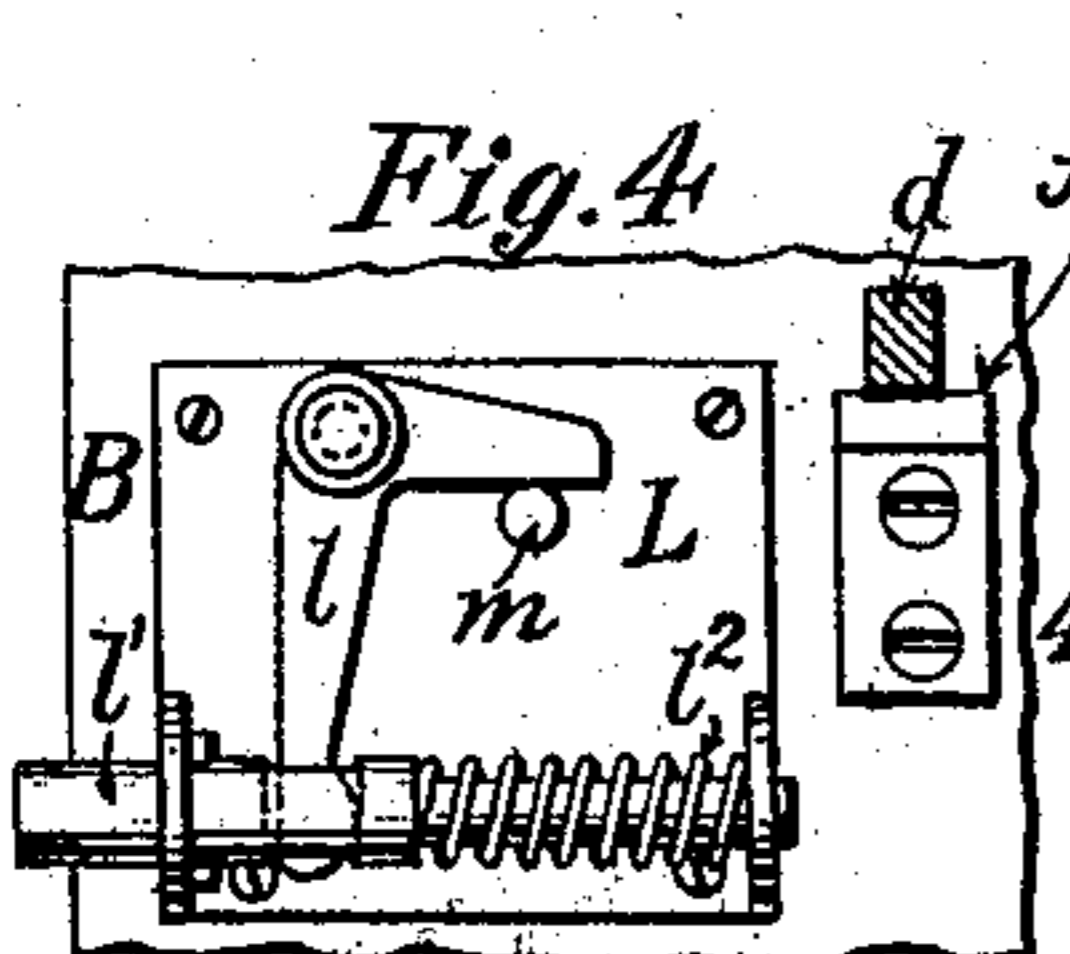
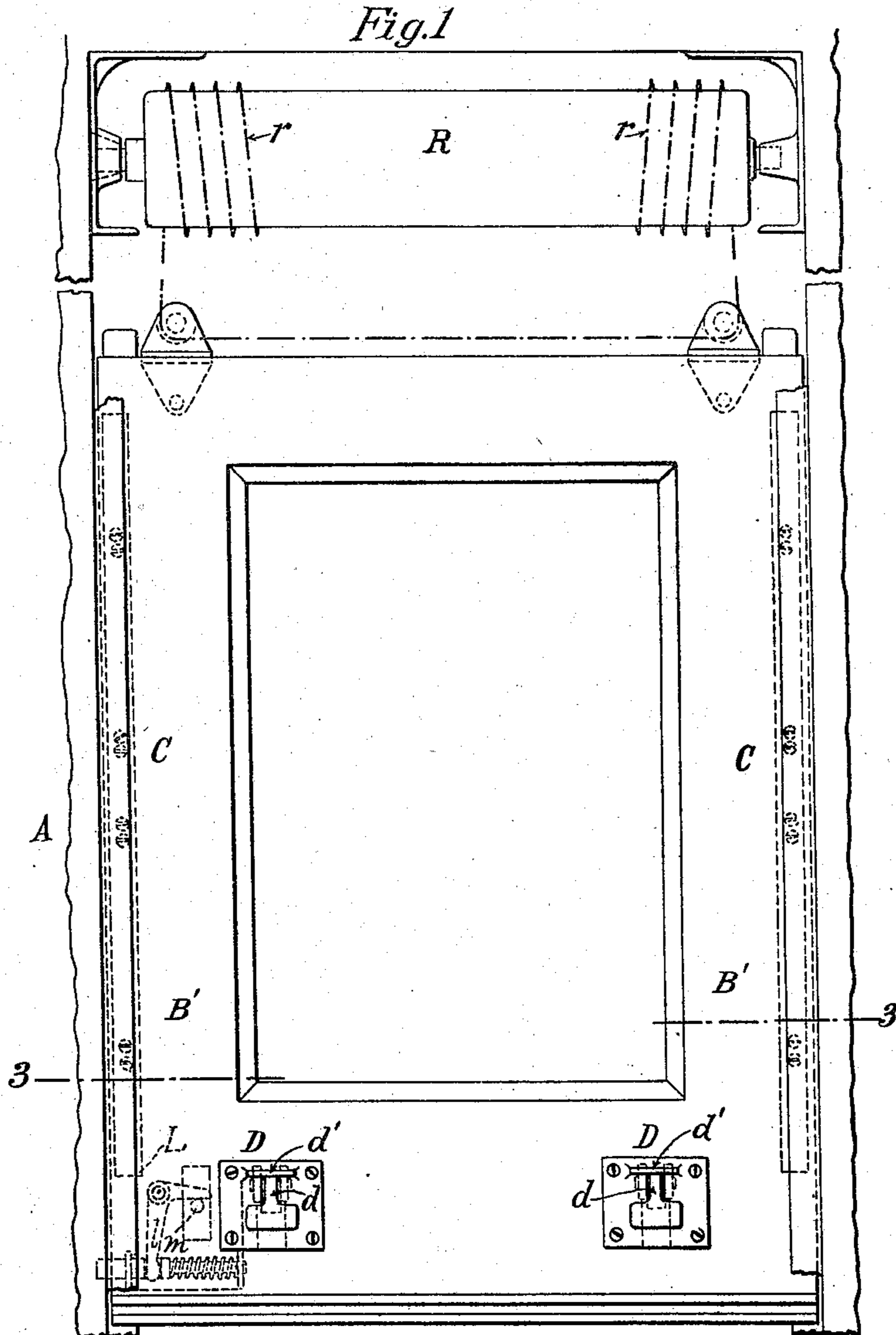
