

No. 649,765.

Patented May 15, 1900.

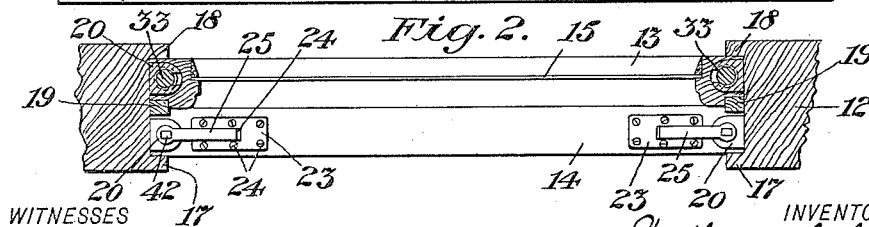
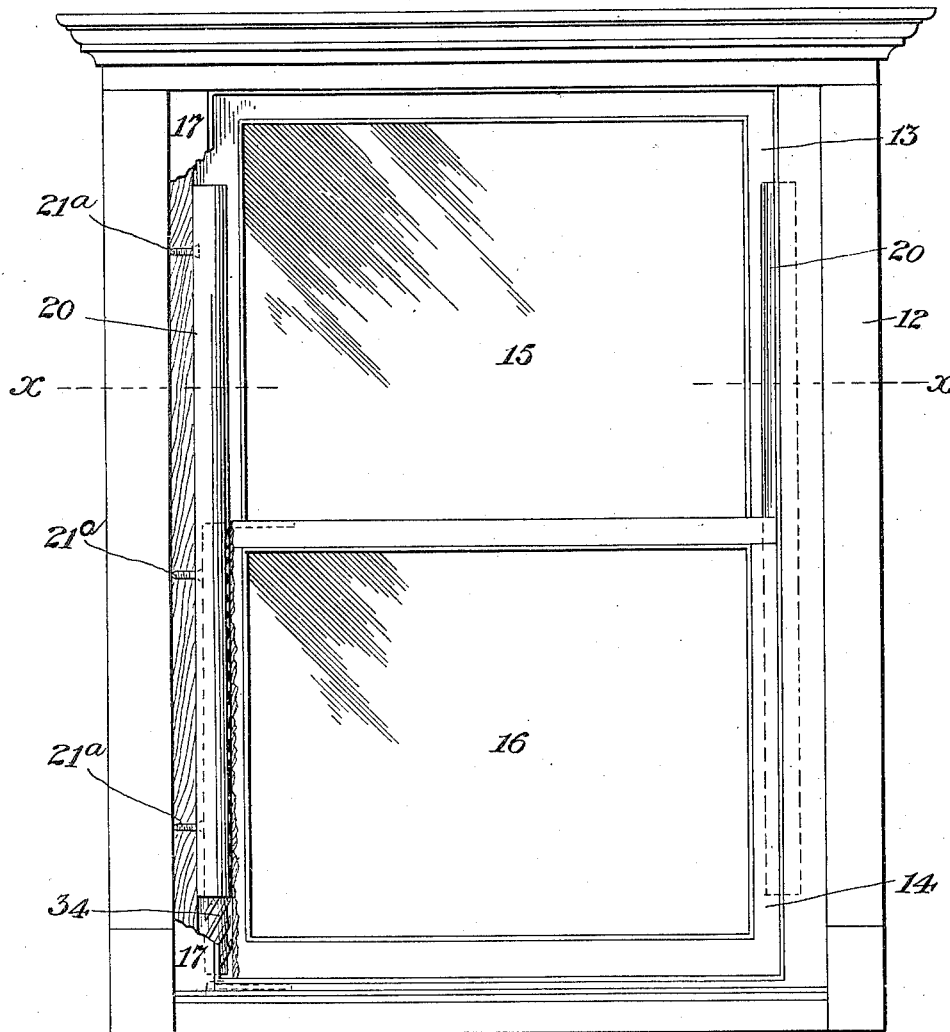
W. SCHUCH.
SASH BALANCE.

