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PATENTED MAR. 12, 1907.

V. WYSS.
WINDOW BLIND.

APPLICATION FILED JULY 24, 1905.

3 SHEETS—SHEET 1.

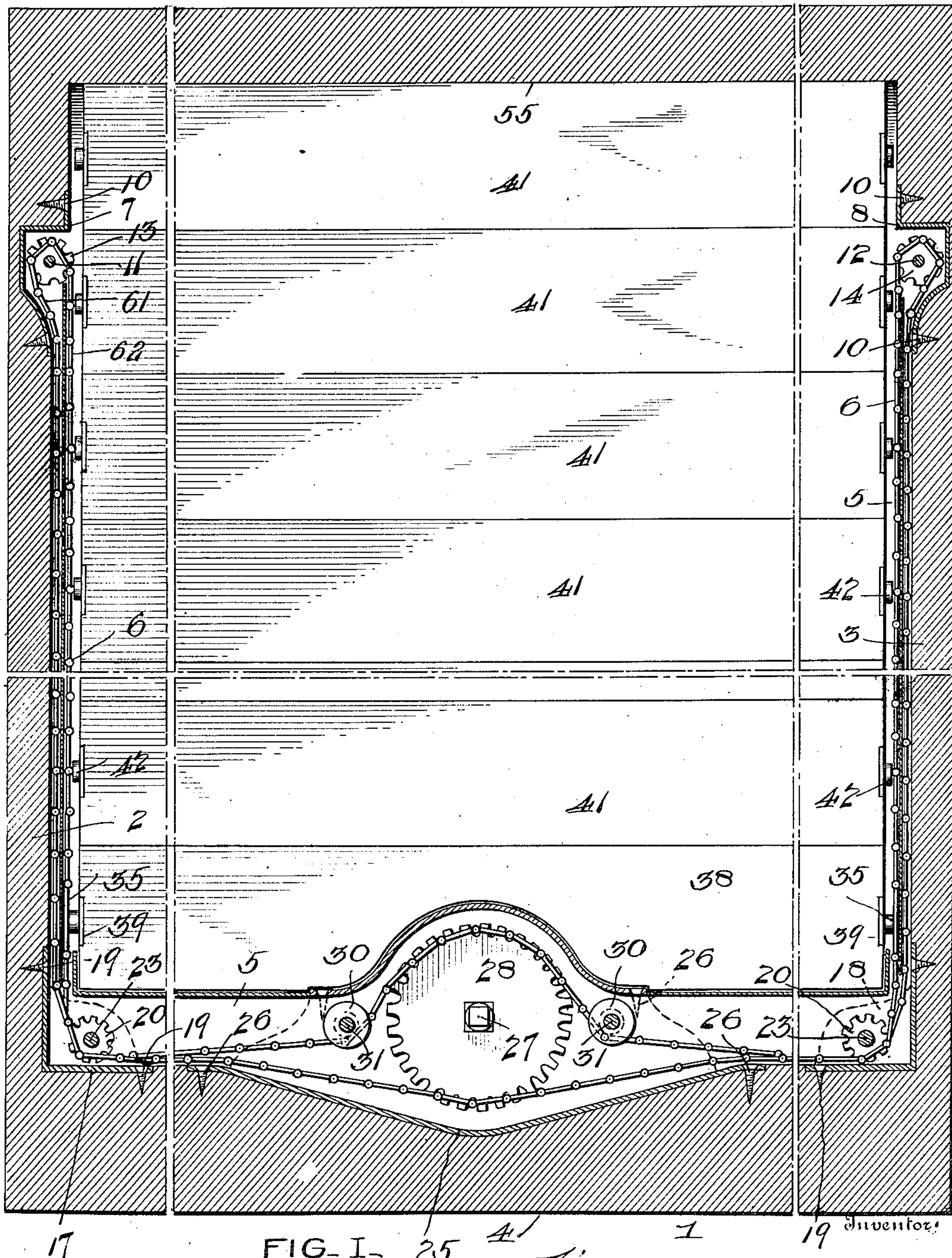


FIG. I.