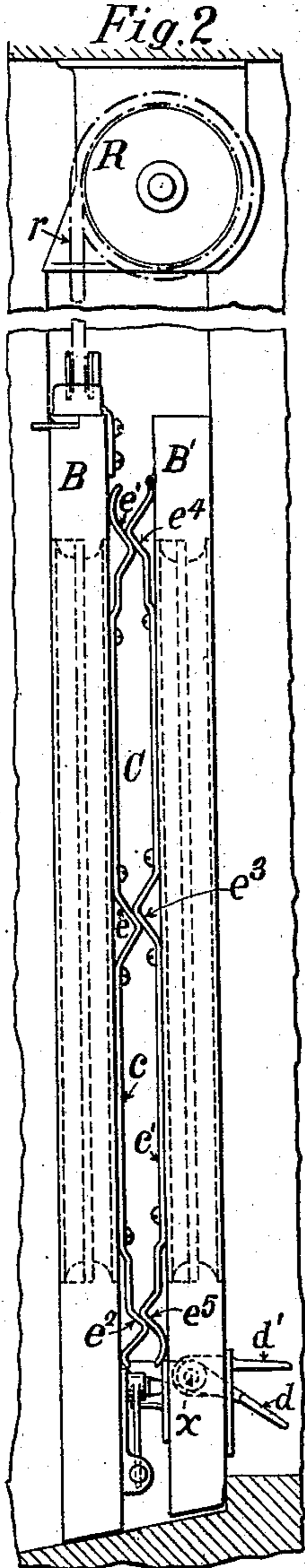


