

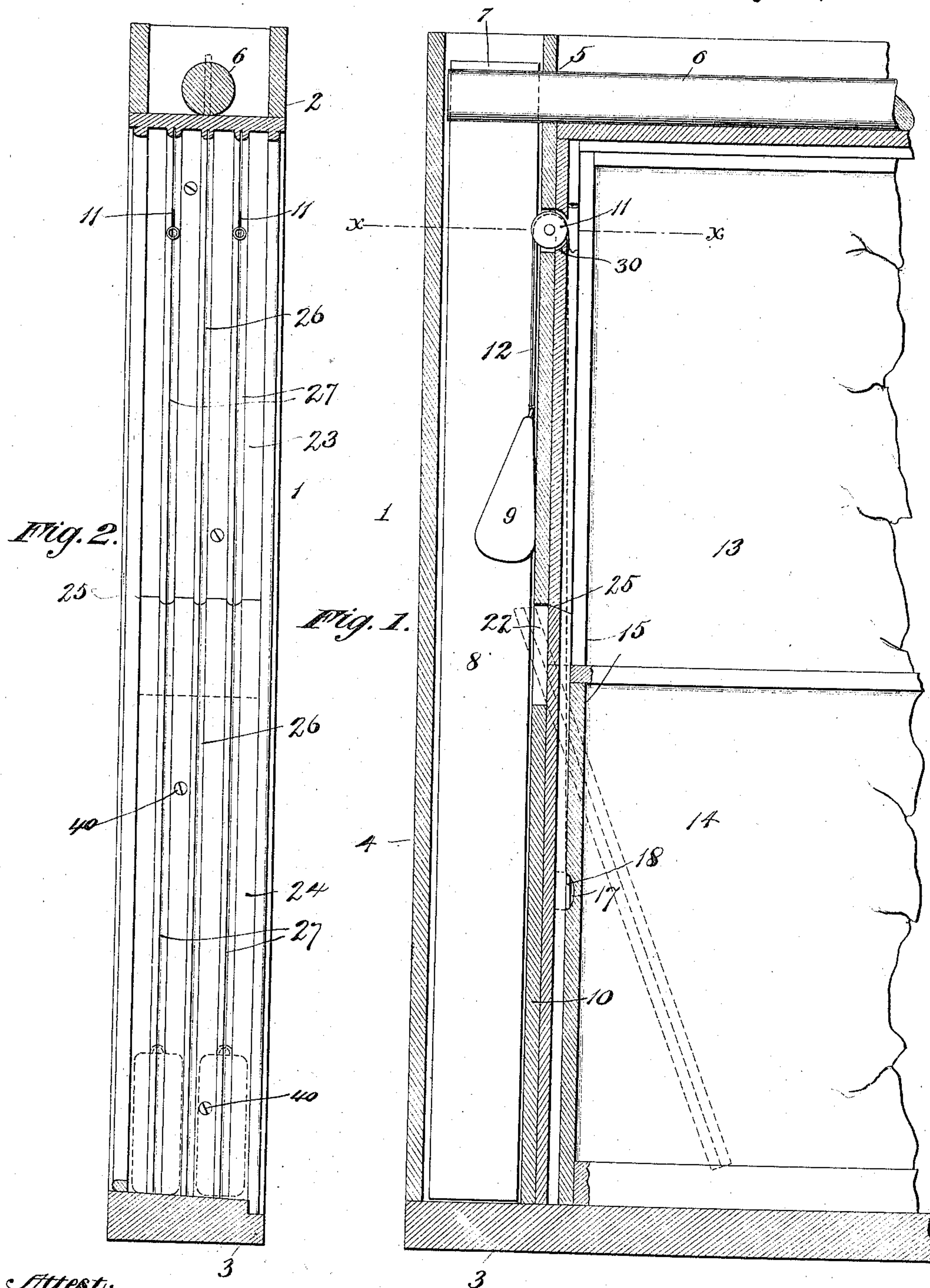
(No Model.)

2. Sheets—Sheet 1.

J. A. CLEVELAND.
WINDOW.

No. 542,726.

Patented July 16, 1895.



Attest.
Edw. D. Duvall Jr.
W. J. S. Duvall

Inventor:
Judson A. Cleveland.
By *W. S. Duval, Atty.*

(No Model.)

