(No Model.)

C. FOWLER.

SASH BALANCE.

No. 390,767. Patented Oct. 9, 1888.

Fig. 1.

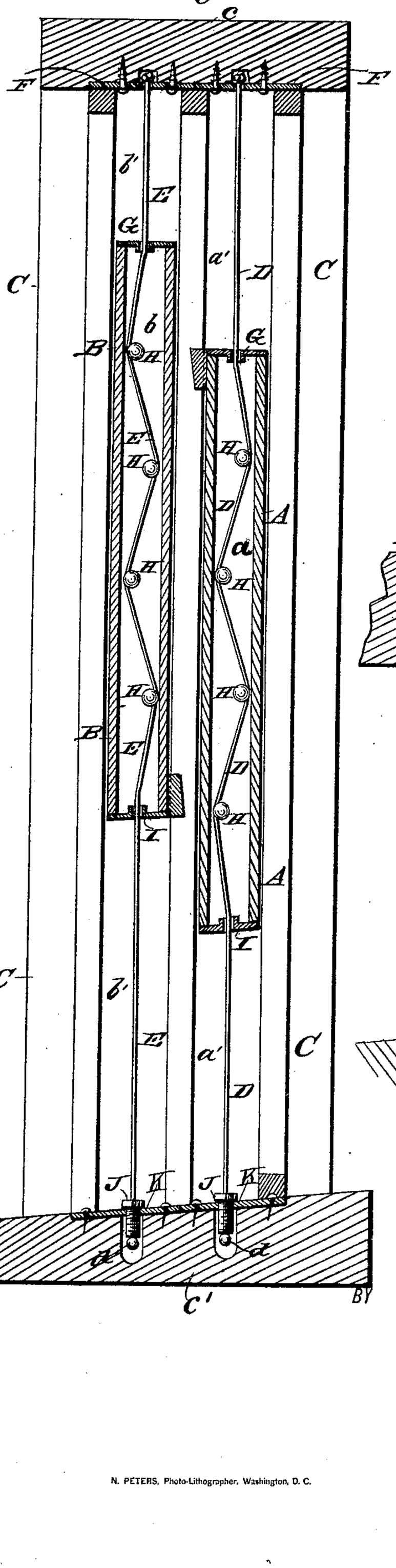


Fig. 2.

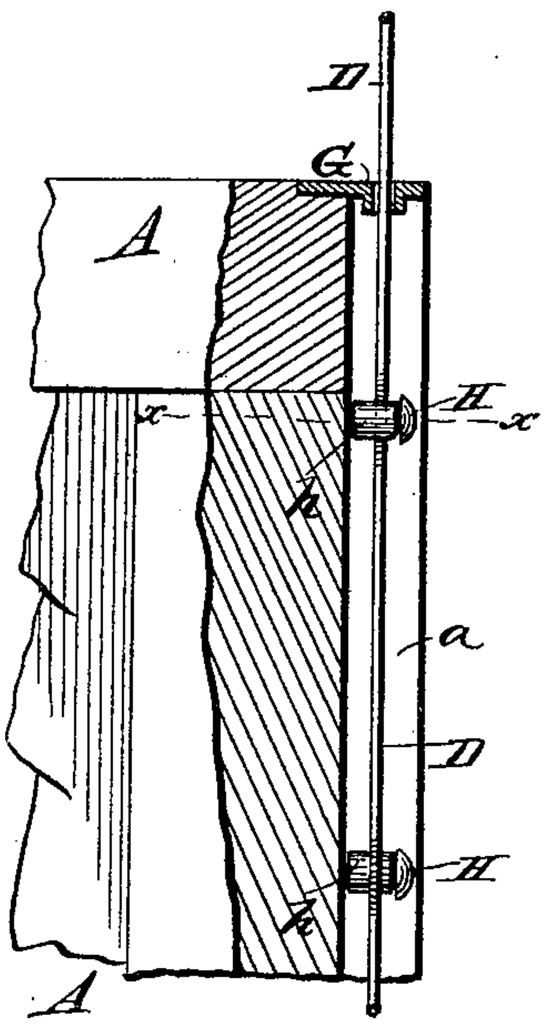


Fig. 3.

