

Aug. 5, 1930.

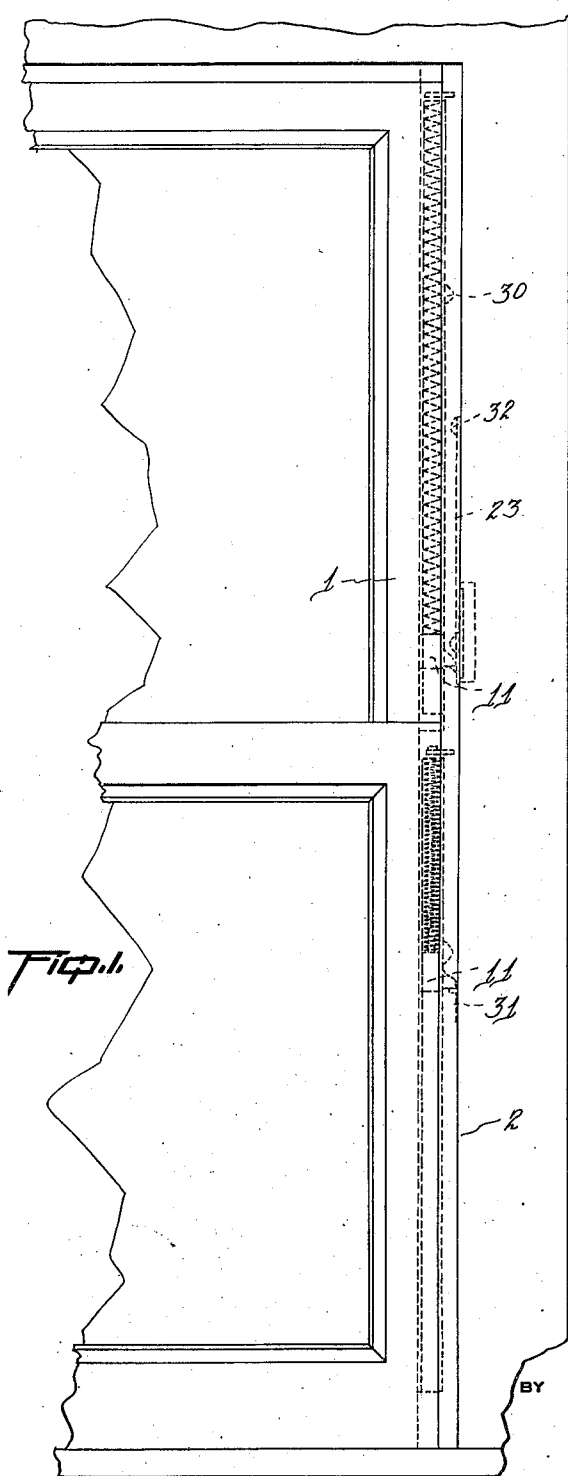
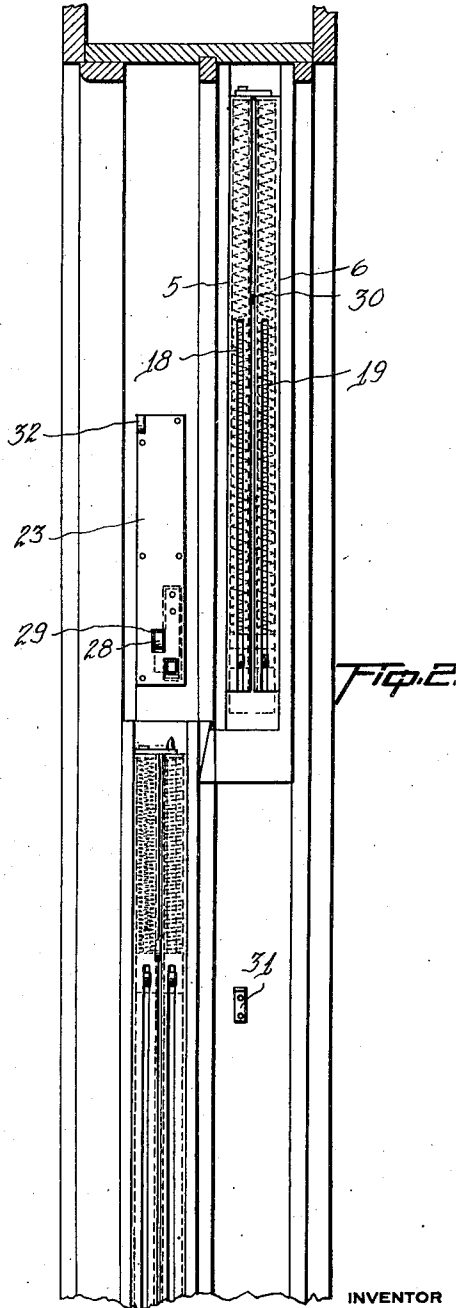
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1,771,997

WINDOW SASH BALANCE.