J. A. CLEVELAND.
WINDOW.

2 Sheets—Sheet 2.

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Fig. 3.

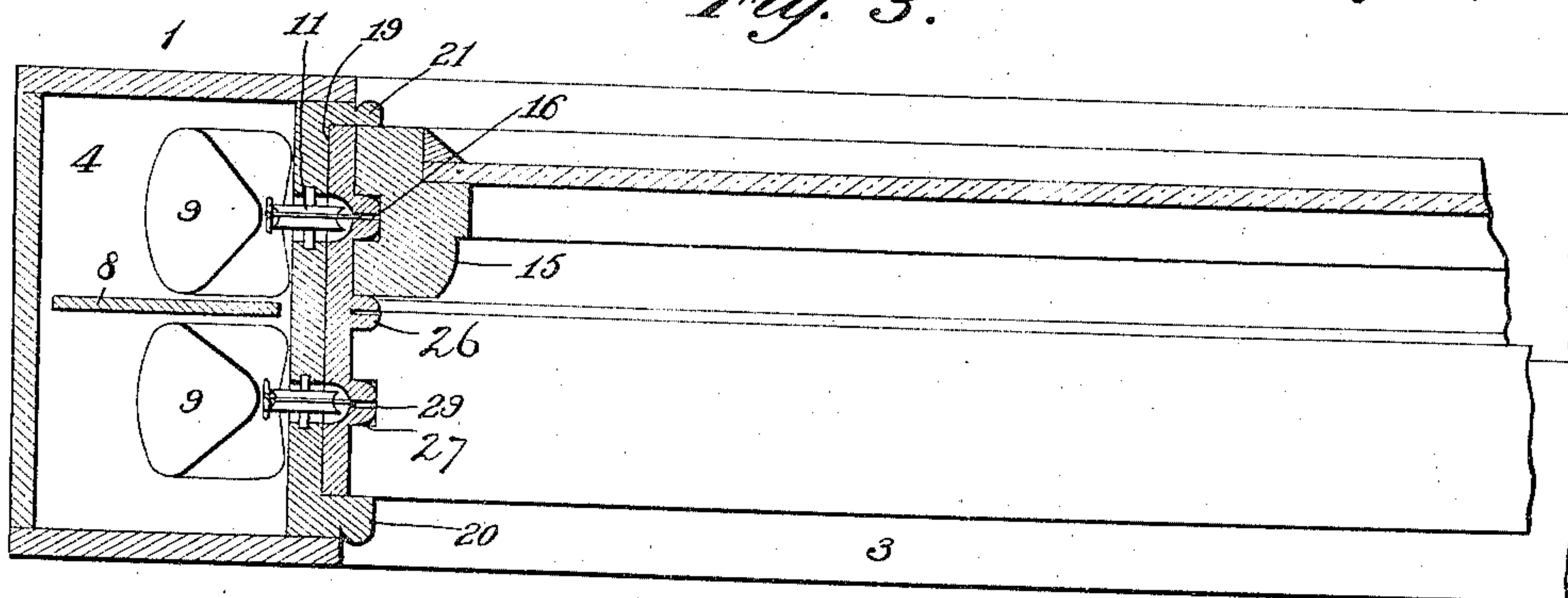


Fig. 4.