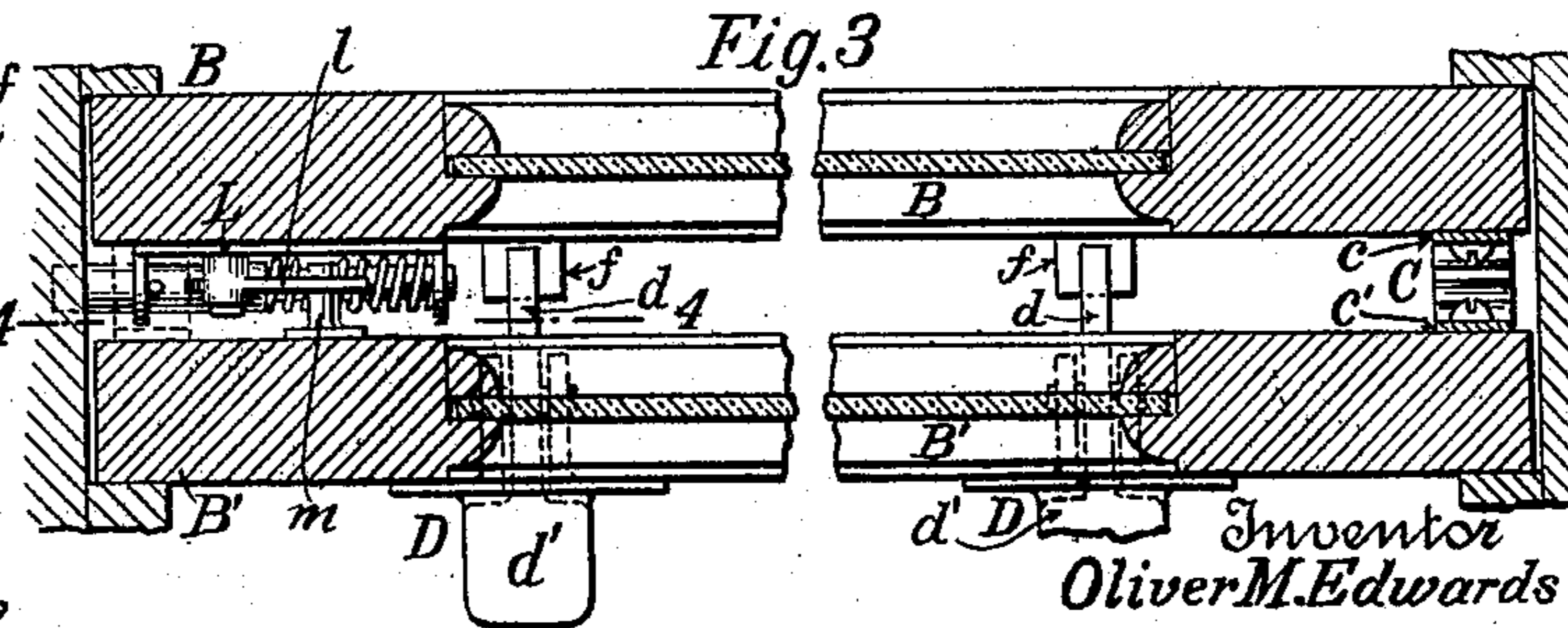
O. M. EDWARDS.
WINDOW AND SASH HOLDING DEVICE.
APPLICATION FILED MAY 20, 1907.

