

E. H. LUNKEN & C. M. CONKLIN.
 WINDOW CONSTRUCTION.
 APPLICATION FILED JULY 17, 1908.

957,693.

Patented May 10, 1910.

2 SHEETS—SHEET 1.

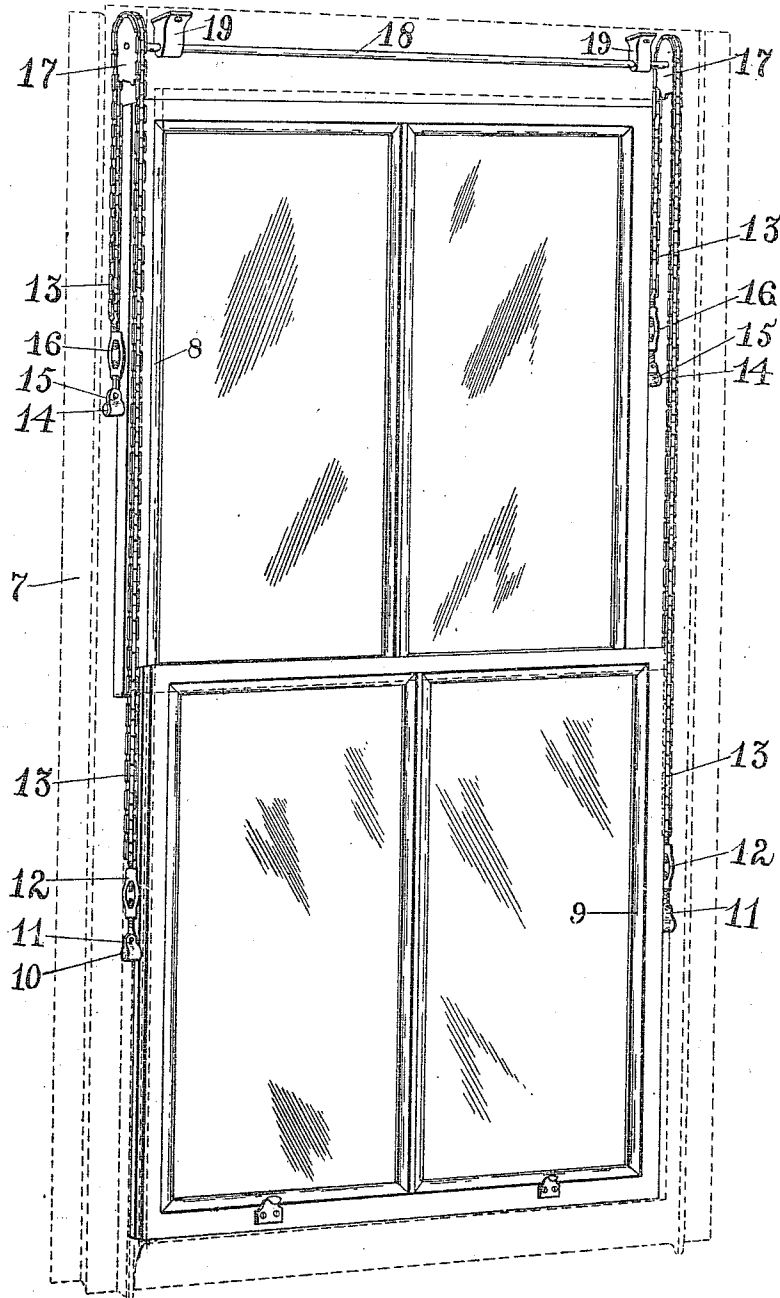


Fig. 1.

Attest:

Edw. L. Tolson
Bentley Stahl

Inventors:

Edmund H. Lunken,
Charles M. Conklin,
 by *Spencer Middleton Smalldene & Co.*
Attys.