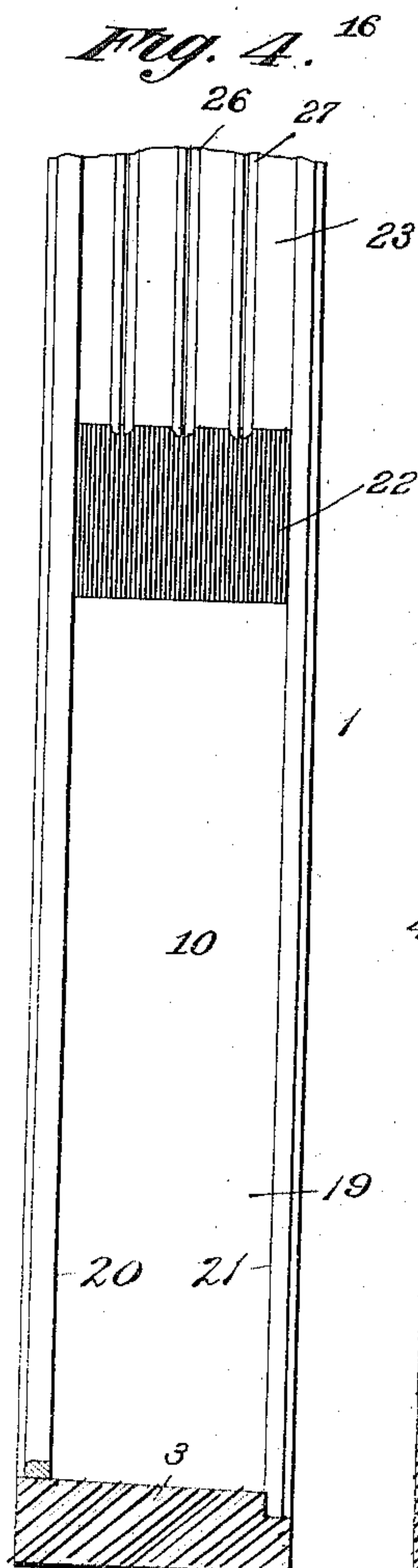


Fig. 5.

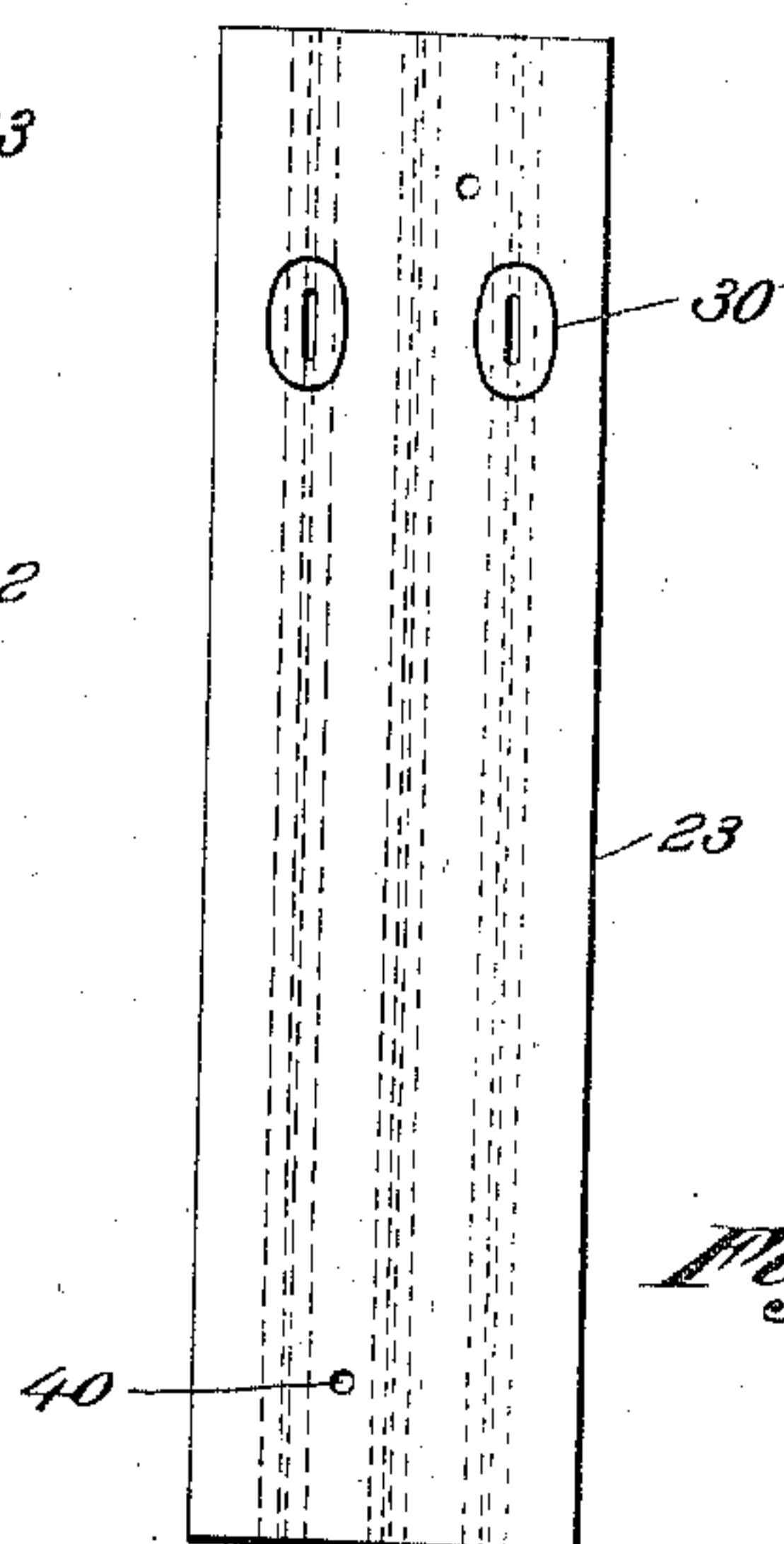


Fig. 6.

