

No. 819,760.

PATENTED MAY 8, 1906.

E. W. HUMPHREYS.

WINDOW.

APPLICATION FILED JULY 11, 1905.

3 SHEETS—SHEET 1.

*Fig. 1.*

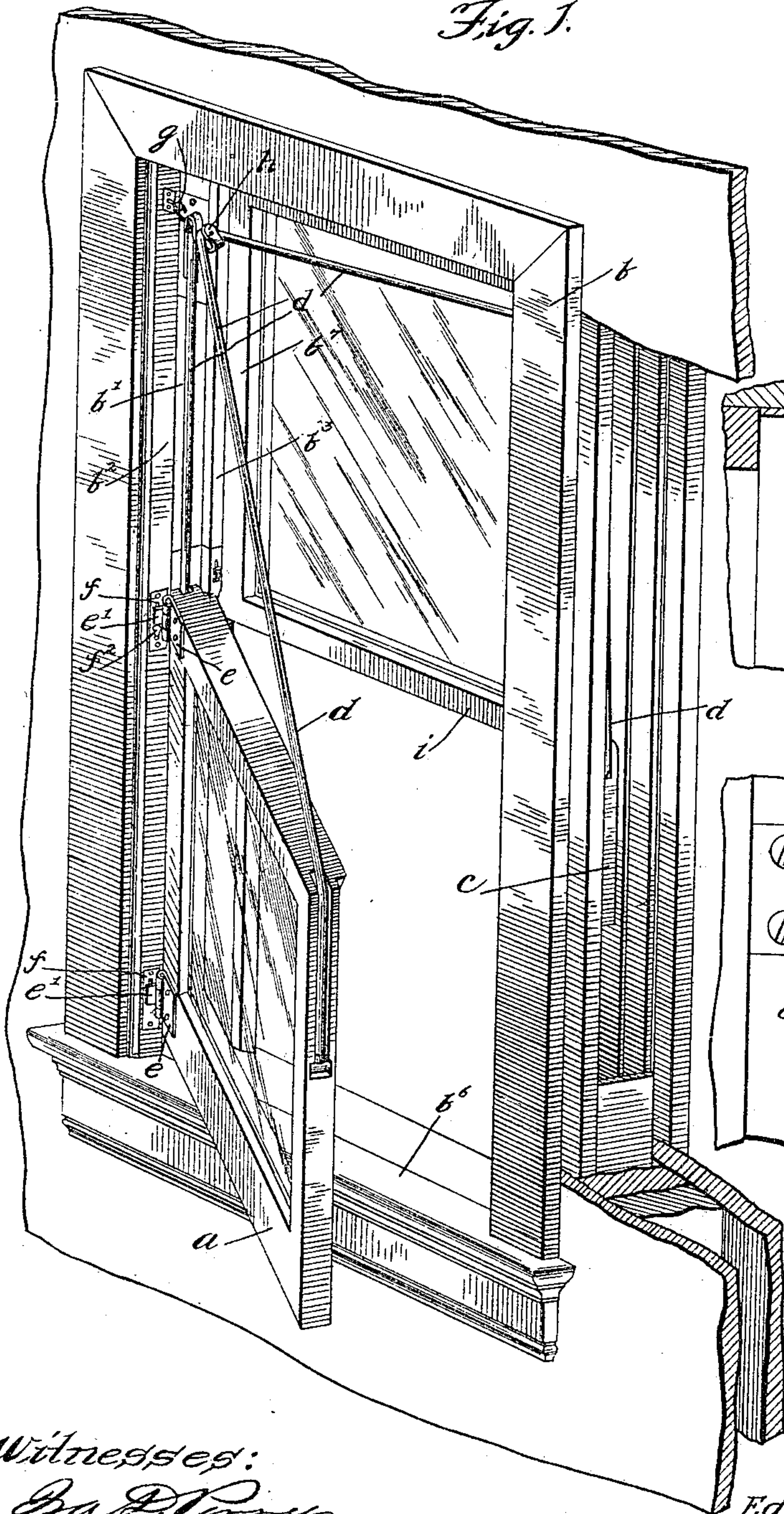
