G. C. WEBSTER.

SASH BALANCE.

APPLICATION FILED FEB. 20, 1917.

1,248,221.

Patented Nov. 27, 1917.

FIG. 1.

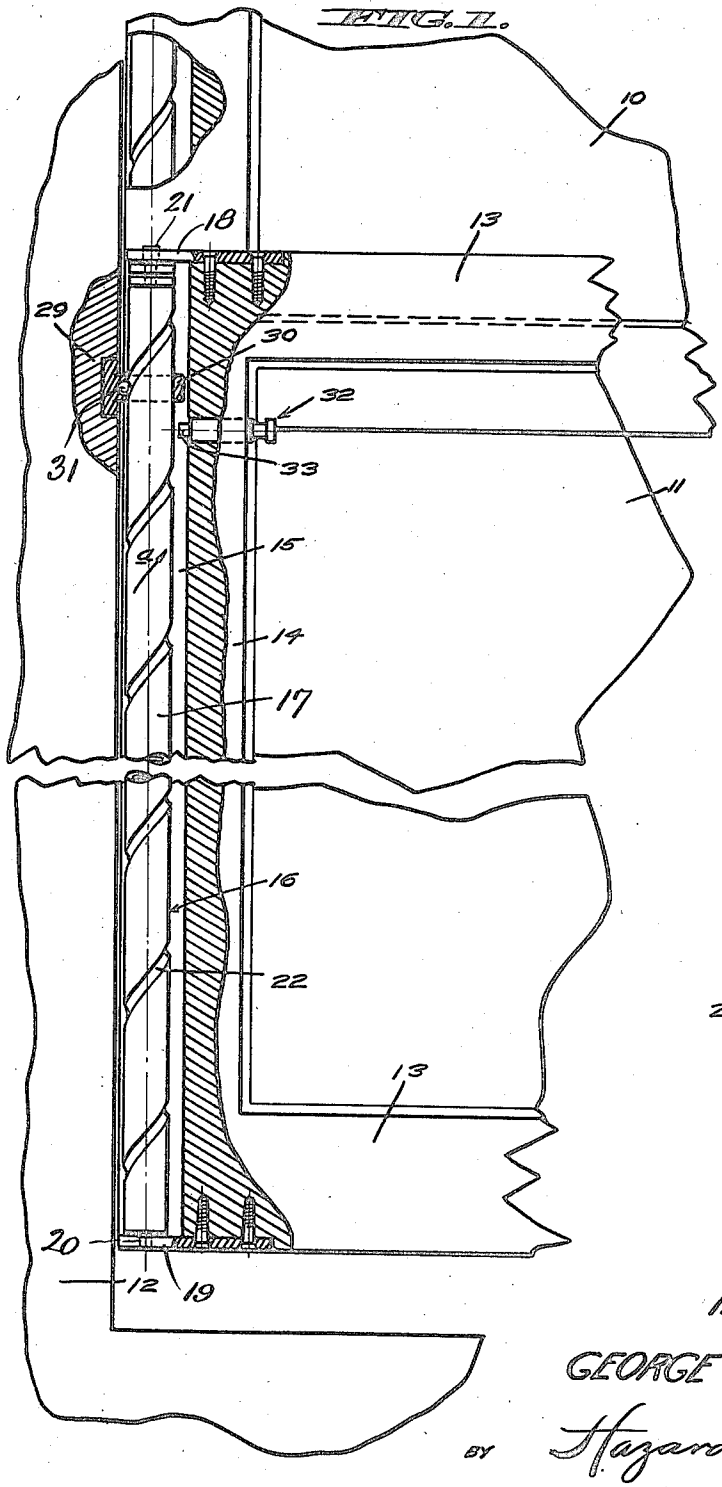


FIG. 2.

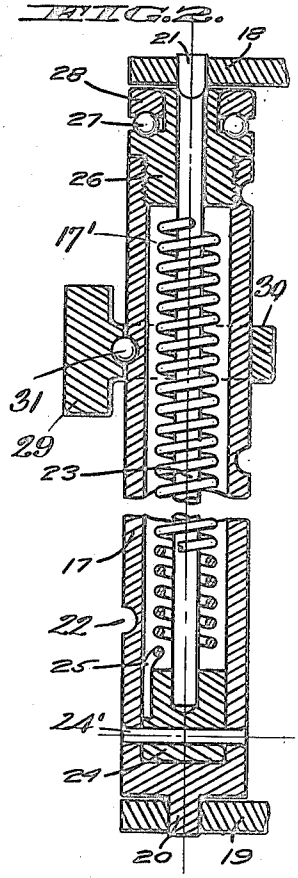
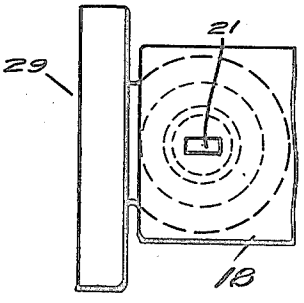


FIG. 3.



INVENTOR

GEORGE C. WEBSTER

BY Hazard & Miller

ATTYS.

UNITED STATES PATENT OFFICE.

GEORGE C. WEBSTER, OF LOS ANGELES, CALIFORNIA.

SASH-BALANCE.