Patented Mar. 23, 1909.

915,754.



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WINDOW AND SASH-HOLDING DEVICE.

No. 915,754.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, OLIVER M. EDWARDS, a citizen of the United States, residing at Syracuse, Onondaga county, State of New York, have invented certain new Improvements in Windows and Sash-Holding Devices Therefor, of which the following is a full, clear, and exact description, reference being had to the drawing accompanying the same.

My invention relates to improved holding means and combinations of devices for use in connection with double windows, that is, where the sashes are arranged opposite each other or one substantially in front of the other, and it has for one of its objects to provide holding means, a portion or portions of which are to be mounted in operative position upon one sash and another portion or portions are to be mounted upon the other sash in position for the different portions to coöperate one with the other in holding the sashes tightly in their frame, and also to permit of one sash being removed therefrom without disturbing the portions mounted on the respective sashes; and another object is to provide holding means adapted to engage with the sash at one or more points with substantially fixed or constant pressure and at some other point or points with a more or less yielding pressure.

Other objects will appear from the description hereinafter given; and my invention consists in the holding means and the combinations of parts or devices hereinafter shown and described and particularly pointed out in the claims hereunto annexed forming a part of this specification.

One embodiment of my invention is illustrated in the drawing forming a part of this specification and is there shown in connection with a double sash window provided with means for more or less supporting or balancing both sashes, which in opening and closing the window move substantially together, as a single sash would move.

Figure 1 illustrates in front elevation a window of the above character wherein one of the two sashes is connected directly to the sash supporting or balancing means, (there shown in the form of a spring roller), so that both sashes are supported or balanced to the degree desired, and one sash is fully supported by the other sash by reason of the construction of the holding means and their arrange-

ment with the sashes in the guideway formed in the window frame. Fig. 2 illustrates in side elevation the two sashes, and the holding means seen in Fig. 1 and shows the relation of each of the several parts to each of the others. Fig. 3 shows in cross sectional view on line 3—3 of Fig. 1 the parts seen when looking downwardly thereon. Fig. 4 shows on line 4—4 that portion of the operating and locking means mounted on the outermost sash by which the sashes are moved relatively to one another and are held locked against opening from the exterior of the structure.

Like characters of reference wherever they occur indicate corresponding parts in all of the figures.

A indicates the window frame, B B', the two sashes which are movable in the guideway of the window frame for the purpose of opening and closing the window. The sash B, as seen in Fig. 2, is connected directly to the sash supporting or balancing means in the form of a spring roller, as R, through the chains and connections *r*, as is many times done at the present time in car windows. The tension of this spring roller thus shown is such that it preferably overbalances the weight of the sash B and more or less balances the weight of the sash B' so that the two sash are counterbalanced to the desired extent for the easy and ready opening of the window. Any other desired form of sash supporting or balancing means may be employed, that the constructor sees fit to adopt and with like effect, so far as concerns the holding means by which the sashes are held in the guideway of the frame. As here shown the holding means C consists of two bent strips or bars of any suitable material, one of which, *c* is fixedly secured to the sash B and the other *c'* is secured to the sash B', as indicated more particularly in Fig. 2 of the drawing. Each of these bars is provided with bent portions presenting inclined or wedge surfaces. These wedge surfaces as *e*, *e'*, *e*² on the bar *c* and as *e*³, *e*⁴, and *e*⁵ on the bar *c'* are arranged opposite of each other so that the inclined or wedge surfaces on the bar *c'* bear against or more or less rest upon the inclined or wedge surfaces *e*, *e'*, *e*² of the bar *c*. These bars *c c'* are firmly secured to the sash B B', respectively, by any suitable means so as to leave their end portions free to yield more or less as desired. Both of the

