEB. 23, 1911.

1,005,346.

Patented Oct. 10, 1911.

2 SHEETS—SHEET 1.

Fig. 1

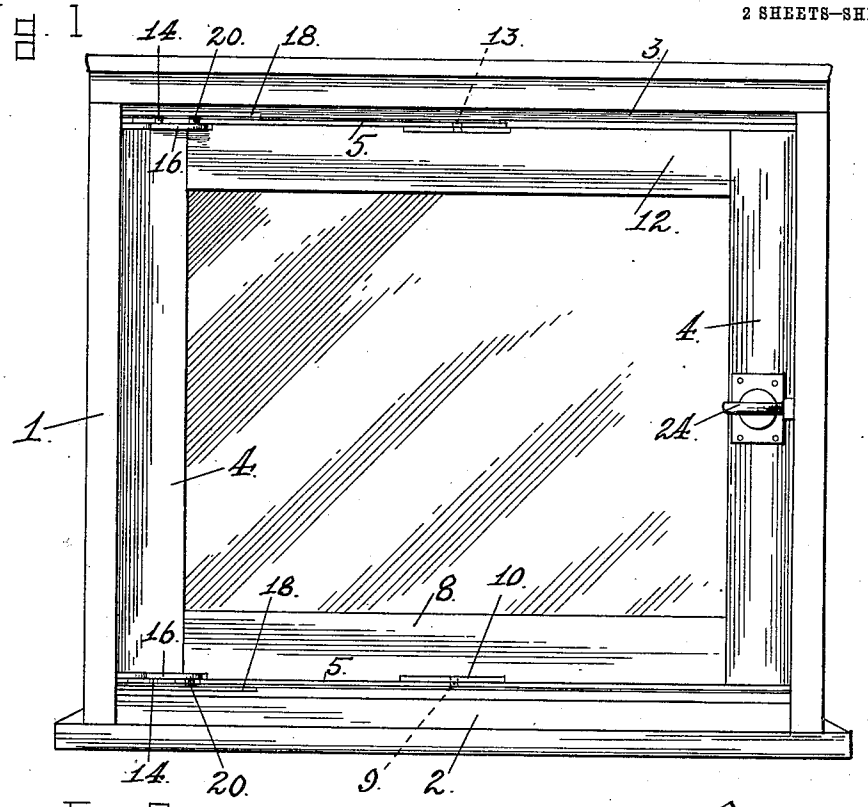


Fig. 2.

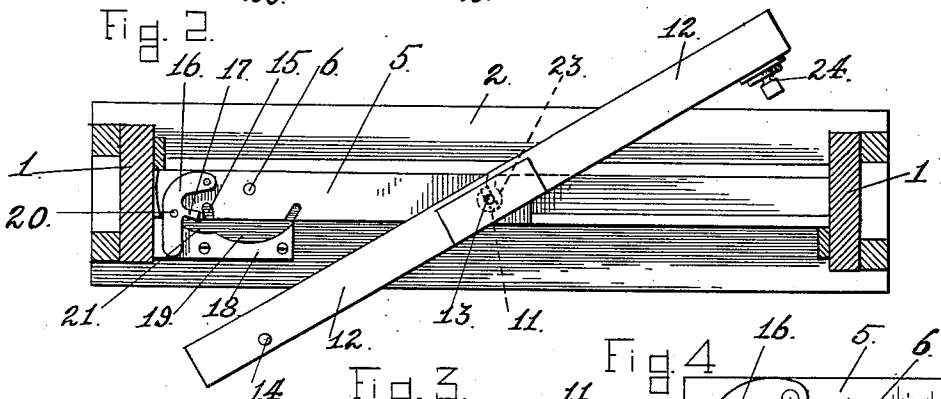


Fig. 3.

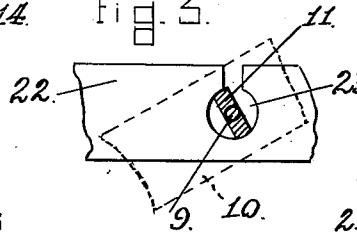
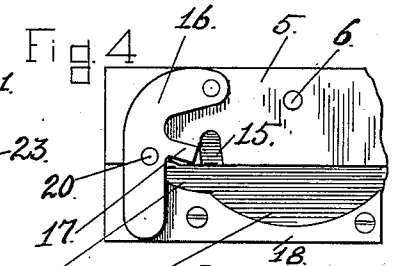


Fig. 4



Witnesses

Arthur L. Slee.

