

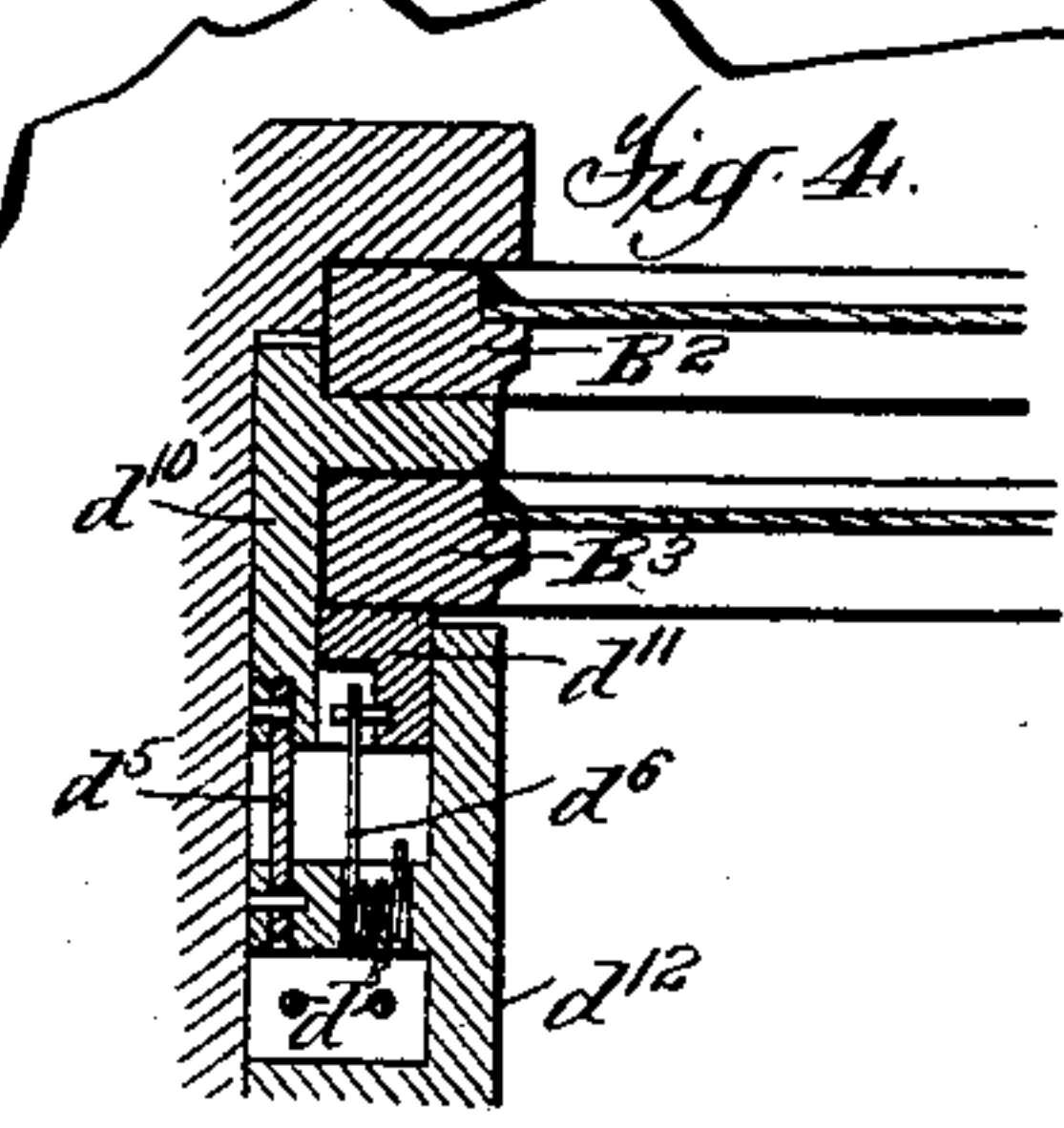
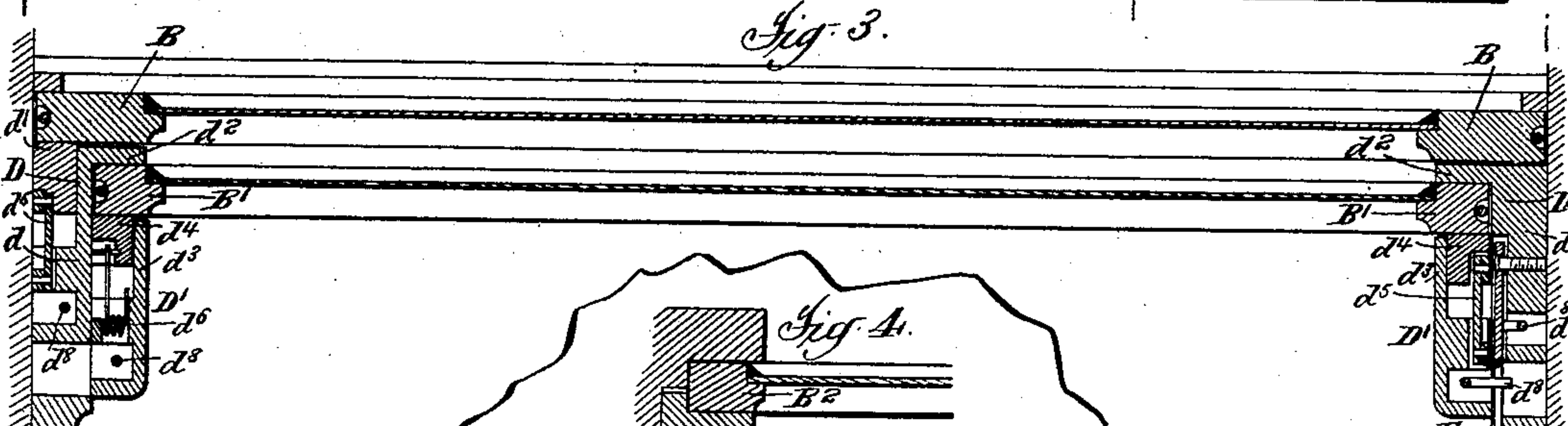