Witnesses

Witnesses
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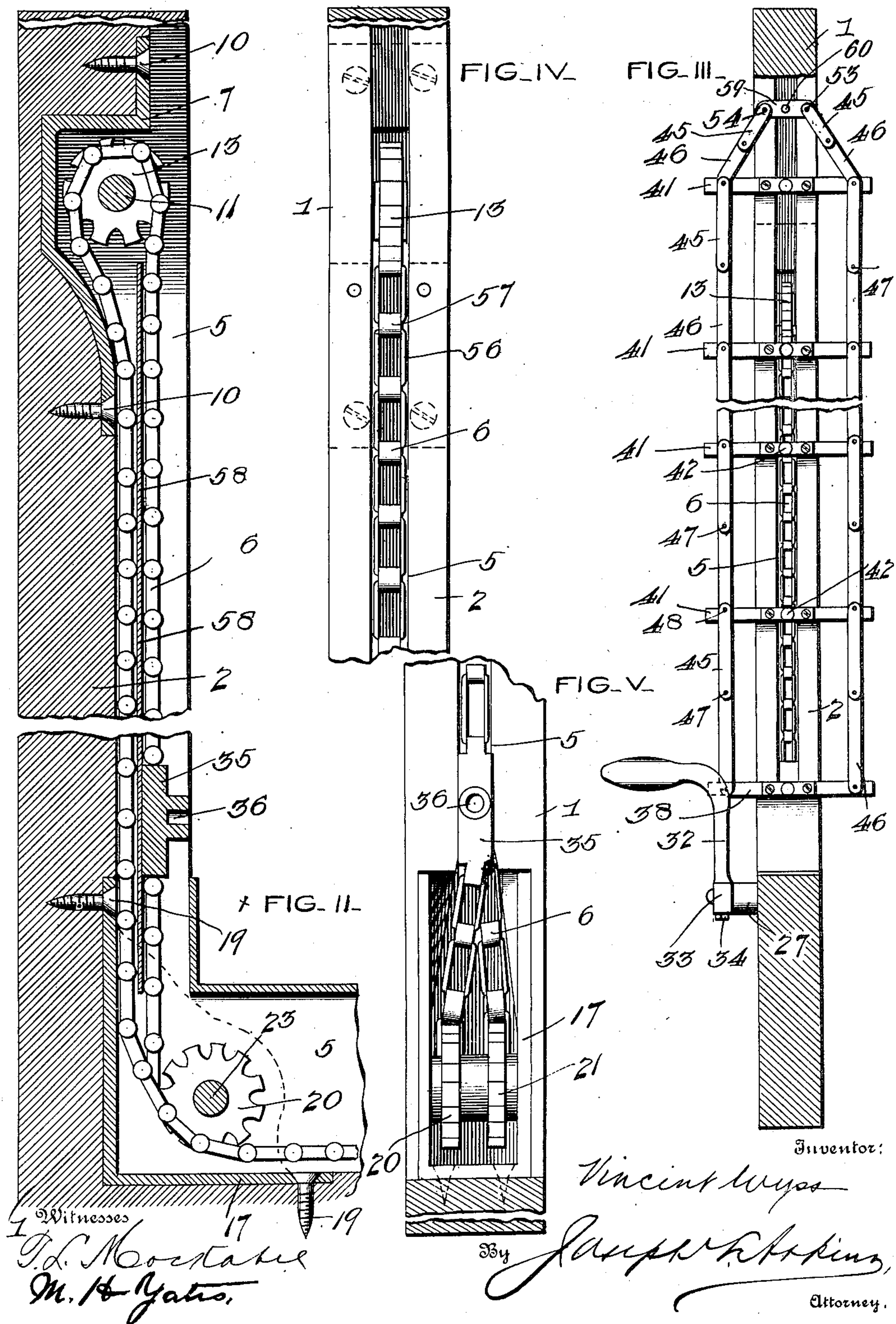
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