

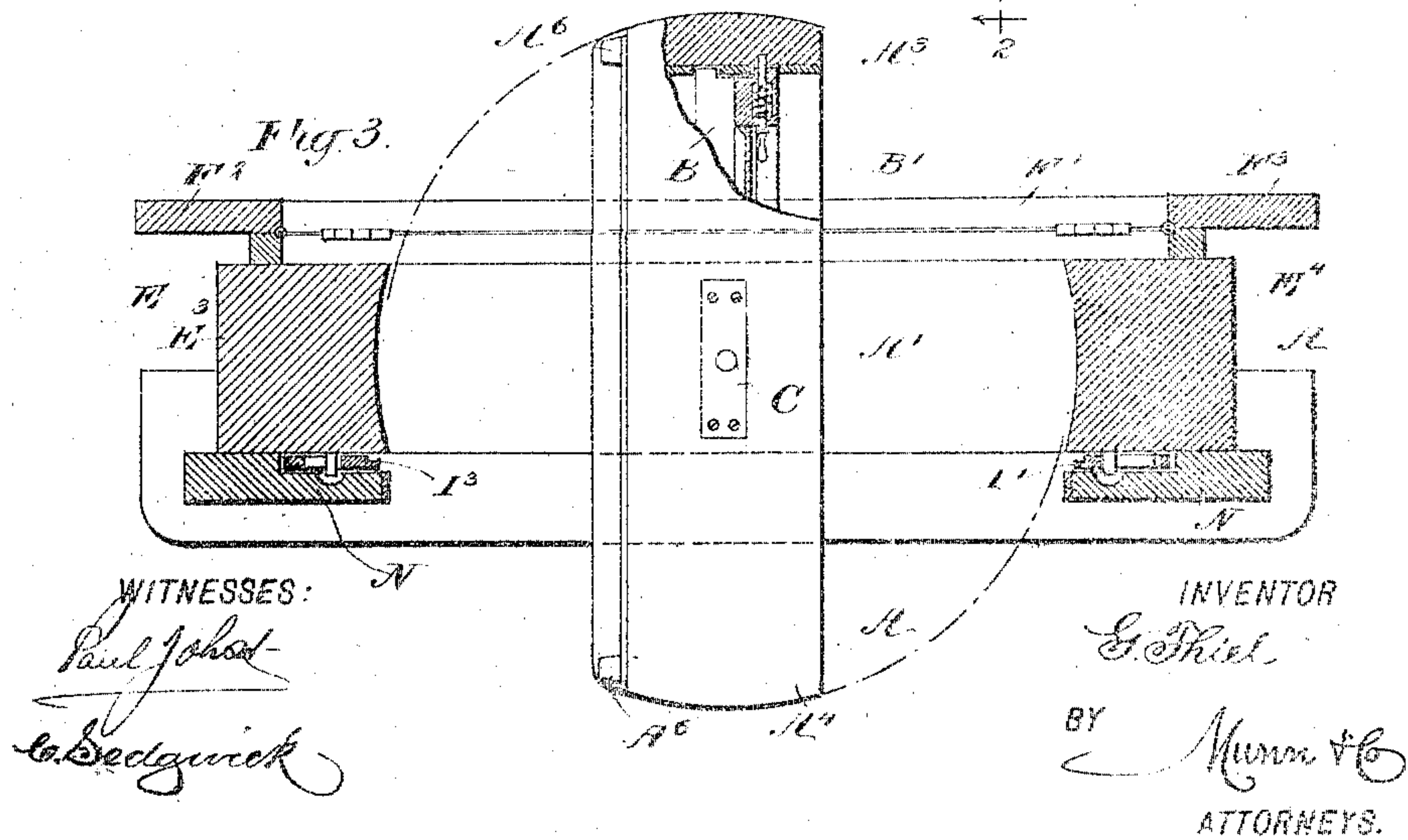