1,248,221. Specification of Letters Patent. Patented Nov. 27, 1917.

Application filed February 20, 1917. Serial No. 149,896.

To all whom it may concern:

Be it known that I, GEORGE C. WEBSTER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Sash-Balances, of which the following is a specification.

My invention relates to sash balances, my object being to improve the lay-out and details of a spring sash balance, and my invention consists of the novel features herein shown, described and claimed.

Figure 1 is a fragmentary view in section and elevation illustrating a portion of a window sash as fitted with the lift and catch with which the present invention is concerned and particularly disclosing the manner in which the catch operates in relation to the sash and the window frame.

Fig. 2 is a view in vertical section as seen through the combined catch and lift illustrating its detailed construction and the counter-weight mechanism for the sash.

Fig. 3 is a fragmentary view in plan elevation illustrating the vertical edge of the sash and the arrangement of the lift therealong.

Referring more particularly to the drawings, 10 and 11 indicate a pair of vertically movable window sashes which are provided to close a window opening. This opening is bounded by a window frame 12. The sashes are formed with stiles 13 and side rails 14. The side rails have longitudinally extending grooves 15 cut throughout their length. These grooves are provided as recesses for the sash balance 16.

The sash balance 16 comprises a tubular screw 17 which extends the length of the sash and is rotatably held within the groove 15 by mounting plates 18 and 19. These plates receive the trunnions 20 and 21 of the screw 17. The screw is formed by a helical groove 22 extending throughout the length and around the outer periphery of a tubular body. This groove is of a pitch of about two inches, although it may be convenient to vary this formation. Mounted within the chamber 17′ of the screw 17 is a trunnion rod 23 which is rotatably positioned within the bearing block 24 fixed in the lower end of the chamber 17′ by a pin 24′. The upper end of this rod forms the trunnion 21. This end is flattened and extends non-rotatably within a slot in the plate 18. Mounted around the trunnion rod 23 is a helical spring 25 which is secured at its lower end to the bearing block 24 and at its upper end to the rod 23. The upper end of the rod 23 is rotatably mounted within and through an end bearing 26 which is threaded into the end of the tubular screw 17 and is formed with a ball race for bearing balls 27 which support an auxiliary race 28 and prevent binding of the screw, due to the torsion and expansion of the spring.

The tubular screw 17 acts in conjunction with an attaching base 29 having a collar 30 which extends around the screw, and the base 29 is secured to the side frame 12 of the window. Mounted within a pocket in the collar is a ball runner 31 which is adapted to ride along the helical groove 22. The ball 31 serves as an anti-friction tooth to drive the tubular screw 17. It will be noted that this groove is arcuate in section so that it substantially conforms to the periphery of the ball. Thus the tubular screw 17 will be revolved as the sash is raised and lowered, thereby producing tension upon the spring 25 in such a manner as to properly counterbalance the weight of the sash and permit it to remain at rest at any desired point along its course of travel.

A lock 32 is mounted within the sash rail 14 and is provided with a bolt 33 which is spring pressed. This bolt bears upon the periphery of the screw 17 and when in register with the helical groove 22 will lock the sash against upward or downward movement.

When a window sash is down in its closed position, the bolt 33 will register with the helical groove 22 at a point along the inner side of the sash. As this bolt is spring pressed it will prevent the rotation of the tubular screw 17 and thereby hold the sash in an immovable position. When the sash is to be raised, the bolt 33 is withdrawn from engagement with the groove 22 and thereafter the sash may be raised to any desired height. During this raising operation the ball runner 31 will ride along the groove 22 and cause the tubular screw 17 to rotate in the direction of the arrow —*a*—, as indicated in Fig. 1 of the drawings. The rotation of the screw 17 will act to unwind the spring 25 and when the sash is brought to rest, the counter-action of the spring 25 will cause the ball runner 31 to stop within the groove 22 and prevent the sash from falling down. The force exerted by this spring will therefore counter-balance the weight of the

sash and obviate the use of sash weights as are commonly provided. When the groove 22 is brought to register with the bolt 33 the sash will be locked. This will permit the sash to be locked at intervals of every two inches as that is substantially the pitch of the groove here shown.

It will thus be seen that the device affords an effective counter-balance for window sashes and also insures that they may be movably held, as well as positively locked, along their course of travel.

While I have shown the preferred construction of my combined sash counter-weight and catch as now known to me, it will be understood that various changes in the combination, construction and arrangement of parts may be made by those skilled in the art without departing from the spirit of my invention, as set up in the following claim.

I claim:

A sash balance comprising a cylindrical body having a peripheral spiral groove forming a screw and a chamber extending from one end, a trunnion extending from the closed end of the screw, a bearing block fixed in the inner end of the chamber, a coil spring fixed at one end to the bearing block, a trunnion rod extending into the bearing block and fixed to the other end of the spring, a bearing attached to the screw and closing the chamber, said trunnion rod extending through the bearing, a mounting plate in which the screw trunnion is rotatably mounted, a second mounting plate in which the outer end of the trunnion rod is non-rotatably mounted, an attaching base, a collar integral with the base and loosely fitting the screw and having a pocket, and a ball in the pocket and forming a runner fitting the screw.

In testimony whereof I have signed my name to this specification.

GEORGE C. WEBSTER.