inclined or wedge surfaces e , e^3 about the middle of the height of the sashes, as seen in Fig. 2, are so secured that such surfaces are practically rigid and cannot move relatively to their respective sashes. This forms a substantially rigid rest or support for the sash B' on which such sash rests and is forced in a direction to separate the sashes from one another and force both sashes into contact with the guideway in the frame, the weight of the sash B acting through such inclined or wedge surfaces in doing this work. The inclined or wedge surfaces e' , e^4 and e^2 , e^5 , respectively, of the bars c c' , are so related to the sashes B and B' that they are permitted to yield somewhat relatively to the sashes to which these bars c c' are secured, as will be seen on inspection of Fig. 2 wherein the means securing such bars to the sashes are so placed that the ends of the bars are somewhat free to yield or move relatively to the sashes and to one another. This construction provides for the portions of the two sashes adjacent to the top and bottom thereof being held in the guideway with a somewhat yielding force, which will be in proportion to the spring action of the ends of the bars c c' . The weight of the sash B' is more or less taken by each of the inclined portions or wedge surfaces of the bar c and is in turn taken more or less by the sash supporting or balancing means through the connection of such means with the sash B to which the bar c is firmly attached.

It is a well known fact that in the case of railroad cars passing over railroad tracks that the bodies of such cars are more or less twisted and consequently the window frames, which are secured to such bodies or form a part thereof are more or less twisted and consequently the sashes must be subjected to a more or less twisting action when held in their frames. From this it results that while holding devices near the center of the window may be capable of firmly holding the central portions of the sashes in the guideway formed on the frame, those placed adjacent to the top and bottom portions are compelled to more or less twist the sashes in order to hold them with equal firmness in contact with such guideway. This naturally places greater stress upon the holding means adjacent to the top and bottom portions of the sashes than is occasioned at their central portions and the tendency under such circumstances is, if all of the several points along the height of the sash are provided with fixed inclined bearing surfaces, to cause a slight vertical movement of one of the sashes relatively to the other whenever such twisting action is exerted upon the sashes through the twisting action of the body of the car. By making the inclined or wedge surfaces slightly yielding adjacent to the top and bottom of the sash and having the cen-

tral inclined or wedge surfaces rigid, this tendency to vertical movement is more or less lessened and each of the upper or lower pairs of surfaces, as the case may be, can move slightly relatively to the other with less tendency to vertical movement of such sash than if all of such pairs of surfaces were rigid. In addition to the above these slightly yielding inclined or wedge surfaces adjacent to the top or bottom of the sash prevent such surfaces from being damaged or set by an excessive stress put upon them by the twisting action of the body of the car as it passes around curves and uneven portions of the track. These surfaces slightly yield under excessive pressure and then when the car body assumes its normal position they force the sashes into normal contact with the window frame.

These holding devices are cheap to construct and apply to double windows and have various advantages over other forms known to me. As here shown, which is the preferred form, these several inclined or wedge surfaces are made from a single piece of material by means of bending and the central inclined or wedge surfaces are made rigid by the peculiar manner of securing the bars to the sashes. This is the preferred construction and manner of securing the holding means to the sashes, as it cheapens the cost of manufacture as well as the application of such holding means to the sashes. It will be observed that a portion of each bar bears against a portion of its respective sash at points opposite or adjacent to the respective inclined or wedge surfaces, so that such bars have two points of bearing for each inclined or wedge surface. This is the preferred form but is not absolutely necessary for some of the purposes of this invention.