E. H. LUNKEN & C. M. CONKLIN.

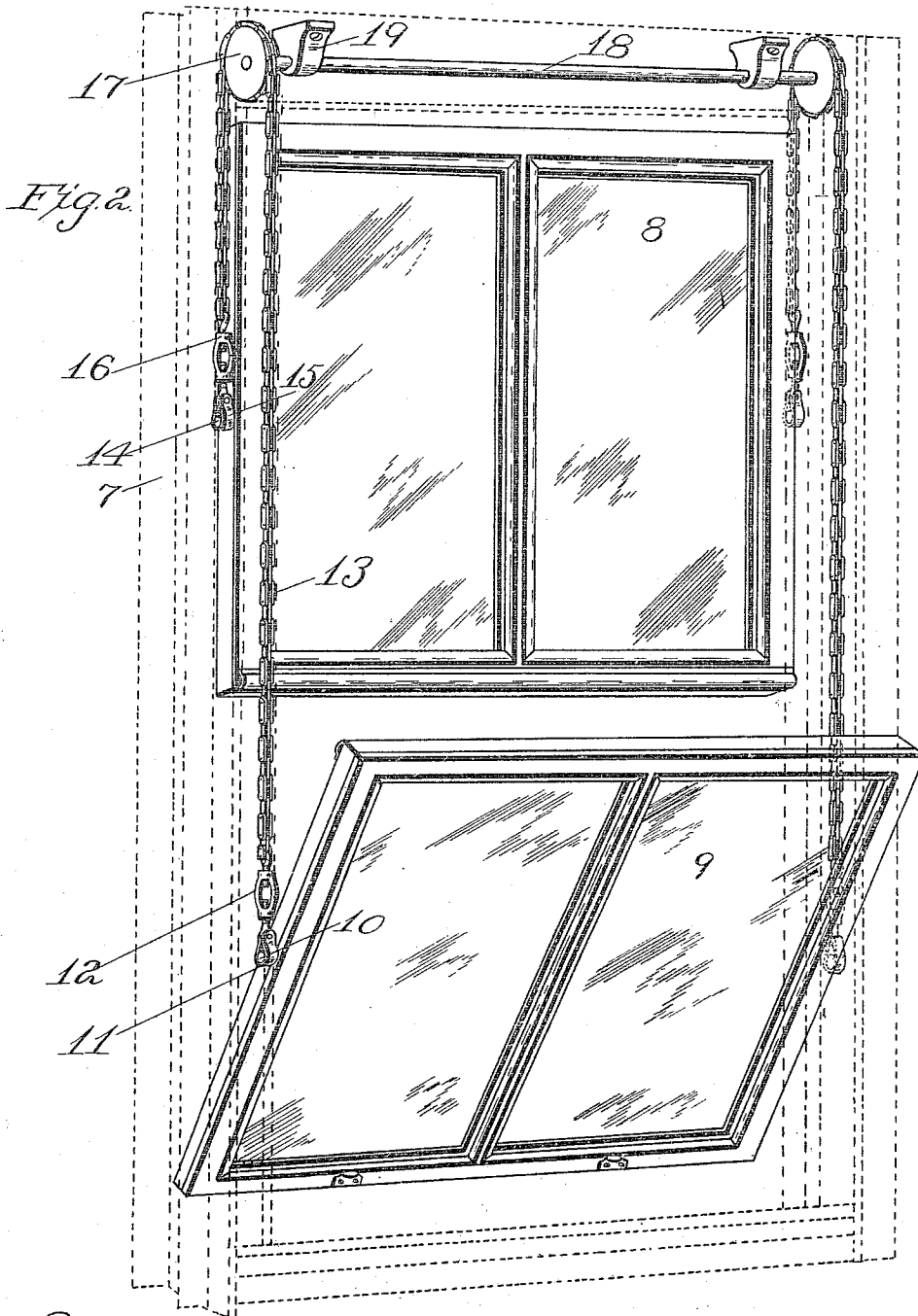
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2 SHEETS—SHEET 2.



Witnesses:
Bent. M. Stahl.
Edw. L. Tolson.

Inventors:
EDMUND H. LUNKEN,
CHARLES M. CONKLIN.
By *Spencer Middleton Donaldson* *Attys.*

UNITED STATES PATENT OFFICE.

EDMUND H. LUNKEN AND CHARLES M. CONKLIN, OF CINCINNATI, OHIO, ASSIGNORS
TO THE LUNKEN STEEL WINDOW COMPANY, OF HAMILTON, OHIO.

WINDOW CONSTRUCTION.

957,693.

Specification of Letters Patent.

Patented May 10, 1910.

Application filed July 17, 1908. Serial No. 444,140.

To all whom it may concern:

Be it known that we, EDMUND H. LUNKEN and CHARLES M. CONKLIN, citizens of the United States, residing at Cincinnati, Ohio, have invented certain new and useful Improvements in Window Construction, of which the following is a specification.

This invention relates to improvements in fire-proof window construction and has for its main objects to provide an arrangement of connected sliding and swinging sashes wherein the sashes will be balanced without the use of weights and will move freely without liability of binding.