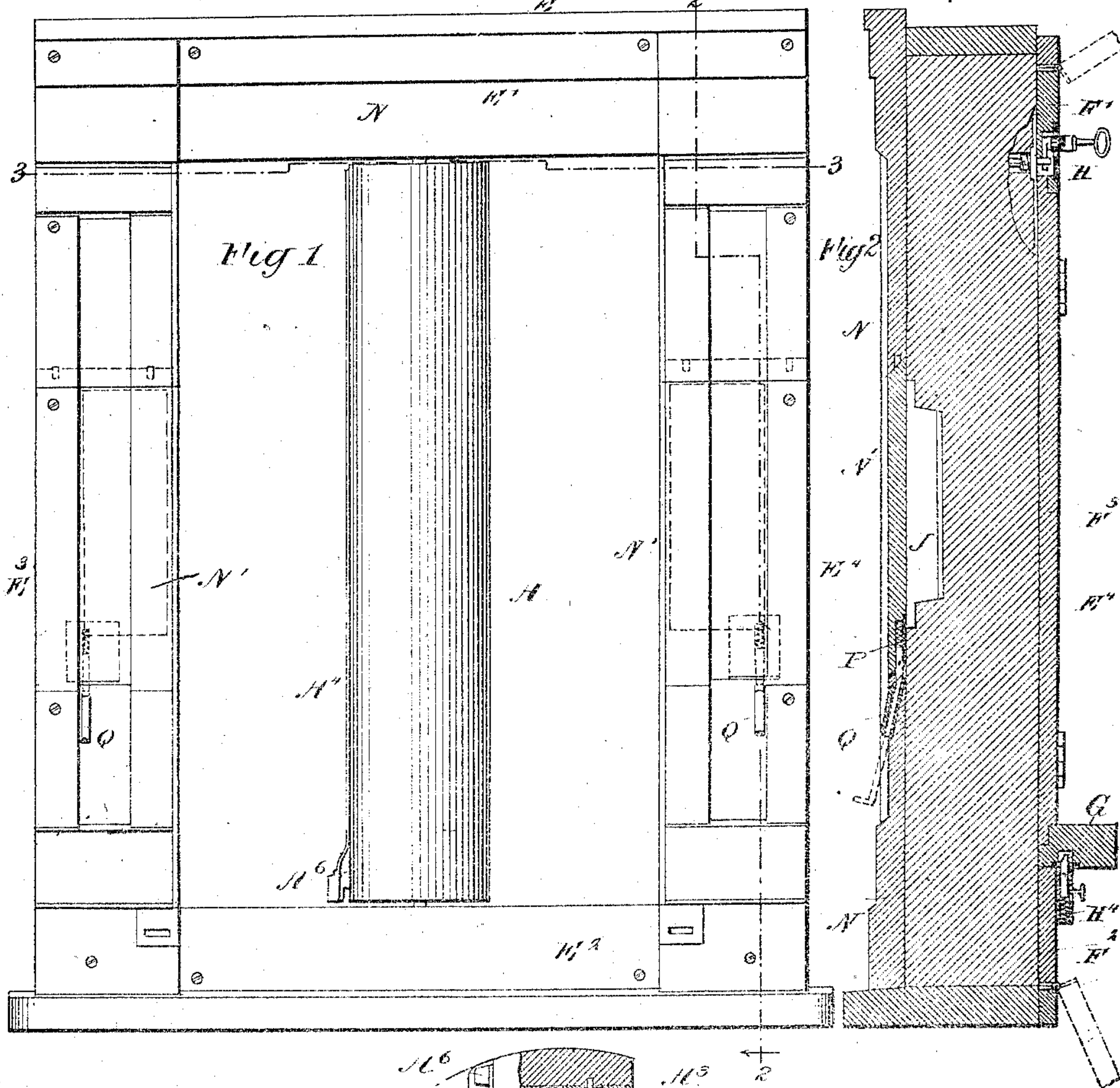
(No Model.)