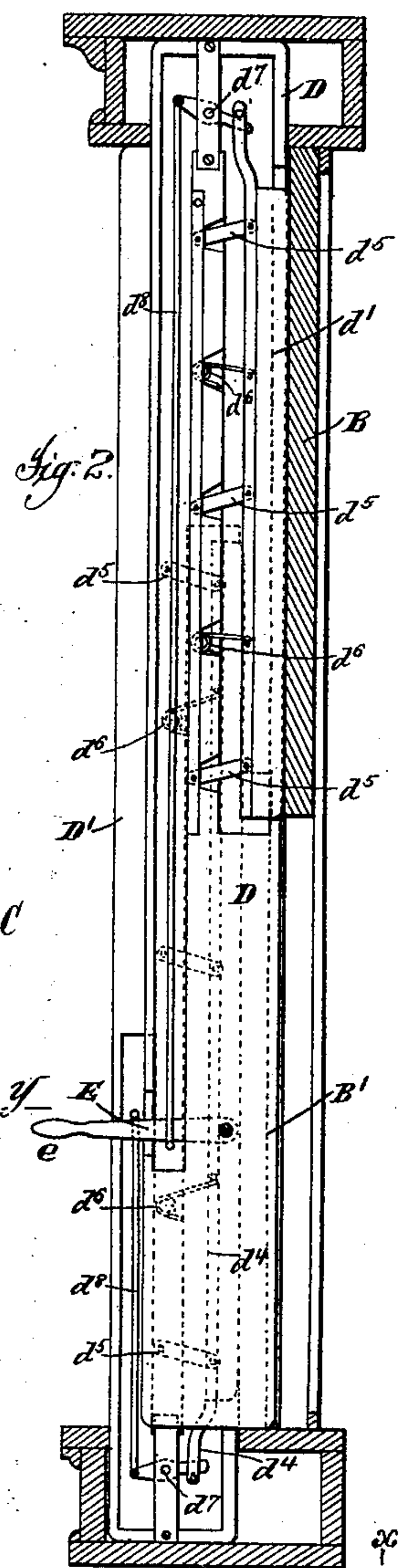
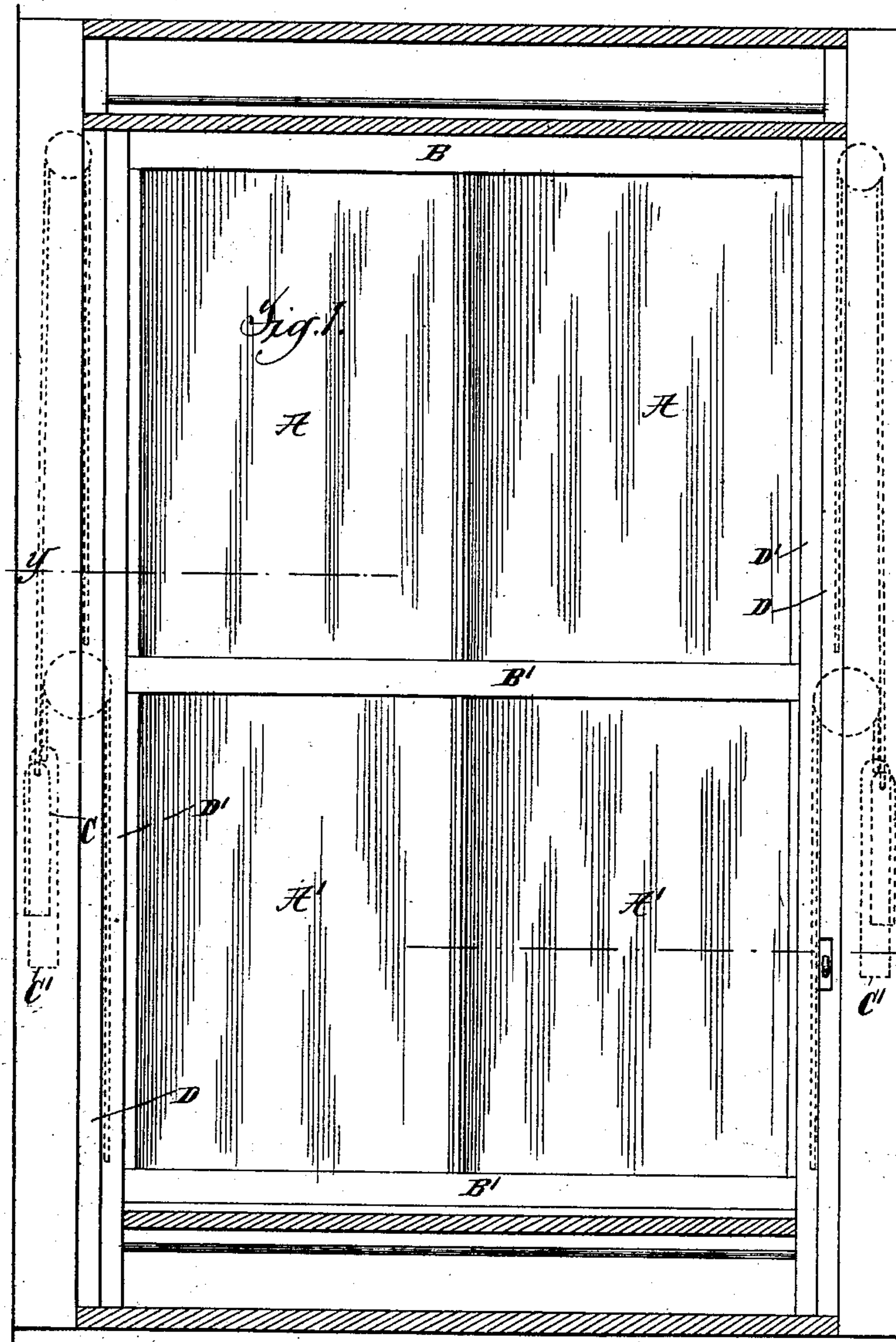
(No Model.)