S. Constine.

Inventor

Arthur C. Soule

by Wm. H. Booth

his Attorney.

A. C. SOULE.

REVERSIBLE WINDOW.

APPLICATION FILED FEB. 23, 1911.

1,005,346.

Patented Oct. 10, 1911.

2 SHEETS—SHEET 2.

Fig. 5.

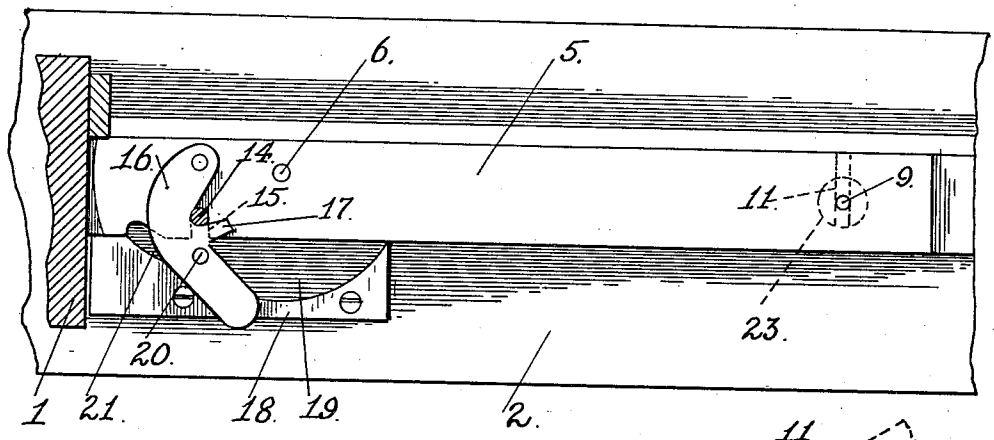


Fig. 6.

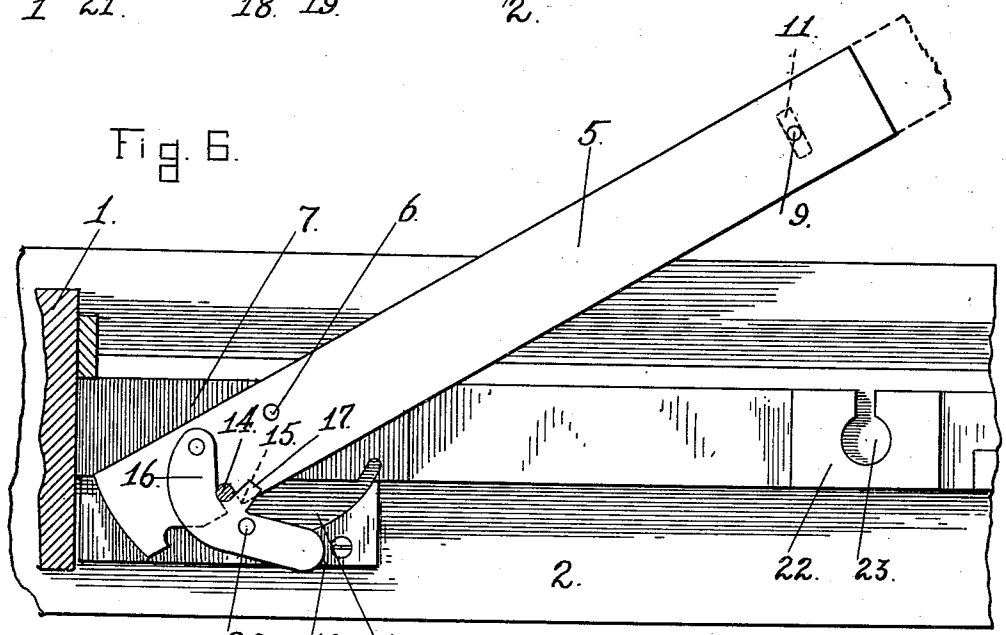
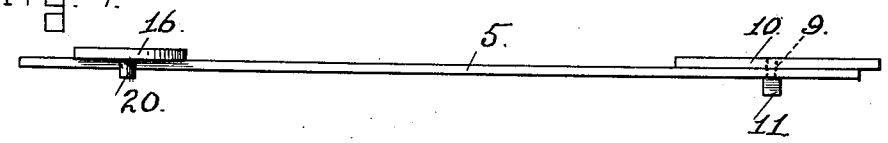


Fig. 7.