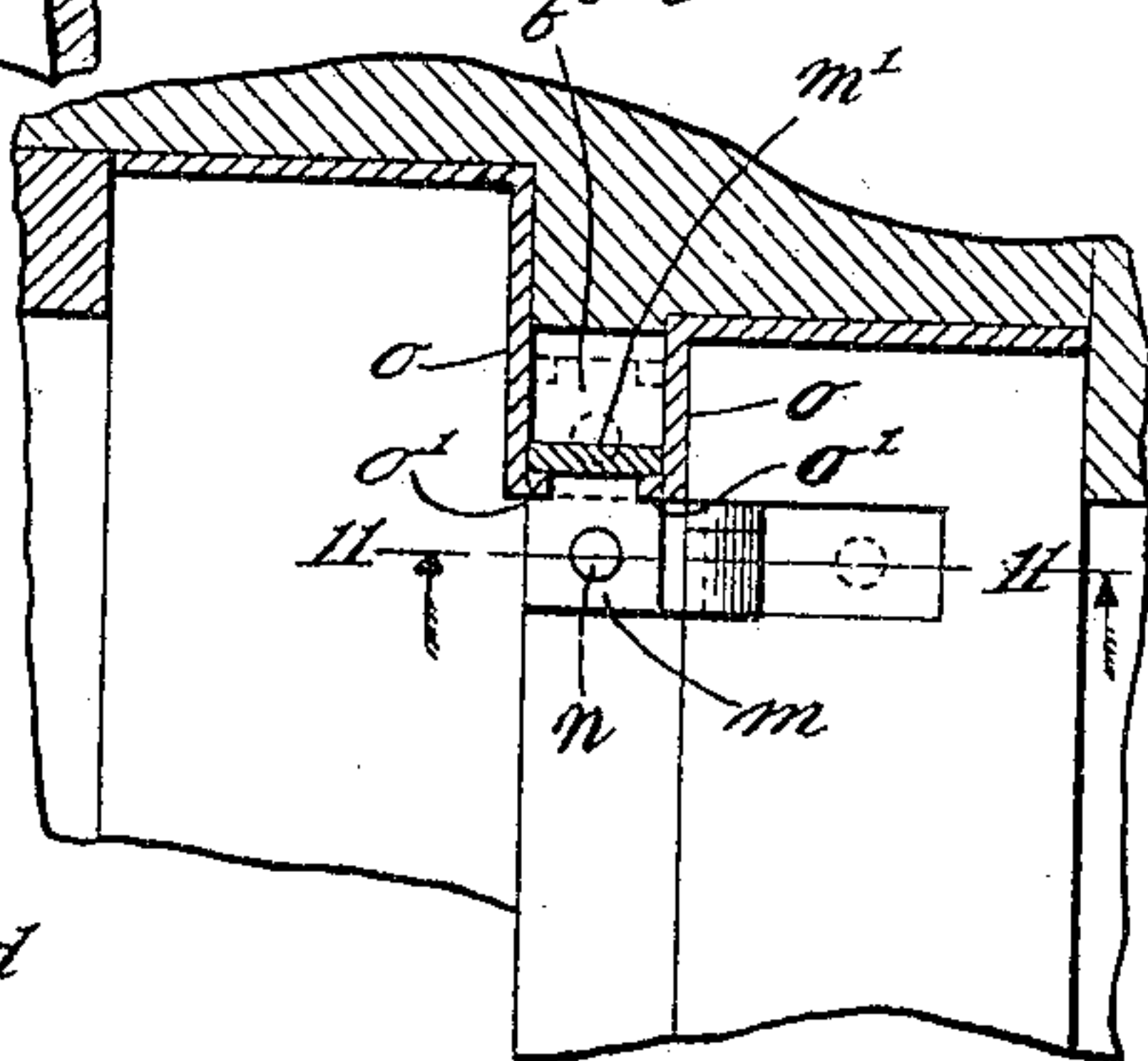
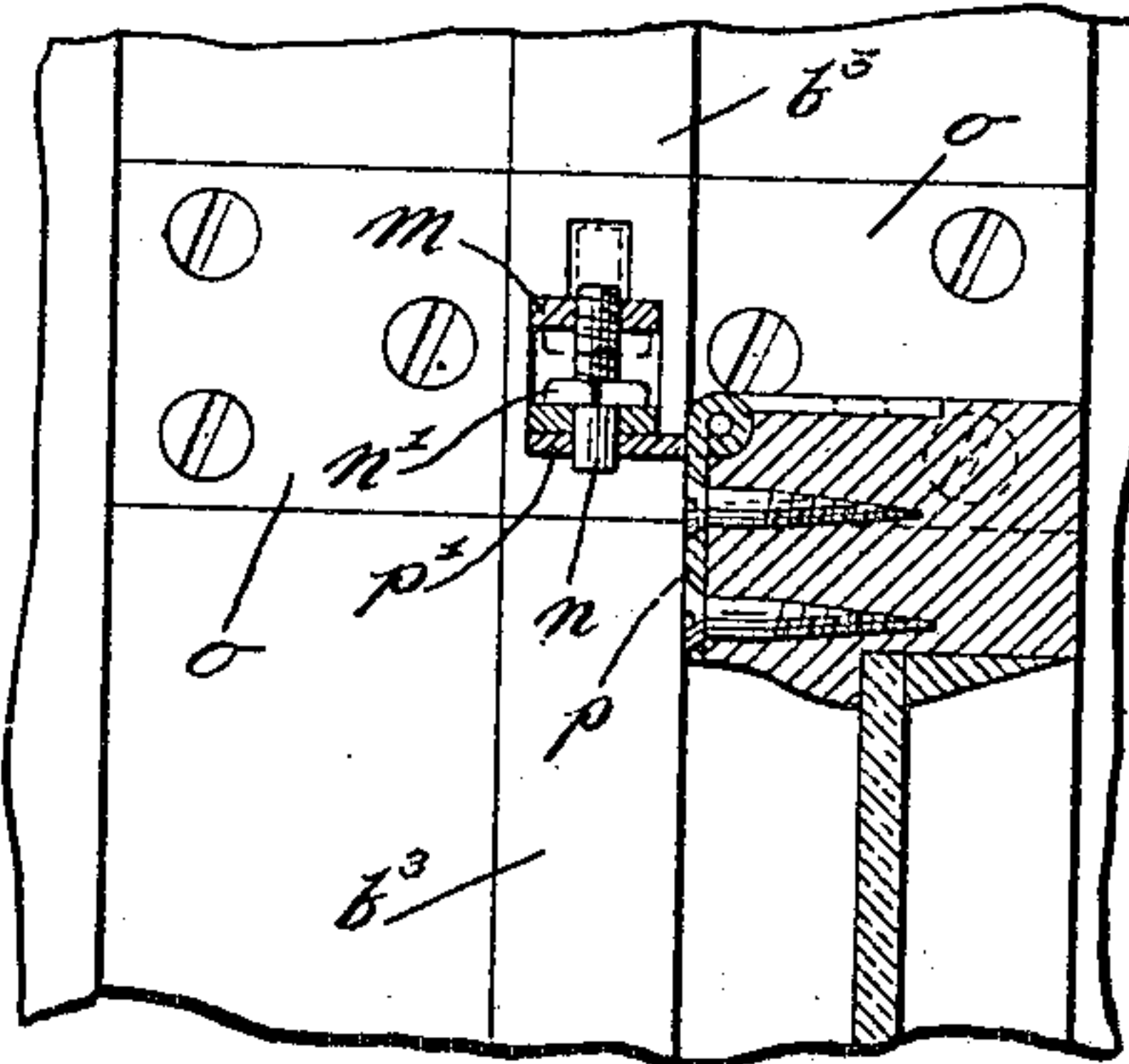