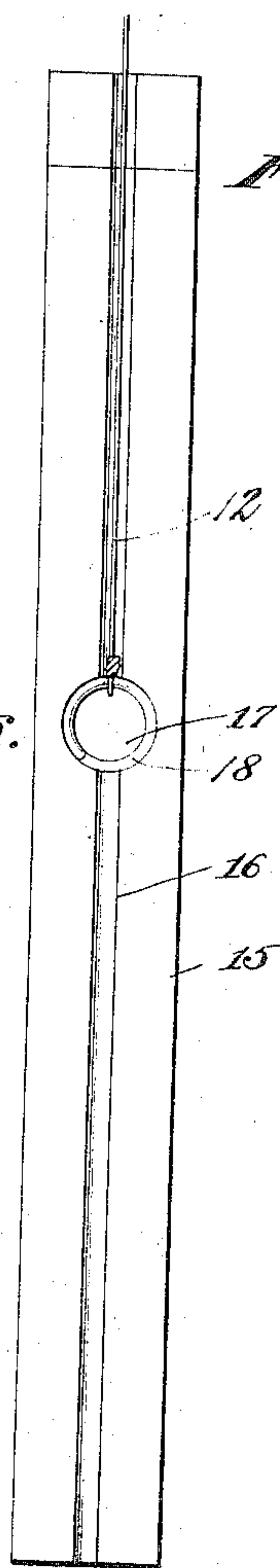


Fig. 8.

