

W. SAWYER.
SASH BALANCING DEVICE.
APPLICATION FILED JULY 8, 1910.

978,400.

Patented Dec. 13, 1910.

Fig. 1.

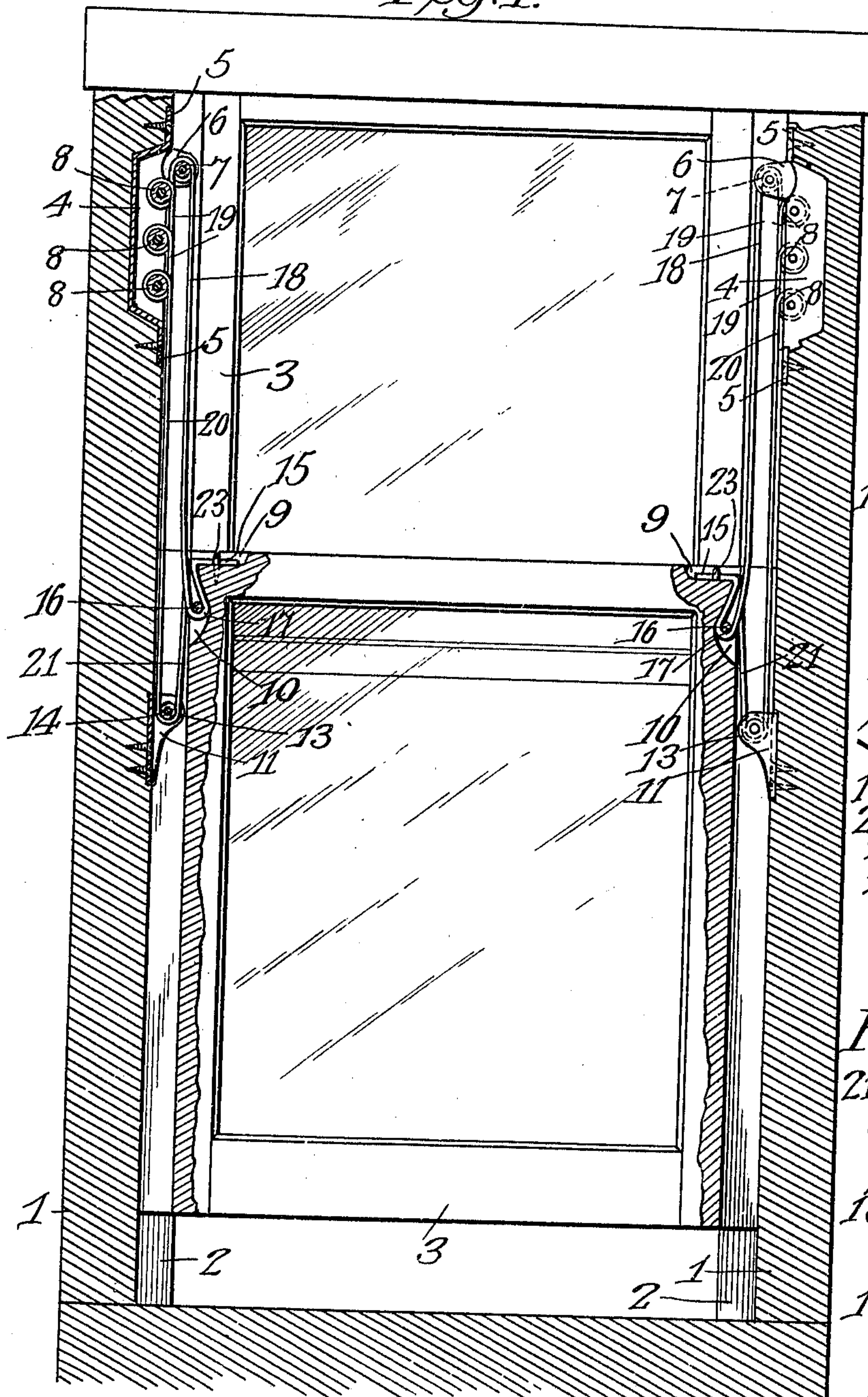


Fig. 2.