4 Sheets—Sheet 1.

G. THIEL.
WINDOW.

No. 509,704.

Patented Nov. 28, 1893.



4 Sheets—Sheet 2.

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Patented Nov. 28, 1893.

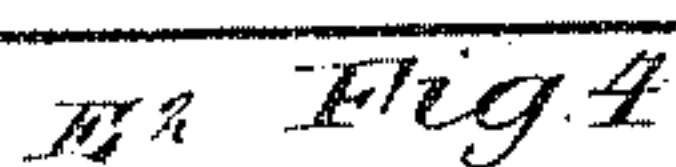
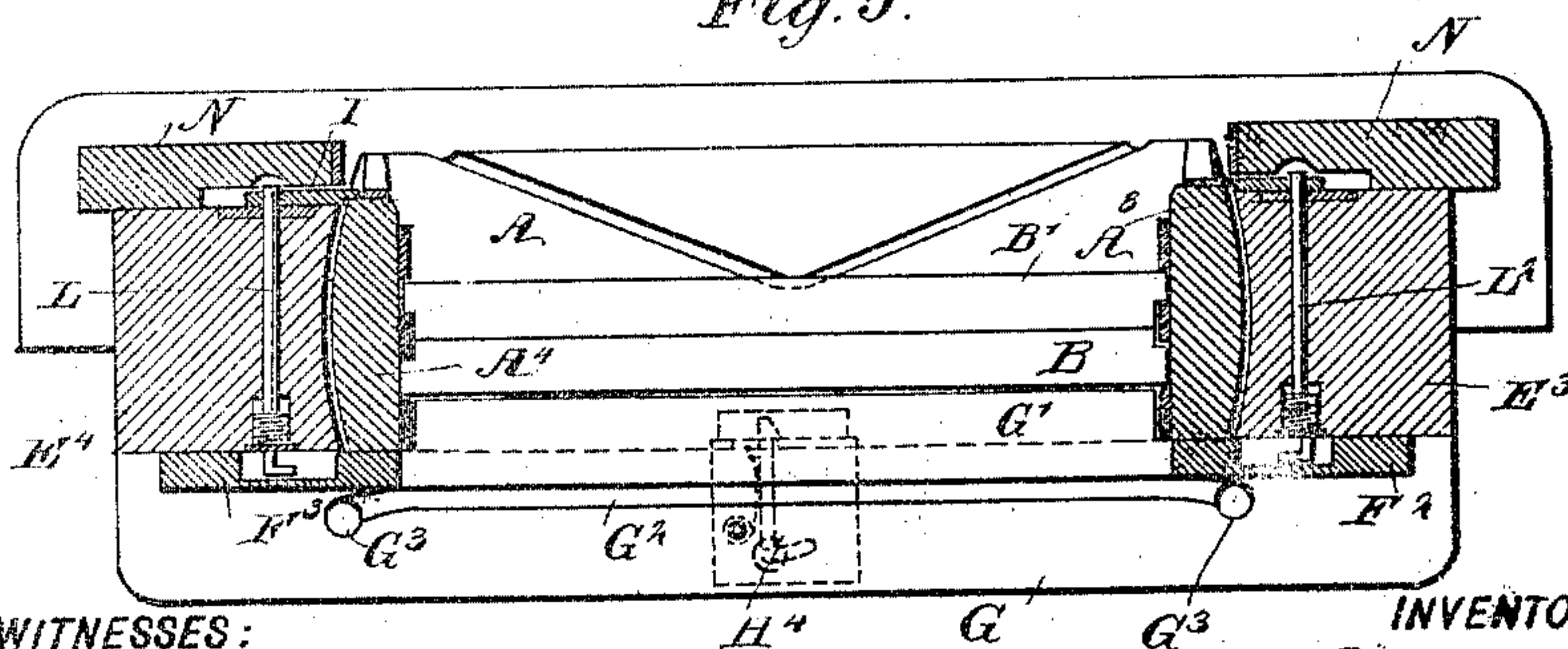


Fig 6

Fig. 5.



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to Bedgwick

INVENTOR

G. Thiel

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ATTORNEYS.