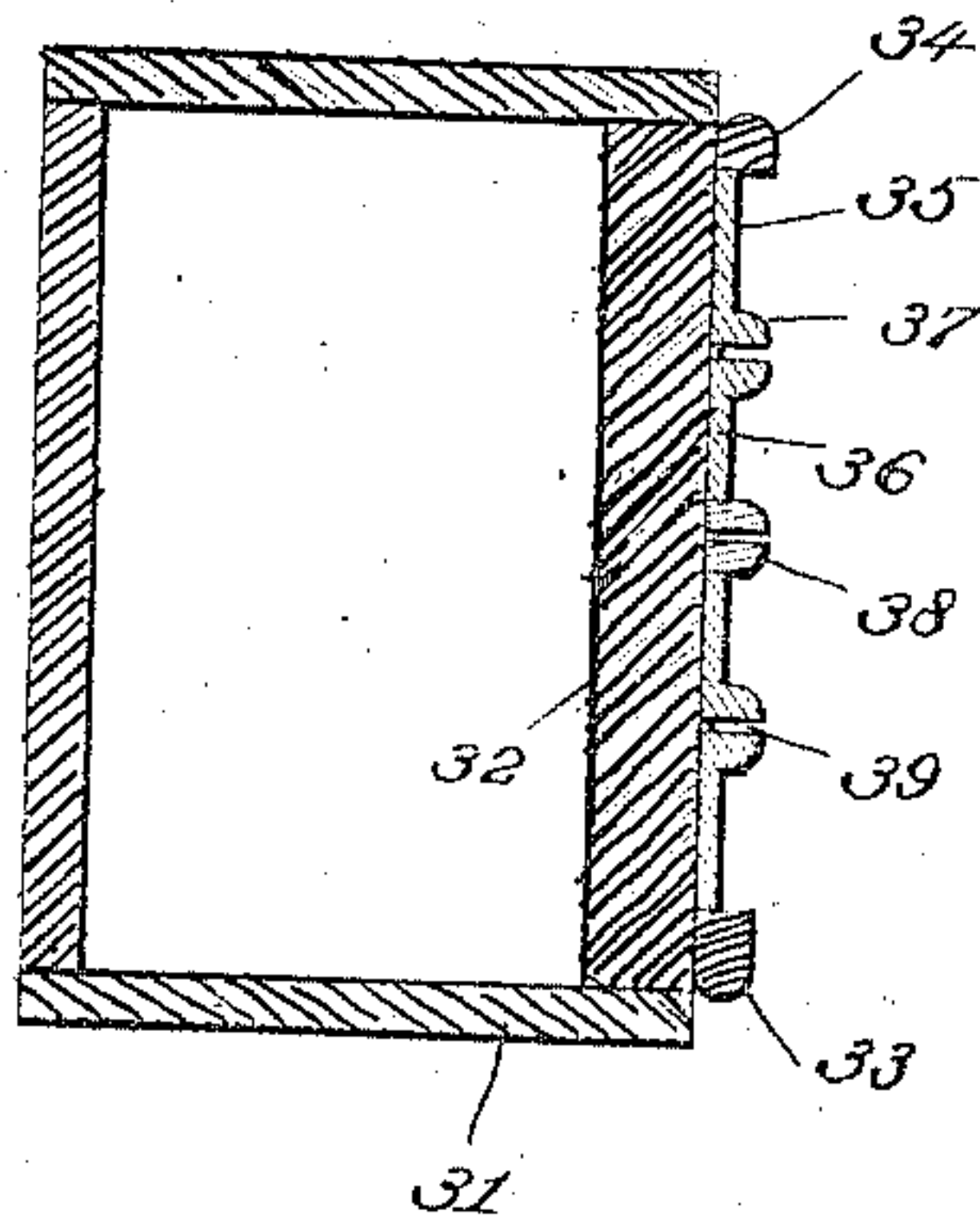
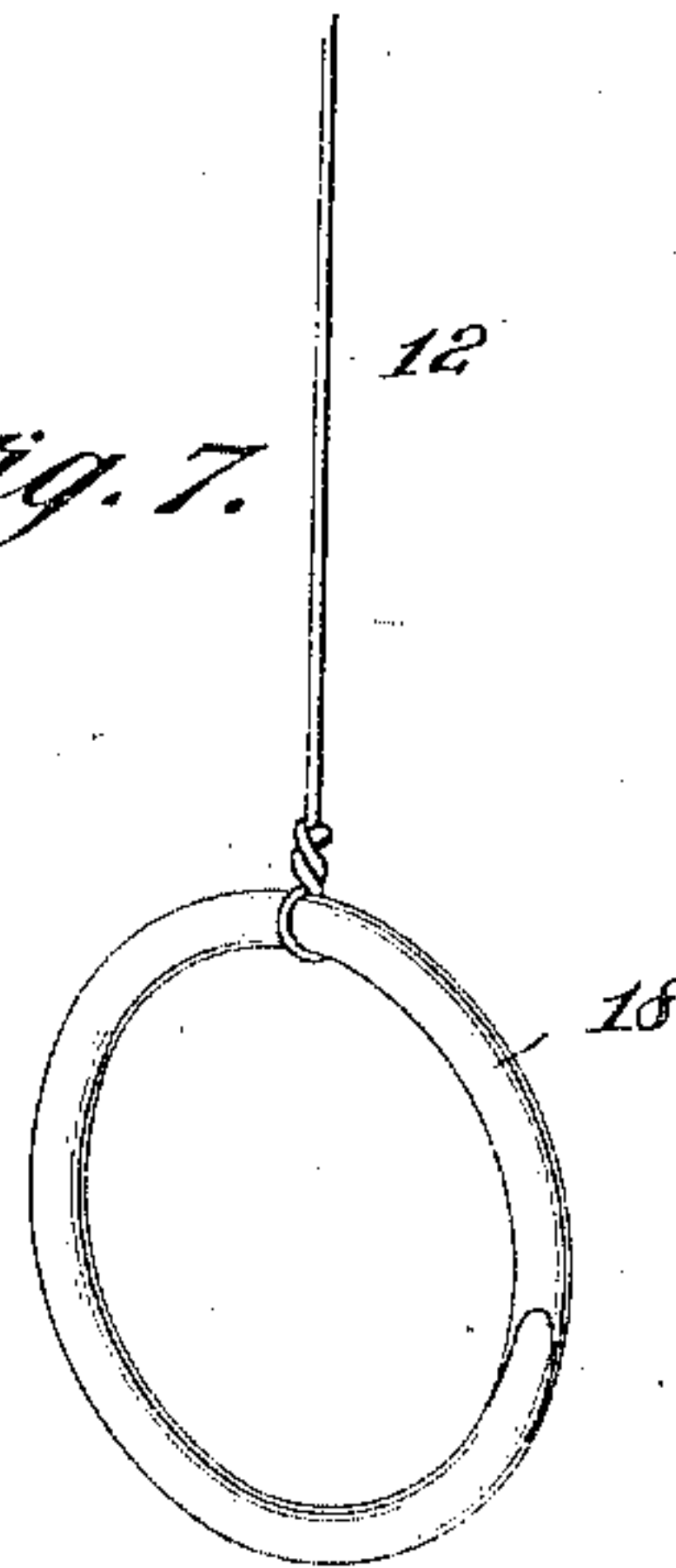