Fig. 10.



*Fig. 11.*



*Witnesses:*

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*Atlys*







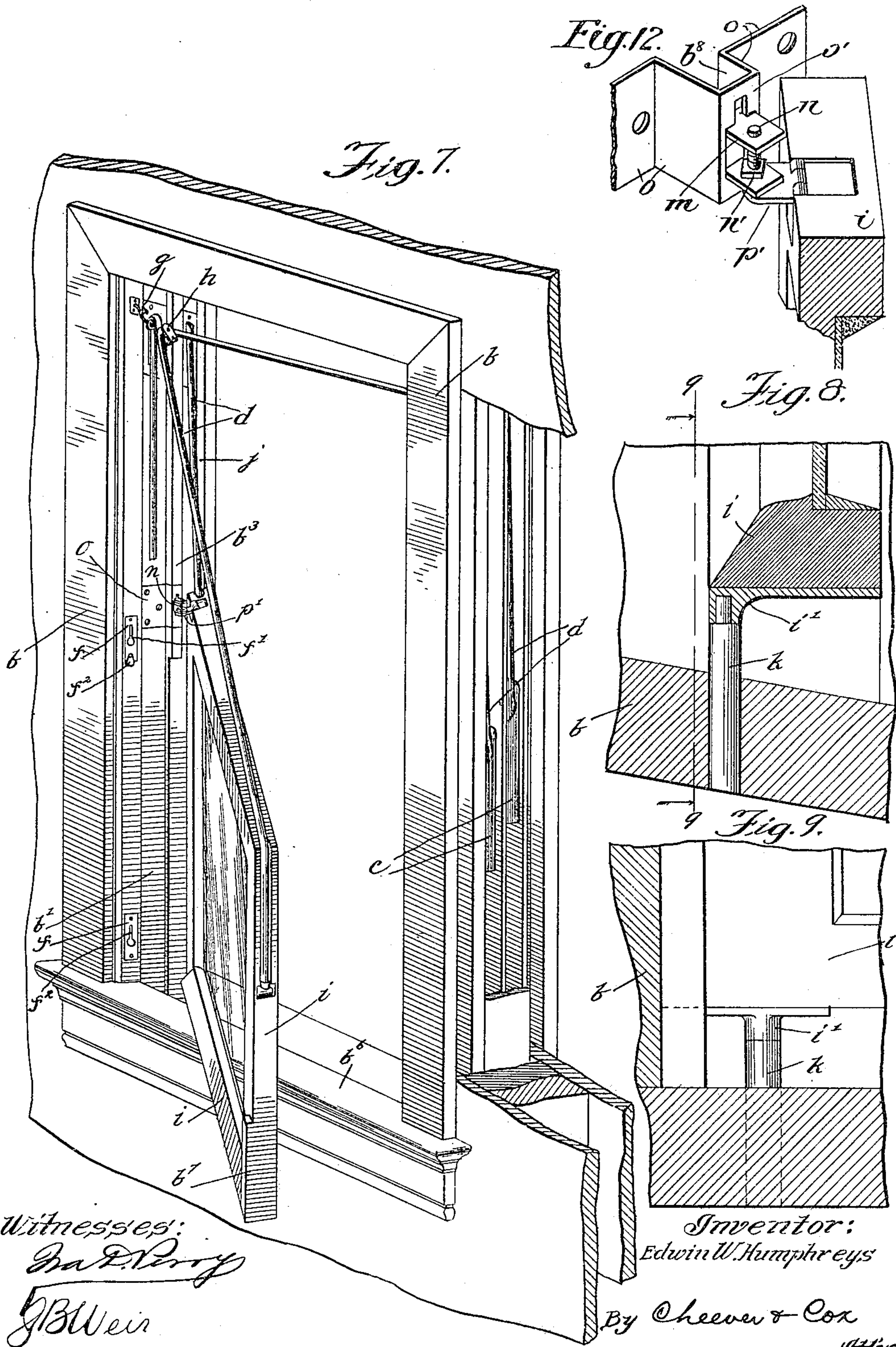
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3 SHEETS - SHEET 3.





# UNITED STATES PATENT OFFICE.

EDWIN W. HUMPHREYS, OF CHICAGO, ILLINOIS.

## WINDOW.

No. 819,760.

Specification of Letters Patent.

Patented May 8, 1906.

Application filed July 11, 1905. Serial No. 269,177.