(Application filed Dec. 6, 1899.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



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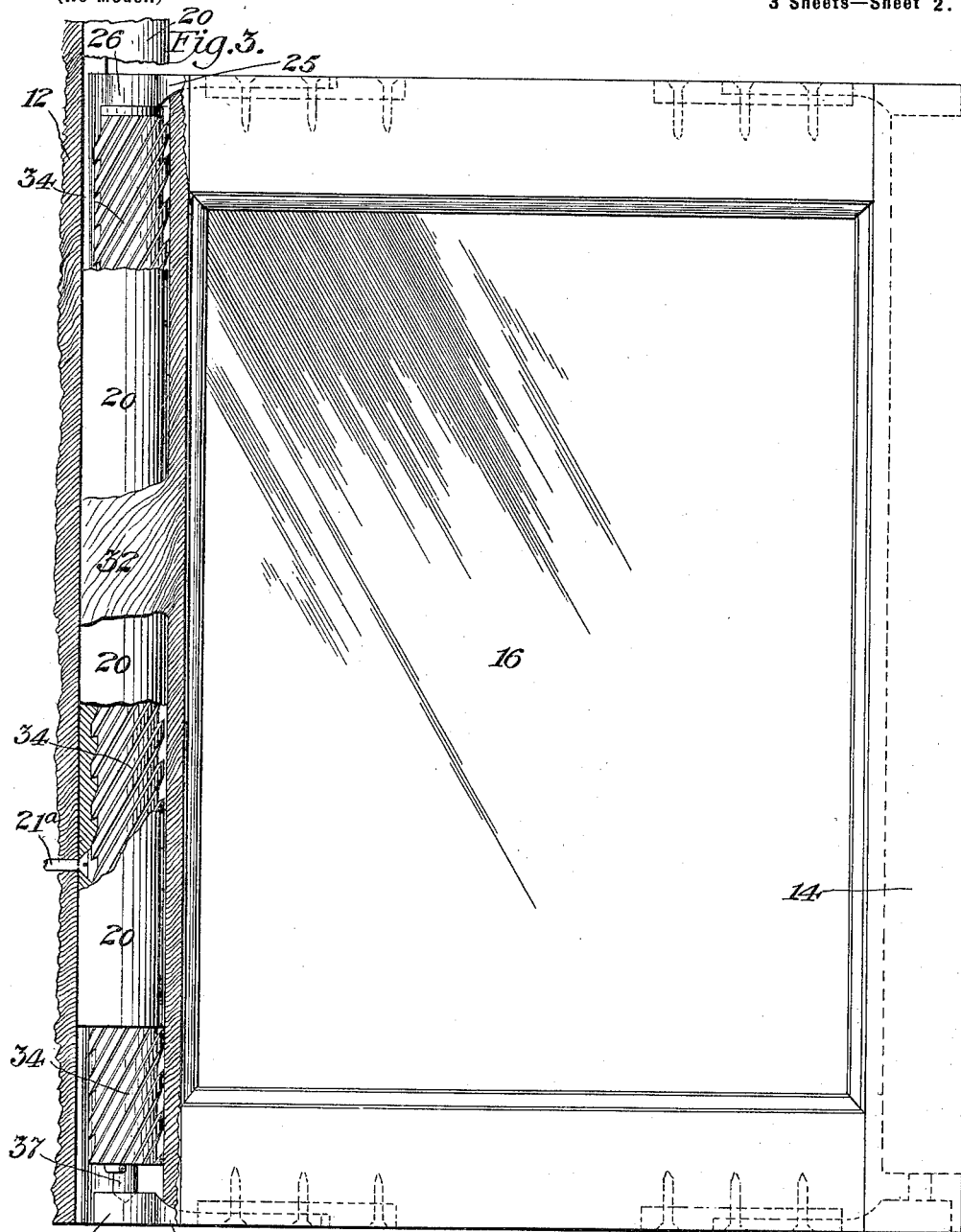
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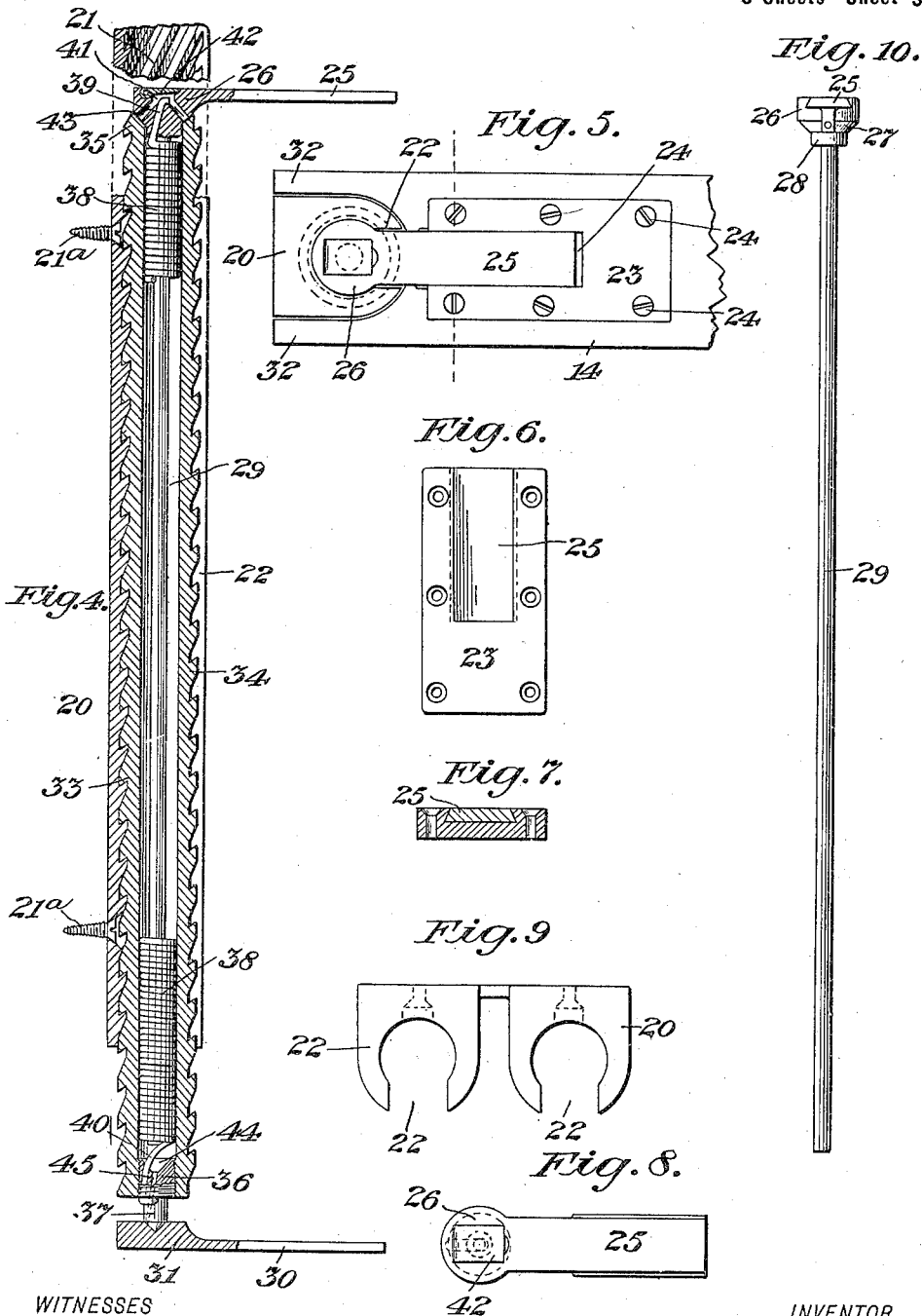
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

