S. S. Clark.

Window Shutter.

No. 16,966. Patented Apr. 7, 1857.

Fig. 5

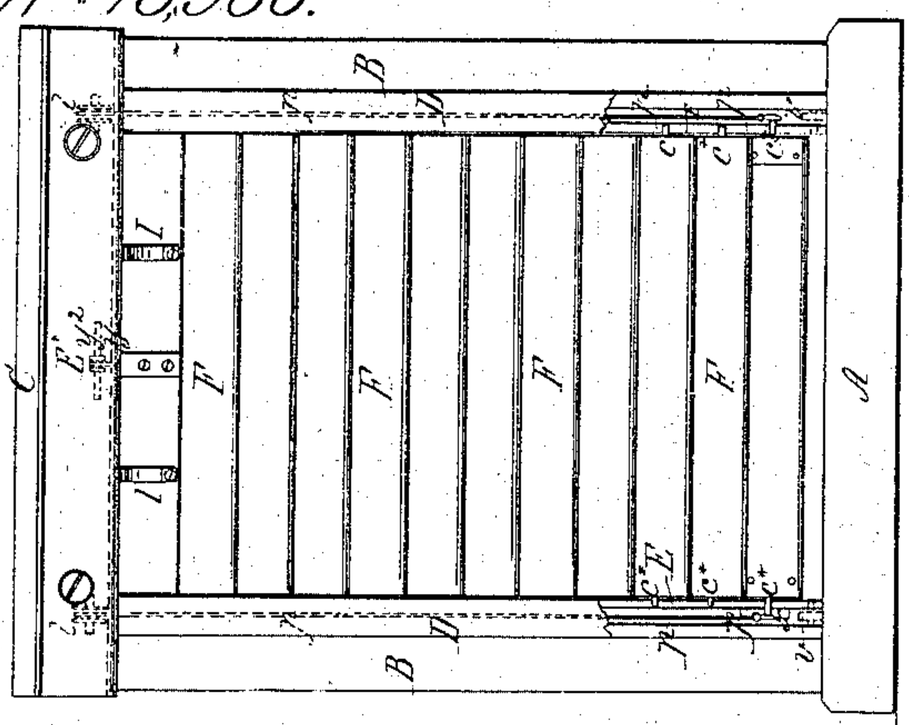


Fig. 4

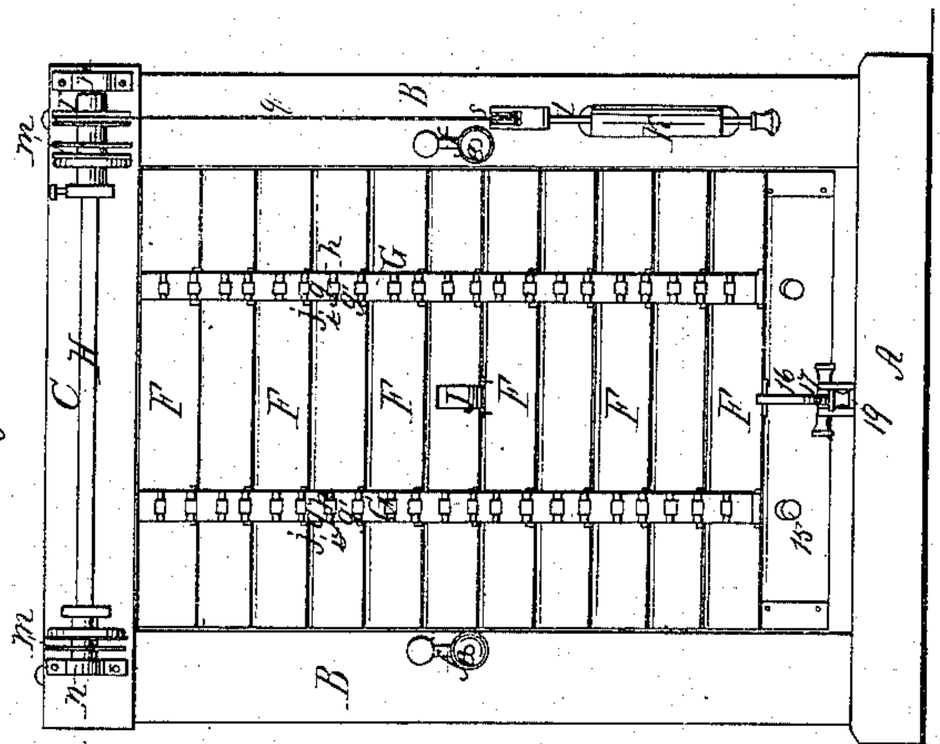


Fig. 3

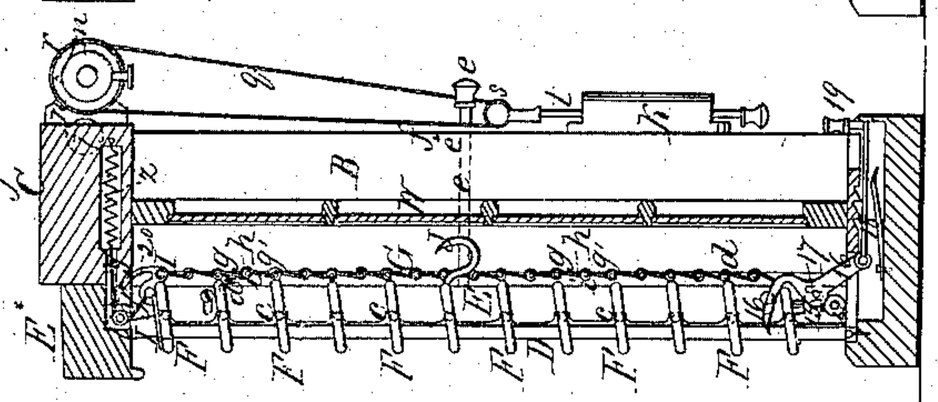


Fig. 2

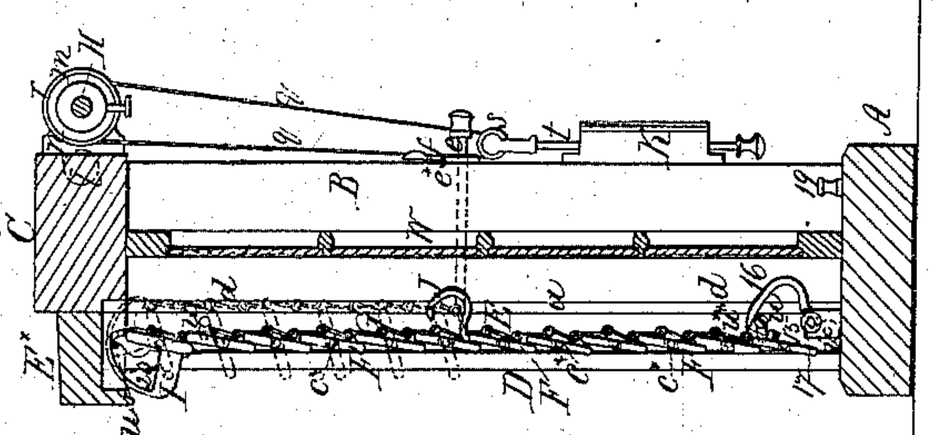


Fig. 1

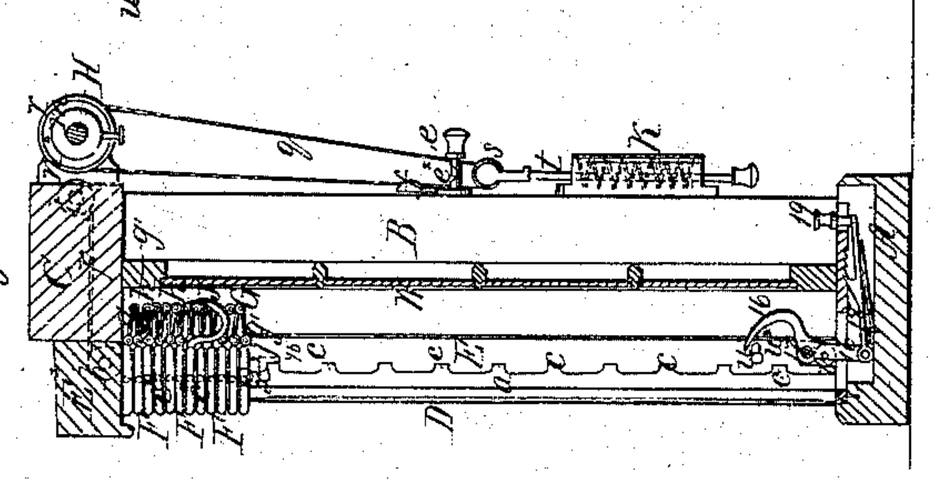


Fig. 10

Fig. 6

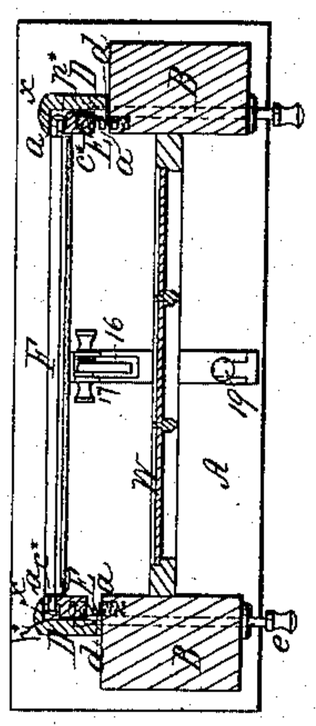


Fig. 8

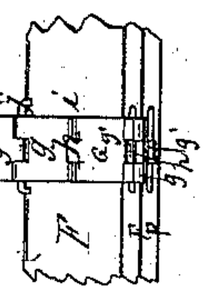


Fig. 7

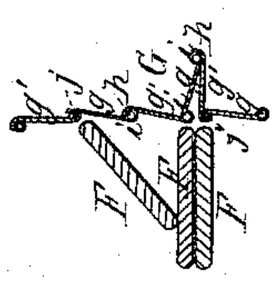
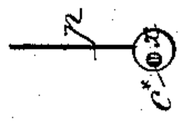


Fig. 9

Fig. 11



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UNITED STATES PATENT OFFICE.

SYLVANUS S. CLARK, OF MANCHESTER, NEW HAMPSHIRE.

FOLDING WINDOW-BLIND.

Specification of Letters Patent No. 16,966, dated April 7, 1857.

To all whom it may concern:

Be it known that I, SYLVANUS SMITH CLARK, of Manchester, in the county of Hillsboro and State of New Hampshire, have invented certain new and useful Improvements in Folding Window Blinds and Shutters; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, making a part of this specification, in which—

Figures 1, 2, and 3, exhibit transverse vertical sections of a window to which is applied a blind or shutter in which all the improvements which constitute the invention are embraced; the several sections showing the blind or shutter in different conditions. Fig. 4, is an inside view of the jamb-framing of the window, and of the blind or shutter. Fig. 5, is an outside view, corresponding with Fig. 4. Fig. 6, is a horizontal section of the window and blind or shutter. Figs. 7, 8, 9, 10 and 11, are detail views, which will be found to be hereinafter explained.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in certain improvements in the construction, arrangement, mode of connection, and method of operating folding blinds and shutters for the exteriors of windows, and is applicable to blinds or shutters of wood or metal.

To enable others to fully understand and construct my invention, I will proceed to describe it.

A B B C, is the wooden jamb-framing of the window; A being the sill; B, B, the jambs; and C, the cap.