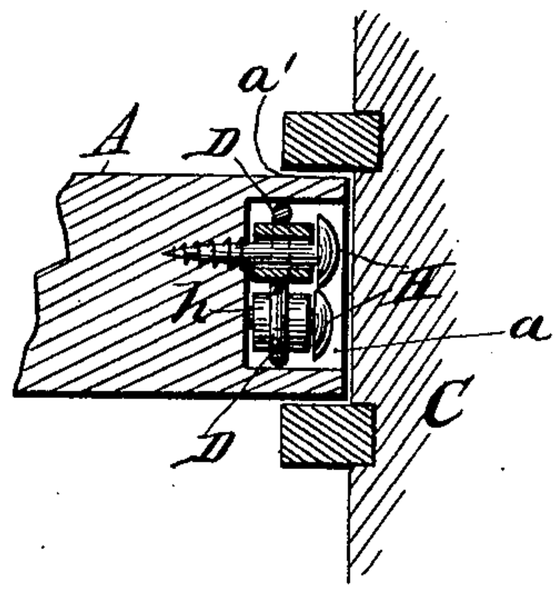
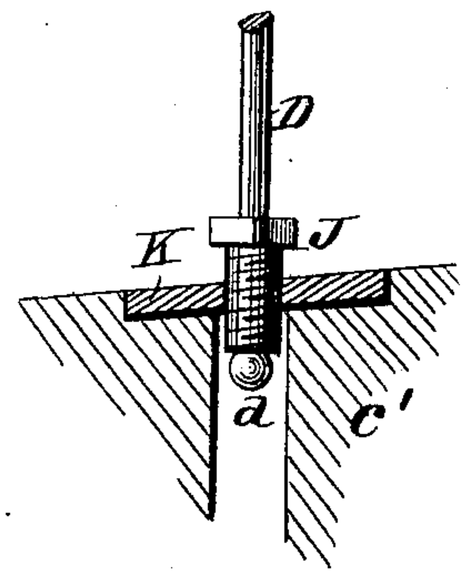


Fig. 4.



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CHARLES FOWLER, OF EAST SPRINGFIELD, NEW YORK.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 390,767, dated October 9, 1888.

Application filed June 23, 1888. Serial No. 277,971. (No model.)

To all whom it may concern:

Be it known that I, CHARLES FOWLER, of East Springfield, in the county of Otsego and State of New York, have invented new and Improved Window-Sash Hangings, of which the following is a full, clear, and exact description.

My invention relates to devices for hanging window-sashes without the use of the pulleys and weights commonly employed; and the invention has for its object to provide simple, inexpensive, easily applied, and efficient devices of this character.

The invention consists in certain arrangements of wires or cords in the window or sash frame and friction-pins in the sash, and in means for taking up any slackness of the hanging wires or cords as it occurs, all as hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the views.

Figure 1 is a vertical sectional elevation of the side part of a window-frame and the grooved edge portions of two sashes fitted therein by means of my improvement. Fig. 2 is an enlarged inner face view of the upper right-hand corner of one of the sashes, partly broken away and in section, and a part of the hanging wire or cord. Fig. 3 is a detail plan view in horizontal section taken on the line *x x* in Fig. 2; and Fig. 4 is an enlarged detail view of the connection of one of the sash wires or cords with the window-sill.

The drawings represent upper and lower sashes, A B, fitted in slideways *a' b'*, respectively, in the window-frame C, which may have any ordinary or approved construction. The opposite edges of the sashes are provided with grooves *a b*, respectively, to accommodate the wires D E, by which the sashes A B are hung, there being two of these wires D E, one wire at each side edge of each sash. The wires or cords D E may be held in any approved way to the head *c* and sill *c'* of the window-frame C, and preferably in a manner allowing any slackness of the wires which may occur to be readily taken up.

