

No. 842,701.

PATENTED JAN. 29, 1907.

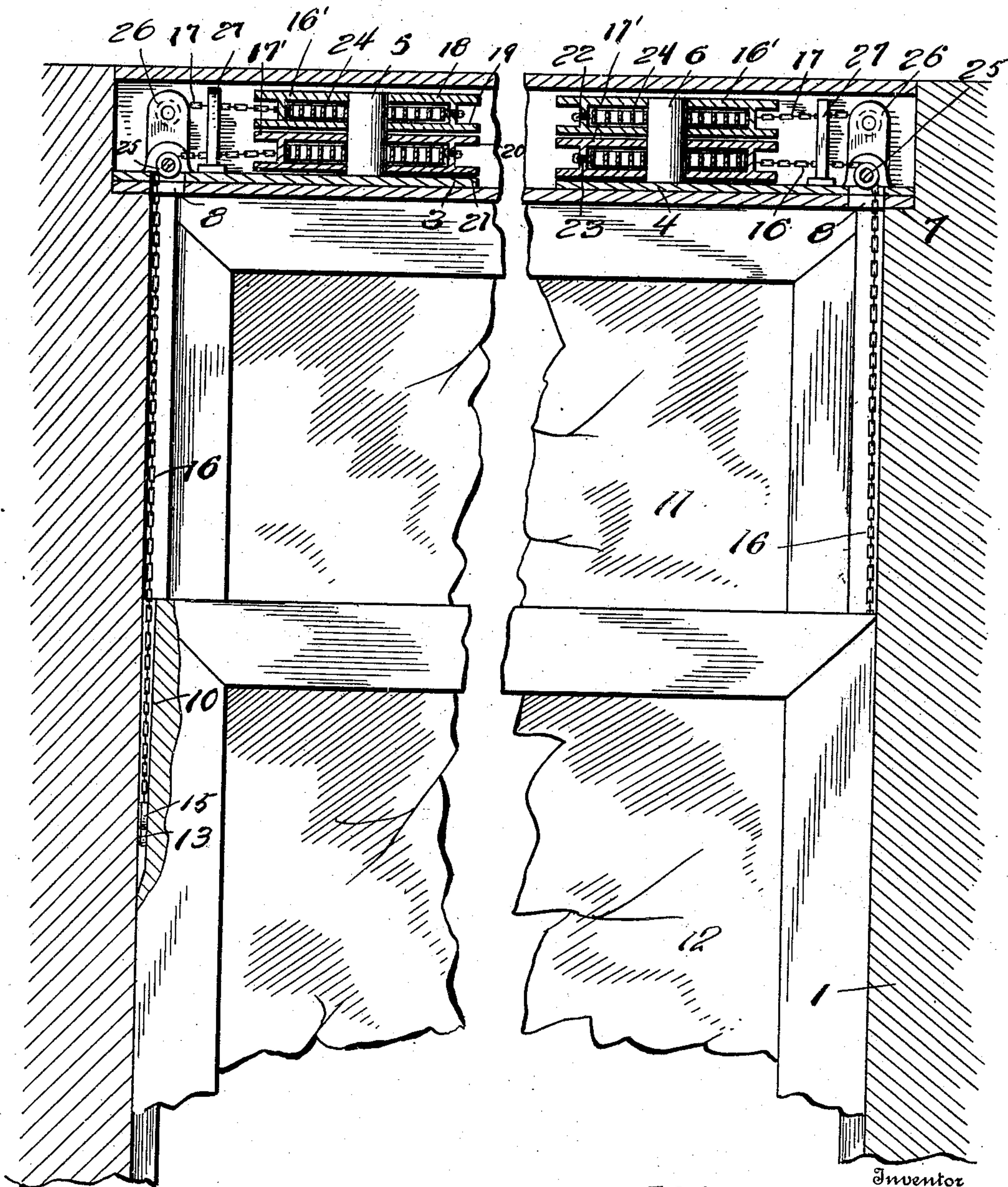
J. N. REILAND.

SASH BALANCE.

APPLICATION FILED JUNE 16, 1905.