*To all whom it may concern:*

Be it known that I, EDWIN W. HUMPHREYS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Windows, of which the following is a specification.

My invention relates to windows wherein the sashes are vertically movable; and the object of the invention is to provide apparatus whereby the sash may be temporarily swung into the room, so that both sides may be washed from within the room, thus eliminating the danger attendant upon washing windows from the outside of the building.

I accomplish my object by means of the apparatus illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a window, showing the window-frame and the upper and lower sash, the lower sash being swung into the room by the aid of my apparatus. Figs. 2 and 3 are horizontal sectional views, Fig. 2 being taken through the lower sash, and Fig. 3 through the upper sash. Fig. 4 is a fragmentary view looking in a direction parallel with the pane of glass and showing the hinges and hinge-supports whereby the lower sash may be temporarily swung into the room. Fig. 5 is a horizontal sectional view taken on line 5 5, Fig. 4. Fig. 6 is a diagrammatic view showing the preferred manner of arranging the weight and window-cord. Fig. 7 is a general perspective view of the window-frame, showing the rear upper sash in lowered position and swung into the room. Fig. 8 is a fragmentary view showing the manner in which the upper sash descends upon and is supported by a pivot-bearing near the bottom of the window-frame. Fig. 9 is a fragmentary sectional view of the part shown in Fig. 8, the section being taken on line 9 9, Fig. 8. Fig. 10 is a fragmentary view, in horizontal section, showing the construction of the disappearing hinge whereby the upper portion of the upper sash is supported when in lowered position to be swung into the room. Fig. 11 is a sectional view of the parts shown in Fig. 10 looking in the direction of the arrows on the line 11 11, Fig. 10. Fig. 12 is a detail view in perspective of the hinge attachment for the upper part of the upper sash shown in section in Figs. 10 and 11.

Similar letters refer to similar parts throughout the several views.

In some respects the constructions of the

upper and lower sashes are necessarily different, or at least their relationships to the window-frame are somewhat different, especially if the parts be designed with reference to the expedient of swinging them into the room from a point near the bottom of the window-frame, and for this reason the apparatus for swinging the lower sash is different from the apparatus for swinging the upper sash, and the parts must be necessarily described separately. Consequently the apparatus for operating the lower and front sash will first be described.

Referring more especially to Figs. 1 to 5, inclusive, *a* represents the lower sash, which is adapted to slide vertically in the guideways of the window-frame *b*. At the front edge of said guideway is the strip *b*<sup>2</sup>, which forms the forward edge thereof, and at the rear of said guideway is the strip *b*<sup>3</sup>, which forms the rear edge thereof. In order to permit the sashes to swing inwardly into the room, a portion *b*<sup>4</sup> of strip *b*<sup>2</sup> on one side of the frame is made removable and adapted to be removably held in place by means of the hand-operated catches *b*<sup>5</sup>. Under normal conditions, of course, the removable strip *b*<sup>4</sup> remains in position, as shown in Fig. 2. At the lower portion of the frame is a sill *b*<sup>6</sup>, which is adapted to lie in front of the lower edge of the sash when the latter is in its normal lowest position.

Both the upper and lower sashes are counterbalanced by means of sash-weights *c* acting upon the window-cords *d*, which run over the pulleys *d'*, located near the upper portion of the window-frame, in the ordinary manner. For reasons hereinafter mentioned it is desirable to reduce the travel of the sash-weight relatively to the amount of cord traveling over the pulleys *d'*, and this is accomplished by mounting a pulley *c'* in the sash-weights and extending the cord around said pulley and up to a fixed point *b*<sup>7</sup> in the window-frame. By this arrangement the sash-weights travel only half the distance that they would if directly connected to the cord in the ordinary manner. This arrangement is best illustrated diagrammatically in Fig. 6.