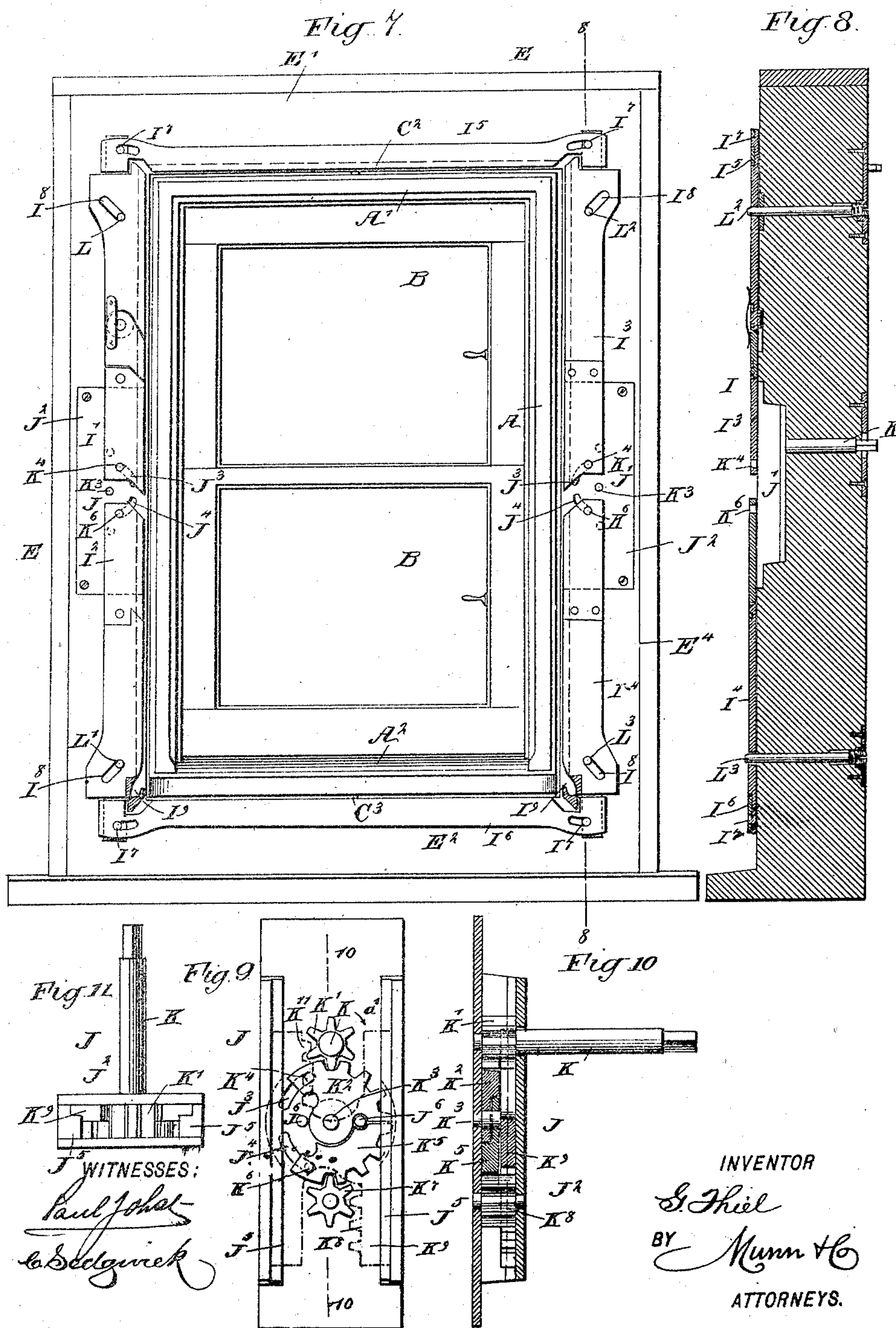
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4 Sheets—Sheet 3.