2 Sheets—Sheet 1.

O. M. EDWARDS.
WINDOW.

No. 482,344.

Patented Sept. 13, 1892.



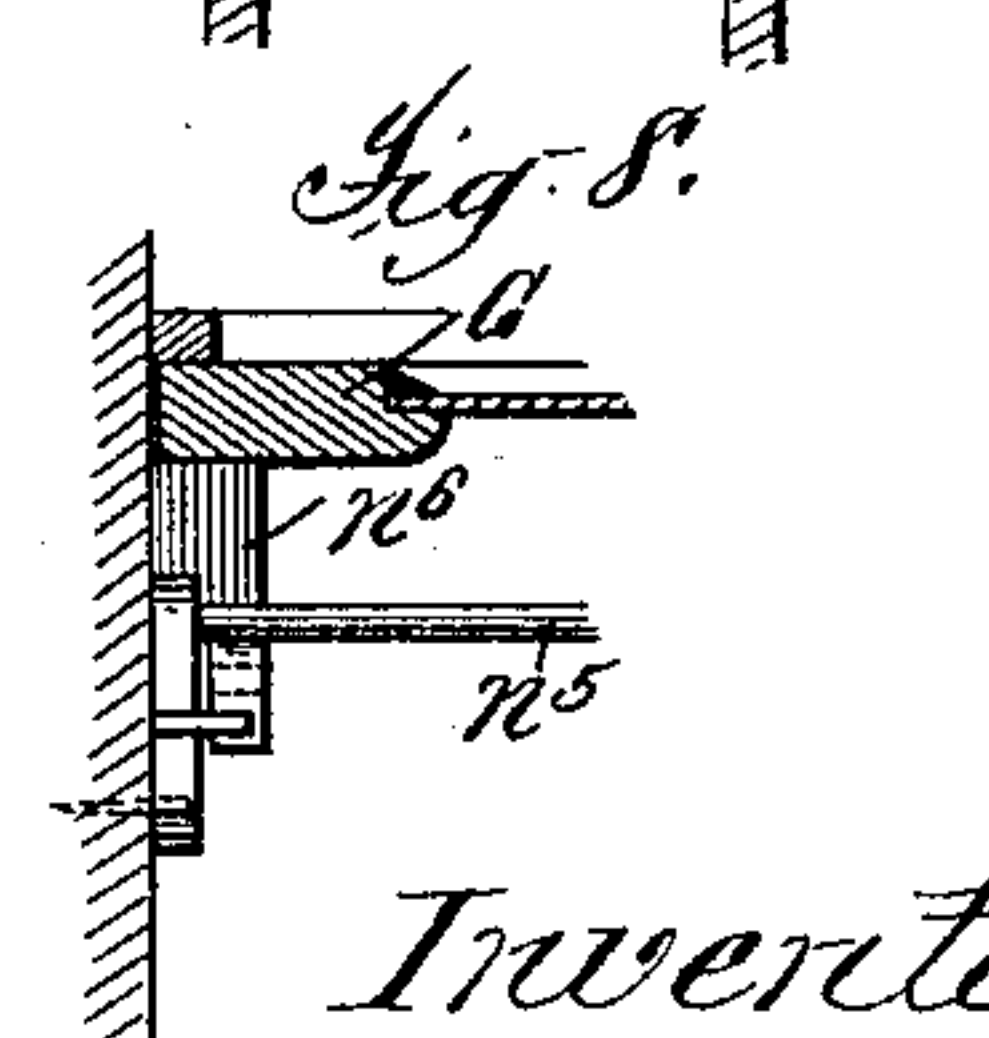