2 SHEETS—SHEET 1.

*Fig. 1.*



Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

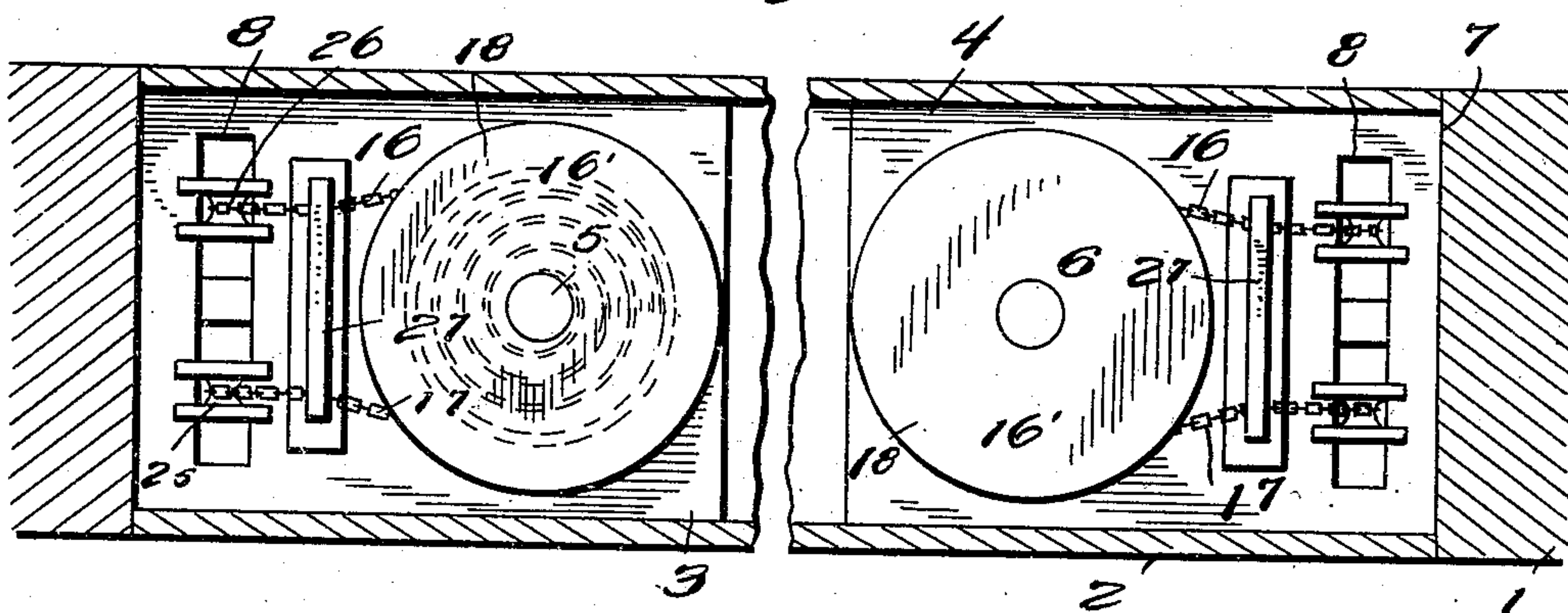


Fig. 3.

