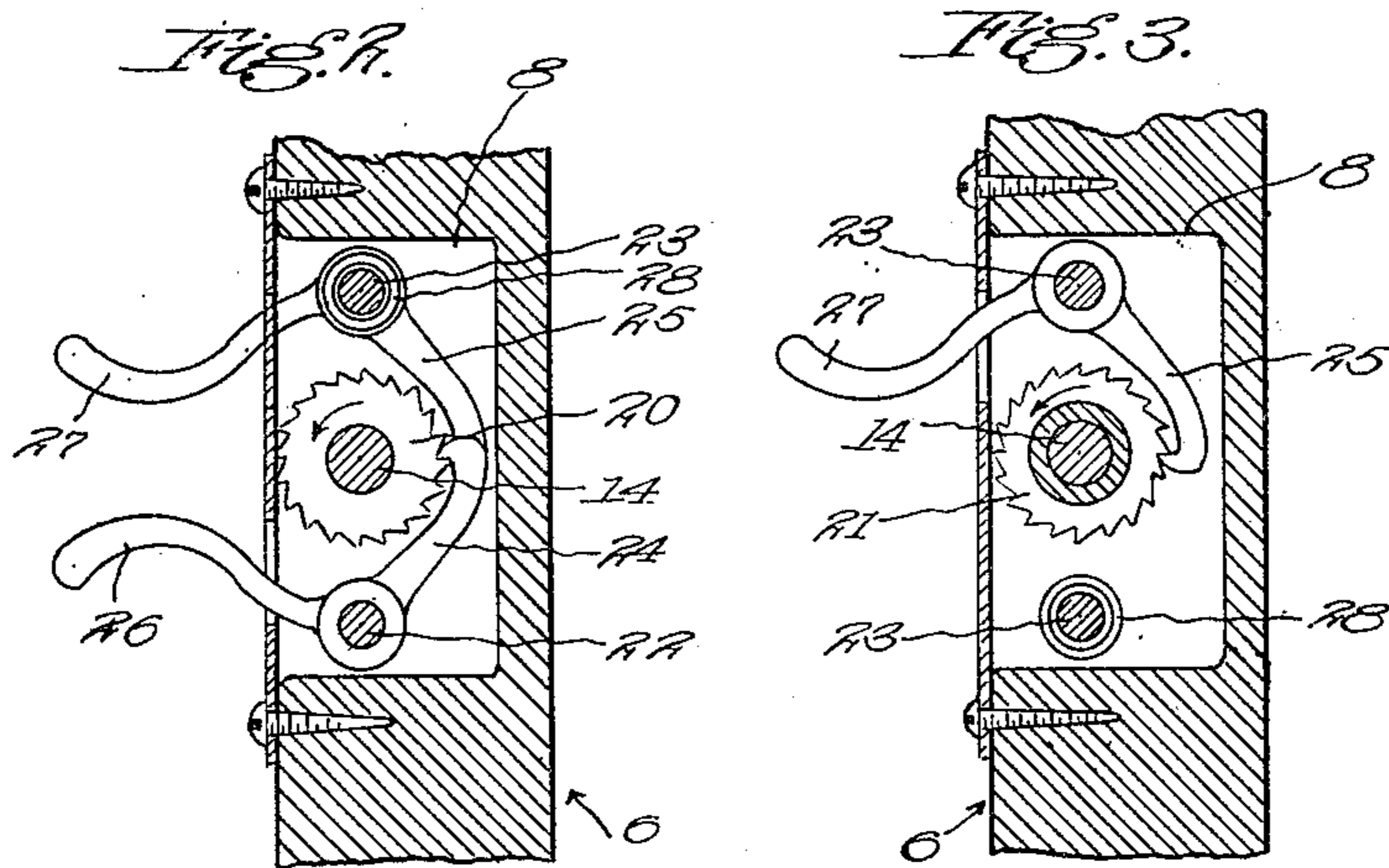
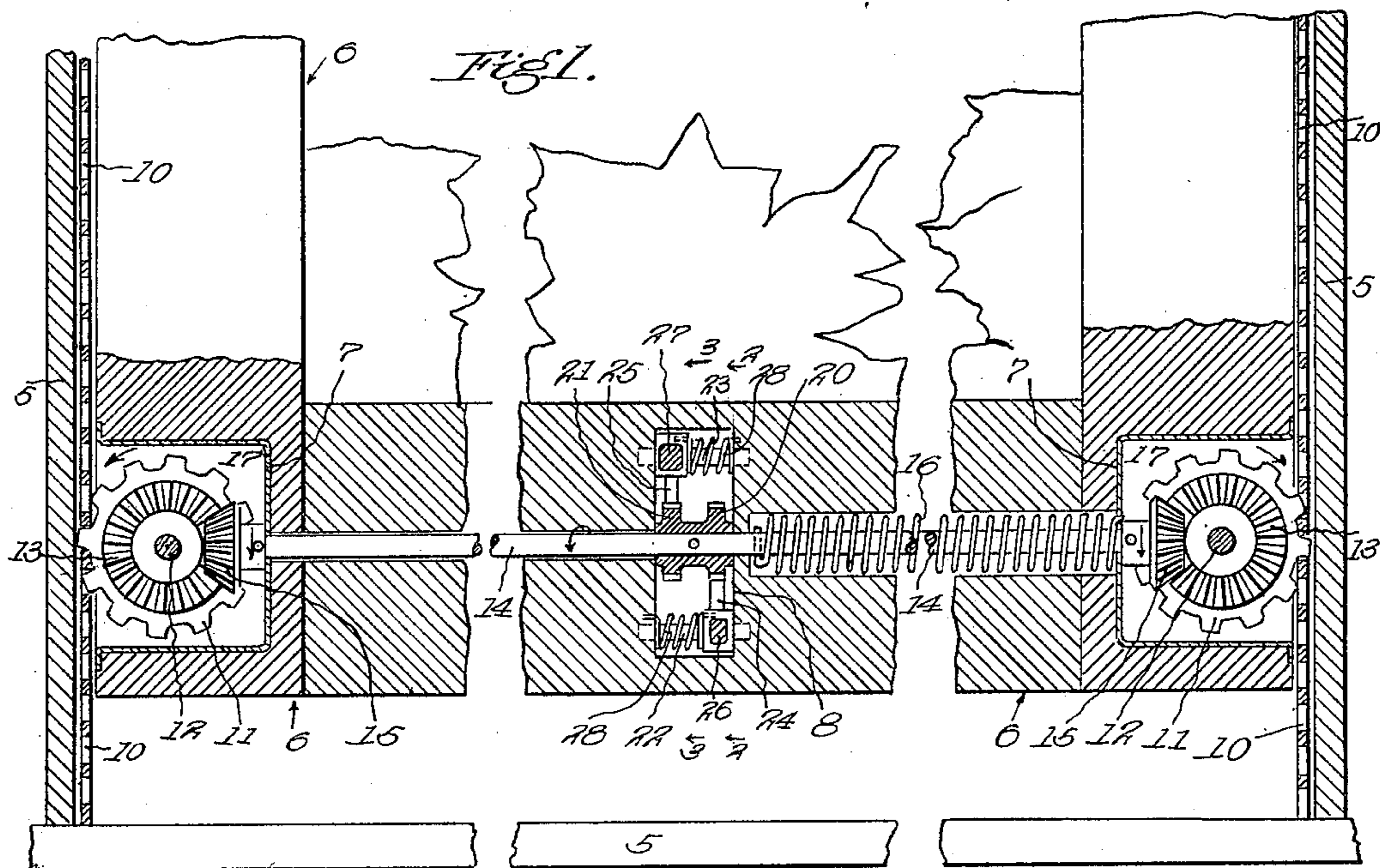