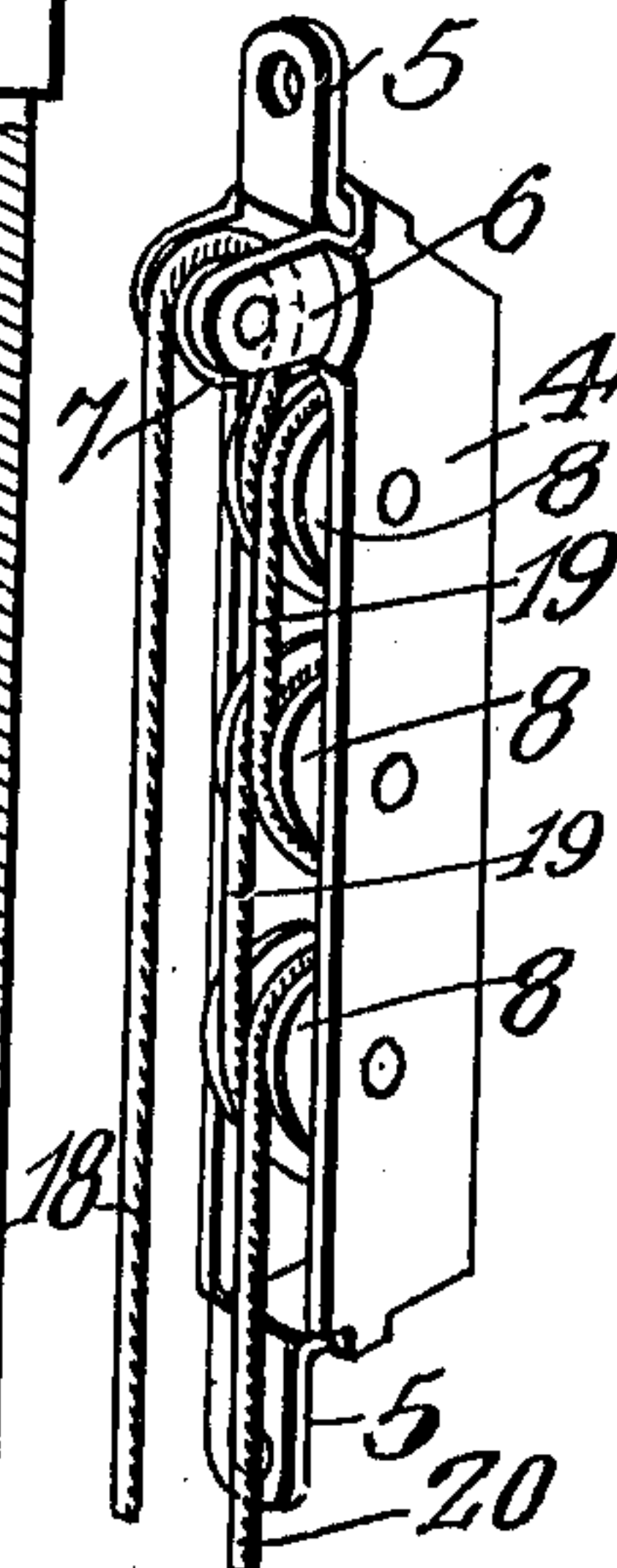


Fig. 3.