It is designed that each of the opposite edges of the sashes shall be provided with similar holding means to that just described and which is particularly illustrated in side elevation in Fig. 2 and, if desired, these holding means at opposite edges may be duplicates of each other.

In order that the sashes B and B' as herein shown may be released from the holding action of the holding devices just described, it is necessary to move the interior sash B' upwardly relatively to the exterior sash B so as to move the inclined or wedge surfaces formed on the bar c' relatively to those on the bar c and thereby release both sashes from the holding action of such surfaces, which holding action is caused by the weight of the sash B' being supported by the sash B through the holding devices attached thereto. To thus move or lift the sash B' operating means D D, are provided, which as shown consist of pivoted levers, as d d , one for each operating means, mounted as shown on sash B', each of which levers is provided at one

end with a finger or hand piece for the operator to take hold of and move that end toward a thumb piece, as d' . When this is done the opposite end of the lever engages, as shown, with stud or abutment, as f , on the sash B with the result that sash B' to which each lever is pivoted, as at f Fig. 2, is slightly moved or lifted relatively to the sash B and the wedge surfaces fixed to one sash are also moved slightly relatively to those on the other and the sashes are released from the holding action of such holding means. Upon a further application of force to the finger or hand portion of the levers, as $d d$, both sashes are raised and the window opened to the desired extent.

When supporting or counterbalancing means, as shown, are employed the window will remain open by reason of the weight of sash B' acting on the inclined or wedge surfaces attached to the sashes against the action of the supporting or counterbalancing means attached to the sash B, that is, the action of gravity is opposed to the supporting or counterbalancing action of the spring in the roller R and the sashes are forced into contact with the window frame. When the window is to be closed force applied to levers, as $d d$, in an upward direction releases the sashes and then the application of force upon the thumb pieces, as $d' d'$, in a downward direction will cause the sashes to move downward the same as if holding means were not employed.

The construction and arrangement of the holding devices and sashes herein shown and described permits of the two sashes being placed quite close to each other so that a single guideway will answer for both, if so desired, and also permits of one sash being removed from the window without disarranging or disturbing the holding means relatively to the sashes to which such means are attached, and also permits of such removed sash being quickly and easily replaced in proper coacting relation with the other sash and the holding means. This is an advantageous feature, because it allows of quick and ready access to both sides of the glass of each sash for cleaning the same.

If it is desired to use locking means to positively lock one of the sash as B, it can be done by the use of the construction herein shown of one having a similar mode of operation without interfering with the ready and quick removal and replacing of one of the sashes as herein set forth. As shown only one locking means, as L, is shown but a similar means may be applied to the opposite side of the window, if desired. This locking means L consists, as shown, of an elbow lever l pivotally mounted on the sash B and a spring bolt l' , having a coiled spring l^2 the stress of which presses the bolt l' into locking position in a well known manner. This elbow lever

l , as shown, is moved in one direction by the spring l^2 and in the opposite direction by a stud or projection or part m fixedly attached to or formed on the sash B'. The normal relationship of this elbow lever l mounted on sash B and the stud or projection m mounted on sash B' is seen in the drawing and particularly so in Fig. 4, where a portion of the sash B is shown and the stud or projection is seen in cross section, the sash B' being omitted for clearness of illustration. To operate this elbow lever l by the pin or stud m it is necessary to slightly move or lift the sash B' to which such stud is attached. This lifting of the sash B' causes the elbow lever to turn on its pivot and move the spring bolt l' backward against the stress of its spring l^2 and thereby withdraw the bolt from its locking position. This lifting of the sash, as B', may be caused to take place when the two sashes are in their guideway by operating the levers, as $d d$, to release the sashes from the holding means, or it may be caused to take place by any other desired means, as for instance by the person in replacing the sash, as B', in its guideway first engaging the inclined or wedge surfaces with one another and then sliding the sash into place while resting on such wedge surfaces. By reason of this construction and arrangement the sash can be removed from the guideway and replaced therein without disarranging or disturbing the locking means herein shown and described.