Witnesses

Arthur L. Sleer,

S. Constine.

Inventor

Arthur C. Soule

by Wm. F. Booth

his Attorney.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ARTHUR C. SOULE, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO SOULE REVERSIBLE WINDOW CO., OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF CALIFORNIA.

REVERSIBLE WINDOW.

1,005,346. Specification of Letters Patent. Patented Oct. 10, 1911.

Application filed February 23, 1911. Serial No. 610,327.

To all whom it may concern:

Be it known that I, ARTHUR C. SOULE, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented certain new and useful Improvements in Reversible Windows, of which the following is a specification.

My invention relates to the class of reversible-windows and is particularly adapted for casement sashes.

My invention consists in the novel construction and arrangement of the links connecting the sash with its frame, and the means for controlling their operation and effect, whereby the sash may be opened as an ordinary sash, and may be reversed for cleaning, both operations being under perfect and easy control and with such obvious safeguards as will provide for the use of the sash with the exercise of ordinary intelligence and experience, and without liability of failure or misdirection of effort.

Referring to the accompanying drawings:—Figure 1 is an elevation of my reversible sash from the inside, the sash being shown closed. Fig. 2 is a horizontal sectional view showing the sash turning on its reversing center. Fig. 3 is a detail enlarged of the bayonet-lock in the reversing center. Fig. 4 is a detail of the locking and controlling devices at the pivotal connections of the hinge-links with the window-casing, showing the position when said links are locked against pivotal movement. Fig. 5 is a horizontal sectional detail showing the position of the locking lever to lock the sash and link together and to free the link so that it can turn on its pivotal connection with the window casing. In this figure the sash is removed, its lock stud only being shown. Fig. 6 is a view similar to Fig. 5 showing the link turning upon the pivotal connection of the link with the casing. Fig. 7 is an edge view of one of the hinge links with some adjacent parts.

1 is the window casing, 2 is its sill, and 3 is its head-piece. 4 is the sash, here shown as of the single casement type. 5 are the hinge-links. There are two of these, one below and one above, each consisting of a flat bar. As the parts above are like those below, I need only describe one set and for illustration I shall describe the lower ones.

The lower hinge-link has a pivotal connection near one end, with the sill, said connection being shown at 6, and best formed by passing the pivot pin down into a wearing plate 7 (see Fig. 6) let into the sill. The upper hinge-link, it must be understood, has a similar pivotal connection with the head-piece of the window casing. The lower hinge-link has also a pivotal connection, near its other end with the lower rail 8 of the sash. This connection is formed by a pivot pin 9, which is rigidly secured in a wearing plate 10, let into the under side of the lower sash rail, said pin passing rotatably through the link, its lower end being formed with a T-head 11. The upper hinge-link is also pivoted to the upper rail 12 of the sash, by a pivot pin 13, seen in Fig. 1.

It will now be seen that the sash is mounted in its casing upon two separate lines of hinge, one near one side of the sash, and the other between its sides, preferably at or near its vertical middle. It follows that if the latter line of hinge represented by the pivots 9 and 13 be locked against functional movement, while the former line of hinge represented by the pivots 6 is free for such movement, the sash can be opened and closed about the pivotal centers 6 as an ordinary casement sash, in which movement it carries the hinge links 5 with it, as seen in Fig. 6, one lying below and parallel with the lower sash rail and the other lying above and parallel with the upper sash rail; and said links thus furnish ample and firm support for the sash when open. Furthermore, if the hinge-line represented by pivots 6, be locked against functional movement, while the hinge line represented by pivots 9 and 13 be free for functional movement, the sash may then turn upon the middle hinge, in such manner that it can be reversed for cleaning purposes, as seen in Fig. 2. The means providing for and controlling these operations of the sash will now be described. The construction below and above being the same, as I have heretofore stated, a description of one, the lower, will apply to both.