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WINDOW OPERATING MECHANISM.
APPLICATION FILED OCT. 19, 1910.

999,318.

Patented Aug. 1, 1911.



Witnesses
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WINDOW-OPERATING MECHANISM.

999,318.

Specification of Letters Patent.

Patented Aug. 1, 1911.

Application filed October 19, 1910. Serial No. 587,890.

To all whom it may concern:

Be it known that I, WILLIAM KOPP, subject of the Emperor of Germany, residing at Pasadena, in the county of Los Angeles and State of California, have invented new and useful Improvements in Window-Operating Mechanisms, of which the following is a specification.

This invention relates to a device adapted to both counterbalance the weight of a window or other sliding member, to keep the member in such a position as to prevent it from binding, and to allow manual movement when desired.

This device is especially applicable to railway car and other similar windows, but it is not restricted in its use to such. It may be used on any window or sliding member of the same general character. Such sliding members have heretofore been generally balanced by weights or similar or equivalent means, or have been left entirely unbalanced and provided with stops or catches for preventing their downward movement. Car windows have been generally provided with the latter devices, and they are quite liable to bind in their casings, or the catch devices become jammed and incapable of operation.

It is the prime object of my invention to provide a device which will overcome these difficulties, balancing the weight of the window, compelling its two opposite edges to move equably so that the window cannot bind in the casing, holding the window in any desired position, and allowing easy manipulation of the window to change its position.