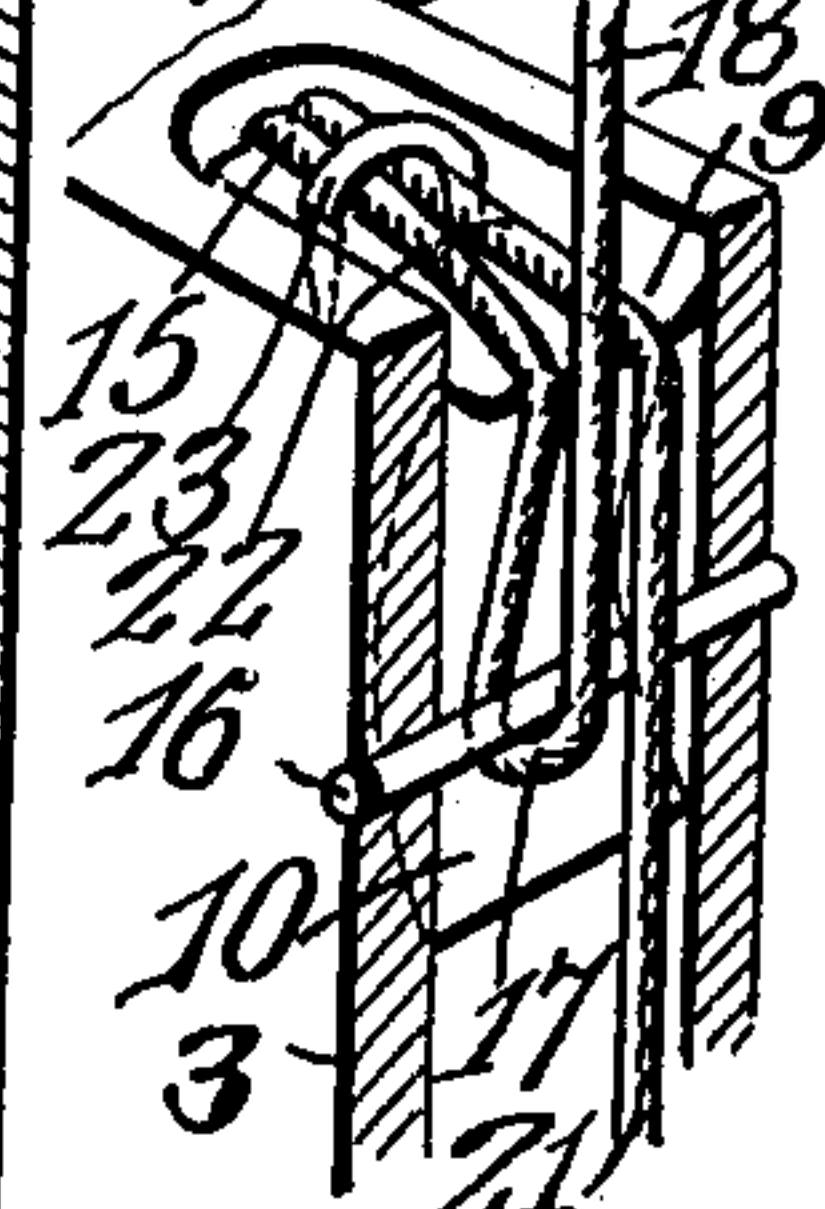
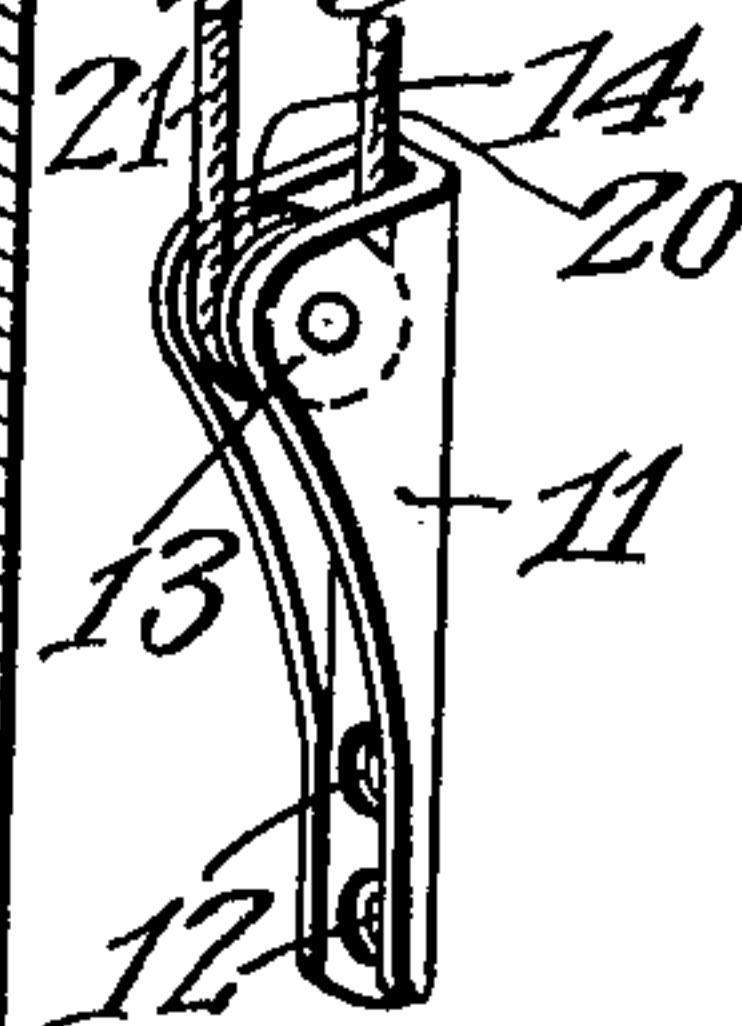