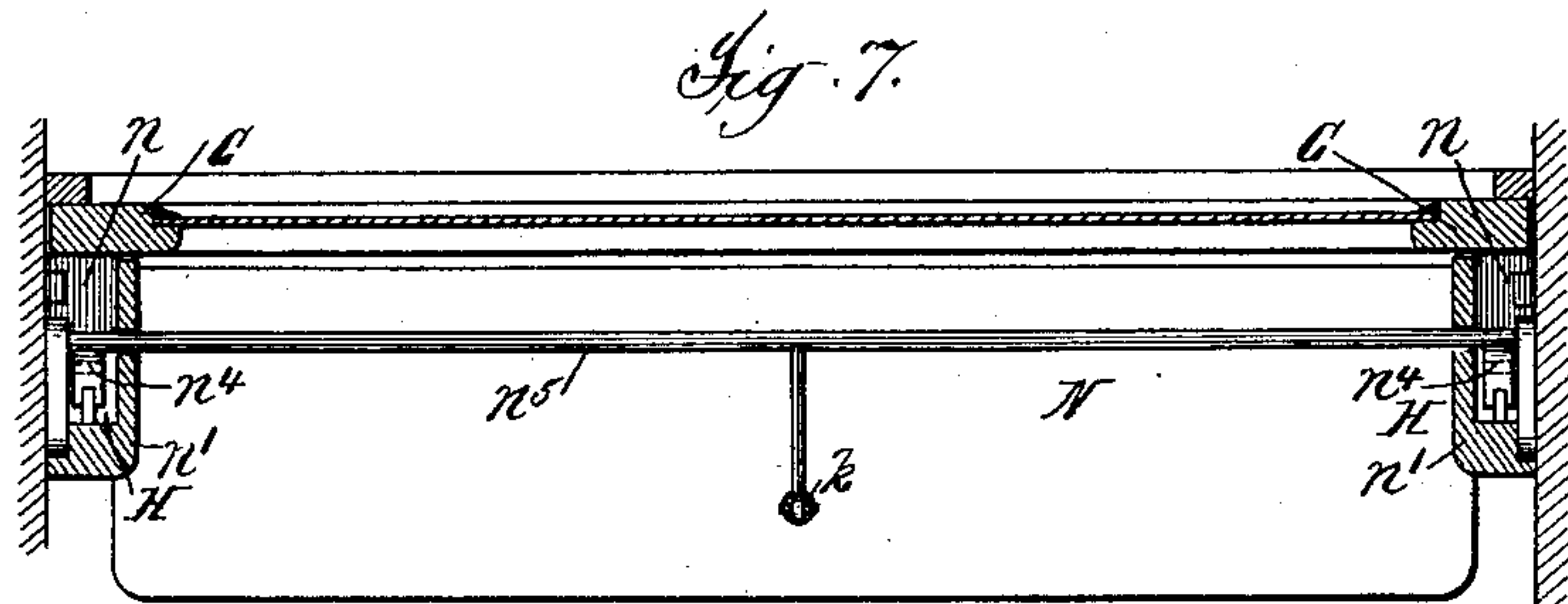
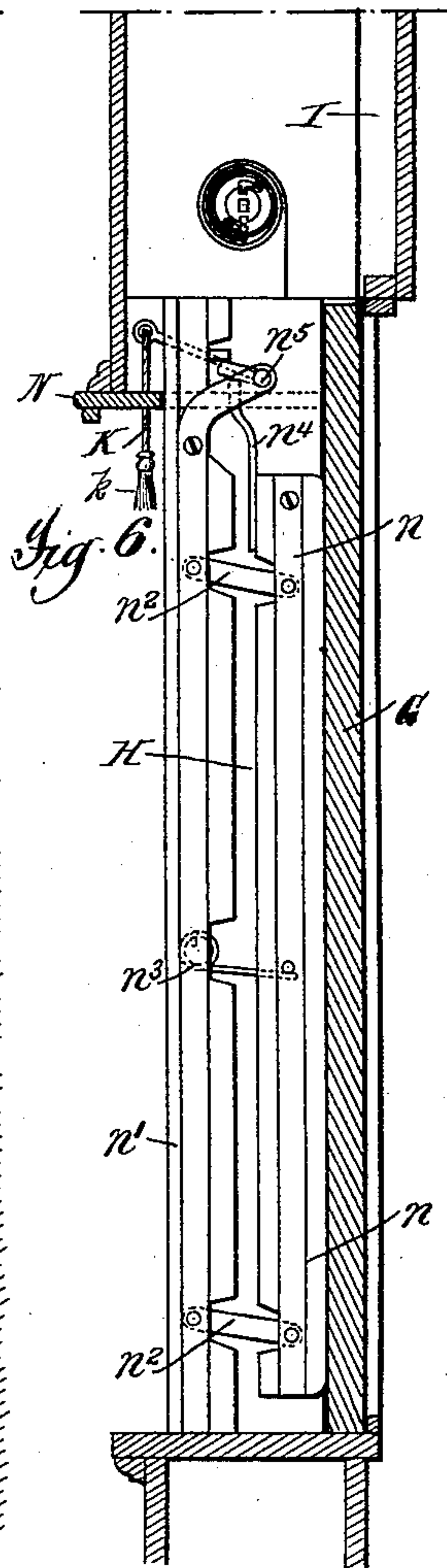
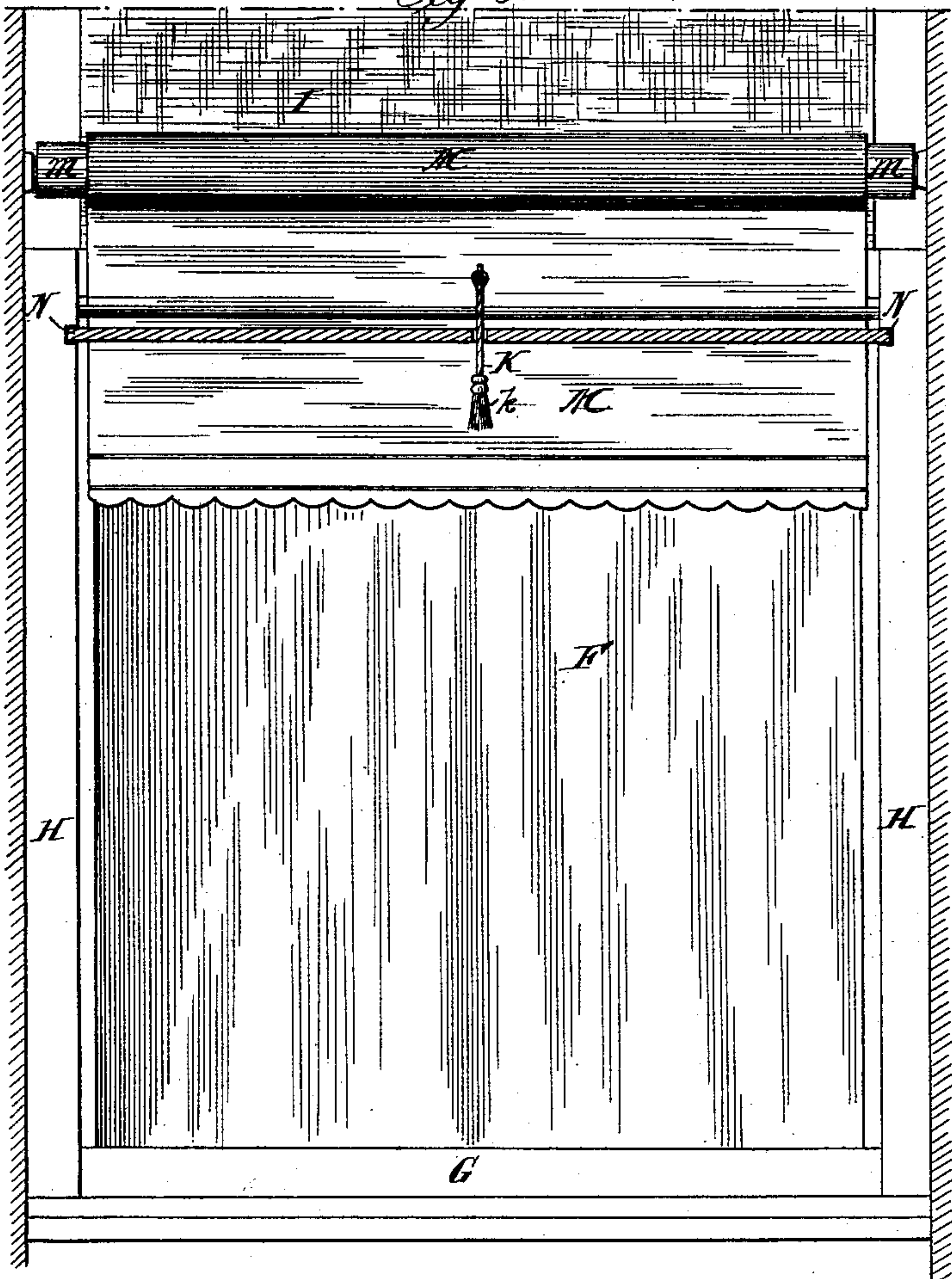