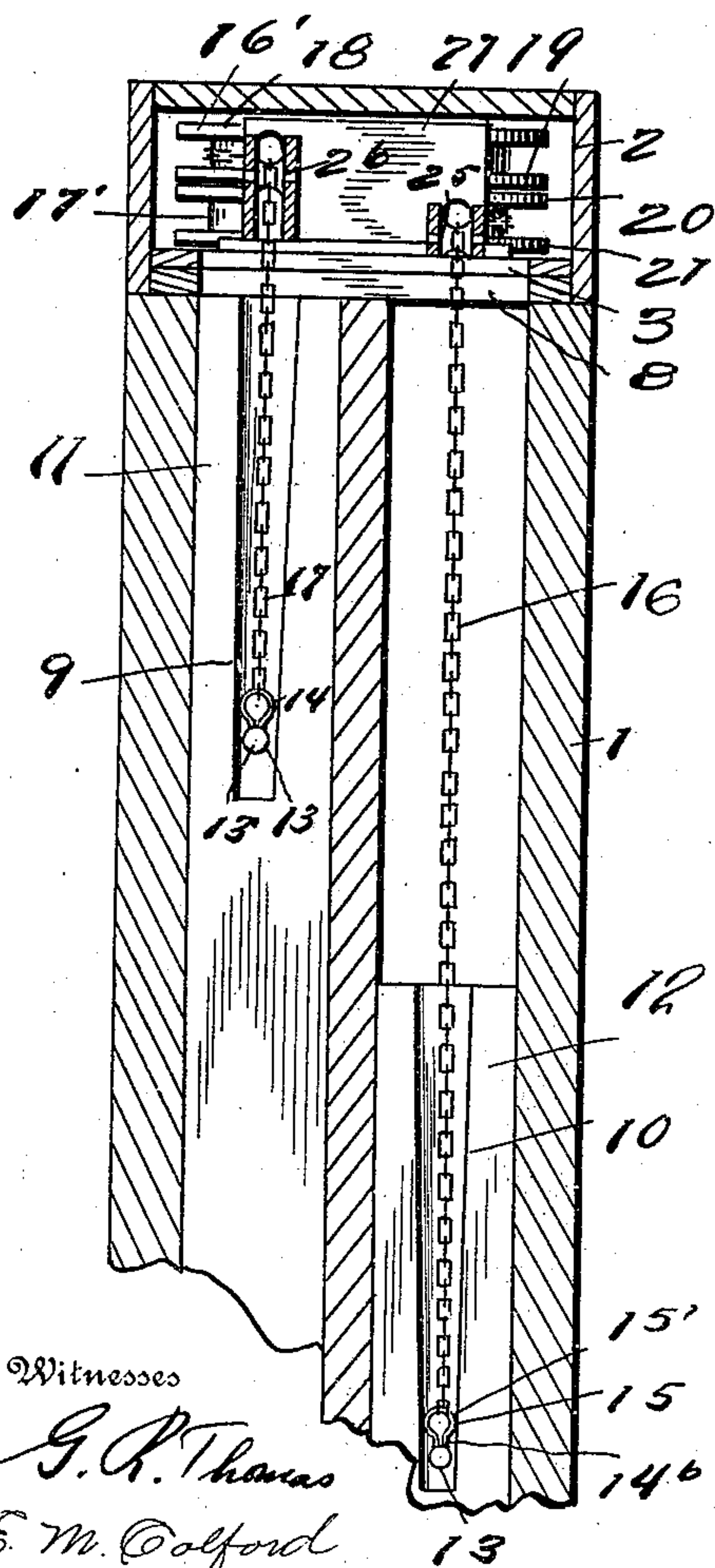


Fig. 4.