Attached to sash *a* at the pivot edge thereof are hinges, which consist of two leaves *e* and *e'*, the leaf *e* being permanently attached to the sash and the leaf *e'* having a raised head *e*<sup>2</sup> formed thereon in such manner as to be engaged by the plates *f*, permanently secured to the adjacent strip *b*<sup>2</sup>. As best shown in



Figs. 4 and 5, said plates have slots  $f'$  therein, the lower portion of the slots being of sufficient dimension to receive the head  $e^2$  of the hinge-leaf  $e'$ . The upper portion of said slots  $f'$  are narrow, and thereby prevent the withdrawal of head  $e^2$ . A dog  $f^2$ , pivoted to plate  $f$ , is adapted to contact the lower edge of the hinge-leaf  $e'$  to prevent the lowering of the head  $e^2$  from the upper narrow portion of the slot. As a result of this construction when sash  $a$  is lowered to the proper point the leaf  $e'$  may be swung so as to bring the head  $e^2$  into the lower portion of slot  $f'$ . Then upon raising the window-sash a slight distance the head  $e^2$  may be brought to the upper portion of said slot, where it will be retained. The subsequent lowering of the sash will be prevented by the dog  $f^2$  on the upper one of the plates  $f$ , and as a result the window-sash will be temporarily hinged to the window-frame. Under ordinary circumstances it will be sufficient to provide only one of such dogs, and for convenience this has here been placed upon the upper one of the two plates  $f$ . When the hinges are not in use, the leaves  $e^2$  may be swung against the leaves  $e$ , where they will be practically out of the way. It is one of the advantages of this construction that the plates  $f$  do not project in front of the surface of strip  $b^2$ , they being countersunk into said strips and a space being provided in the strip behind the plate for receiving the heads  $e^2$ . As it is impracticable to have the sill  $b^6$  removable, the plates  $f$  are so located in the strip  $b^2$  that when the hinges  $e e'$  are in operative connection with said plates the lower edge of the window-sash will clear the window-sill. It is proposed also that the plates  $f$  shall be so located that the heads  $e^2$  will enter the slot  $f'$  when the window-sash is in its normal lowered position.

As window-sashes are rather heavy, especially if they contain plate-glass panes, and as it is desirable to employ hinges and attachment-plates  $f$  of small dimensions, so that the parts shall be unobtrusive, it is desirable to afford means for assisting in the support of the outer free edge of the window-sash when the latter is swung to open position. I accomplish this by providing a hook  $g$  at a convenient point near the upper end of the frame close to the guideway  $b'$ , said hook being adapted to support a pulley-block  $h$ , over which the sash-cord  $d$  may run.

In the operation of the device as thus far described the operator first takes a pulley-block  $h$ , with which he is provided, and hangs it on the hook  $g$ , at the same time drawing out the cord  $d$ , which connects with the outer free edge of the lower window-sash, passing it over said pulley-block in the manner shown in Fig. 1. He then swings the hinge-leaves  $e'$  so that the heads  $e^2$  thereon will pass into the plates  $f$ . Then after removing the strip

$b^4$  he raises the window-sash a slight distance until he is able to throw the dog  $f^2$  to operative position below the hinge-leaf  $e'$ . The leaves  $e'$  will then be in positive engagement with the plates  $f$ , and the sash may be swung to open position into the room, as illustrated in Fig. 1, the cord  $d$  supporting, to a greater or less extent, the free swinging edge of the window-sash. The swinging movement of the sash will not be prevented by cord  $d$ , for the reason that it leads to a point approximately in the line of the axis of the hinges  $e e'$ . When it is desired to return the sash to normal operative condition, it is swung back to its usual position in the frame, the pulley-block  $h$  is removed, and the cord allowed to assume its normal condition. The dog  $f^2$  is thrown back, the window-sash is lowered until the heads  $e^2$  may be disengaged from the plates  $f$ , and finally the strip  $b^4$  is replaced in its usual position in the frame.

The object in having the sash-weight  $c$  hung on a pulley  $c'$  is to arrange for a sufficient amount of cord  $d$  to draw the same out over the pulley-block  $h$  without necessitating too great an amount of travel of the sash-weight, for it will be understood that it is desirable that a window-sash weight shall not have a travel greater than the height of the window-frame.