Fig. 4.



Witnesses
Jas. E. McArthur
R. V. Bishop

Inventor
William Sawyer,
By *E. G. Sigg*
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM SAWYER, OF ARMSTRONG, BRITISH COLUMBIA, CANADA.

SASH-BALANCING DEVICE.

978,400.

Specification of Letters Patent.

Patented Dec. 13, 1910.

Application filed July 8, 1910. Serial No. 571,085.

To all whom it may concern:

Be it known that I, WILLIAM SAWYER, subject of the King of Great Britain, residing at Armstrong, in the county of Yale and Province of British Columbia, Canada, have invented a new and useful Sash-Balancing Device, of which the following is a specification.

This invention relates to improvements in sash balances and the object of the invention is primarily to provide simple means whereby a window sash may be held at any desired point of the window frame and which will overcome the necessity of providing boxes in which counter-balance weights may be suspended.

The invention seeks to provide a device having the desired characteristics which may be applied to any window at a slight expense and which will not in any way interfere with the free movement of the sash whenever it is desired to adjust the same.

With these and other incidental objects in view, the invention consists in certain novel features of the mechanism illustrated in the accompanying drawings which will be hereinafter first fully described and then more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a sectional elevation of a window equipped with my improvements. Fig. 2 is a detail perspective view of the upper bracket and supporting rollers. Fig. 3 is a detail perspective view of the corner of a sash, and Fig. 4 is a detail perspective view of the lower bracket and guide roller.

The window frame 1 may be of any desired size and is provided with the usual channels 2 in which the sashes 3 slide. Within the sides of the window frame 1, at the upper ends of the channels 2 therein, I form recesses in which are seated casings 4 having perforated ears or lugs 5 at their upper and lower ends through which suitable fastening screws are inserted into the window frame to secure the casings in position, as shown in Fig. 1. At the upper end of the casing 4 is provided forwardly projecting lugs or ears 6 between which is journaled a guide roller 7 over which the sash-sustaining cord or other flexible device passes. Between the side walls of the housing 4, I journal a plurality of grooved rollers 8 around which intermediate portions of the sash-sustaining cable are wrapped.

The sash 3 is provided at each upper corner with a horizontal recess or cavity 9 and a vertical recess or cavity 10 communicating therewith, the recess 9 being located in the upper edge of the sash while the recess 10 is located in the side edge of the sash, as will be readily understood on reference to Figs. 1 and 3.

Below the meeting rails of the sashes, I secure to the window frame, within the channels 2 therein, a bracket 11 which is provided at its lower end with openings 12 through which screws or other fastening devices are inserted to secure the bracket in position and at its upper end this bracket is provided with inwardly projecting walls or lugs 13 between which is mounted a guide roller 14.

