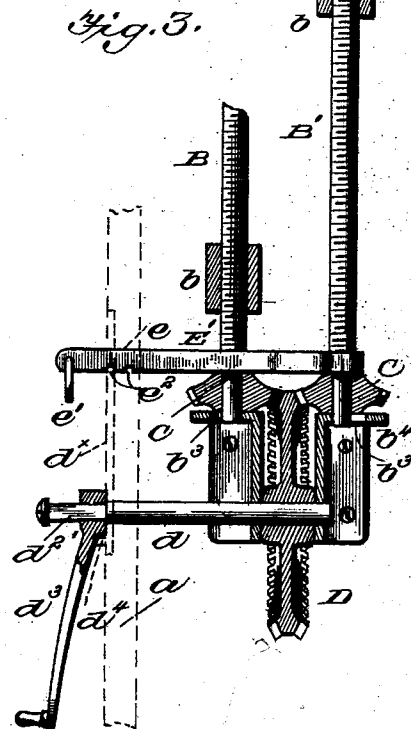
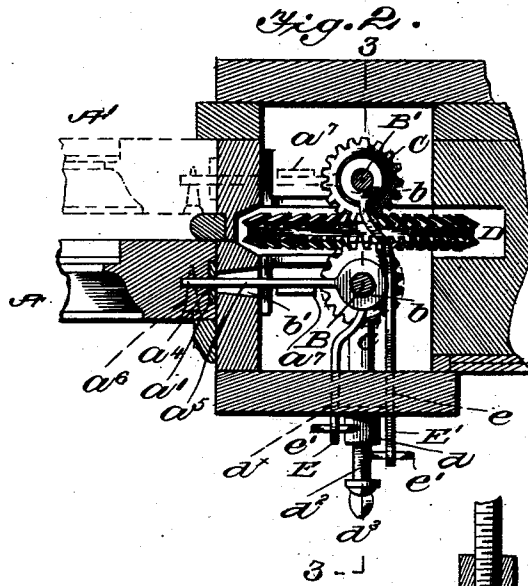
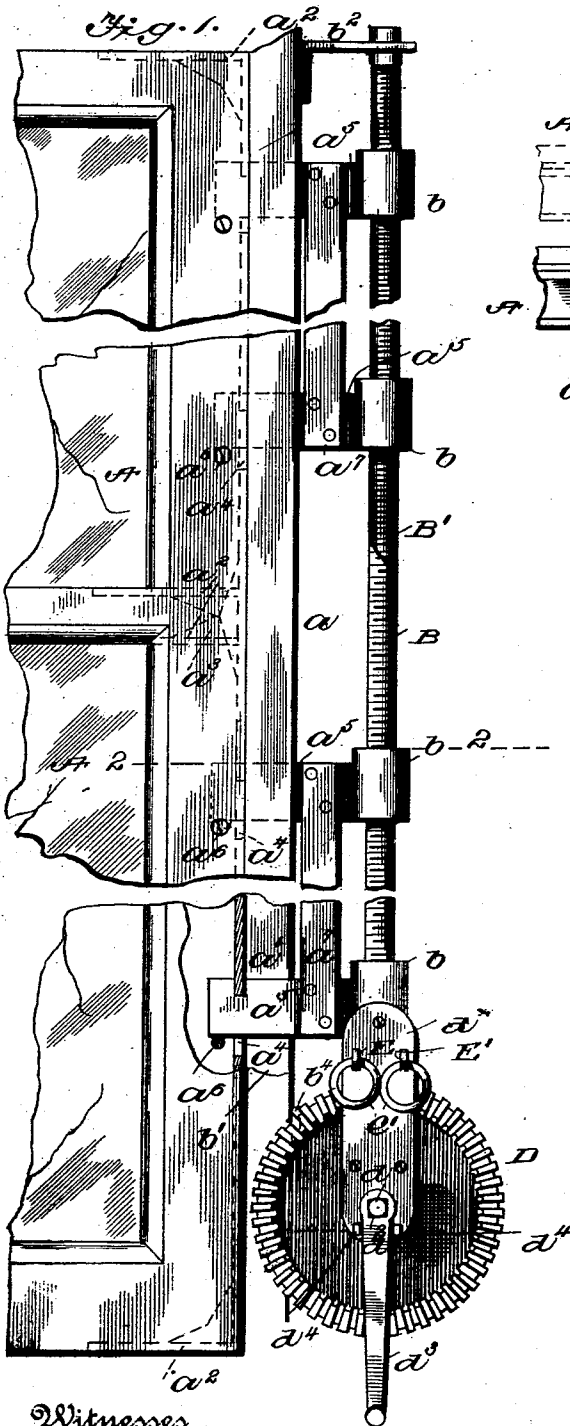


(No Model.)