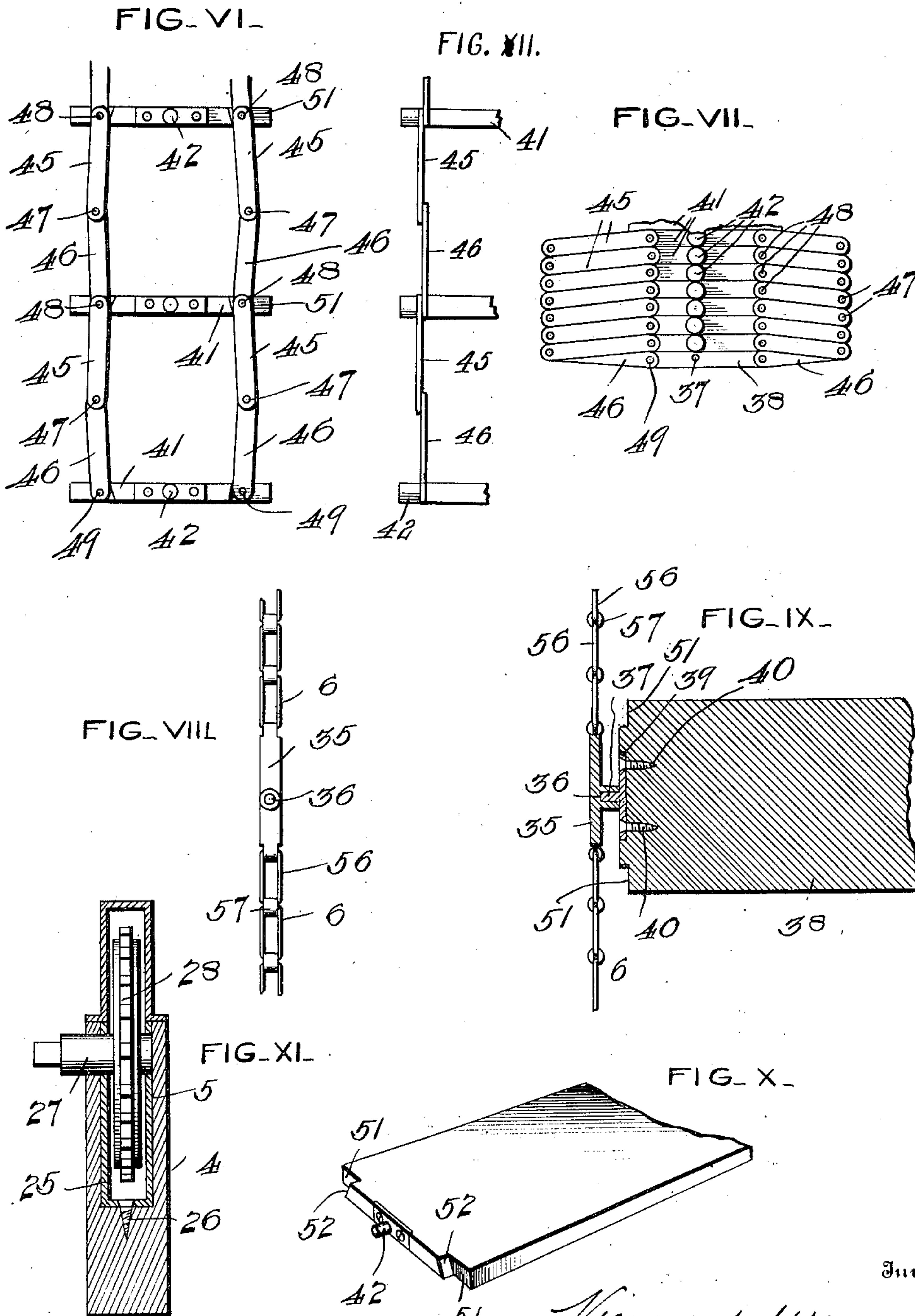
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3 SHEETS—SHEET 3.