D D E*, is the frame of the blind or shutter, which may be of wood or iron, secured to the exterior of the jamb-framing; said frame consisting of two uprights D, D, and a cap piece E*, the said uprights being sunk in the sill A, and secured by screws or any other suitable means to the jambs B, B, and the cap piece E* having the jambs mortised into it, and being secured by bolts or other means to the cap C, of the jamb-framing. The uprights D, D, have cavities *a*, *a*, in their inner faces, as shown in Figs. 1, 2, and 6, and also in Fig. 5, in the latter of which figures they are represented partly broken away to expose the said cavities, which cavities are for the purpose of containing two movable upright pieces E, E, which contain notches *c*, *c*, in their front sides, to receive and constitute bearings for the round tenons *c**, *c**, at the ends of the slats F, F, of the blind or shutter, to turn in to open and close them while the blind or shutter is down, as shown in Figs. 2, 3, 4, and 5, of which Fig. 3 shows the slats open and the other figures show them closed. The tenons are confined in the notches, when the blind or shutter is down, by the pieces E, E, being held against the front sides of the cavities *a*, *a*; but the blind or shutter is intended to fold and draw up to the top of the window, provision is made for liberating the tenons from the notches *c*, *c*, by making the pieces E, E, of less depth from back to front than the cavities *a*, *a*, to allow them to move inward or backward in the said cavities far enough to leave room for the tenons to move forward out of their bearings *c*, *c*, and move upward between the front of the pieces E, E, and the front sides of the cavities *a*, *a*. Fig. 1 represents the pieces E, E, drawn back, and the slats F, F, drawn up to the top of the window. Springs *d*, *d*, are placed between the pieces E, E, and the back or inner sides of the cavities *a*, *a*, as shown in Figs. 2, 3, and 6, to force the said pieces forward or outward to confine the tenons of the slats when the blind or shutter is let down; and rods *e*, *e*, one for each piece E, are provided, to draw the pieces E, E, back, to allow the slats to move up; said rods passing through the jambs B, B, so as to be operated by hand from the interior of the house or other building without opening the window.

W, in Figs. 1, 2, 3, and 6, is the window-sash.

A small upright sliding bolt (*f*) is applied, inside the jamb, to each rod *e*, to drop into one of two notches *e**, in the said rod, to lock the piece E, either in its inward position shown in Fig. 1, or its outward position shown in Figs. 2, 3, and 6. The movable upright pieces E E, are confined to the cavities *a*, *a*, by screws, *u*, *u*, near the top and bottom; the said screws passing through horizontal slots *u**, *u**, in the said pieces E, E, and screwing into the stationary uprights D, D. Rollers *v*, *v*, are fitted into the bottoms of the upright pieces E, E, to run on the sill A, to reduce the friction.

The slats F, F, are all connected together at their inner edges by two chains G, G, which are made with two links to each slat; the said links being so provided with stops as to fold only in an inward direction or away from the slats, as shown in Fig. 1, so

as not to get between the slats and prevent them being drawn up close to each other. The construction of the links is illustrated in Figs. 7 and 8, the former of which exhibits a transverse section, and the latter an inside view, on a larger scale than the figures already referred to, of portions of three slats and the chain connecting them. The links g, g^1, are connected by hinged joints; and the links g^1, are each constructed with a stop piece h, at its upper end, which, when the chain is extended, comes in contact with the link g, above it, and thus prevents the joint i, that stands midway between the connections j, j, of the chains and slats, from folding toward the slats, but yet allows it to fold freely from the slats, in the manner illustrated in the lower part of Fig. 7. The top or uppermost slat F of the blind or shutter is suspended by two slotted plates I, I, shown in Figs. 2 and 3, from two stationary pins w, w, that are secured in the cap-piece E. The form of the plates I, I, is illustrated best in Fig. 9, which is a side view of one of them detached. The object of making these plates with large slots 20, to work on the pins w, w, and the particular form of the said slots will be hereinafter explained in a more suitable place.