Referring now to the apparatus for temporarily supporting the upper sash  $i$  to permit it to be swung into the room, attention is called more particularly to the figures of the drawings, excluding Figs. 4 and 5. The upper sash  $i$ , which travels in a plane behind sash  $a$ , is similar in most respects to sash  $a$ , except that it is a trifle narrower, being adapted to fit within the guideways  $j$ . Said guideways  $j$  lie a slight distance inside of the guideways  $b'$  in order that there may be no necessity at the lower portion of the window-frame for the strips  $b^3$ , which occur at the upper portion of the frame for guiding the upper sash and keeping out the weather. The omission of the strip  $b^3$  at the lower portion of the frame permits the upper sash to be swung forward at the lower portion of the frame without the necessity of the employment of a removable strip, as is the case with the lower sash. It is desirable in many cases to shorten strip  $b^3$  at the right side of the window-frame and for appearances place the remaining portion  $b^7$  on the upper sash itself, as illustrated in Fig. 7. By this contrivance when the upper sash is in normal raised position it will not be evident that the guide-strip on the right side of the window-frame is any shorter than the strip on the left side thereof. The shortened strip  $b^3$  will permit sash  $i$  to clear the bottom of the strip when the sash is being swung into the room.

Fastened to the bottom of the upper sash is a socket-plate  $i'$ , adapted to fit over and bear upon the pivot-post  $k$ , permanently se-



cured in the window-frame beneath sash *i*. The parts are so arranged that when sash *i* is lowered to a point near the bottom of the frame-plate *i'* will come to a bearing on post *k* and become pivoted thereon. This in a simple manner takes care of the pivoting or hinging of the lower portion of sash *i*, and the same result is accomplished for the upper portion of sash *i* by means of the devices shown in detail in Figs. 10 and 11. Referring to the last-mentioned figures, *m* is a yoke having two horizontal arms which are vertically apertured, so as to receive the pivot-bolt *n*. A nut or shoulder *n'* is placed on bolt *n* for retaining the same within yoke *m* and at the same time permitting a limited vertical movement of said bolt in said yoke. Bolt *n* and its yoke are located at an elevation such that they will be adjacent to the top of the upper sash when the latter is lowered to a bearing upon the post *k*. The yoke is supported in the window-frame preferably by means of two plates *o o*, having inwardly-projecting flanges *o' o'* for retaining the upright piece *m'* of the yoke *m*. Said plates are preferably so formed that they constitute a continuation of strip *b<sup>3</sup>* in the manner best illustrated in Figs. 1, 7, 10, and 11. The strip *b<sup>3</sup>* is cut away at this point, so as to form a recess or chamber *b<sup>8</sup>*, (see Fig. 10,) and the construction is such that the yoke *m* is horizontally movable, so that it may be entirely inclosed within the plates *o* or may be projected forward into operative position, as shown in Figs. 10 and 11, the object being to place the yoke out of the way and practically out of sight when not in use.

The pivot-bolt *n* is vertically movable in the apertured yoke-arms, so that when the yoke is out in operative position the bolt may drop a slight distance, the amount of drop being limited by the nut or shoulder *n'*.

A hinge is provided consisting of the leaves *p* and *p'*, the leaf *p* being rigidly secured to the upper portion of the upper sash and the leaf *p'* being adapted to swing so that it may lie either adjacent to the top of the sash or project horizontally in front of the same. In this last-described position, which is shown in Fig. 11, said leaf *p'*, which is apertured, may receive the bolt *n* and be thus hinged upon said bolt as an axis.

In operating the upper sash the lower one is first swung into the room out of the way of the upper one. The upper one is then lowered until plate *i'* comes to a bearing on post *k*. The hinge-leaf *p'* is then swung forward to horizontal position, and after the yoke *m* is brought forward the bolt *n* is permitted to drop into the aperture in leaf *p'*, the parts then being in the relationship shown in Figs. 10 and 11. Thus both the upper and lower portions of the upper sash will be pivotally supported, and as yoke *m* lies above the leaf *p'* the sash cannot be accidentally

raised off from the post *k*, nor can the leaf *p'* become disengaged from bolt *n* until said bolt is actually raised by hand up free from said leaf. The bolt is held down by gravity, and consequently there is practically no possibility of the upper sash becoming accidentally unhinged. The window-cord of the upper sash may be drawn out to form an auxiliary support for the free edge of said upper sash in the same manner as for the lower sash and as illustrated in Fig. 7. The upper sash may be freely swung inward because of its smaller width and the absence at the lower part of the frame of the strip *b<sup>3</sup>*.