Fig. 7.



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UNITED STATES PATENT OFFICE.

JUDSON A. CLEVELAND, OF DULUTH, MINNESOTA.

WINDOW.

SPECIFICATION forming part of Letters Patent No. 542,726, dated July 16, 1895.

Application filed January 8, 1895. Serial No. 534,244. (No model.)

To all whom it may concern:

Be it known that I, JUDSON A. CLEVELAND, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Windows; 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 windows; and among the objects in view are to produce a window wherein the sashes may be readily removed and inserted in the window-frames without the necessity of removing the usual bead-strips; to so construct the frame as to obviate to a great degree the entrance of dust between the crevices; to produce guides for the sashes between the usual beads, which guides are so constructed as to obviate any binding of the sashes by reason of the action of the atmosphere thereon; to produce a simple and convenient means for attaching the sashes to the weight-wires and obviate in the same the employment of hooks or screws for such connection; to provide a partition-strip for separating the weights and preventing them from contacting with each other, and, finally, to construct the entire frame in such a cheap and simple manner as will readily recommend it to general use.

Other objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a partial elevation and sectional view of one side of a window constructed in accordance with my invention. Fig. 2 is a vertical transverse sectional view of the same, the sashes being removed. Fig. 3 is a horizontal transverse sectional view on the line X X of Fig. 1. Fig. 4 is a view similar to Fig. 2, the lower guides being removed. Fig. 5 is a reverse elevation of the upper guide. Fig. 6 is an edged view of one of the sashes and a portion of the weight-wire, illustrating the preferred manner of connecting the two. Fig. 7 is a detail of the connection employed at the end of the

weight-wire. Fig. 8 is a horizontal sectional view similar to Fig. 3.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 designates the opposite vertical sides of a window-frame; 2, the upper sill, and 3 the lower sill. The sides, as usual, are provided with the weight-boxes 4 and the walls of the latter extend above the top sill, as shown in Figs. 1 and 2, and in such extended portions are provided round bearing-openings 5, in which are loosely journaled the transverse rock-shaft 6, whose ends occur vertically above the boxes 4. The ends of the shaft are slotted, as indicated at 7, and inserted in the slots or kerfs thus produced are the vertically-hanging partitions 8, that longitudinally subdivide the boxes 4 for the accommodation of the weights 9. The partition-strips being thus loosely suspended will readily yield to any vibration of the weights as they ascend or descend during the movements of the sashes.

The inner boards 10 of the sides of the frame are provided near their upper ends with the usual openings for the reception of the pulleys 11, and over said pulleys are preferably passed weight-wires 12. The inner ends of the weight-wires are connected to the weights 9, while the outer ends are designed to be connected with the sides of the sashes.

The sashes are designated by the numerals 13 and 14, and their vertical side rails 15 are provided with vertical grooves 16 between their opposite edges and extending throughout their length. At those points where the usual connection is made between the weight-wires and rails, I form a concave countersink or recess 17. This countersink is without hook, eye, or other usually-employed device, but is designed to have sprung therein a split expanding-ring 18, which is attached to the end of each of the wires 12. It will be obvious that by compressing the rings 18 so that their terminals will pass each other, the rings may be inserted into the recesses 17 of the sashes, and by a subsequent release of the rings the same will expand so as to fit snugly within said recesses and thus form a secure connection between the sashes and weight-

wires. At the same time it will be observed that a most ready disconnection may be at any time had.

