Merryman & Ferguson,

Sash Balance.

No. 49,134. Patented Aug. 1, 1865.

Fig. 1.

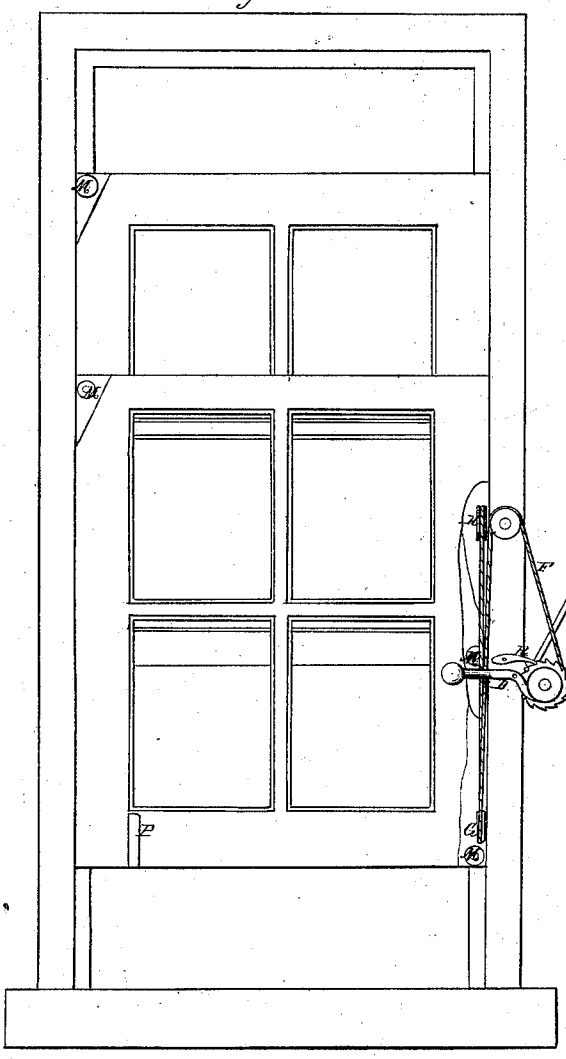


Fig. 2.

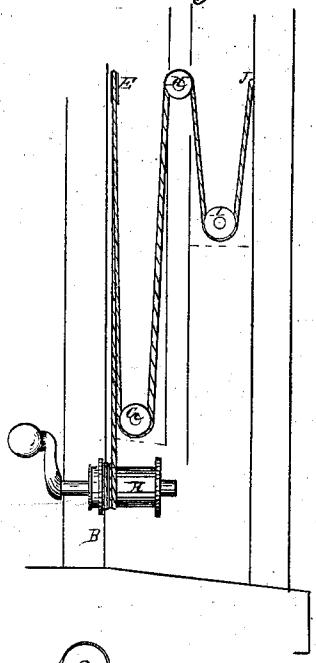


Fig. 3.

Fig. 4.

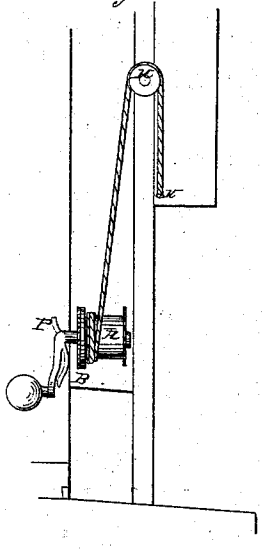
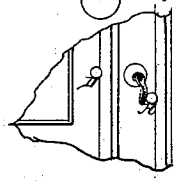


Fig. 5



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UNITED STATES PATENT OFFICE.

JOHN M. MERRYMON AND KILBY FERGUSON, OF INDIANAPOLIS, INDIANA.

IMPROVED MODE OF HOISTING AND LOWERING WINDOW-SASH.

Specification forming part of Letters Patent No. **49,134**, dated August 1, 1865.