As the arrangement of each of the wires D E is precisely the same with relation to the sash which it hangs in the window-frame, I will more particularly describe the invention with reference to one of the wires D employed to hang the lower sash, A, which will suffice for a clear understanding of the features of the improvement, and as follows:

I attach the top of the wire to the head *c* of the window-frame C, preferably by using a metal plate, F, which is let in flush with the head and held thereto by screws, as shown, or otherwise. This plate has a hole through which the wire is passed upward, and the end of the wire is upset or knotted at the back of the plate. From this plate the wire passes downward through a hole in a metal wear and guide plate, G, into the side-edge slot *a* of the sash, and thence downward, but in a zigzag course, around or along the outer sides of a series of pins, H, which are placed alternately at opposite sides of the sash-slot or in staggered positions, and the wire then is passed downward through a hole in a wear and guide plate I let into the lower edge of the sash, and thence to and through a screw-plug, J, below which the wire is upset or is provided with a head, *d*. The plug J fits a threaded hole in a metal plate, K, which is let into the sill *c'* of the window-frame C, and the sill is bored or cut away to accommodate the screw-plug J and permit its vertical movement. The plate K may be fixed to the window-frame sill by screws, as shown, or in any other secure manner.

The sash-pins H may be plain pins, preferably having heads which will prevent lateral slip of the sash wire or cord from them; but in order to reduce wear and friction on both the pins and the sash wire or cord I place rollers *h* on the pins, along or over which the wire slips as the window-sash is raised or lowered. These rollers also materially assist the easy working of the sash in the window-frame.

It is obvious when the sash is hung by two wires, one at each side, in the manner above described that the sash may be raised or lowered easily and conveniently in the window-frame and that the sash will stay or stop either fully open or closed or at any intermediate position to which it may be raised or lowered by the hands. Should the hanging wires or cords become slack, so that they allow the sash to slip, it requires but a moment to turn the

screw-plug J of the wires in the window-sill nut-plates by a wrench or other tool to stretch or strain up the wires to any degree of tightness which will securely hold the sash when it is let go and yet allow the sash to work easily in the window-frame.

It will be noticed that by my improvement ordinary sash-weights with their accompanying pulleys or fixtures are dispensed with, while the sashes are hung quite as cheaply or at less cost and operate quite as effectively, and sashes may be hung by my improved hangings in places where ordinary sash weights and cords could not be used.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. Sash hangings consisting of wires or cords secured to the sash-frame, and series of pins fixed to the sash in staggered positions, and over which pins the wires pass in zigzag or sinuous course, substantially as herein set forth.

2. Sash-hangings consisting of wires or cords secured to the sash-frame, and series of pins fixed to the sash in staggered positions, and provided with anti-friction rollers over which the wires pass in zigzag or sinuous course, substantially as described, for the purposes set forth.

3. The combination, in sash-hangings, of wires or cords secured to the sash-frame, apertured wire guide-plates fixed to the top and bottom of the sash at the ends of slots therein which receive the wires, and a series of pins fixed in the sash-slots, and over which pins the wires pass in zigzag or sinuous course, substantially as herein set forth.

4. Sash-hangings consisting of wires or cords secured to the sash-frame and at one end to a screw-plug or tightener device working in the frame, and a series of pins fixed to the sash in staggered positions, and over which pins the wires pass in zigzag or sinuous course, substantially as herein set forth.

5. The combination, in sash-hanging fixtures, of wires or cords, as D, secured to the head of the sash-frame, a series of pins, as H, set into the sash in staggered positions, and over which the wires pass in sinuous course, nut-plates K, fixed to the sash-frame sill, and screw-plugs J, fitted to the plates K, and to which one end of the sash-wires is connected, substantially as shown and described.

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