Filed Jan. 11, 1929

2 Sheets-Sheet 1



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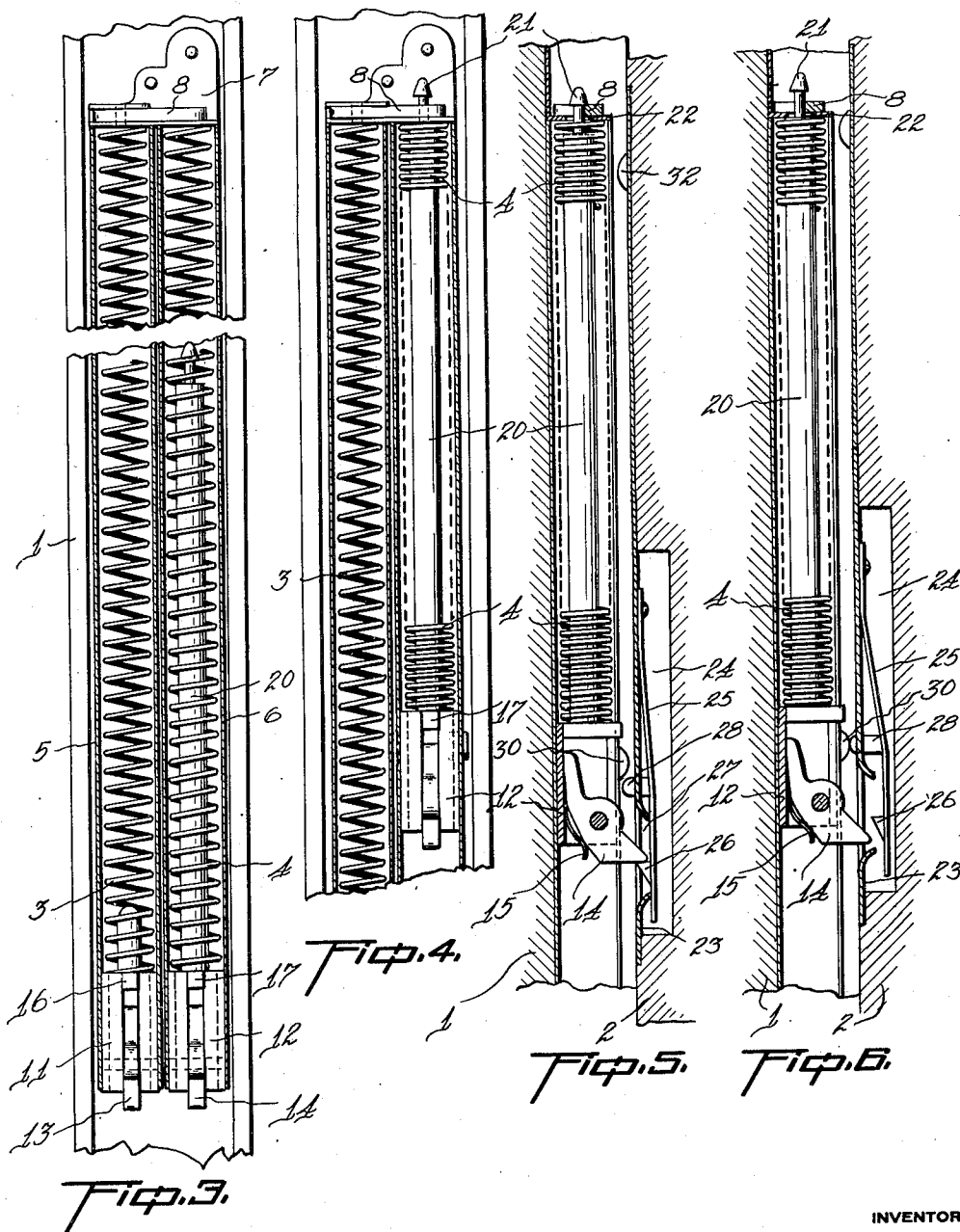
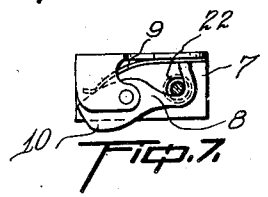
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WINDOW-SASH BALANCE

Application filed January 11, 1929. Serial No. 331,930.