The slats are drawn up to the condition shown in Fig. 1, by means of two cords or chains p, p, connected with the tenons of the lowest or bottom slat, and passing up through the cavities a, a, in the uprights D, D, of the frame of the blind or shutter, over guide rollers k, k, in the cap-piece E, from thence through the cap C, and under guide rollers l, l, in the back part thereof, to rollers m, m, on a horizontal shaft H, that is arranged in bearings n, n, attached to the interior of the cap C, within the building. The two cords or chains p, p, are drawn up, to draw up or fold the blind or shutter, by turning the shaft H, and thus winding up said cords or chains on the rollers m, m.

Various means may be employed to enable persons standing on the floor of a room or apartment to operate the shaft H. When the blind or shutter is made of wood, the means shown in the drawing will serve the purpose very well, viz.: an endless band or cord q, running over a pulley r, at one end of the said shaft, and under a pulley s, attached to an upright bolt t, at the lower part of the window, which bolt has a spring applied to it, within a stationary guide box K, in such a manner as to produce such a tension on the cord as is necessary to produce friction enough on the pulley r, to turn the shaft or hold it stationary. By pushing up this bolt, to slacken the endless band or cord q, the blind or shutter is allowed to unwind the cords or chains p, p, and descend or close itself by its own weight. The bottom slat, when not of itself heavy enough to effect the above result, may have weights attached. 15, 15, represent such weights. The means above described of operating the shaft H, are, however, not applicable with advantage when the blind or shutter is made of metal, as the weight of the blind is too great to be raised by cords and pulleys; but instead of those contrivances, I propose to employ an upright shaft geared by bevel gearing with the shaft H, and provided with a handle at the bottom, which should be at a convenient height to allow it to be turned by a person standing on the floor. The cords or chains p, p, by which the lower slat is drawn up to fold or open the blind or shutter, work in rabbets, which are formed in the front or outer sides of the movable upright pieces, as shown at p^*, in Fig. 5, and also in Fig. 10, which is a transverse or horizontal section of one of the pieces E. The said cords or chains are connected with eccentric circular plates x, x, attached to the tenons of the bottom slat; the said plates fitting between the fronts of the cavities a, a, in the stationary uprights D, D, and the backs of the rabbets p^*, p^*, of the pieces E, E, and serving as guides to conduct the bottom slat upward without any liability of its tenons entering the notches c, c. A side view of one of the plates x, x, is given in Fig. 11, on a larger scale than that in which it is shown in any other figure. The other figures in which the guide plates x, x, are shown are Figs. 1, 5, and 6. Opposite the lowest pair of notches c, c, there are small cavities sunk in the back of the rabbets p^*, for the plates x, x, to work in when the upright pieces E are moved forward to confine the tenons of all the slats. The tenons c, c, of all the other slats are made shorter than those of the bottom slat, in order to allow the cords or chains p, p, to pass them. The bottom slat, as it is drawn up by the cords or chains p, p, passes behind the one above it, and thus throws it forward, and throws the tenons of the latter out of the notches c, c; the latter one passes behind the one above it, and acts in the same manner; and so on, all the way to the top, each slat throwing forward the one above it, and releasing its tenons. The slats, as they rise successively, assume a horizontal position.

The uppermost or top slat has its inner edge connected at about the middle of its length by a cord y, with a spring z, that is placed in a cavity in the cap C, of the jamb-framing, as shown in Fig. 2. The cord y, passes over a pulley y^*, which is so arranged as shown in Fig. 3, that the spring, in pulling the cord, exerts a tendency to throw forward the inner edge of the slat, to bring