WILLIAM SCHUCH, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO
GEORGE WOLF, OF SAME PLACE.

SASH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 649,765, dated May 15, 1900.

Application filed December 6, 1899. Serial No. 739,362. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SCHUCH, a citizen of the United States, residing at New York, in the county and State of New York, have invented a new and useful Improvement in Sash-Balances, of which the following is a clear and exact description, such as will enable those skilled in the art to which it appertains to make and use the same.

My invention relates to windows; and one object thereof is to provide a window devoid of sash cords and weights and which is provided with tension devices whereby as the sash is lowered a certain lifting potential is created which shall assist in raising the same.

A further object is to avoid in window construction the chambering of the window-frame, with the disadvantages incident thereto.

With the above and other objects in view my invention consists in the construction and arrangement of parts hereinafter set forth.

In the accompanying drawings, which form part of this specification, and in which like reference characters denote like parts in the several views, Figure 1 is a front elevation of a window constructed according to my invention, part thereof being cut away to show the interior construction; Fig. 2, a transverse section thereof upon the line *xx* of Fig. 1; Fig. 3, a front elevation of one of the sashes and part of the frame shown in Fig. 1, the parts being cut away at places to show the interior construction; Fig. 4, a vertical section, partly in full lines, of a portion of Fig. 3; Fig. 5, a plan view of a portion of Fig. 3; Fig. 6, a plan view of a portion of Fig. 5; Fig. 7, a transverse section thereof; Fig. 8, a plan view of still another portion of Fig. 5; Fig. 9, a plan view of a detail of construction, and Fig. 10 a side elevation of a portion of Fig. 4. Figs. 1 and 2 are upon a diminished scale.