M. M. CANFIELD.
DEVICE FOR OPERATING WINDOWS.

No. 570,841.

Patented Nov. 3, 1896.



Witnesses
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UNITED STATES PATENT OFFICE.

MORTIMER M. CANFIELD, OF SEATTLE, WASHINGTON.

DEVICE FOR OPERATING WINDOWS.

SPECIFICATION forming part of Letters Patent No. 570,841, dated November 3, 1896.

Application filed March 17, 1896. Serial No. 583,614. (No model.)

To all whom it may concern:

Be it known that I, MORTIMER M. CANFIELD, of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Devices for Operating Windows; 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 contemplates certain new and useful improvements in devices for raising and lowering window-sashes.

The object of the invention is to provide simple and highly efficient means for simultaneously moving the upper and lower sashes of a window in opposite directions or operating each sash independent of the other, and also to provide for locking the sashes at any point. This I accomplish by the use of two independent screw-rods, each engaging threaded hubs or sleeves carried by the window-sashes and provided at their lower ends with pinions which intermesh with a beveled gear-wheel. These pinions may be easily thrown into or out of gear with the operating-wheel by shifting-arms connected thereto. The crank-arm is movable on the shaft of the gear-wheel and can be held as against turning when moved inward between two lugs.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a front view showing portions of two window-sashes, the frame being removed. Fig. 2 is a horizontal sectional view on line 2 2, Fig. 1. Fig. 3 is a vertical sectional view on line 3 3, Fig. 2.

Referring to the drawings, A A' designate upper and lower window-sashes, *a* the window-frame, and *a'* metallic plates secured to one of the longitudinal edges of each sash, said plates having angular ends *a*², attached to the horizontal edges of said sashes. At the corners of the latter are angular brace-plates *a*³, which are riveted to the plates *a'*. In each plate *a'* are two vertical slots *a*⁴, through which extend the inner grooved ends of outwardly-projecting arms *a*⁵, held in place in said slots and in corresponding grooves in

the sides of the sashes by means of screws *a*⁶. These arms are connected together by plates *a*⁷. The outer ends of said arms have interiorly-threaded hubs or sleeves *b*, preferably formed integral therewith. These arms *a*⁵ project through vertical slots *b'* in the frame *a*.

B B' designate two screw-rods located within frame *a* and held at their upper ends by angular arms *b*², their lower ends fitting in the slotted portions *b*³ of angular bearing-plates *b*⁴ within frame *a*. The slots of these lower bearing-plates permit the screw-rods to be moved in opposite directions. These screw-rods extend through and engage the interiorly-threaded hubs or sleeves *b*, one screw-rod engaging the sleeves of the upper sash and the other those of the lower sash. On the lower ends of these screw-rods are beveled pinions C, which are designed to intermesh with a double beveled gear-wheel D, mounted on a shaft *d*, supported by the angular plates *b*⁴ and extended outwardly from frame *a* through a plate *d*^x, attached to the exterior of said frame. The outer projecting portion of this shaft *d* is squared, as at *d*², and upon it is fitted the hub end of a crank-handle *d*³, which slides longitudinally on said shaft. When said crank-handle is moved inward against the plate *d*^x, it is located between two lugs *d*⁴, extending from said plate and thus prevented from turning. By moving said crank-handle out on the squared portion of the shaft the latter can be readily turned so as to effect the rotation of the gear-wheel D. The rotation of this wheel effects the turning of the screw-rods B B', the beveled pinions C thereof being in engagement with said gear-wheel, and thereby the sashes A A' can be raised or lowered.