To all whom it may concern:

Be it known that we, J. M. MERRYMON and KILBY FERGUSON, of the city of Indianapolis, in the county of Marion and State of Indiana, have invented certain Improvements in Devices for Hanging and Balancing and Locking Window-Sash; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings and the letters of reference marked thereon, in which—

Figure 1 is a front elevation of a window with our improvement attached, portions of the casing and sash being represented as broken away for the purpose of showing more distinctly the devices referred to. Fig. 2 is an elevation of the inside of the casing to show the relative positions and operation of the cord and pulleys. Fig. 3 is a front elevation, showing the lower corner of a lower sash. Fig. 4 is an edge view of the same. Fig. 5 is a perspective sketch to show the exterior appearance of a window-casing with our improvement attached.

The nature of our invention consists in hanging window-sash by an arrangement of cord, pulleys, and windlass operating upon one edge of the sash only, and in such a way that either the upper or lower sash may be raised or lowered at will, or the two may have a mutual movement—the one up and the other down—the effect of being perfectly balanced, or be locked at any point.

That others skilled in the art may understand the construction and operation of our devices, we will particularly describe them.

The barrel of the windlass A is inclosed in a suitable metallic case, (not shown in drawings,) which furnishes proper bearings for the working parts, and also renders the whole easy of attachment to the window-casing. This may be accomplished in any of the ordinary and usual ways of performing such work. Upon one end of said barrel is the ratchet B, which, in connection with the pawl C, prevents the barrel B from being revolved backward, except when the pawl is designedly raised out of connection with the ratchet.

The friction-brake D is conveniently located, so that its knob or outer end may project beyond the casing of the window and be within convenient reach of the hand when it is desired to let the barrel A revolve backward to lower one of the sash.

For convenience we prefer to connect the pawl and brake somewhat as represented in Fig. 1, so that as the knob or handle of the brake is pressed down to bring the friction-surfaces in contact the pawl is lifted from the teeth of the ratchet automatically. In order to make the brake and pawl operate in this way perfectly, the connection between them should be by an elastic cord or spring. The brake will then be brought in contact with the barrel before the pawl is released, as the teeth of the ratchet should be made a little hooking to retain the pawl till the barrel is turned forward a little, or until considerable pressure is applied to the outer end of the pawl.

Above the barrel A, inserted in the face of the sash-channel, is the pulley E, similar to the ordinary sash-weight pulley. A cord, F, which is partially wound upon the barrel A, passes over the pulley E, and downward between the edge of the sash (which is properly rabbeted for the purpose) and the face of the casing at the lower edge of the inner or lower sash. The cord F passes under the pulley G, which is attached to the edge of the sash, near the lower end, as shown in Figs. 1 and 2; thence the cord F passes upward and over a pulley set flat against the casing and directly between the channels of the upper and lower sash, as at H, Figs. 1 and 2.

The pulley H we prefer to place a little lower than the top bar of the lower sash when said sash is down, so that it is always concealed behind the sash. From the pulley H the cord F passes downward again around the pulley I, which is attached to the lower part of the vertical edge of the upper sash in the same way that the pulley G is attached to the lower

sash. The cord is then fastened permanently in any convenient way to the window-casing at a point as high as the pulley H, as shown in Fig. 2. In Fig. 2 the red lines indicate the lower edges of the two sash.

It will now appear obvious that the upper and lower sash, being supported by the one cord F, will balance each other—that is, if one descends the other must ascend at the same time—for, both ends of the cord being fixed, one permanently to the casing, as at J, Fig. 2, and the other fixed to the immovable windows A, if one sash is pressed down it must necessarily draw the cord over the pulley H from under the other sash, and thereby cause the other sash to rise, and vice versa.