Referring more particularly to the drawings and to Figs. 1 and 2 thereof, I have shown a window-frame (indicated by the general index character 12) and two window-sashes (indicated, respectively, by the general index characters 13 and 14,) each of which is provided with a window-pane 15 and 16, respectively.

The window-frame 12 is provided at each

side with inwardly-directed vertical front and rear stop-strips 17 and 18, respectively, and with intermediate vertical stop-beads 19. Between each stop-strip and the adjacent stop-bead is mounted a vertical sleeve 20, secured to the adjacent portion of the frame 12 by screws 21^A or other suitable fastening devices. The sash 13 is grooved at its sides to fit slidably the rear sleeves 20, the sash 14 similarly fitting the front sleeves 20, and said sashes are free to move vertically in engagement with said sleeves.

Referring more particularly to Fig. 3, which shows one of the sashes 14 and a portion of the window-frame 12 and certain operative parts about to be described, and to Fig. 4, which shows a portion of one of the sleeves 20 and also several of the operative parts about to be described, and to Fig. 5, the sleeve 20 is provided with an internal screw-thread 21, of relatively-great pitch, and is slitted longitudinally upon its inner portion at 22. This latter formation is still more clearly shown in Fig. 9, which discloses two of the sleeves 20, relatively arranged as in Fig. 1.

The sashes 13 and 14 are identical in construction and arrangement of parts, and in the following portions of the description I will for simplicity refer simply to the sash 14, and said sash is provided laterally of the top member thereof with a plate 23, which is sunk thereinto and secured thereto at 24 and provided with a longitudinal dovetail groove 24^A, in which is slidably mounted a plate 25, similar in transverse section to said groove 24, as shown in Figs. 5 to 8, inclusive. The plate 25 is arranged to slide in the groove 24^A and is provided at its outer end with a head 26, provided with a conical lower portion 27, from which projects a depending circular bearing 28, centrally from which springs a downwardly-directed cylindrical rod 29. (Shown in full in Fig. 10.)

The sash 14 is provided laterally of the bottom member thereof with a similar plate 23, sunk thereinto and shown in dotted lines in Figs. 1 and 3, and a plate 30, similar to the plate 25, operates slidably in connection therewith and is provided at its outer end with a head 31. The sash 14 is suitably grooved at top and bottom, communicating with the

grooves 24 of the plates 23, to receive the plates 25 and 30 between said plates and the edge of the sash. The sash is grooved at its side to receive the sleeves 20, as above described, forming flanges 32, which embrace said sleeve. I provide a screw member for the sash, which consists of a cylindrical tubular element 33, exteriorly threaded at 34 to fit the interior thread 21 of the sleeve 20 and operating therein and provided at its upper end with a beveled portion 35, which operates in connection with the conical portion 27 of the head 26 of the plate 25, operating also in connection with the bearing 28 and provided at its lower end with a screw-plug 36, which carries a depending conical-ended pivot-pin 37, which operates in a conical-pivot recess in the head 31, as shown clearly in Fig. 4. The rod 29, which depends from the head 26 of the plate 25, projects longitudinally of and within the tubular element 33, and coiled thereabout is a coil-spring 38, the upper end of which is secured in the head 26 at 39 and the lower end of which is secured in the screw-plug 36 at 40. The spring 38 is of such construction and so mounted that as the heads 26 and 31, sash 14, and tubular element 33 are lowered the potential of said spring is increased, the upper end being fixed against rotation and the lower end rotating with the said tubular element.

The head 26 is provided with an oil cup or chamber 41 and a hinged cap 42 therefor, and communicating with said oil-cup and opening through the conical portion 27 of said head are a plurality of oil-passages 43. The screw-plug 36 is provided with an open oil-cup 44 and with an oil-passage 45, communicating therewith and opening through the outer surface of the pivot-pin 37.

I have described but two of the plates 23 as connected with the sash 14, respectively at top and bottom of one side thereof; also, but one each of the plates 25 and 30, which are connected therewith, and but one of the tubular elements 33 and the parts connected therewith; but it is understood that all these parts and elements are duplicated upon the other side of the sash and operate in connection with the sleeve 20, which said other side of the sash engages, as shown in Fig. 1 and as described in hereinabove particularly treating said figure. This duplication of parts is shown in outline in dotted lines in Fig. 3.

As shown in Fig. 1, the sleeves do not extend the entire height of the window-frame, but are terminated at their upper and lower ends a considerable distance respectively from the top and bottom of said frame. This allows the sleeves to be readily fitted into the frame, and the fastening devices 21^a are passed through the sleeves in such position as shall be available after the sashes are in place and operatively connected with the sleeves.