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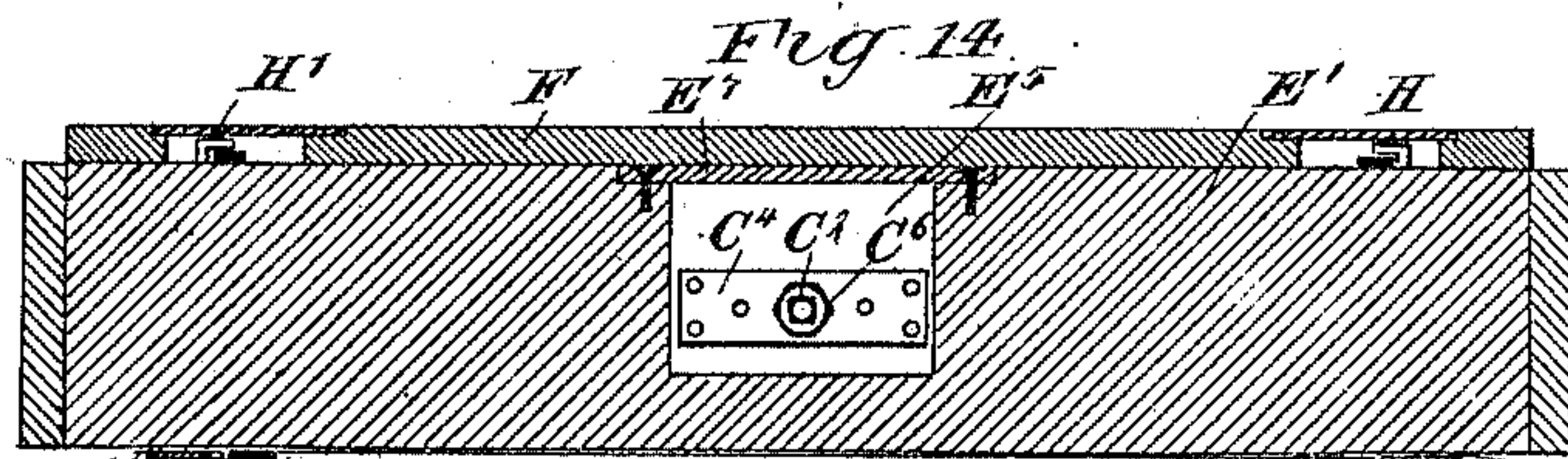
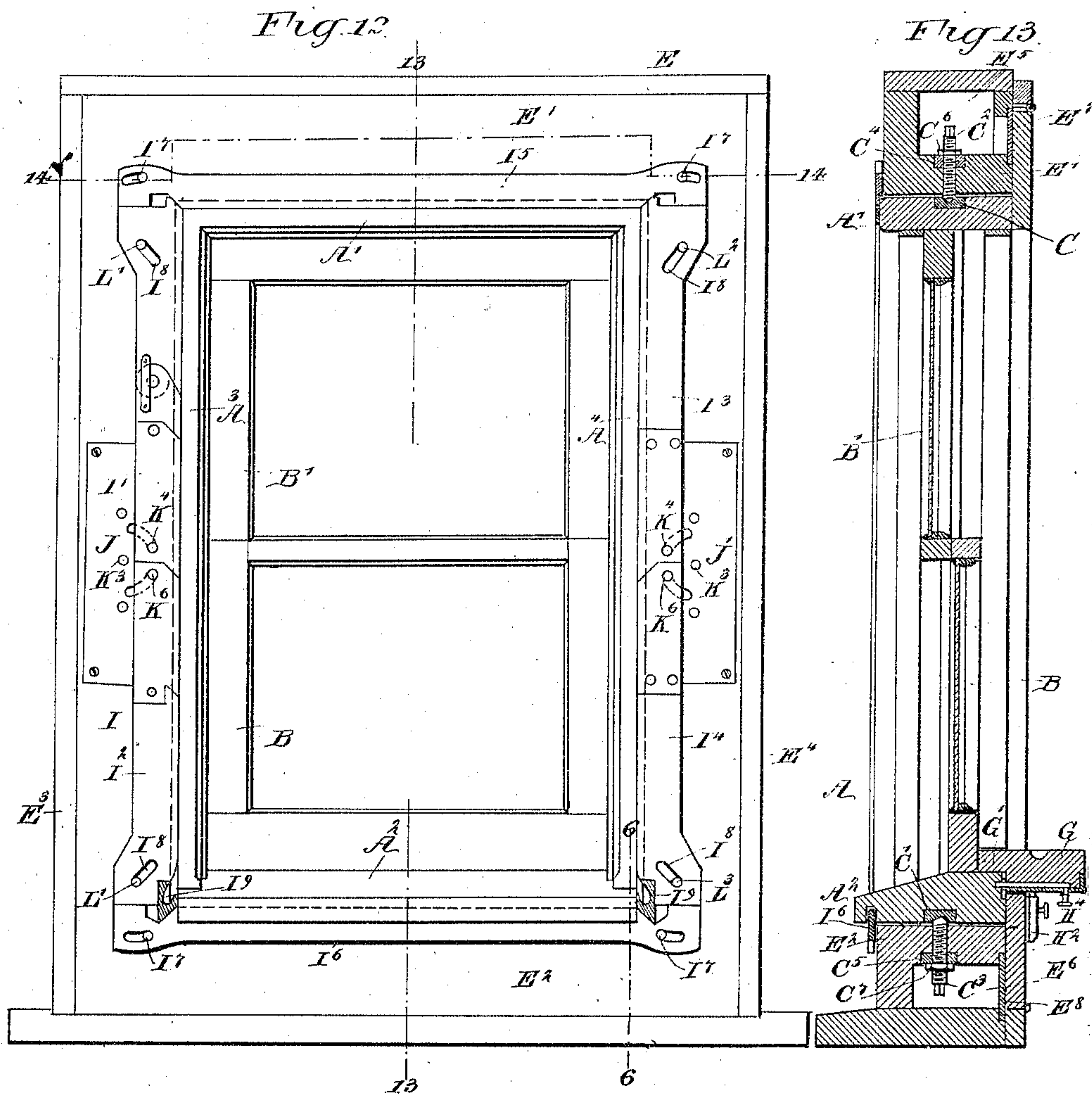
(No Model.)