Witnesses
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UNITED STATES PATENT OFFICE.

VINCENT WYSS, OF PITTSBURG, PENNSYLVANIA.

WINDOW-BLIND.

No. 847,143.

Specification of Letters Patent.

Patented March 12, 1907.

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To all whom it may concern:

Be it known that I, VINCENT WYSS, of Pittsburgh, county of Allegheny, State of Pennsylvania, have invented certain new and useful Improvements in Window-Blinds, of which the following is a specification.

The object of my invention is to produce a window-blind by use whereof it is practicable to dispense with outside shutters, awnings, inside blinds, and, if desired, with window-sash.

My blinds can be made of any kind of wood, metal, or other suitable material. They may be so constructed as to afford to a window secure protection against intrusion from without, or they may be adapted solely for use as a means of regulating the light and air admitted through a window or other similar opening. They may be permanently fixed in a window-frame, but are preferably made readily removable therefrom at will. They are in construction for ordinary purposes light, durable, simple, and ornamental, easy of operation, and can be used on any kind of buildings, such as hospitals, office-buildings, club-houses, and residences.

What constitutes my invention will be hereinafter specified in detail and succinctly set forth in the appended claims.

In the accompanying drawings, which constitute a part of this specification, Figure I is a front view of a preferred form of embodiment of my invention with its frame in section, showing the raising and lowering mechanism thereof, the same being broken vertically and longitudinally in order to present the same upon a liberal scale within the limits of space available, and the link-braces being omitted for the sake of clearness in illustration. Fig. II is a view of one side of the subject-matter of Fig. I upon an enlarged scale. Fig. III is a cross-section of the subject-matter of Fig. I looking toward the edge of the slats. Fig. IV is a similar partial view, upon an enlarged scale, but with the slat-supports removed. Fig. V is a section of the frame, illustrative of a pair of the corner-pulleys upon which the endless chain for raising and lowering the slats works. Fig. VI is an elevation of three slats assembled together, showing their runners and connecting mechanism. Fig. VII illustrates a number of slats folded. Fig. VIII illustrates that portion of the endless chain which carries the slat-actuating link. Fig. IX is a view at

right angles to Fig. VIII, showing in section the slat-actuating link and a portion of a slat with its stud mounted therein. Fig. X is a perspective view of a portion of one of the slats with its runner in place and showing cut-away portions in opposite corners of the slat for the accommodation of the braces which connect it with its neighbors. Fig. XI is a section of main sprocket and frame with chain-pulley detached. Fig. XII is a view at right angles of the subject-matter of Fig. VI, but showing each slat as broken away at one end.

Referring to the numerals on the drawings, 1 indicates a frame, which may be made of any suitable material, such as metal or wood, and which, if of wood, as preferred, consists of a suitable piece of joinery. It is provided in its opposite sides 2 and 3 and in its bottom rail 4 with a continuous groove 5. The groove 5 is of a sufficient depth to accommodate an endless flexible member, preferably a sprocket-chain 6, and also to leave an inwardly-opening space in the sides 2 and 3, respectively, for the accommodation of the slat-runners hereinafter referred to. The groove is preferably enlarged at its opposite ends in the sides 2 and 3, respectively, to accommodate in each a pulley-box, (indicated by the numerals 7 and 8, respectively,) which may be secured in place, as by screws 10. Each of the boxes 7 and 8 is designed and adapted to carry, as upon a shaft 11 and 12, respectively, a sprocket-gear pulley 13 and 14, respectively, adapted to operatively intermesh with the links of the chain 6.

In the opposite lower corners of the frame, respectively, provision is made for pulley-boxes 17 and 18, adapted to be secured in place, as by screws 19, and each provided with a pair of sprocket-gear pulleys 20 and 21, revolubly mounted in the box, as upon a shaft 23.

The bottom rail 4 is provided with a recess to accommodate an actuating-gear box 25, secured in place, as by screws 26, and carrying, as upon a shaft 27, an actuating sprocket-gear 28. The chain 6 meshes with the teeth of the gear 28 upon opposite sides thereof. It is led to engagement therewith below directly with the gears 21 and bends about the upper part under the direction of guide-pulleys 30, revolubly mounted in the box 25, as upon shafts or axles 31 upon opposite sides of the gear 28. The shaft 27, to which

the gear 28 is fixed, projects inwardly a sufficient distance to accommodate a crank 32, which is provided with a collar 33 to receive it, the collar and the end of the shaft being preferably squared and the collar provided with a set screw 34, by which the crank may be detachably secured to the shaft.

The chain 6 is provided upon its oppositely-moving portions 61 and 62, respectively, with a lift-link 35, having coaxially-disposed round sockets 36, respectively, which accommodate the studs 37 upon the opposite ends of a lowermost slat 38. The studs 37 are preferably carried upon plates 39, (see Fig. IX,) which may be secured, as by screws 40, to the ends of the slat. The slat may be made of wood or of light metal, such as aluminium or any other material suitable and preferred for the purpose. Above the slat 38 in regular succession are a series of slats 41, the number thereof being such as is adapted to fill the space in the frame 1. Each slat is provided at its opposite ends with a runner 42, which works snugly but freely in the groove 5, wherein space between the outer edge of the groove and the chain within the groove is provided for respective accommodation of the several runners. The sockets 36 on the lift-link 35 also work in the said groove. The oppositely-moving portions 61 and 62 preferably are closely adjacent to each other along sides 2 and 3. This construction obviates the necessity of providing a deep groove in sides 2 and 3 for the accommodation of chain 6, and in consequence the cost of manufacture of the device is lessened, while a compact disposition of its operating parts is made possible.