The sashes, together with the tubular elements, are preferably operatively mounted in connection with the sleeves 20 before the lat-

ter are secured in the window-frame, and said sashes move freely in connection with said sleeves, the plates 25 and 30 readily operating through the longitudinal side slots 22 thereof. The flanges 32 entirely embrace and obscure the sleeves 20, tubular elements 33, and other operative parts, effectively excluding dust and dirt therefrom, and this result is further augmented by the stop-strips 17 and 18 and stop-beads 19, though these form no vital part of my invention and may be omitted, if desired. In Fig. 1 the flanges 32 are shown as cut away slightly to receive the stop strips and beads, but not so shown in the other views. It will be noticed that the above-described construction avoids all chambering of the window-frame, as well as the use of sash cords and weights. Upon lowering the sashes the springs 38 are tensionally tightened, and this increased tensional potential assists in raising the sash, the tubular elements 33 revolving in the sleeves 20. As the pitch of the threads of both thereof are relatively great, the tubular elements 33 revolve but slowly and the springs 38 are only tightened a necessary amount. The great pitch of the said threads allows the sashes to be speedily raised.

Oil injected into the chambers 41 flows down through the passages 43 onto the bearings 28 and cones 27, thence through the tubular elements 33 into the oil-cups 44, and thence through the passages 45 down upon the pivot-pins 37 and heads 30, thus thoroughly oiling the chief operative parts.

The relatively-movable plates 23 and 25, and 23 and 30 allow automatic adjustment of the sashes in the window-frame should the latter warp or swell and obviate consequent binding and friction of the chief operative parts.

My improved construction above described and hereinafter claimed fully accomplishes the purposes in view and does so by means of a construction which is durable and comparatively cheap to manufacture. It is manifest that the tubular element may be substituted for the sleeve in connection with the window-frame and the sleeve for the tubular element in connection with the sash without departing from the scope of my invention and the claims hereto appended. I do not limit myself to the specific construction and arrangement of parts herein described, but reserve the right to vary the same within the scope of my invention.

Having fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A sash-balance comprising a sash provided at one side with a pivotally-mounted externally-threaded tubular element, a coiled spring mounted in said element, one end of which is connected therewith and the other end of which is connected with said sash, and a frame provided with an internally-threaded sleeve in which said element operates, substantially, as shown and described.

2. In a sash-balance, a sash provided at the top and the bottom of one side thereof with a laterally-slidable extension, one of said extensions being provided with a bearing and the other thereof with a pivot-recess, a threaded tubular element pivotally mounted between said bearing and said pivot-recess, said element being provided with a coiled spring, one end of which is connected therewith, and the other end of which is connected with one of said extensions and a fixed threaded sleeve which operates in connection with said tubular element, substantially, as shown and described.

3. In a sash-balance, a sash provided at the top and the bottom of one side thereof with a laterally-slidable extension, one of said extensions being provided with a bearing and the other thereof with a pivot-recess, a threaded tubular element pivotally mounted between said bearing and said pivot-recess, said element being provided with a coiled spring one end of which is connected therewith, and the other end of which is connected with one of said extensions, one of said extensions being provided with oil-holes communicating with said tubular element, which latter is provided at its lower end with oil-holes whereby oil is admitted to said pivot-recess, and a fixed threaded sleeve in connection with which said tubular element operates, substantially as shown and described.

4. An improved sash-balance comprising a sash provided at the top and at the bottom of one side thereof with a laterally-directed extension, a tension device pivotally connected with said extensions, and a frame provided

with a sleeve in connection with which said tension device operates, said sleeve being provided at one side with a longitudinal slot in which said extensions operate, substantially, as shown and described.

5. An improved sash-balance comprising a frame provided at each side with a vertically-threaded sleeve which is provided with a longitudinal slot in its inner side, and a sash provided at each side with a vertical groove whereby flanges are formed which embrace said sleeves, plates slidably connected with each side of the top and bottom of said sash and provided with heads at their outer ends, and operating through said slots, internally-threaded tubular elements pivotally mounted between said heads at the sides of said sash in the upper pair of said heads being provided with depending rods which project within said tubular elements, coiled springs mounted upon said rods and connected at the top with the upper pair of said heads, and at the bottom with said tubular elements, and said tubular elements being provided at the top with conical portions which operatively engage similar portions of said upper heads, and at the bottom with pivot-pins which operatively engage pivot-recesses in said bottom heads, substantially, as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 24th day of November, 1899.

WILLIAM SCHUCH.

Witnesses:

GEORGE WOLF,
S. WOLF.