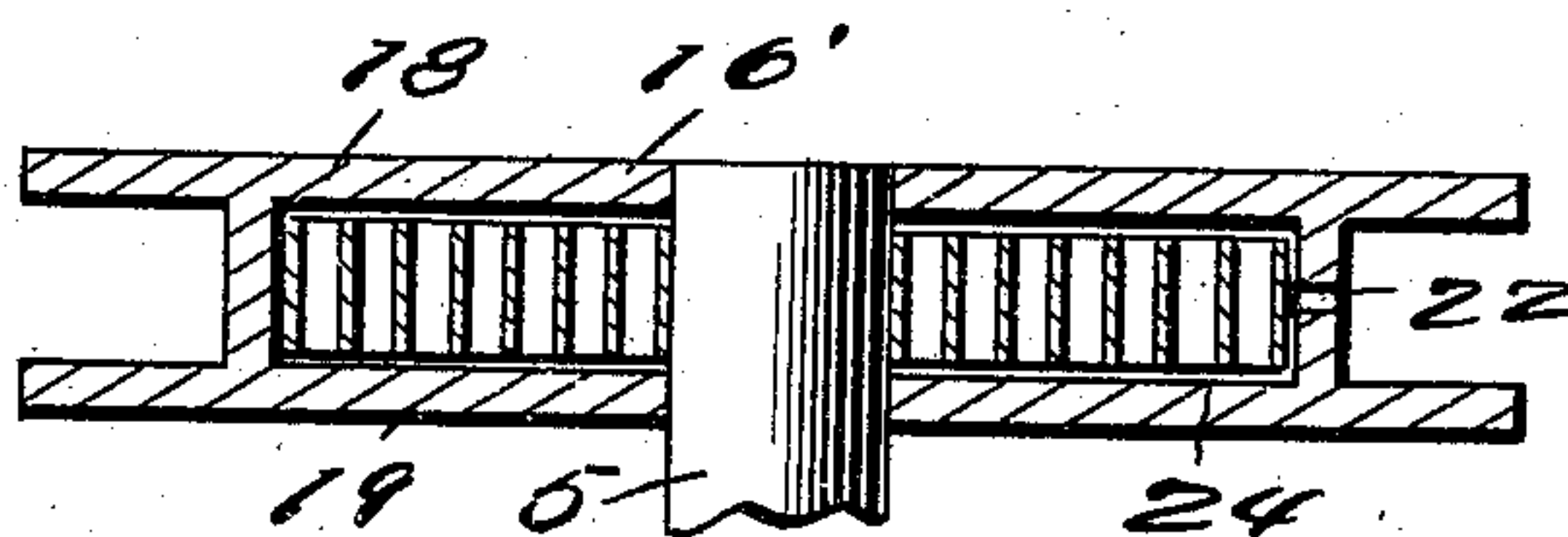
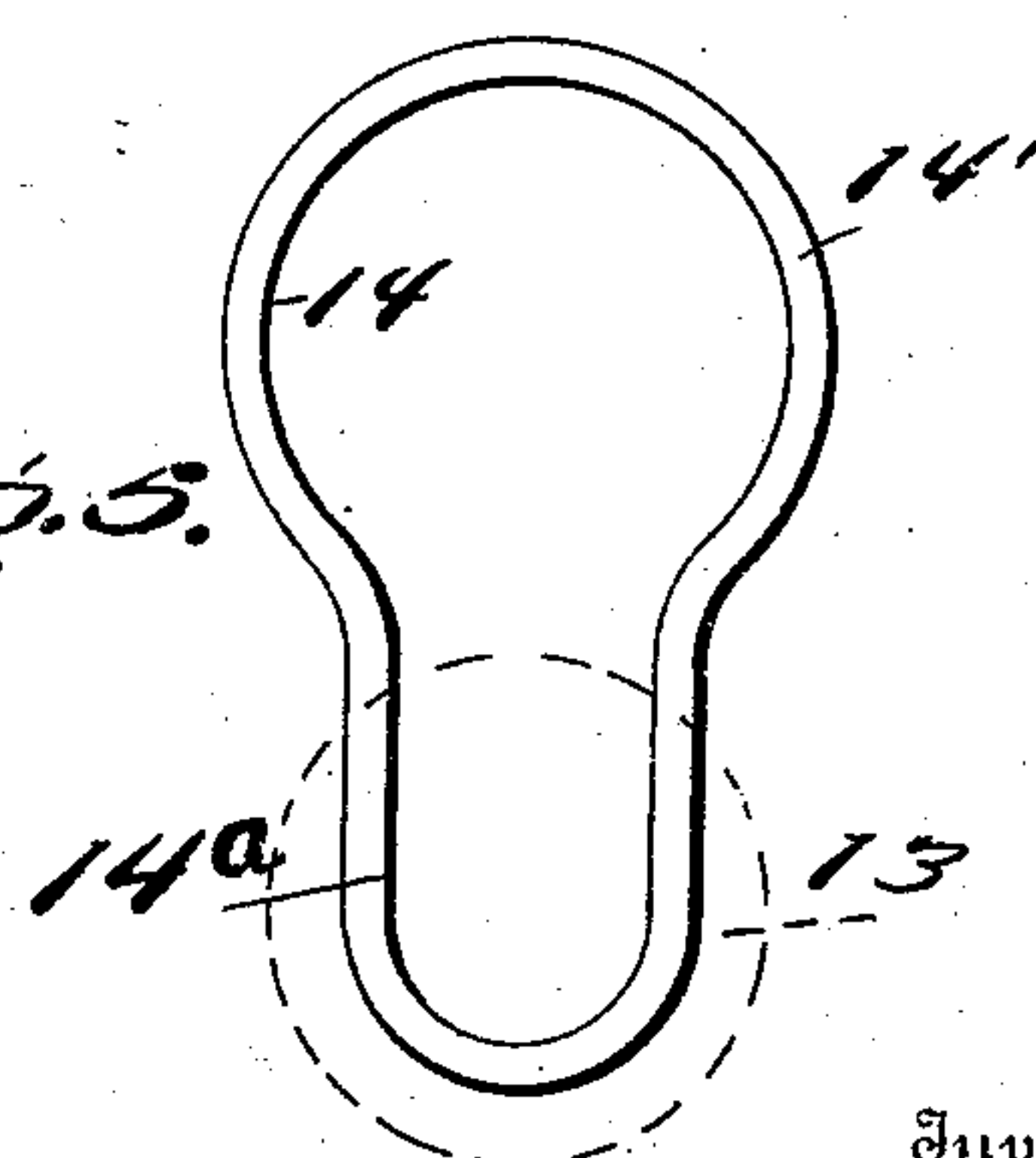