The slats 41 are connected one with another and with the slat 38 in such manner that they may be suspended from the upper part of the frame 1 and may be lifted in successive order by the uplifting of the lowermost slat 38. Any suitable means may be employed to support the slats in any position they may occupy when relieved of manipulation; but I prefer that the friction between the shaft 27 and its bearings, (not shown in the drawings,) together with that between the chain and its pulleys, should be sufficient to attain this result. Provision is also made for adjusting the angle of inclination of all of the slats in the frame 1 by manipulation of any one of the slats, and more particularly of the lowermost slat 38. The means which I prefer to employ for the purpose last specified is a plurality of pairs of braces, each brace comprising links 45 and 46, (see Fig. VI,) pivoted to each other, as indicated at 47, the free end of link 45 being pivoted, as at 48, to the end of one slat, and the free end of link 46 being pivoted, as at 49, to a corresponding end of the next adjacent slat. Two pairs of braces for each end of

each slat is provided, with the exception that each end of the lowermost slat is provided with one pair of braces only. The pivotal connections upon the lowermost slat are indicated by the numeral 49. Those upon the remaining slats are indicated by either the numeral 48 or the numeral 49. I prefer to secure the ends of the braces to the slat in recesses 51, provided for them, as clearly shown in Figs. VI and X. These recesses being defined by inclined shoulders 52 are adapted to impart to each pair of braces a slight outward bend, as shown in Fig. VI. Hence when the lowermost slat 38 is lifted by raising of the lift-link 35 this causes the several pairs of braces which unite it to the next slat 41 above it to close until the slat 38 lies flat against the bottom of the said slat 41. Thereupon continued upward movement of the lift-link 35 lifts the first slat 41 against the second, and so on throughout the entire series until they are all closed, as shown in Fig. VII.

A cross-piece 59 is preferably pivoted to the frame, as upon a pin 60. To this cross-piece the topmost braces are preferably pivoted, as at points 53 and 54, respectively.

A box 55 may be provided, as indicated in Fig. I, in the upper part of the frame 1 for the reception and concealment of the slats when drawn together, as shown in Fig. VII. A movement of the lift-links 35 in a direction opposite to that previously described serves after the slats are lifted into the box 55 to draw them out therefrom and to assemble them across the opening in the frame 1. At any position below the box 55 all of the slats may be tilted to any desired angle by manipulation of any one of the slats, more particularly the slat 38, which is at all times readily accessible to manipulation. In the turning of the slats by the manipulation just referred to the slat 38 turns upon its studs 37 in the sockets 36, thereby communicating motion similar to that of the parallel-ruler to the several slats 41, with which it is successively connected by the braces 45 and 46, two pairs of which are provided between each pair of adjacent slats at their opposite ends, respectively.

I prefer to construct the chain 6 of a series of long links 56 and short links 57, making the short links of cylindrical contour in cross-section to correspond with the recesses provided for their accommodation in the several sprocket-gear pulleys 13, 14, and 28 and the guide-pulleys 20 and 21.

Between the ascending and descending portions of the chain 6, within the groove 5 provided for them in the side pieces 2 and 3, respectively, of the frame 1, I prefer to provide a separating-strip 58, which may be made of brass and which is designed to lend freedom and noiselessness of movement to the chain 6. (See particularly Fig. II.)

The operation of my device is as follows: Supposing the slats to be lowered, as shown in Fig. 1, a turn of the crank 32 to the left serves to impart synchronous upward move-

5 ment to the lift-links 35, and thereby to raise the lowermost slat 38, and after it the slats 41 in their order of succession, as specified. A movement of the crank in the opposite di-
10 rection will serve to lower them. It may be observed in this connection that the desired motion of the lift-links 35 is imparted to them by the disposition of the bends of the chain about the respective pulleys 13 and 14, 20 and 21, and that the chain serves to sup-
15 port any of the slats or all of them in any position to which they may be adjusted by manipulation of the crank 32. The diameter of the sprocket-gear 28 determines the driving speed of the chain 6, and it may be conven-
20 iently constructed of a size to enable five or six turns of the crank in either direction to entirely raise or entirely lower all of the slats.

The manner of adjusting the angle of inclination of the several slats transversely in the frame has already been described.

25 The frame 1 may be mounted in any suitable manner, as upon hinges or hangers in a window-frame, after the manner of an inside blind, and may be opened or closed, and is se-
30 curable in the opened and closed positions by any suitable or ordinary means provided for a like purpose in respect to inside blinds.

If it be desired in the use of my blinds to dispense with the sash, as in summer-time, 35 that is entirely feasible by provision of the ordinary fly-screens in the window.