The boards 10 are preferably channeled between their opposite vertical edges, as best shown in Fig. 3 and indicated by the numeral 19, and by such channeling it will be seen that I produce the inner and outer stop-beads 20 and 21, respectively. These beads are usually separate and attached to the window-casing, and by the channeling of the board 10, I obviate this expense. Of course the edges of the integral stop-beads 20 and 21 may be shaped to represent the usual separate beads, but such shaping may be performed simultaneously with the channeling and the expense is not thereby increased.

Immediately below their middles the boards 10 are provided with openings 22, which extend transversely between the inner and outer stop-beads 20 and 21, such openings being of less length, preferably, than those usually formed for the insertion of the ordinary billet-shaped weights. These openings 22 are for the purpose of giving access to the boxes 4 for the insertion or withdrawal of the weights 9.

The weights 9, it will be observed by reference, are so shaped as to bring the preponderance of weight at the bottom, or, in other words, they are somewhat of a cone shape, whereby I avoid in their production the formation at their upper ends or apices of any shoulders that would be calculated to abut against or engage with the upper edges of the openings 22 in any attempt to withdraw said weights from the boxes. The openings are preferably of about two-thirds the length of the weights, which, but for their formation, as herein described, of such weights, would be entirely too small for the purpose. The locations of these openings perform another function that will hereinafter appear distinct from that of affording a passage-way for the weights.

Seated between each of the front and rear stop-beads 20 and 21 is a lower and upper filling-board 23 and 24, respectively. The upper filling-board is secured in position between the beads 20 and 21 and extends from the top sill of the frame down to the upper edge of the opening 22 and has its lower edge under-cut or beveled, as shown and indicated by the numeral 25. The lower filling-board extends from this point to the lower sill 3 and has its upper edge beveled to conform to the lower edge of the filling-board 23 and therefore overlapped by the same and closes the opening 22. The meeting edges of the filling-boards 23 and 24, and also the upper ends of the openings 22, must be such a distance above the meeting-rails of the sashes as is equal to the depth of the stop-bead of the sill in order that the sashes, when lowered subsequent to a removal of the lower filling-boards, are enabled to be removed. These filling-boards 23 and 24 are provided at their centers

with integral vertical spacing-ribs 26 and at the opposite sides thereof with similar integral guide-ribs 27. Each of the ribs 26 and 27 is broader at its base than at its outer edge and is provided throughout its length with a narrow groove 29 in said outer face. The inner faces of the filling-boards 23 are recessed, as best shown by Fig. 5 and indicated at 30, for the accommodation of those portions of the pulleys 11 that project inwardly. These pulleys, it will be observed, are so mounted with reference to the inner walls of the boxes 4 that their peripheries extend beyond the same and prevent the weights from exerting undue friction upon the walls of the boxes as they rise and fall with the raising and lowering of the sashes. The spacing-ribs 26 serve the usual function of such strips by spacing the sashes apart, while the guide-ribs 27 enter the grooves 16 of the sash-rails and serve to guide said sashes in their movements. The grooves or kerfs, with which the ribs 26 and 27 are provided, are produced for the purpose of preventing any expansion of those ribs as caused by action of the atmosphere and thus obviate any resulting binding of the same upon the sash-rails, so that the sashes are always free for movement. The peculiar formation of the ribs—that is, forming the same so as to be wider at their bases than at their apices—also aids to resist any expansion of the ribs as caused by the action of the atmosphere. The grooves 29 in the guide-ribs serve the additional function of forming ways through which the weight-wires may pass, and thus they are protected from any wear.

Although I have herein shown the filling-strips as applied to a channeled window-frame, it will be obvious by reference to Fig. 8 that I may employ the same in connection with the frame as usually formed. In said figure, 31 designates the frame, 32 the inner wall or board, and to the same is applied the usual supplemental and separable inner and outer stop-beads 33 and 34. It is well known that in order to remove the sashes from such a constructed frame the beads 33 must be removed. I avoid this in my invention, as will be hereinafter seen, and insert between these beads 33 and 34 the filling-strips 35. These strips may be longitudinally divided that there may be a base 36 and a guide-bead 37 for each of the boards 32, or the two guide-beads may be formed on a single base. In the present instance, however, I have shown them as separate and have set in between the same the space-rib 38. Each of the beads 37 and 38 are produced as formerly described, and have the grooves 39, the operation and function being the same.