the slat as nearly as possible to an upright position, or, in other words, to close it. The connection of the inner edges of the slats by the chains G, G, causes all of the slats to be closed by the closing of the top one, when the blind or shutter is down and the tenons are in their bearings *c*, *c*, and in like manner causes all to be opened by the opening of the bottom one. To enable the slats to be opened from inside the window, I employ, outside of the window, a curved lever 16, (shown in Figs. 1, 2, 3, 4, and 5,) whose character is that of a cam; said lever being arranged on a fulcrum 17, and having connected with it a sliding spring ratchet-bar 18, which works in a cavity in the sill A, and is furnished with a knob 19, standing above the sill, inside of the window. By pulling the knob 19 inward, the upper or cam-like portion of the lever 16, is caused to slide over the inner edge of the bottom slat, in such a way as to depress the said edge, and turn the slot to a horizontal or other open position, which position is maintained against the action of the spring *z*, and cord *y*, by the ratchet bar 18. This operation is illustrated in Figs. 2 and 3, in the latter of which the lever is shown not in operation, and the slots closed; and in the former the lever is shown in operation, and the slats open.

J, is a hook, attached to the inner edge of one of the slats for the purpose of enabling the slats of the upper portion of the blind to be opened while the lower ones are closed. This is only operative while the tenons are secured in the notches *c*, *c*. By placing the point of this hook over the inner edge of the next slat above it, that slat and all above it are held open, while the slat to which the hook is attached and all below it remain closed. This is illustrated in Fig. 2, by the representation in red outline of the upper slats in an open condition. This adjustment can only be affected by opening the window; but all the other adjustments and movements of the blind or shutter are effected from the interior without opening the window.

The suspension of the top slat of the blind by the slotted plates I, I, admits of all the movements necessary to the various conditions of the blind, which could not be effected by suspending the slat at a fixed point. The outer or upper sides of the slots 20, constitute portions of circles described from points in the line of the axis of the tenons *c**, *c**, of the slat, so as to admit of their working over the pins *w*, *w*, as the slat turns on its tenons when the blind or shutter is down; but the inner or lower side of the said slot is described so as to work against the pins *w*, *w*, when the blind is being drawn up, and guide the upper slat in its double movement, viz., its movement toward a horizontal position and the upward movement which brings it close to the cap E.

This blind or shutter combines the characteristics of both a blind and a shutter, and when made of iron, is fire-proof and burglar-proof.

What I claim as my invention, and desire to secure by Letters-Patent, is:

1. The employment of movable upright pieces E, E, containing notches *c*, *c*, to receive and constitute bearings for the tenons of the blind slats, arranged to operate substantially as described within the stationary sides D, D, of the blind or shutter framing for the purpose of confining the tenons of the slats when the blind or shutter is down, or of liberating the tenons to allow the blind or shutter to be drawn up or folded.

2. The guide plates *x*, *x*, for conducting the tenons of the bottom slat clear of the notches *c*, *c*, during the drawing up of the blind; such plates being attached to portions of the tenons of the said slat that extend beyond the ends of the tenons of the other slats into cavities that are made within the stationary side pieces of the blind, for the cords or chains *p*, *p*, by which the blind is raised or folded, to work through, substantially as herein described.

3. The construction of the chains G, G, with stops *h*, *h*, on the links, arranged in such manner as to allow the links to fold freely inward or away from the slats, and prevent them folding between the slats, substantially as herein described.

4. The application of the spring *z*, and cord *y*, to the upper slat substantially as described, in combination with the connection of the slats by the chains G, G, at their inner edges, for the purpose of effecting the closing of the slats when the blind or shutter is down, and keeping them closed unless held open by other means.

5. The suspension of the top slat from fixed pins *w*, *w*, in the cap of the frame of the blind or shutter by slotted plates I, I. of a form substantially as herein described, which admits of all the movements herein specified.

6. The curved lever 16, and sliding ratchet bar 18, applied as described, to operate upon the lower slat, and open the blind or shutter from the interior of the window.

7. The hooks J, attached to the inner edge of one of the slats and operating in combination with the spring *z*, and cord *y*, to hold open the slats of the upper portion of the blind or shutter while the lower portion remains closed, substantially as herein described.

SYLVANUS S. CLARK.

Witnesses:
SELIM FRAS. COHEN,
HENRY T. BROWN.