The present invention pertains to a novel window sash balance to be employed in conjunction with double hung windows and similar constructions.

The primary object of the present invention is to devise a balancing mechanism which may be easily installed by any competent carpenter upon any standard double hung window sash. The mechanism in accomplishing this object, further facilitates the construction of the window in a tight, stormproof manner, guarantees that it will not stick or rattle, and that it may be smoothly and easily moved up or down at any time desired.

A further object of the present invention is to construct a sash balance which insures the smooth and easy raising or lowering of the window without employing any special frames, or without the use of pulleys as is the ordinary practice. The present device is designed so that all the parts may be made of metal and therefore it is not subject to breakage or warping and when once installed it remains in serviceable condition during the entire useful life of the window.

With these objects in view and others which are subsidiary thereto and resultant therefrom, my invention is fully disclosed by way of example in the following description with reference to the accompanying drawings, in which

Figure 1 is a partial front elevation of a window equipped with the present invention;

Figure 2 is a vertical cross section through the window opening illustrating the edges of the upper and lower sash in elevation;

Figure 3 is a side elevation of the sash illustrating the spring casing in cross section with the device in the expanded position;

Figure 4 is a view similar to Figure 3 with the device compressed through downward movement of the sash;

Figure 5 is a cross section through the sash and window frame, being illustrative of the spring locking and releasing mechanism, and

Figure 6 is a cross section similar to Figure 5 illustrating a further stage of operation

resulting from continued downward movement of the sash.

Similar characters of reference are employed throughout the following description and the drawings and serve to indicate the several elements and their functions which combine to form the present invention.

The numeral 1 indicates the upper and lower sashes of a window which may be any type which is in every day use at the present time employing wooden sash. The sashes are mounted in the usual frame 2 in a manner which permits them to be moved up or down and for the purpose of assisting this movement there are provided the springs 3 and 4. The springs are enclosed in casings 5 and 6 respectively, which serve to maintain the springs from bending or buckling, the casings being suitably secured to the window sash in any convenient manner.

The upper ends of the casings 5 and 6 abut against the bracket 7 which is secured to the sash, the bracket being provided with means for pivoting a latch 8 which is normally held in the position illustrated in Figure 7 of the drawings by means of the spring 9. The latch is formed with a portion 10 projecting beyond the edge of the bracket for a purpose which will become apparent as the description progresses.

The lower ends of the springs 3 and 4 support heads 11 and 12 respectively which are slidable in the casings 5 and 6, the heads containing pivoted dogs 13 and 14 which are held to project outwardly in a resilient manner by means of the springs 15 which are clearly illustrated in Figs. 5 and 6, the projecting edge of the dogs contacting with the window frame. The heads, being slidable within the casings 5 and 6, are provided with bosses 16 and 17 which project into slots 18 and 19 in the casings 5 and 6 respectively to maintain them in the proper relation, the slots further permitting the free movement of the projecting dogs 13 and 14. The head 12 is provided with a stem 20 which projects upwardly within the coils of the spring 4, the upper end of the stem having a small extension provided with a rounded head 21 which is of smaller diameter than the diameter of

the stem 20. The head 21 on the stem 20 is adapted to be forced through an opening 22 in the bracket 7 and retained in this position by the latch 8 as will later be described in detail, the stem being of larger diameter so as to prevent it from also passing through the opening 22.

A plate 23 is secured to the window frame which is previously recessed as at 24 to accommodate the spring 25 secured to the rear face of the plate 23. The spring normally rests in the position illustrated in Figure 5 of the drawings and is provided with a catch 26 which projects into the opening 27 in the plate 23 and is thereby adapted to be engaged by the dog 14 during downward movement of the sash. The spring 25 is further provided with an extending member 28 which projects through an opening 29 in the plate 23 and is adapted for engagement by a lug 30 carried by the casing 6 for the purpose of moving the catch 26 away from the dog 14 and leaving it free for downward movement. The frame is further provided with a bracket 31 which is adapted for engagement by the dog 13 carried in the head 11. A rounded projection 32 is formed upon the plate 23 and is so located that it will engage the portion 10 on the catch member only at a time when the lug 30 is above the extending member 28. In engaging the portion 10 of the catch member 8, the member is caused to move upon its pivot so that the catch member is moved away from under the head 21 on the stem 20.