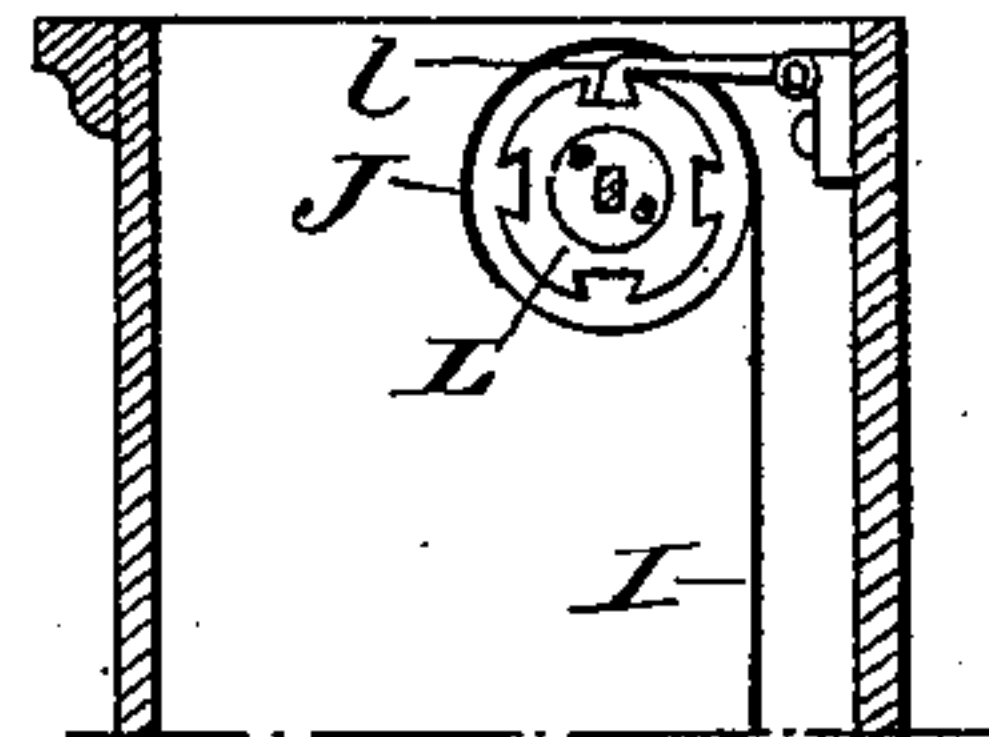
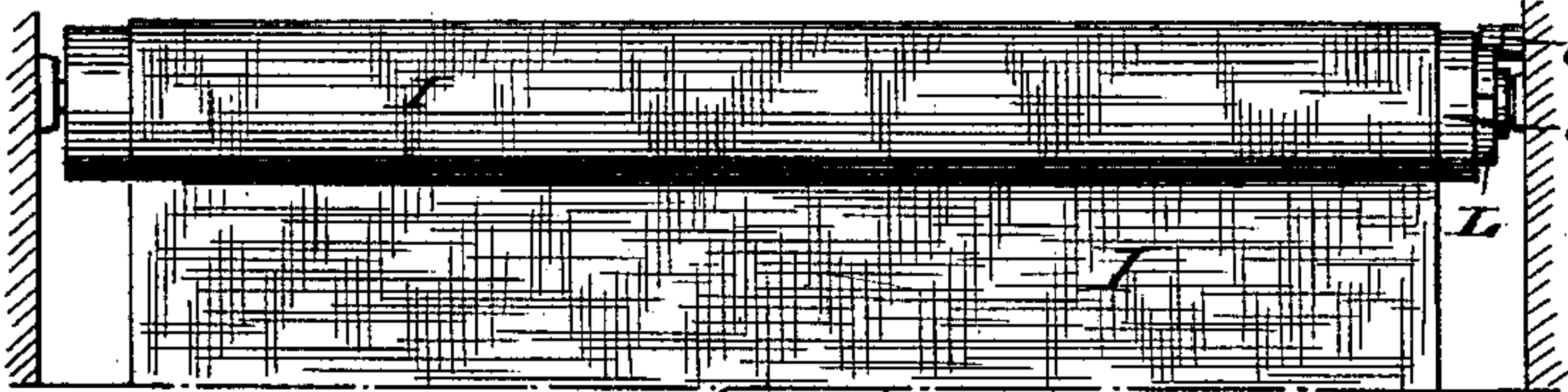
Attest:
Geo. H. Potts.
Frank B. Murphy.