In the sash rails, both lower and upper, is a lock-stud 14, which when the sash is

closed enters a notch seat 15 made in the hinge-links 5. Upon each link is pivoted a locking-lever 16, having its handle end projecting far enough to the inside of the sash to be readily manipulated. The locking lever has a locking-finger 17, which when the lock-stud 14 is in its notch seat 15, is adapted to traverse the entrance to said notch seat, as seen in Figs. 5 and 6, and thereby securely lock the stud 14 in said seat. By throwing the locking lever 16 back, as in Fig. 2, its finger 17 withdraws from in front of the stud 14 and thereby frees it so that it can move from its notch seat. Thus when the locking levers 16 are thrown forward and hold the studs 14 in their seats 15 in the links 5, the sash and the links are locked together, thereby rendering inoperative the hinge line, between said sash and links, represented by pivot pins 9 and 13, but leaving operative the hinge line between the links and the window casing, represented by pivot pin 6; with the result that the sash may be opened as an ordinary sash, as in Fig. 6, turning on pivots 6, the sash and links moving together, the former being well supported in this operation by the latter. At this point, it will be well to note the advisability of a precaution, for which I provide, against an accidental or unintelligent use of the device.

If when the sash is opened or turned out from its casing, as above described and as shown in Fig. 6, the manipulator should think it a good plan to try to reverse it on the hinge line of pivots 9 and 13, and to this end should throw the rocking levers 16 back thereby unlocking the sash from the links, to permit movement on pivots 9 and 13, the whole weight of the sash in such reversing movement would be borne by the links, and these being wholly independent, and not operating in unison, they would or could turn to different angles and throw the sash askew, thereby producing strain. To prevent this, I form, by means of a guide plate 18, a curved channel 19 on an arc having the hinge line of pivots 6 for a center, and in this channel, when the locking levers 16 are thrown forward, fits and plays a stud 20 secured in said levers. Now, when said locking levers are thrown forward for their locking function, and the sash is caused to open, the studs 20 above and below travel in the curved channels 19, and while in said channels, the levers cannot be thrown back, because their pivotal centers are not in the hinge line of the links and therefore neither by accident nor design can the above mentioned undesirable operation take place.

When the locking levers 16 are thrown back, the sash being then in a closed position, and ready for reversal on its hinge line represented by pivots 9 and 13, provision must necessarily be made for locking the operation of the hinges or pivots 6, so that the links 5 will be held in the plane of the casing, while the sash reverses on pivots 9 and 13. To effect this condition of inoperativeness of the hinge line represented by pivots 6, I form, by means of the same guide plates 18, short channels 21 introductory to the channels 19, said short channels being curved on an arc having for its center the pivotal center of the locking levers themselves, as seen in Fig. 4, which center of said levers is eccentric to the hinge line of pivots 6. When, therefore, the locking levers 16 are thrown back to free the sash from the links to enable it to reverse on the pivots 9 and 13, the studs 20 of said levers are entered into the short channels 21, as seen in Fig. 4, and these being eccentric to the pivots 6, will prevent the links 5 from moving on said pivots and will permit the sash to reverse freely upon the pivots 9 and 13, while the links 5 remain locked in the plane of the casing, as seen in Fig. 2, and the sash will thereby, in reversing have the full support of said casing. As an additional precaution, to this same end, I provide for locking the links in the plane of the casing by a locking device at their inner ends. This is the function of the T-head 11 of the pivot 9. This pivot, as heretofore mentioned, is secured rigidly in the wearing plate 10 of the lower sash rail and its T-head 11 is rotatable under the link.

In a small wearing plate 22, seen in Fig. 6, secured to the sill of the casing is made a bayonet-socket 23. The position of the T-head 11 of the pivot 9, when the sash rail and link are parallel is such that said head will readily enter and remove from the bayonet-socket 23, as in Fig. 5, so that the sash may move with the link on the hinge line of pivots 6. But when the sash is turned, ever so little, as in Figs. 2 and 3, on its hinge line represented by pivots 9 and 13, this movement of the sash will turn the T-head 11 of pivot 9 across the entrance of the bayonet-socket 23, and the link cannot, therefore, move from the plane of the casing, but the sash may freely turn on the pivots 9 and 13.

A resumé of the operation of the window may now be of service.

With the locking levers 16 thrown forward, as in Figs. 5 and 6, the sash and links may be turned together about the pivots 6, the sash thus operating to open and close as an ordinary sash. The positions assumed during this operation cannot be disturbed, because the locking levers are themselves locked. When the sash is again closed, and only when closed, the locking levers may be thrown back, as in Figs 2 and 4, and thereupon the sash may be reversed upon its pivots 9 and 13, the link 5 being doubly held from movement and fixed in the plane of the

casing by the studs 20 of the locking levers at one end, and by the T-headed pivot 9 at the other end.