If (the window being closed) it is desired to raise the lower sash, the crank of the windlass is turned and the cord F wound upon the barrel. The consequent shortening of the cord outside of the pulley E will obviously cause the lower sash to rise. If it was desired to lower the upper sash without moving the other, then the proper pressure upon the handle of the brake releases the pawl and allows the cord F to be unwound from the barrel, the weight of the upper sash being sufficient for this purpose, and the pressure upon the brake regulating the speed and distance of its descent. The upper sash is wound up to its place again by the crank of the windlass, and the lower sash descends to its place by permission of the brake. When, as will be most generally the case, it is simply desired to open the window, top and bottom, the lower sash is pushed up by the hand, as usual, and lowered again by an opposite movement.

An obvious modification of the foregoing arrangement is shown in Figs. 3 and 4, where the windlass is attached to or buried in the body of the lower sash. From it the cord ascends and passes over the pulley H, and, descending, is secured at its end to the lower edge of the upper sash, as at K, Fig. 4. By this arrangement the sash are balanced, as before, and may be raised or lowered in exactly the same way. Less cord is used and three pulleys are dispensed with, and in these respects may be considered as better. The only real difference, however, is in the location of the parts.

To some persons the presence of the crank may be considered as objectionable, and, if desirable, it may be dispensed with by the addition of a weight within the casing, as shown at L, Fig. 1. The cord from the weight is wound upon a barrel of the same windlass that raises and lowers the sash, and, if desirable, it may be a continuation of the cord F. When the weight is used its office may be simply to take up the slack of the cord F when one or the other of the sash is being raised by hand, or it may be sufficiently heavy to balance the weight of the sash, and in that way possibly dispense with the ratchet and pawl and brake.

The lock P is placed upon the lower sash not only for the ordinary purpose of a window-lock, but to facilitate the working of the upper sash when it is not desired to move the lower one; for, if both sash be down and free, when the windlass turns the inner sash will rise first. It also enables the sash to be securely locked when the upper sash is part way down, for when the windlass is fixed it is obvious that one sash cannot move without the other, and if one be fixed by a lock, the other is also fixed, whatever be its position.

When the power to lift a window-sash is applied entirely upon one side, as in this case, it is evident there will be a tendency to fall over toward the other side. One upper corner will press with greater force against whatever confines it than will any other part, and if an attempt is made to slide the sash upward in its ways or channel, the said upper corner may bind and wedge so as to render its movement impossible. To obviate this, the friction-rollers M M are attached to the diagonally-opposite corners of the sash, where the pressure will be, and it is therefore obvious that the sash must move upward and downward with freedom, notwithstanding it be supported entirely at one side.

Among the advantages of this mode of hanging window-sash may be enumerated great facility of application, as these fixtures can be applied at any time and to any window, as they do not require the casings to be constructed with reference to them. Facility of access for repair. If a cord is worn out and is to be replaced, nothing is necessary more than to remove the sash from the frame, and perfect access is obtained to the working parts. Cheapness, as they are much less expensive than the ordinary weights, even when the cheaper construction of the window-casing is not considered, for no hollow cases are required for these fixtures. Absence of rattling, for, pressing with considerable force at two points against the sash-frame, it is obvious much less side movement can be experienced, even though the sash may not fit more snugly than common; and, finally, the general ease and facility of handling, which has only to be experienced to be appreciated.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In combination with the upper and lower movable sash of a window, a cord, windlass, and pulleys, or equivalent devices, so that the said sash may be raised or lowered at pleasure and perfectly balanced when the windlass is fixed within the window-casing.

2. The combination of a cord, windlass, and pulley with the upper and lower sash of a window, or equivalent devices, so that the said sash may be raised or lowered at pleasure and perfectly balanced when the windlass is attached to the lower sash.

3. In combination with a hoisting and low-

ering device applied to one edge of a window-sash, the friction-rollers M M, applied to diagonally-opposite corners of said sash, for the purpose set forth.

4. In combination with the windlass A, for raising and lowering window-sash, and the ratchet and pawl B R, the friction-brake D, substantially as described.

5. The lock P or its equivalent, in combination with the ratchet and pawl of the windlass A, for the purpose of facilitating the working of the upper sash, and for locking the window with the said upper sash at any desired point of elevation.

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