It is to be observed that in the construction herein set forth the two sashes, the operating and locking means, when the latter are employed, cooperate one with the other in opening the window. The two sashes move to open and close the window as a single sash would do and yet they have a movement of one relatively to the other by the operating means to operate the locking means and lock the two sashes in position. This making the locking means structurally independent of the operating means by mounting the movable member separate and distinct from the movable member of the operating means permits of the placing of the operating means at any desired position upon the sashes irrespective of the point or points at which it may be deemed desirable to place the locking means, as there is no direct operative relations between the two forms of means. For instance in some cars window sashes are in use that are over four feet in width. In such a case the locking means can be placed adjacent to the edge or edges of such a wide sash as is ordinarily done with narrow sashes and the operating means can be placed at a convenient distance apart on the sash without regard to where the locking device or devices may be placed. It is also to be observed that the two sashes, the holding means, the operating

and locking means cooperate one with another in releasing the sashes and opening and closing the window, as hereinbefore explained.

5 I have herein shown and described the best form now known to me of embodying my invention in concrete form and what is herein set forth will naturally suggest to others skilled in the art other specific forms
10 or embodiments of this invention and modifications thereof, hence I do not wish to limit my invention to the specific form or embodiment herein shown and described, but desire to include all forms or embodiments which disclose or embody the spirit
15 thereof and have the same mode of operation as that herein set forth.

What I desire to claim as new is:—

1. In a window the combination, substantially as set forth, of a frame, two sashes arranged opposite each other and movable in the frame, and holding means composed of members one of which is secured to one sash and the other member is yieldingly secured to the other sash and the two are
20 adapted to coact with one another in forcing the sashes into contact with the frame.

2. In a window the combination, substantially as set forth, of a frame, two sashes arranged opposite each other and movable in the frame, and holding means composed of two substantially duplicate coacting members, one of which members is secured to one sash and the other member is secured to the
30 other sash and adapted to force the sashes into contact with the window frame.

3. In a window the combination, substantially as set forth, of a frame, two sashes arranged opposite each other and movable in the frame, and holding means composed of two coacting members each of which is provided with a plurality of wedge surfaces, the wedge surfaces on one member coacting with the wedge surfaces on the other member to
40 force the sashes into contact with the window frame.

4. In a window the combination, substantially as set forth, of a frame, two sashes arranged opposite each other and movable in the frame, and holding means composed of two coacting members each of which is provided with wedge surfaces which are substantial duplicates of one another and those on one member engaging with and coacting
50 with those on the other member to force the sashes into contact with the window frame.

5. In a window the combination, substantially as set forth, of a frame, two sashes arranged opposite each other and movable in the frame, and holding means composed of two members one of which is secured to one sash and the other to the other sash in such manner that the two members may be separated from each other and replaced without

disarranging any portion of either member 65 relatively to the sash to which it is attached.

6. In a window the combination, substantially as set forth, of a frame, two sashes arranged opposite each other and movable in the frame, and holding means composed of
70 a plurality of pairs of holding surfaces a portion of such plurality being rigidly secured to the sashes and another portion yieldingly secured thereto.

7. In a window the combination, substantially as set forth, of a frame, two sashes arranged opposite each other and movable in the frame, and holding means composed of two bars each of which is provided with a plurality of holding surfaces, one of which
80 bars is secured to one sash and the other is secured to the other sash in position to force the sashes away from each other and into contact with the window frame.

8. In a window the combination, substantially as set forth, of a frame, two sashes arranged opposite each other and movable in the frame, and holding means composed of two bars each of which is provided with a plurality of holding surfaces, one of which
90 surfaces of each bar is rigidly secured to one of each of the two sashes in coacting relation with one another and others of such surfaces are yieldingly secured to the sashes in coacting relation one with another to force the
95 sashes into contact with the window frame.