Inventor:
Oliver M. Edwards
Per *W. L. Newton*
Attorney

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Attorney

UNITED STATES PATENT OFFICE.

OLIVER M. EDWARDS, OF SYRACUSE, NEW YORK.

WINDOW.

SPECIFICATION forming part of Letters Patent No. 482,344, dated September 13, 1892.

Application filed October 7, 1891. Serial No. 407,979. (No model.)

To all whom it may concern:

Be it known that I, OLIVER M. EDWARDS, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Windows, of which the following is a full, clear, and exact description, reference being had to the drawings accompanying and forming a part of the same.

My invention relates to devices employed for holding window-sashes in desired positions, releasing the same, and under certain circumstances automatically moving the same in one direction when released; and it has for its object the provision of means whereby a sash is held in the desired position, and also when closed it is held against opening by force applied to its exterior and may be quickly released therefrom and may under certain circumstances be caused to automatically move in one direction.

The invention consists, first, in the combination of movable stops arranged in a peculiar manner with a window sash or sashes; second, in the combination of movable stops arranged in a peculiar manner with a spring or springs, a window sash or sashes, and means for moving the stops against the stress of the spring or springs, and, third, in the combination of movable stops arranged in a peculiar manner, a spring or springs, a window sash or sashes, and means for automatically moving the sash or sashes in the desired direction; and my invention also consists in certain other novel and useful combinations of parts and peculiarities of construction and operation, all of which will be hereinafter fully described, and then pointed out in the claims.

Like letters of reference, wherever they occur, indicate corresponding parts in all the figures.

Figure 1 is a front elevation of a window with two sashes which move in opposite directions to open, as is customary in house-windows. Fig. 2 is a longitudinal section on line *xx* of Fig. 3. Fig. 3 is an enlarged cross-section on line *yy* of Fig. 1. Fig. 4 is a cross-section of a modification of the construction shown at the left of Fig. 3. Fig. 5 is a front

elevation of a window with a single sash such as is customarily found in passenger-cars. Fig. 6 is a longitudinal section on a line through the right of Fig. 6 between the window-frame proper and the window-stops. Fig. 7 is a cross-section on a line just below the curtain-roll *m*. Fig. 8 is a cross-section of a modified form and arrangement of stops.

In Fig. 1, *A* is the glass of the upper sash *B* of the window, and *A'* is the glass of the lower sash *B'* thereof. The sashes are arranged to slide in the usual manner and are here shown as provided with counterbalancing-weights *C C* and *C' C'*, those of the lower sash *C' C'* being heavy enough to cause it to raise when freed from restraint and those of the upper sash *C C* being only sufficiently heavy to prevent the sash dropping too suddenly when released from restraint, and also rendering it easier to raise when the window is to be closed. From this it will be seen that both sashes move automatically in one direction whenever they are free to move. I have shown weights and gravity as the power which automatically moves the sashes; but it is obvious that spring-rollers like that shown in Figs. 5 and 6 (cords being substituted for the web shown in those figures) may be employed without departing from the substance of my invention. Weights may also be substituted for the spring-roller of those figures with like result.

Referring to Figs. 1, 2, and 3 it will be observed that the usual stops on one side of each sash are provided with movable portions, thus forming compound stops, which are composed of a stationary and movable portion, the stationary portion preferably embracing or surrounding the movable portion on substantially two of its sides, so that when the compound stops are in place the movable portion is practically hid from view, but has its operative surface free for contact with the sash. These compound stops are arranged at each of two edges of one side of each sash, so that the movable portion of each stop is in contact with the sash and arranged relatively thereto, so that such movable portions move with the sash as it moves in an opening direction and cause such portions to bear with

an increasing pressure against the sash, and thereby prevent it being opened by force applied to the exterior of the sash. It is obvious that the operation of the movable portions of these compound stops would be the same if the stationary portions did not embrace the movable portions, or, in fact, the stationary portions were omitted and the connection of the movable portions was attached to any convenient stationary part of the window, as shown in cross-section in Fig. 8, so long as such movable portions were arranged as above stated and so operated.

The construction and arrangement of window-sashes and movable stops shown in Figs. 1, 2, and 3 are the preferred form; but it is obvious that other constructions and arrangements of sash and movable stops can be adopted, as I have herein shown.

In said Figs. 1, 2, and 3 the sash B is wider than the sash B', so that the compound stops D D for such upper sash can pass by the sash B' and not interfere with the operation of the latter sash. The compound stops D D are preferably composed of a stationary portion d and a movable portion d' , the portion d being preferably provided with an abutment or stationary stop d^2 , which forms the parting-strip between the two sashes, as well as the stationary stop against which the sash B' is held by the movable stops of that sash. The compound stops D' D' for the sash B' are preferably composed of a stationary portion d^3 and a movable portion d^4 , and are preferably arranged against and over the stops D D, as shown, the window thus presenting the customary appearance. The movable portions of the stops D and D' are preferably attached to their stationary portion by means of the pivoted links d^5 , which are arranged when the sash moves downward to open, as shown in Figs. 1 and 2, with the ends of the links d^5 , which are attached to the movable portion d' , with their pivots beyond the pivots of the other ends, which are secured to the stationary portion when viewed from the direction in which the sash moves when closing. By reason of this arrangement of parts the movement of the sash in a direction to open the same causes the movable portion d' to move with the sash and also to move toward it, thus causing the movable stop to bear with an increasing pressure against the sash, thereby preventing the sash from moving but a short distance in the opening direction before the wedging action of the movable stops completely arrests movement in this direction, thus locking the sash against opening until released from the control of the stops. When the sash moves upwardly to open, as does B', as shown in Figs. 1 and 2, then the pivots of the links d^5 will be similarly arranged—that is, so that those of the movable portions will be beyond those of the stationary portions when viewed from the direction in which the

sash moves in closing, and they will similarly operate.