What I claim is—

1. The combination with a frame and slats, of a series of braces comprising links pivoted 40 in pairs to the ends of the adjacent slats and to each other, the uppermost pairs of braces being suspended from the frame, means upon the slats for causing the braces to close out-
45 wardly, and means upon the frame for raising and lowering the slats.

2. The combination with a frame and a series of slats, said slats being capable of angular adjustment about their longitudinal axes, of an endless flexible member carried in the 50 frame and directly connected with one of said slats at its opposite ends for raising and lowering said slats.

3. The combination with a frame and a series of slats, said slats being capable of angular adjustment about their longitudinal axes, of an endless flexible member carried in the 55 frame and directly connected with one of said slats at its opposite ends for raising and lowering said slats, and mechanism for actu-
60 ating said flexible member.

4. The combination with a frame provided with a series of sprocket-pulleys and a sprocket-gear, of a sprocket-chain meshing with the sprocket-gear and guided by the 65 pulleys, and a series of slats in the frame,

said slats being capable of angular adjustment about their longitudinal axes, and one of said slats being connected at its opposite ends with the chain.

5. The combination with a frame having 70 corners and provided with a groove extending around two corners of the frame and having pulley-boxes and pulleys therein at its opposite ends, of pulley-boxes in the corners of the frame provided each with a pair of pul- 75
leys, an actuating-gear and guide-pulleys upon opposite sides thereof, an endless chain bent around said pulleys and said gear, substantially in the manner specified, and a series of slats operatively connected with said 80 chain.

6. The combination with a frame having corners and provided with a groove extend- 85 ing around two corners of the frame and having pulley-boxes and pulleys therein at its opposite ends, of pulley-boxes in the corners of the frame provided each with a pair of pulleys, an actuating-gear and pulleys upon opposite sides thereof, an endless chain bent around said pulleys and said gear substan- 90
tially in the manner specified, and an independently-adjustable series of slats having its lowermost slat operatively connected with said chain.

7. The combination with a frame, of an 95 endless flexible member provided with portions crossing each other and adapted to move in relatively opposite directions, slats directly connected at opposite ends to said oppositely-moving portions, respectively, 100
and means located at the crossing of said portions for actuating said endless flexible member.

8. The combination with a frame, of a sprocket-chain provided with portions cross- 105 ing each other and adapted to move in relatively opposite directions, slats directly connected at opposite ends to said oppositely-moving portions, respectively, and a sprocket-gear located at the crossing of said 110 portions for actuating said sprocket-chain.

9. The combination with a frame provided upon its sides with a shallow groove, of an endless flexible member therein provided with portions closely adjacent to each other 115 and adapted to move in relatively opposite directions, a separating-strip between said oppositely-moving portions, and a series of slats, one of said slats being directly connected at its opposite ends with said oppo- 120
sitely-moving portions, respectively.

10. The combination with a frame provided upon its sides with a shallow groove, of an endless flexible member therein provided with portions closely adjacent to each 125 other and adapted to move in relatively opposite directions, a separating-strip between said oppositely-moving portions, a series of slats, one of said slats being directly connected at its opposite ends with said op- 130

positely-moving portions, respectively, and means for actuating said endless flexible member.

11. The combination with a frame provided with a groove having pulley-boxes and pulleys therein at its opposite ends, of an endless flexible member bent around said pulleys, the portions of said member leading to each pulley being closely adjacent, coaxial guide-pulleys in the corners of the frame and parallel to the aforesaid pulleys, and a series of slats, one of said slats being directly connected with said flexible member.

12. The combination with a frame provided with a groove having pulley-boxes and pulleys therein at its opposite ends, said pulleys being mounted to rotate in a plane parallel to the plane of the frame, of an endless flexible member bent around said pulleys, the portions of said member leading to each pulley being closely adjacent, coaxial guide-pulleys in the corners of the frame and

parallel to the aforesaid pulleys, and a series of slats, one of said slats being directly connected at its ends with the inner portions of said endless flexible member.

13. The combination with a frame provided upon its sides with a shallow groove, of pulleys in said groove, an endless flexible member in said groove and bent around said pulleys, the portions of said member leading to each pulley being closely adjacent, a separating-strip between said oppositely-moving portions, means for guiding said flexible member, and series of slats, one of said slats being directly connected with said endless flexible member.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

VINCENT WYSS.

Witnesses:

GOTHARD WYSS,
CHARLES MEYER