Fig. 5.



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# UNITED STATES PATENT OFFICE.

JOSEPH N. REILAND, OF MAZEPPA, MINNESOTA.

## SASH-BALANCE.

No. 842,701.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed June 16, 1905. Serial No. 265,538.

*To all whom it may concern:*

Be it known that I, JOSEPH N. REILAND, a citizen of the United States, residing at Mazeppa, in the county of Wabasha, State of Minnesota, have invented certain new and useful Improvements in Sash-Balances; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in sash-balances.

One object of the invention resides in the provision of an exceedingly simple, inexpensive, durable, and efficient spring-actuated means for automatically balancing window-sashes.

A further object resides in the provision of a mechanism capable of being readily and detachably connected to the window-sashes for balancing purposes.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes may be made in the form, proportion, size, and minor details of invention within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a face view of the casing and sashes connected up with my invention, the illustration being shown mostly in section. Fig. 2 is a top plan view. Fig. 3 is an end view with one side of the casing removed. Fig. 4 is a detail view of one of the spring-actuated wheels. Fig. 5 is a detail view of the loop connection at the lower end of each chain.

Referring now more particularly to the accompanying drawings, the reference character 1 designates a window-casing, at the upper end and extending from side to side of which is a support 2, upon the bottom of which latter and the end thereof are mounted face-plates 3 and 4, there being upright posts 5 and 6 riveted upon the face-plates 3 and 4, respectively.

It will be observed that the support 2 is let into the side walls of the casing, as indicated by the reference character 7, the said support having a slot 8 at each end thereof, which lies

over the grooves 9 and 10 of the upper and lower window-sashes 11 and 12, respectively, the said grooves of the window-sashes being arranged one upon each side of the corresponding sash and terminating considerably short of the bottom of each sash. Each groove has arranged therein a headed pin or projection 13 for detachable engagement with the loops 14 and 15 of the chains 16 16 and 17 17. The former chains are connected at one end with the projection 13 of the lower sash and the latter chains with the similar projections in the upper sash. As shown in Figs. 1 and 3, the projections 13 are arranged in the bottom of the grooves. It will thus be understood that the aforesaid projections, loops, and chains are arranged upon each side and within the casing 1 for connection with the corresponding grooves of the corresponding sashes.

Mounted upon the aforesaid post 5 are upper and lower pairs of hollow wheels 16' and 17', respectively, the upper and lower plates 18 and 19 and 20 and 21, respectively, of each wheel extending considerably beyond its body portion to provide a groove for the reception of the chains 17 and 16, respectively. A similar pair of wheels is mounted upon the opposite post 6 in like manner with the corresponding chains; but as both pairs of wheels are identical in construction and arranged for the same purpose it is thought that a description of one pair is sufficient. The upper end of each chain is connected with its corresponding wheel by means of a bolt passing through the perforations 22 and 23 in the upper and lower wheels, respectively, and retained in place therein by nuts or other preferred means. Arranged in each wheel is a band-spring 24, one end of which is secured in any suitable manner to the corresponding post 5 or 6, the opposite end of each spring being connected to the inner face of the periphery of the corresponding wheel, the said springs being connected to the said upper wheels in such manner as to cause a rotation of the upper wheels in a direction opposite to the direction of movement of the lower wheels for a purpose well understood.