I have illustrated a typical and preferred form of my invention in the accompanying drawings, in which—

Figure 1 is a sectional elevation of my improved device applied to a window. Fig. 2 is an enlarged cross section taken on line 2—2 of Fig. 1. Fig. 3 is an enlarged cross section taken on line 3—3 of Fig. 1.

In the drawings 5 designates a typical window casing in which a window sash 6 is adapted to be moved vertically. Window sash 6 may be made of any construction; for my invention it is provided with recesses 7 and 8. Recesses 7 are made on the lower vertical edges of the sash and contain the gearing mechanism of my device. Recess 8 contains the manually operated portion of my mechanism. On the inner face of casing 5 are placed rack bars 10, these bars being

economically formed of stamp metal. Gears 11, mounted on shafts 12 mesh with bars 10, gears 11 being provided with beveled gears 13 on their faces. A shaft 14 extending across the window sash carries two beveled gears 15 meshing with gears 13. When the window sash is moved upwardly the various gears rotate in the directions indicated by the arrows, shaft 14 also rotating in the direction indicated. A spring 16 is secured at one end to shaft 14 and at the other end to one of casings 17 which carry the gear mechanism. Spring 16 is placed around shaft 14 in such a manner that it tends to rotate shaft 14 in the direction indicated, to assist in raising the window sash. The spring is normally of sufficient strength to approximately counterbalance the weight of the sash, but it may be made so as to slightly more than counterbalance the weight and render easier the upward movement of the window sash while making the downward movement more difficult; for it is usually easier to pull downwardly on such a window than to push upwardly.

Within recess 8 are arranged two ratchet wheels 20 and 21 having teeth pointing in opposite directions. On studs 22 and 23, below and above shaft 14, are pivotally mounted pawls 24 and 25 which engage with ratchet wheels 20 and 21. Handles 26 and 27 are connected to the pawls for engagement by the fingers for the purpose of raising and lowering the sash. Springs 28 keep the pawls normally in engagement with the ratchet. From the arrangement shown, it will be seen that pawl 24 engaging with ratchet 20 prevents the upward movement of the window sash, while the other pawl and ratchet prevent the downward movement.

In operation, when the window is to be raised, handle 26 is pushed upon upwardly. This first disengages pawl 24 from the ratchet wheel 20, subsequent upward pressure tending to move the whole sash upwardly. As the sash moves upwardly, and the ratchet wheels rotate in the direction indicated by the arrows, pawl 25 continuously engages with the ratchet wheel 21 to prevent any downward movement of the sash. When the desired position is reached, the upward pressure on handle 26 is merely discontinued, pawl 25 holding the sash from any possible downward movement and pawl 24 immediately reengaging with ratchet

wheel 20 to prevent any further upward movement. When it is desired to move the window sash downwardly, downward pressure is applied to handle 27, and operations
5 the reverse of those above described are performed.

The prime mechanical features of my invention consist in the mechanism whereby the opposite edges of the sash are guided
10 evenly in their vertical movements, and in the manually operable mechanism for controlling the vertical movements of the sash and for holding the sash at any desired position, this last mechanism being operated in a
15 natural manner by the usual movement for the raising or lowering of the sash.

Having described my invention, I claim:

1. In combination with a window casing and a sash vertically movable therein, a
20 shaft rotatably mounted upon the sash, connective means whereby the movement of the sash in the casing causes the rotation of the shaft, a pair of ratchet wheels mounted on the shaft, pawls engaging with the ratchet
25 wheels and respectively preventing the rotation of the shaft in opposite directions, and a handle mounted upon each of the pawls.

2. In combination with a window casing and a sash vertically movable therein, racks
30 mounted on the casing, gears mounted on the

sash and meshing with the racks, a shaft mounted on the sash and rotatably connected to the gears, resilient means connected to the shaft and tending to rotate the same in a direction adapted to move the sash up- 35 wardly, a pair of ratchet wheels mounted on the shaft and rotating therewith, the teeth of the wheels facing in opposite directions around the shaft, a pair of pawls mounted on the sash, one engaging with each of the
40 ratchet wheels to prevent their rotation in opposite directions, and handles connected with the pawls and arranged one above the other on the sash, the lower handle being connected to the pawl which is instrumental
45 in preventing the rotation of the shaft in a direction to raise the sash and being so connected that an upward movement of the handle will disengage the pawl from its ratchet, and the upper handle being con- 50 nected to the other pawl in such a manner that its downward movement will disengage the pawl from its ratchet.

In witness that I claim the foregoing I have hereunto subscribed my name this 11th
55 day of October 1910.

WILLIAM KOPP.

Witnesses:

JAMES T. BARKELEW,
ELWOOD E. BARKELEW.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."