In either of the instances mentioned it will be seen that in order to remove the sash it is merely necessary to raise the two sashes, and then by removing one or more retaining-screws 40, passed through any portion of the filling-strip 24 into the board 10, the upper end of said board may be tilted inwardly

through the opening 22, and the board as a whole subsequently removed. (See dotted lines, Fig. 1.) The lower filling-board 24 being removed, it is simply necessary to lower the sashes and take them out one by one, the rings 18 being readily removed by a slight lateral pull.

From the foregoing description, in connection with the accompanying drawings, I have provided a very simple construction of window-frame wherein the sashes are positively and readily guided in their vertical movements, may be readily removed and replaced, connected and disconnected from the weight-wires, wherein free access may be had to the weights and their boxes, and efficient separation being provided for the weights; that I obviate any possibility of warping of the ribs and consequent impediment of readily raising and lowering of the sashes and by the provision of the ribs serve in a great measure to prevent ingress of dust by forming a tortuous path for the same. It will be understood, as shown in Fig. 2, that the upper filling-board 23 is permanently secured in position by suitable screws, and that the under side or face of the top sill may have the formation continued by simply grooving the same in an obvious manner, whereby the ribs (both space and guide) will be produced so as to carry out the effect.

I do not limit my invention to the precise details of construction herein shown and described, but hold that I may vary the same to any degree within the knowledge of the skilled mechanic without departing from the principle of my invention or sacrificing any of its advantages.

Having described my invention, what I claim is—

1. The combination with the window-frame and the openings 22, the upper filling-board provided with guide-ribs having grooves, the lower filling-board meeting the upper filling-board opposite said opening and also provided with ribs having grooves, pulleys arranged above the openings, weight-wires arranged over the pulleys, weights at the inner ends of the wires and rings at the outer ends thereof, said wires lying within the grooved ribs of the upper filling-boards, the ends of which act as stops for the rings when the lower filling-boards are removed, of sashes removably arranged in the frame and grooved to receive the ribs and provided with circular recesses adapted to receive the rings in a removable manner and retain the same by contact of their walls with the rings, substantially as specified.

2. The combination with a window casing having its sides extended above its top sill, a transverse shaft loosely journaled in openings formed in said extended portions and terminating above the weight boxes of the frame, and a partition strip let into the ends of the shaft and depending loosely in the boxes, window sashes, pulleys, wires passing

over the same and connected to the sashes, and weights connected to the wires within the boxes at opposite sides of the partition, substantially as specified.

3. The combination with a window frame its pulleys, weight-wires and weights, of sashes having circular recesses formed in their side-rails, split expanding rings connected to the wires and adapted to be compressed to enter the recesses and when released to expand and engage the same, substantially as specified.

4. A window-frame having its usual guide-ribs provided at their outer faces or edges with open contractible longitudinal grooves, in combination with sashes grooved to span the grooves of the ribs and to receive said ribs, substantially as specified.

5. The combination with a window frame having inner and outer stop-beads of an intermediate filling-board having guide and intermediate spacing-ribs grooved longitudinally, and window sashes having grooves to receive the guide-ribs substantially as specified.

6. The combination with a window frame having inner and outer stop-beads, of an inner filling-board provided with space and guide-ribs grooved at their inner edges and cone-shaped in cross-section and sashes grooved to receive the guide-ribs, substantially as specified.

7. The combination with a window frame having its inner face provided with grooved guide and spacing-ribs, of sashes grooved to receive the guide-ribs, substantially as specified.

8. The combination with a window frame the inner boards of which are provided with openings extending above their middles and independent filling-strips arranged removably on said board and meeting a distance above the meeting rails of the sashes equal to the depth of the bead of the window sill and provided with grooved guide ribs, of sashes grooved between their edges to receive said ribs pulleys arranged in the upper portion of the frame, and weight wires arranged on the pulleys, detachably connected to the sashes and arranged in said grooves, substantially as specified.

9. The combination with a window frame the inner board of which is provided with the openings 22, the upper and lower independent filling boards 23 and 24 the former being under-cut and terminating at the upper edge of the opening 22 and the latter beveled to correspond therewith and extending from such point to the lower sill, guide-ribs arranged on said filling-boards removably, and screws for retaining the boards in position, substantially as specified.

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

JUDSON A. CLEVELAND.

Witnesses:

FRANK D. BLACKISTONE,
W. S. DUVALL.