Inasmuch as the operation of the upper and lower sash are identical, the description of the operation will be confined to the upper sash. The sash is moved downwardly which causes the dog 14 to engage the catch 26, continued movement causing the spring 4 to be compressed until the head 21 on the stem 20 is forced through the opening 22 in the bracket 7 and the latch 8 engages under the head to lock the stem in this position with the spring 4 compressed. At the same time this action takes place the lug 30 engages the member 28 to release the catch 26 from under the dog 14 leaving the sash free for continued downward movement as far as this spring 4 is concerned. At the time which the spring 4 becomes locked in a compressed position and released from the catch after the manner above described, the dog 13 engages against the bracket 31 and continued movement of the sash will compress the spring 3 and continue to counterbalance the weight of the window. If it is found that the two springs are not sufficient to give the desired amount of movement it is quite obvious that a greater number may be employed to operate consecutively by employing the same mechanism and with very little change.

In raising the window it is counterbalanced by the spring 3 until such time as its

resiliency is spent and at that time the lug 32 engages the portion 10 on the latch 8 and moves it to release the head 21 of the stem 20 and the spring 4, which has been compressed in the manner previously described, causing the dog 14 to engage the catch 26 and the sash is counterbalanced by the spring 4 during continued upward movement.

It is to be understood, that, although the mechanism has been described in conjunction with a double hung window, it is not to be confined to this particular use as it is obvious that its uses are various and of broad scope. It is also to be understood that, although a specific embodiment has been illustrated and described that various alterations may be made in the details of construction without departing from the spirit of the invention as depicted in the appended claims.

What I claim is:—

1. In combination with a sash slidably mounted in a frame, said sash having channels formed in the sides thereof, a balancing mechanism comprising a plurality of projecting members carried by said frame and partly projecting into said channels, and resilient means mounted in said channels for consecutively engaging certain of said projecting members whereby to resiliently counterbalance the weight of the sash.

2. In combination with a sash slidably mounted in a window frame, said sash having channels formed in the sides thereof, a balancing mechanism comprising projecting members carried by said frame and positioned at different heights to partly project into said channels, and a plurality of resilient members carried by said sash and adapted to consecutively engage certain of said projecting members for compressing one of said resilient members at any stage of the movement of said sash.

3. In combination with a sash slidably mounted in a window frame, a balancing mechanism comprising projecting members carried by said frame, channels formed in the side members of said sash, resilient members attached to said sash in said channels, dogs carried by said resilient members and adapted to engage said projecting members consecutively whereby one of said resilient members is adapted to be compressed at any stage of the movement of said sash.

4. A balancing mechanism of the character described comprising in combination a frame, a sash having channels in the sides thereof slidably mounted in said frame, a plurality of projecting members carried by said frame, and a plurality of resilient members carried by said sash in said channels and adapted to consecutively engage said projecting members for compressing one of said resilient members at any stage of the movement of said sash.

5. The combination with a sash slidably

mounted in a frame, said sash having channels in the sides thereof, a balancing mechanism comprising a plurality of projecting members attached to said frame, a plurality of springs carried by said sash in said channels and having dogs for engaging one of said projecting members whereby downward movement of said sash causes said spring to be compressed, means for locking said spring in a compressed position, and said dog on the other of said springs engaging with the other of said projecting members for compressing said last named spring during continued downward movement of said sash.

In testimony whereof I affix my signature.
AUGUST C. FAST.

10 the other of said springs engaging with the other of said projecting members for compressing said last named spring during continued downward movement of said sash.

15 6. The combination with a sash slidably mounted in a frame, a balancing mechanism comprising a plurality of projecting members attached to the frame, a plurality of springs carried by said sash and having dogs for engaging one of said projecting members whereby downward movement of said sash causes one of said springs to be compressed, means for locking said spring in compressed position, means carried by said spring for releasing said dog from engagement with said engaged projecting member while said spring is in the locked position, and means whereby the dog on the other of said springs will engage the other of said projecting members for compressing said last named spring during continued downward movement of said sash.

35 7. The combination with a sash slidably mounted in a frame, a balancing mechanism comprising a plurality of projecting members attached to the frame, a plurality of springs carried by said sash and having dogs for engaging one of said projecting members whereby downward movement of said sash causes one of said springs to be compressed, means for locking said spring in a compressed position, and means whereby the dog on the other of said springs will engage with the other of the said projecting members for compressing said last named spring during continued downward movement of said sash, and means carried by said frame for engaging said locking means whereby to release said compressed spring during upward movement of the sash.

40 8. The combination with a sash slidably mounted in a frame, a balancing mechanism comprising a plurality of projecting members attached to the frame, a plurality of springs carried by said sash and having dogs for engaging one of said projecting members whereby downward movement of said sash causes one of said springs to be compressed, means for locking said spring in compressed position, means carried by said spring for releasing said dog from engagement with said engaged projecting member while said spring is in the locked position, means whereby the dog on the other of said springs will engage the other of said projecting members for

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