The movable portions of the stops D, as shown in Fig. 2, do not extend the whole height of the window, as do the stationary portions of these stops, but stop at or above the lower edge of the sash B when the latter is closed, and when this is the case the lower contacting-surface of such movable stop is preferably slightly rounded or beveled off, as seen in Fig. 2, so that the sash in closing will strike such rounded or beveled portion instead of the square end of it and not move the stop as far as it otherwise would.

The two portions of the stops D and D' are preferably provided with a spring or springs d^6 , as seen in Fig. 2, which causes the movable stops d' and d^4 to move in the direction in which the sash moves in opening. In addition to the above the springs hold the sash firmly against the stops on the opposite side of it, and hence the sash is prevented from rattling or making a noise, and dust is also prevented from passing between the sash and its stops, thus rendering the window dust-proof and anti-rattling. The upper ends of the movable stops d' and the lower ends of similar stops d^4 are preferably provided with an extension adapted to engage with arms of rock-shafts $d^7 d^7$, which are journaled, as seen in Fig. 2, where the stops d^4 are shown in dotted lines. These rock-shafts $d^7 d^7$ are provided with arms, one of which engages with the movable stops, and the other is provided with connecting-rods $d^8 d^8$, which in turn preferably connect with a pivoted lever E, which is provided with a handle e , extending into convenient reach of the operator, the ends of the rods $d^8 d^8$ being turned so as to engage with opposite edges of the lever, as shown. The rock-shafts $d^7 d^7$ preferably extend across the window, so as to connect each pair of movable stops d' and d^4 together, so that each pair move together. It will be observed that as the handle e is moved downward its under side engages with the turned-over end of one of the connecting-rods d^8 , and when it is moved upward it engages with the turned-over end of the other connecting-rod d^8 , so that either pair of movable stops can be moved against the stress of their springs by the operating-handle e and connections with such stops and the sash released from the control of the stops. Of course it will be understood that the necessary recesses or spaces will be provided for the several parts to work as herein described.

The operation in opening and closing the sashes B and B' is as follows: To open the sash B, the operating-handle e is pressed downward, which moves downward the connecting-rod d^8 , attached to the rock-shaft d^7 , connecting the movable stops $d d$ together and turns those stops on their pivots and moves them upwardly and out of contact with sash B

when the sash falls and opens. The stops $d d$ are released and are again brought into contact with the sash or the sash opens to its full extent. To close it, the handle e is again
 5 pressed downward and the stops $d d$ are again moved upwardly and the sash released, and it is then closed by hand and the handle released, or the sash may be closed by the hand without touching the handle e , the upward
 10 movement of the stops to free it being caused by their contact with the sash, the stops pressing against the sash and holding it locked against opening until released from the control of the stops. To open and close the sash
 15 B' , the handle e is pressed upwardly moving the stops $d^4 d^4$ in like manner when the sash raises and opens. To close it, the handle e is again pressed or not, as desired, the stops moved and the sash closed by hand and again
 20 locked by its movable stops.

In Fig. 3 it will be observed that the movable stops d' and d^4 are embraced or surrounded on substantially two of their sides by the stationary portions d and d^3 , respectively.
 25

In Fig. 4 there is shown a somewhat different arrangement and construction of sashes and stops, wherein both sashes are of the same width and the movable stop d^{10} for the sash
 30 B^2 , which corresponds with the sash B of Figs. 1 and 2, is unprovided with a separate stationary portion, but one stationary portion d^{12} answers for both movable stops d^{10} and d^{11} , they being connected to such stationary part
 35 by similar pivoted links and arranged to act upon the sashes B^2 and B^3 in the manner set forth for the corresponding movable stops of Figs. 1, 2, and 3, and they are also similarly operated. It will be observed that with this
 40 construction the movable stop d^{10} extends slightly around the edge of the sash B^2 . This is done to better support it, the contacting-surface for the sash remaining the same as with the stop d' , except that it is necessarily
 45 greater, owing to the absence of the stationary abutment or stop for the sash B^3 of this figure. It will also be observed that when the rock-shaft connecting the pair of stops d^{10} together is operated it necessarily moves the
 50 sash B^3 and its pair of stops d^{11} slightly by reason of the contact of sash B^3 with the stops d^{10} .

In Figs. 5, 6, and 7, F represents the glass, and G the sash, of a window. Compound stops
 55 $H H$, similar to those of the sash B' of Figs. 1, 2, and 3, are arranged in connection with the sash G in a manner similar to the corresponding stops of Figs. 1, 2, and 3, and they are also similarly connected and operate similarly, an
 60 operating-handle and the necessary connections being provided for their operation. To the sash G there is secured one end of a web I , the other end being secured to a spring-roller J , which is provided with a spring arranged to uncoil and wind up the web around
 65

the roller and open the sash G by raising the same. In this case, as with the sash B' of Figs. 1, 2, and 3, the counterbalancing force is sufficient to lift the sash and raise the same to open it when it is to be automatically opened
 70 or moved in one direction.

The compound stops $H H$ are, like the corresponding stops $D' D'$, composed of the movable portions n and the stationary portions n' , which latter portions, like those of stops
 75 $D' D'$, can be dispensed with, if desired, by simply attaching the movable portions to any convenient stationary portion of the window, as seen in Fig. 8. The portions n are preferably secured to the portions n' by pivoted
 80 links n^2 , a spring or springs n^3 serving to cause the portions n to move in the direction that the sash moves when it opens. The movable portions n are preferably provided with an extension n^4 , adapted to connect with one
 85 arm of a rock-shaft n^5 , the other arm of which preferably has attached to it one end of a cord K , which may be provided with a tassel k to serve as an operating-handle, or the tassel may be dispensed with and the cord itself
 90 used as an operating-handle. It will be observed that the stops n are embraced or surrounded on substantially two of their sides.