E E' designate two horizontally-disposed shifting-arms secured, each at its inner end, to one of the screw-rods B B' adjacent the beveled pinion thereof, both of said arms being extended outward through slots *e* in the upper portion of plate *d'*. Rings or loops *e'* are provided on the outer ends of these arms for the easy manipulation thereof. In the lower edge of each shifting-rod are formed two grooves *e*², which, engaging with the plate *d*^x, will serve to hold said arms in their inner or outer position. By moving the arm E out-

ward the pinion C of screw-rod B will be disengaged from gear-wheel D, while by moving the shifting-arm E' inward the pinion of screw-rod B' will likewise be disengaged from said gear-wheel. Thus it will be seen that either pinion can be disengaged from the gear-wheel without affecting the pinion of the other screw-rod. This is only necessary when it is desired to operate one sash independent of the other.

From what has been said it will be seen that when the beveled pinions of the two screw-rods are in engagement with the gear-wheel D the operator by turning the crank-handle can readily effect the raising or lowering of both the upper and lower sashes and that by disengaging the pinion of either screw-rod from said gear-wheel one sash can be operated independent of the other.

It will be observed that I have provided extremely simple and inexpensive means for effecting the raising and lowering of window-sashes and that when the operating crank-handle is moved inward upon the shaft d it will be held as against turning by the lugs between which it is located. This serves to hold the sashes and prevents the surreptitious raising or lowering of either or both of them. A device of the character herein described having the features specified is extremely simple and inexpensive and not liable to get readily out of order or be deranged.

I claim as my invention—

1. The combination with upper and lower window-sashes having arms provided with interiorly-threaded hubs or sleeves, of two screw-rods each engaging the hubs or sleeves of one of said sashes, beveled pinions on the lower ends of said screw-rods, an operating gear-wheel with which said pinions are designed to intermesh, a crank-shaft, and means for disengaging said beveled pinions from said gear-wheel, substantially as set forth.

2. The combination with upper and lower sashes having outwardly-projecting arms provided with interiorly-threaded hubs or sleeves, of two screw-rods each engaging the hubs or sleeves of one sash, beveled pinions on the lower ends of said screw-rods, slotted bearing-plates for said screw-rods, shifting-arms connected to said screw-rods, and an operating gear-wheel with which said pinions are designed to engage, substantially as set forth.

3. The combination with upper and lower window-sashes having slotted plates attached to their longitudinal edges, of arms having their inner ends extended through the slots of said plates, and interiorly-threaded hubs or sleeves on the outer ends of said arms, screw-rods engaging said hubs or sleeves, the beveled pinions on the lower ends of said screw-rods, a gear-wheel with which said pinions

engage, and an operating crank-shaft, substantially as set forth.

4. The combination with upper and lower window-sashes having slotted plates attached to their longitudinal edges, of arms having their inner ends extended through the slots of said plates, interiorly-threaded hubs or sleeves on the outer ends of said arms, screw-rods engaging said hubs or sleeves, and having beveled pinions on their lower ends, slotted bearing-plates for said screw-rods, a beveled gear-wheel with which said pinions are designed to engage, a plate having slots, and shifting-arms secured at their inner ends to said screw-rods, and having grooves in their lower edges and extended through the slots of said plate, substantially as set forth.

5. The combination with upper and lower window-sashes having projecting arms, and interiorly-threaded hubs or sleeves on the outer ends of said arms, of the screw-rods engaging said hubs or sleeves, the beveled pinions on the lower ends of said screw-rods, the bearing-plates for said screw-rods, the beveled gear-wheel located between said bearing-plates with which said pinions are designed to engage, the shaft supported by said plates, and having an outer squared portion, a plate through which said shaft projects provided with lugs on its outer face, and a crank-handle movable on said squared portion of said shaft designed to fit between said lugs, substantially as set forth.

6. The combination with upper and lower sashes having slotted plates secured to their longitudinal edges, of outwardly-projecting arms extended at their inner ends through the slots of said plates, brace-plates connecting said arms, interiorly-threaded hubs or sleeves on the outer ends of said arms, screw-rods, upper supporting-plates therefor, lower angular slotted plates, beveled pinions on the lower ends of said screw-rods, shifting-arms connected to said screw-rods and having grooves in their lower edges, a plate having slots therein through which said shifting-arms project, a beveled gear-wheel with which said pinions are designed to engage, a shaft supported by said lower angular plates and upon which said beveled gear-wheel is secured, said shaft having an outer squared portion, a crank-handle movable on said squared portion, and lugs on the outer face of said plate between which said handle is designed to fit, substantially as set forth.

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

MORTIMER M. CANFIELD.

Witnesses:

ALEXANDER DOE.

FRED. J. AIKENS.