The sash-sustaining cable has one end secured in the recess or seat 9, and from the said recess 9 the cable or other flexible device passes downward within the recess 10 to a pin 16 extending transversely through the same, the cable being passed behind, under, and then upward around this pin 16, as shown at 17. From the pin 16 the cable extends in a vertical run 18 to the guide roller 7 over which it is carried, as shown in Fig. 2. After passing over this guide roller 7, the cable is carried downward between the said roller and the casing 4 to the uppermost grooved roller 8 and then is wrapped around the said roller, being carried under, back of, and then over the said roller so as to emerge from the casing 4 in front of the roller, as shown in Figs. 1 and 2. The cable then presents a run 19 which extends to the next succeeding grooved roller 8 around which it is wrapped in a similar manner, and this wrapping of the cable is repeated throughout the series of rollers which may be greater or less according to the weight of the sash to be carried. From the lowermost roller, the cable extends in a run 20 to the lower guide roller 14 and passes between the said roller and the bracket 11 supporting the same, and then under the roller and up in front of the same so as to extend in a run 21 to the upper corner of the sash, the end 22 of the cable being carried into the recess or cavity 9 and secured therein jointly with the end 15, by a staple or similar fastening 23.

It will be understood, of course, that a cable is provided at each side of each sash, and it will be readily seen that the weight

of the sash is carried entirely by the cables. The intermediate portion of the cables being wrapped around the grooved pulleys 8, the weight of the sash will be transmitted through the cable to the said rollers and will create a tension on the cable which will cause the cables to resist any tendency toward unwinding from the rollers so that the sash when raised will not accidentally drop, but will be maintained in its raised position until force is applied thereto to lower the same. While the sash will be held raised in a sufficiently firm manner to require the application of a direct force to move it, a slight force properly applied will be sufficient to lower the sash, inasmuch as the several rollers will move freely and easily and consequently permit ready movement of the sash. The provision of the guide rollers at the upper and lower bights of the cables will cause the cables to run vertically within the channels of the window frame so that they will completely encircle the grooved rollers and, consequently, will be in contact with the said rollers throughout their circumferences. Although it may be dispensed with and the cable secured to the side of the sash, I prefer to use the pin 16 as it will serve to maintain the said run or branch of the cable in a vertical position so that wear of the cable upon adjacent surfaces will be avoided, while at the same time the cable will be secured to the sash in such a manner that it cannot be accidentally released therefrom, and the lifting power exerted through the cable will be transmitted to the sides of the sash below the upper edge of the same and, consequently, the liability of the cable pulling away from the sash or causing the sash to sway and thereby bind within the channels of the frame is effectually overcome. Inasmuch as both ends of the cable are secured to the upper corner of the sash by one fastening device, the mutilation of the sash is avoided so that the strength of the same is maintained.

My device will permit the usual sash weights to be dispensed with, although in the case of very large heavy sashes, they may be used in conjunction with my device for the purpose of easing the operation of lifting the sash, although they need not be heavy enough to counterbalance the weight of the sash.

The advantages of the construction and of the method of operation will be readily

apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described my invention, what I claim is:—

1. The combination with a window frame and a window sash mounted therein, of upper and lower guide rollers mounted on the window frame, a series of rollers fitted in the window frame between the said guide rollers, and a cable having both ends secured to the upper corner of the window sash and passing therefrom in opposite directions to the upper and lower guide rollers, the intermediate portion of the cable being wrapped successively around the rollers between the said upper and lower guide rollers.

2. The combination of a window frame, a window sash mounted therein and provided at its upper corner with connecting horizontal and vertical recesses, a transverse pin passing through the vertical recess, a casing seated in the window frame, a bracket secured to the window frame below the said casing, a guide roller in said bracket, a guide roller at the upper end of the said casing, a series of rollers mounted between the walls of the casing below the said guide roller, and a cable having both ends secured in the horizontal recess in the sash and having an intermediate portion wrapped successively around the several rollers between the walls of the said casing, one branch of the cable passing from the said rollers over the guide roller at the upper end of said casing and then around and under the transverse pin in the vertical recess of the sash, and the other branch of the cable passing from the series of rollers downward to the lower guide roller and around the same and then upward to the sash.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WILLIAM SAWYER.

Witnesses:

WILLIAM E. FOREMAN,
THOS. LOWES.