The invention includes the novel features of construction and arrangement and combination of parts hereinafter described and particularly set forth in the appended claims.

A window constructed in accordance with our invention is shown in the accompanying drawing in which—

Figure 1 is a perspective view with the frame shown in dotted lines for clearness of illustration, and Fig. 2 is a similar view showing one of the sashes in its tilted position.

In this drawing the numeral 7 designates the window frame or casing which is preferably formed of pressed sheet metal, and 8 and 9 the upper and lower sashes respectively. These sashes and the window frame are preferably formed substantially as disclosed in the application filed on the 8th day of May, 1908, Serial No. 431,986, the sashes being guided in their vertical movement by the movable guide bars 9^a as disclosed more in detail in the said application.

The lower sash is provided with hinge pins 10 which move vertically in the channels of the window frame as the sash is raised and lowered and are designed to permit of pivoting of the sash when the guide strips have been withdrawn from engagement with the side edges of the sash. The hinge pins 10 are encircled by bushings 11 which are connected by adjustable means, such as turn buckles 12 with the lower ends of the sprocket chains 13. The opposite ends of these chains are connected in a similar manner to the hinge pins 14 of the upper sash by the bushings 15 and turn buckles 16. The hinge pins 14 move vertically in

the corresponding channels similarly to the hinge pins of the lower sash so as to permit the swinging of the upper sash on the hinge pins when the guide strips are removed.

The intermediate portions of the sprocket chains 13 pass over sprocket wheels 17 which are mounted on the ends of a shaft 18 journaled in suitable bearings 19 carrying in the top cross member of the window frame which is also in the top of the box, the chains of course passing through openings in the bottom wall. As the sprocket wheels are fast on the shaft 18 they are compelled to rotate in unison and as the teeth of the sprocket wheels engage the links of the chains and are thereby held against slipping thereon the two chains are compelled to move in absolute uniformity and thus any tilting or tipping of either sash is prevented as it is moving up or down. By means of the turn buckle any necessary adjustment may be quickly and easily effected. This arrangement it will be obvious enables the sashes to be counterbalanced without the use of weights.

We are aware that it is not broadly new to counterbalance sliding sashes by means of cords or the equivalent thereof passing over plain pulleys attached to a shaft held by and between the side bars of the window frame, and we do not claim so broadly as to include such construction.

In sashes which are arranged to slide and balance each other by means of cords which are connected to pivots, it is desirable to use guide strips upon which the sashes slide vertically in the normal operation of the sashes, which are capable of being moved transversely away from the sashes to permit the sashes to swing upon their pivots. In such an arrangement, however, it is extremely important to adjust and maintain the pivots in accurate horizontal line. To secure the utmost nicety of adjustment we combine on each pair of chains an adjusting turn-buckle interposed between the ends of the chains and the pivots whereby such adjustment may be secured as to permit the sashes to turn without binding while the positive and non-slipping engagement of the chains with the sprocket wheels prevents any change in the horizontal alinement of the pivots even though the support of the guide strips is removed and the sash swung in a horizontal

position. Were any slipping possible when the sash is in such horizontal position, binding and defacement of the finished parts of the frame would result, which in highly metallic window construction for which this invention is especially adapted would be extremely detrimental.

We claim as our invention:—

1. In combination with a window frame,
10 a pair of pivoted sashes, flexible elements connected to the pivots of the sashes, rotary bearing members at the top of the window over which the flexible elements pass for counterbalancing said sashes, said flexible
15 elements and rotary bearing members being provided the one with indents and the other with detents for engaging said indents, and a shaft journaled at the top of the window frame to the ends of which said bearing
20 members are secured, whereby the rotary bearing members and flexible elements are caused to move in unison and the pivots of

the sashes kept in horizontal alinement with each other, substantially as described.

2. In combination with a window frame, 25 a pair of pivoted sashes, sprocket chains connected to the pivots of the sashes, sprocket wheels at the top of the window over which the chains pass, for counter-balancing said sashes, and a shaft journaled at the top of 30 the window frame to the ends of which the said sprocket wheels are secured whereby the sprocket wheels and chains are caused to move in unison, and the pivots of the sashes kept in horizontal alinement with each other, 35 substantially as described.

In testimony whereof, we affix our signatures in presence of two witnesses.

EDMUND H. LUNKEN.
CHAS. M. CONKLIN.

Witnesses:

WM. BODEMER,
SAM L. MOYER.