The spring-roller J is preferably provided with a device consisting of a notched disk L ,
 95 to which one end of the spring is attached, and which can be readily rotated by the operator to either coil or uncoil the spring to the desired tension, and the pivoted latch l , which is adapted to engage with one of the notches
 100 in the disk L , is inserted in the nearest notch, and the disk is prevented from rotating in either direction. By this means the tension of the spring can be readily adjusted without removing the roller from its position. Of
 105 course the ends of the roller J are provided with journals and bearings alike in construction and operation, the flattened portion of the rod attached to the spring being placed in the disk instead of in one of the bearings, as
 110 is customary. It is obvious that other forms of spring-adjusting device can be employed in the place of the one here shown and described.

M represents a curtain on a spring-roller m
 115 in the usual manner now customary in many passenger-cars.

N represents a portion of the casing over the window through which the curtain M and cord K extend in front of the glass F , and
 120 may or may not be easily removable.

In Fig. 8 there is shown a modified form of stop, which may be substituted for the other form, if desired. As there shown, it is designed to represent the left of Fig. 7. It will
 125 be observed that the portion n' of Fig. 7 is entirely omitted and the portion n is attached to a stationary portion of the window, thus forming a movable stop n^6 . This movable stop n^6 is preferably secured to the stationary
 130

part of the window by pivoted links, as is the case with the movable stop *n*, and such stops *n*⁶ are similarly arranged in connection with the sash *G*, and also similarly connected and operated, as are the corresponding stops *n*.

Each one of the forms of movable stops herein shown and described serves to hold the sashes against the abutting stops, thereby preventing dust entering around the sash, and at the same time preventing the sashes from rattling or making a noise, and also permitting them to move with the utmost freedom whenever it is desired to have them move, as in opening and closing the same, thus forming a dust-proof and anti-rattling window.

I have herein shown and described a spring or springs for moving the movable stops; but it is obvious that under some circumstances other means can be employed; but I prefer a spring or springs for this purpose for reasons which will be manifest to those skilled in the art to which this invention pertains. I also consider the form of stops shown in Figs. 1, 2, and 3 the preferable form when two sashes moving in opposite directions form the window; also, the form shown in Figs. 5, 6, and 7 is the preferable form when only one sash forms the window; but other forms can be used, as I have shown, without departing from the substance of my invention, and therefore I do not wish to limit myself to the forms herein shown and described.

What I claim, and desire to secure by Letters Patent, is—

1. The combination, substantially as set forth, of a sash, two movable stops arranged one at each of two edges of one side of the sash, means adapted to cause the stops to move with the same with an increased pressure upon the sash as it moves in an opening direction, and a spring or springs pressing the stops against the sash, whereby the movable stops are held in contact with the sash and are moved by such contact as the sash moves in an opening direction, exerting an increasing pressure upon the sash, which is thereby locked against opening until released from the stops.

2. The combination, substantially as set forth, of a sash, two pivoted movable stops arranged one at each of two edges of one side of the sash, pivotal connection between the stops and the window-frame, adapted to cause the stops to move the same with an increased pressure upon the sash as it moves in an opening direction, and a spring or springs turning the stops on their pivots, whereby the movable stops are held in contact with the sash and are turned on their pivots by such contact as the sash moves in an opening direction, exerting an increasing pressure upon the sash, which is thereby locked against opening until released from the stops.

3. The combination, substantially as set

forth, of a sash, means for automatically moving it in an opening direction, movable stops, and means adapted to cause the stops to move with the sash as it moves in an opening direction and exert an increased pressure thereon, whereby the sash is held by the stops against moving automatically until released from the stops.

4. The combination, substantially as set forth, of a sash, two movable stops arranged at each of two edges of one side of the sash, means adapted to cause the stops to move with an increased pressure upon the sash as it moves in an opening direction, a spring or springs pressing the stops against the sash, and means adapted to move the stops against the stress of the springs, whereby the movable stops are held in contact with the sash and are moved by such contact as the sash moves in an opening direction, exerting an increasing pressure upon the sash, which is thereby locked against opening until released by the movement of the stops against the stress of the spring or springs.

5. The combination, substantially as set forth, of two sashes arranged to move in opposite directions, two pairs of movable stops arranged one pair in contact with each sash, means adapted to cause the stops to move with the sash and exert an increased pressure as it moves in an opening direction, and a spring or springs pressing the stops against the sashes, whereby the two pairs of movable stops are held in contact with their respective sashes and are moved by such contact as the sashes move in an opening direction, exerting an increasing pressure upon the sashes, which are thereby locked against opening until released from the stops.

6. The combination, substantially as set forth, of two sashes arranged to move, two pairs of movable stops arranged one pair in contact with each sash, means adapted to cause the stops to move with the sash and exert an increased pressure as it moves in an opening direction, a spring or springs pressing the stops against the sashes, means for connecting each pair of stops together, and an operating-handle and connections whereby both sashes are held in the closed position by the stops and either sash is released from the control of the stops by the handle and connections.

7. The combination, substantially as set forth, of two sashes arranged to move in opposite directions, two pairs of movable stops arranged one pair in contact with each sash, means adapted to cause the stops to move with the sash and exert an increased pressure as it moves in an opening direction, a spring or springs pressing the stops against the sashes, means for connecting each pair of stops together, and an operating-handle and connections whereby both sashes are held in the closed position by the stops and either

sash is released from the control of the stops by the handle and connections.

8. A compound window-stop composed of a stationary and a movable portion, the latter being embraced by the former on substantially two of its sides and secured thereto by links pivoted at one end to the stationary part, forming a portion of the window-frame, and at the other end to the movable part.

9. A compound window-stop composed of a stationary portion provided with a sash-abut-

ment or stationary stop and a movable portion, the latter being embraced by the former on substantially two of its sides and secured thereto by a movable connection and such movable portion adapted to contact with another sash.

OLIVER M. EDWARDS.

Witnesses:

DANIEL M. EDWARDS,

F. W. C. HAYES,

J. H. FRENDETHAL.