24 is a latch for the sash.

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

1. In a reversible window, the combination of a window-casing; a sash; hinge-links having near one end a pivotal connection with the horizontal members of the window-casing, and near the other end a pivotal connection with the horizontal members of the sash, said links having notch-seats near their first named ends; lock-studs in the horizontal members of the sash adapted to enter said notch-seats; and locking-levers pivoted to the hinge-links and adapted to hold the lock-studs in the notch-seats and to free them therefrom, whereby in the one case the sash and links are connected to turn in unison about the pivotal connections of the links with the window-casing, and in the other case the sash is freed to turn separately upon its pivotal connection with the links.

2. In a reversible window, the combination of a window-casing; a sash; hinge-links having near one end a pivotal connection with the horizontal members of the window-casing, and near the other end a pivotal connection with the horizontal members of the sash, said links having notch-seats near their first named ends; lock-studs in the horizontal members of the sash adapted to enter said notch-seats; locking-levers pivoted to the hinge-links and adapted to hold the lock-studs in the notch-seats and to free them therefrom, whereby in the one case the sash and links are connected to turn in unison about the pivotal connections of the links with the window-casing, and in the other case the sash is freed to turn separately upon its pivotal connection with the links; and means for holding said locking-levers in their locking position when the sash and links are turned in unison about the pivotal connections of the hinge-links with the window-casing.

3. In a reversible window, the combination of a window-casing; a sash; hinge-links having near one end a pivotal connection with the horizontal members of the window-casing, and near the other end a pivotal connection with the horizontal members of the sash, said links having notch-seats near their first named ends; lock-studs in the horizontal members of the sash adapted to enter said notch-seats; locking levers pivoted to the hinge-links at points eccentric to the pivotal connections of said links with the window casing, said levers being adapted to hold the lock-studs in the notch-seats of the links and to free them therefrom, said locking levers having studs and said horizontal members of the window-casing having channels in which the studs of the levers play, said channels being curved on an arc having for a center the said pivotal connections of the links with the window casing, whereby said locking levers are held in their locking position when the sash and links are turned together about the pivotal connections of the hinge-links with the window casing.

4. In a reversible window, the combination of a window-casing; a sash; hinge-links having near one end a pivotal connection with the horizontal members of the window-casing, and near the other end a pivotal connection with the horizontal members of the sash, said links having notch-seats near their first named ends; lock-studs in the horizontal members of the sash adapted to enter said notch-seats; locking levers pivoted to the hinge links at points eccentric to the pivotal connections of said links with the window casing, said levers being adapted to hold the lock-studs in the notch-seats of the links and to free them therefrom, said locking levers having studs and said horizontal members of the window casing having main channels and introductory channels to said main channels, in each of which channels the studs of the levers play, said main channels being curved on an arc having for a center the said pivotal connections of the links with the window casing, and said introductory channels being curved on an arc having for a center the pivotal connections of the locking levers with the links, whereby when the studs of the locking levers are playing in the main channels, said levers are held against unlocking movement, and when said studs are in the introductory channels, the links are locked to the window-casing.

5. In a reversible-window, the combination of a window-casing; a sash; hinge-links having near one end a pivotal connection with the horizontal members of the window casing, and having near their other end a pivotal connection with the horizontal members of the sash; means at the first named ends of said hinge links for locking said links against pivotal movement alternately to the sash and to the window casing; and means dependent on the turning of the sash on its pivotal connections with the other ends of the links for locking said links in the plane of the window casing.

6. In a reversible-window, the combination of a window-casing; a sash; hinge-links having near one end a pivotal connection with the horizontal members of the window casing, and having near their other end a pivotal connection with the horizontal members of the sash; means at the first named ends of said hinge links for locking said links against pivotal movement alternately to the sash and to the window casing; and

means dependent on the turning of the sash on its pivotal connections with the other ends of the links for locking said links in the plane of the window casing, consisting of a T-head pivot of said sash engaging a bayonet-socket in the window casing.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ARTHUR C. SOULE.

Witnesses:
WM. F. BOOTH,
D. B. RICHARDS.