There are three advantages in the employment of the post *k* and plate *i'*, as shown. In the first place, the post lies in the path of the sash and the plate *i'* is adjusted by merely pulling the sash down until it comes to a bearing. In the second place, the height of the post remains permanent and may be predetermined to stop the sash at such height as to clear the window-sill in swinging, and in the third place the top of the post, although exposed to the weather, is high enough not to become clogged with ice or snow.

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

1. In a window the combination with the frame and vertically-movable sash of a plate attached to the window-frame, said plate having a slot therein larger at one end than at the other, a hinge attached to the sash, said hinge consisting of two leaves one of which is free from the sash and the said free leaf having a head thereon of such dimensions as to readily enter said slot at the larger part thereof and too large to be withdrawn from the smaller part thereof; and a dog attached to the plate and adapted to retain the hinge with its head in the narrow part of said slot.

2. Means for temporarily hinging a window-sash to its frame said hinging means including an apertured plate hinged to the sash whereby it may when not in use be folded against the sash, a bolt adapted to engage said apertured plate to act as a pivot, and a member *m* for carrying said bolt, said member *m* being secured in the window-frame and adapted to slide in a direction parallel with the surface of the sash when in normal position, and said member *m* being adapted to disappear in the window-frame when not in use.

3. In a window having an upper and a lower sash, each of which is vertically movable the upper sash traveling behind the lower, the combination with the sashes, of a window-frame, sash cords and weights and means for temporarily hinging the upper sash to the frame said hinging means consisting of a pivot-post on the frame, a plate on the lower portion of the upper sash adapted to bear on



said post, a member on the upper portion of the upper sash and a yoke on the frame detachably attachable thereto, said yoke being slidably mounted in the window-frame and adapted to be slid into the frame sufficiently to bring the outer portion of the yoke flush with the surface of the window-frame.

4. In a window having an upper and a lower sash, each of which is vertically movable, the upper sash traveling behind the lower, the combination with the sashes, of a window-frame, sash cords and weights and means for temporarily hinging the upper sash to the frame said hinging means consisting of a pivot-post on the frame, a plate on the lower portion of the upper sash adapted to bear on said post; an apertured plate attached to the upper portion of the upper sash; a member *m* mounted in the frame and a bolt carried in said member *m*, said bolt being adapted to engage said apertured plate for hinging the sash to the frame.

5. In a window having an upper and lower sash, each of which is vertically movable, the upper sash traveling behind the lower, the combination with the sashes, of a window-frame, sash cords and weights and means for temporarily hinging the upper sash to the frame, said hinging means consisting of a pivot-post on the frame, a plate on the lower portion of the upper sash adapted to bear on said post; an apertured plate attached to

the upper portion of the upper sash; a yoke mounted in the frame and having two horizontal arms, and a bolt adapted to engage said apertured plate for hinging the sash to the frame, said bolt being vertically movable in said horizontal arms of the yoke for facilitating attachment to and detachment from the apertured plate on said upper sash.

6. In a window having an upper and a lower sash each of which is vertically movable, the upper sash traveling behind the lower, the combination with the sashes, of a window-frame, sash cords and weights and means for temporarily hinging the upper sash to the frame said hinging means consisting of a pivot-post on the frame, a plate on the lower portion of the upper sash adapted to bear on said post, an apertured plate hinged to the upper portion of the sash whereby it may when not in use be folded against the sash, a bolt for engaging said apertured plate and a yoke carrying said bolt, said yoke being horizontally movable in the window-frame whereby it may be pushed into the frame when not in use.

In witness whereof I have hereunto subscribed my name in the presence of two witnesses.

EDWIN W. HUMPHREYS.

Witnesses:

HOWARD M. COX,  
W. W. PEET.