Since the upper sash is arranged to slide in the rear of the lower sash, it is obvious that the chains hereinbefore referred to are designed to travel in alinement and in spaced relation to each other upon the opposite sides of the sashes, both chains 16 and 17 being designed to pass over rollers 25 and 26, ar-



ranged in the aforesaid support 2 at each end thereof, there being therefore two rollers at each end of said support arranged one above the other, the lower roller being in alinement with the lower wheel and the upper roller being in line with the upper wheel, the wheels at each end of the said support being so arranged as to permit the chains to depend thereover into the corresponding grooves of the corresponding sashes, there being a slotted plate 27 arranged at each end of the support upon the face-plates 3 and 4 to insure the guidance of the chains from the wheels to their respective rollers.

It has been heretofore stated that the chains are arranged for detachable engagement with the corresponding sashes, and it will be observed that the loops 14 and 15 are each provided with an enlarged open portion 14' and 15', respectively, and a contracted portion 14<sup>a</sup> and 14<sup>b</sup>, respectively, the attachment of the chains to the corresponding headed pins or projections 13 being accomplished by simply placing the enlarged open portion of the corresponding loops over the said pins or projections and then pulling the former upwardly, so that the contracted neck portion of each loop may engage the corresponding pin and be prevented from becoming displaced therefrom by reason of the head 13' of the pin or bolt 13.

From the foregoing it will be seen that the upper and lower sashes may be balanced regardless of what position they may assume and that in order to accomplish this purpose the upper wheels at each side of the frame rotate in a direction opposite to the direction of rotation of the wheels therebeneath. It will also be observed that by reason of the aforesaid sheaves and the grooves of the corresponding sashes there is not the slightest possibility of the chains becoming unlocked or otherwise worked together to interfere with proper operation of the sashes, for the said sheaves will surely guide the corresponding chain into the groove of the corresponding sash.

What is claimed is—

1. A sash-balance comprising a casing, upper and lower sashes slidably mounted in the casing, upper and lower wheels arranged at each side and in the top of the casing, each wheel having a spring arranged therein, a chain connected with each of said upper and lower wheels, the chains of the upper wheels being detachably connected with the upper sash, and the chains of the lower wheels being detachably connected with the lower sash.

2. A sash-balance, comprising a casing, upper and lower sashes arranged for sliding movement within the casing, each sash having a groove upon each of its side faces, a pro-

jection arranged at the bottom of each groove, upper and lower spring-actuated wheels arranged in the top of the casing and upon each side thereof, chains connected with each wheel, the chains of the upper wheels being connected with the upper sash, and the chains of the lower wheels with the lower sash, each chain having a loop provided with a contracted portion for engagement with the corresponding projection in the corresponding groove of the sashes, and a plate arranged at each side of the casing at the top thereof to guide the chains in their passage from their respective wheels to the corresponding rollers.

3. A sash-balance comprising a casing, upper and lower sashes arranged for sliding movement within the casing, each sash having a longitudinally-extending groove formed on each of its side faces, a projection arranged at the bottom of each groove; upper and lower hollow wheels mounted in the top of the casing at each side thereof, chains connected with each wheel, the chains of the upper wheels being connected with the upper sash, and the chains of the lower wheels with the lower sash, each chain having a loop provided with a contracted portion for engagement with the projection in the corresponding sash-groove, and a band-spring mounted within each wheel for actuating the same, the upper wheels being arranged for movement in a direction opposite to that of the lower rollers.

4. A sash-balance, comprising a casing, upper and lower sashes arranged for sliding movement in the casing, each sash having a longitudinally-extending groove formed in each of its side faces, a projection arranged at the bottom of each groove, upper and lower hollow wheels mounted in posts arranged in the top of the casing at each side thereof, each wheel being formed with a perforation in its body, chains secured to each wheel and to the projection in the corresponding sash-groove, each chain having a bolt at its upper end for engagement in the perforations in said wheels, and a contracted portion for engagement with the said projections, the chains of the upper wheels being connected with the upper sash, and the chains of the lower wheels with the lower sash, and a band-spring mounted in each for actuating the same, the upper wheels being arranged for movement in a direction opposite to that of the lower rollers.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH N. REILAND.

Witnesses:

B. H. DETERS,  
 C. A. ARPKE.