9. In a window the combination, substantially as set forth, of a frame, two sashes arranged opposite each other and movable in the frame, and holding means composed of
100 two bars each provided with wedge coacting surfaces, one of which bars is secured to one sash and the other bar is secured to the other sash with two points of bearing of each bar on its respective sash adjacent to each of a plurality of such wedge surfaces.

10. In a window the combination, substantially as set forth, of a frame, two sashes arranged opposite each other, and holding means composed of two bars each provided
110 with wedge coacting surfaces, one of which bars is secured to one sash and the other is secured to the other sash with two points of bearing adjacent to each of a plurality of such wedge surfaces a portion of which are
115 adapted to yield relatively to their corresponding coacting surfaces.

11. In a window the combination, substantially as set forth, of a frame, two sashes arranged opposite each other and movable in the frame, and holding means composed of two bars each provided with wedge coacting holding surfaces, one of which bars is secured to each sash and a portion of such surfaces is adapted to yield relatively to their corresponding coacting surfaces.

12. In a window the combination, substantially as set forth, of a frame, two sashes

arranged opposite each other and movable in the frame, and holding means composed of two bars each provided with wedge coacting surfaces, one of which bars is secured to each sash in position between the sashes and which are adapted to force the sashes apart into contact with the guideway of the window frame.

13. In a window the combination, substantially as set forth, of a frame, two sashes arranged opposite each other and movable in the frame, and holding means composed of two bars each provided with wedge coacting surfaces a portion of which surfaces on each bar is adapted to yield relatively to its sash and corresponding coacting surface, and one of which bars is secured to each sash in position between the sashes and which are adapted to force the sashes apart into contact with the window frame.

14. In a window the combination, substantially as set forth, of a frame, two sashes arranged opposite each other and movable in the frame, holding means composed of two members, one for each of the sashes, operating means for moving one sash relatively to the other to release the same and locking means structurally independent of the operating means and operable by the movement of one sash relatively to the other.

15. In a window the combination, substantially as set forth, of a frame, two sashes arranged opposite each other and movable in the frame, holding means composed of two members, one for each of the sashes, operating means for moving one sash relatively to the other to release the same, and locking means composed of two members one of which is mounted on one sash and the other is mounted on the other sash separate from the operating means.

16. In a window the combination, substantially as set forth, of a frame, two sashes arranged opposite each other and movable in the frame, holding means composed of two members, one for each sash, operating means for moving one sash relatively to the other to release the same, and locking means composed of two members one of which is movably mounted on one sash and the other is fixedly mounted on the other sash separate from the operating means.

17. In a window the combination, substantially as set forth, of a frame, two sashes arranged opposite each other and movable in the frame, operating means for moving one sash relatively to the other, and locking means composed of two members one of which is movably mounted on one sash and the other is mounted on the other sash, the movably mounted member being unconnected with the operating means and movable by the movement of one sash relatively to the other.

18. Sash holding means composed of two members, each of which is provided with coacting holding surfaces, which surfaces on one are adapted to coact with those on the other and each member is adapted to be secured to a sash with a portion of its surfaces substantially rigid and another portion yielding relatively to the sash to which such portion is secured.

19. Sash holding means composed of two members, each of which is provided with coacting holding surfaces, which surfaces on one are adapted to coact with those on the other, and such members are adapted to be secured in cooperative relation to one another upon two sashes with a portion of such surfaces in substantially rigid position relatively to one another and their respective sashes and with another portion so secured as to yield, one relatively to another with which it coacts.

20. In a window the combination, substantially as set forth, of a frame, two sashes arranged opposite each other and movable in the frame, holding means, operating means, and locking means, each of which means is composed of two members one of which is mounted on one sash and the other is mounted on the other sash, whereby the sashes are held and released and one sash may be removed from the window frame and replaced therein without disarranging either member of either means relatively to the respective sashes to which such member is attached.

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