4 Sheets—Sheet 4.

G. THIEL.
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No. 509,704.

Patented Nov. 28, 1893.



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GUSTAV THIEL, OF MEDFORD, WISCONSIN.

WINDOW.

SPECIFICATION forming part of Letters Patent No. 509,704, dated November 28, 1893.

Application filed May 27, 1893. Serial No. 475,721. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV THIEL, of Medford, in the county of Taylor and State of Wisconsin, have invented a new and Improved Window, of which the following is a full, clear, and exact description.

The invention relates to reversible windows, and its object is to provide a new and improved window which is simple and durable in construction, can be readily reversed to permit of conveniently cleaning the window panes and sashes on the inside and outside from within the building.

The invention consists of a sash frame carrying the window sashes and mounted to turn in the window frame.

The invention also consists of certain parts and details, and combinations of the same, as will be hereinafter described and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement viewed from the outside and with the sash frame turned in an angular position relative to the window frame. Fig. 2 is a cross section of the same on the line 2—2 of Fig. 1. Fig. 3 is a sectional plan view of the same on the line 3—3 of Fig. 1. Fig. 4 is a side elevation of the improvement viewed from the inside of the building and with the sash in an angular position. Fig. 5 is a sectional plan view of the same on the line 5—5 of Fig. 4. Fig. 6 is an end elevation of the same with parts in section on the line 6—6 of Fig. 12. Fig. 7 is a side elevation of the improvement viewed from the outside with parts removed to show the packing strips, the latter being withdrawn and out of contact with the sash frame. Fig. 8 is a cross section of the same on the line 8—8 of Fig. 7. Fig. 9 is an enlarged side elevation of the operating mechanism for the packing strips. Fig. 10 is a transverse section of the same on the line 10—10 of Fig. 9. Fig. 11 is an end elevation of the same. Fig. 12 is a side elevation of the improvement with parts removed, and the packing strips moved into contact with the sash frame. Fig. 13 is a cross section of the

same on the line 13—13 of Fig. 12; and Fig. 14 is a sectional plan view of the same on the line 14—14 of Fig. 12.

The improved window is provided with a sash frame A in which are mounted to slide in the usual manner, the lower and upper sashes B and B', carrying the window panes, the said sashes being either hung on weights or adapted to be locked in place in any desired position by the usual locking devices passing through the sashes into the sides of the window frame, as illustrated in Fig. 3. As the devices for counterbalancing the sashes, or locking the same in place in any desired position are of the ordinary construction, no further description of the same is deemed necessary.

The sash frame A is provided with the top and bottom A' and A² and the sides A³ and A⁴, of which the top and bottom A' and A² are provided on their outer faces and in the center with metallic steps C and C' respectively, engaged by the pointed ends of screws C² and C³ respectively, forming pivots for the sash frame to turn on so as to swing the latter around whenever desired and as indicated in Figs. 1 and 3. The screws C² and C³ extend through the top and bottom E' and E² respectively of the window frame E, which is also provided with the sides E³ and E⁴ and completely surround the sash frame A when the latter is in its normal or closed position. See Figs. 5 and 13.

The screws C² and C³ screw in nuts C⁴ and C⁵ respectively, secured on the top and bottom E' and E² respectively, the inner ends of the said screws extending into recesses E⁵ and E⁶ respectively, formed in the top and bottom E' and E² of the window frame E. The front ends of the said recesses E⁵ and E⁶ are adapted to be closed by doors or panels E⁷ and E⁸ respectively, which, when removed, give access to the said recesses E⁵ and E⁶ to permit the operator to turn the screws C² and C³ respectively, with a wrench or other suitable tool, to engage or disengage the pointed ends of the screws with the steps C and C' respectively. When the screws are in place and engage the steps C and C' to permit a convenient swinging or turning of the sash frame A then the said screws are locked in

place by jam nuts C^6 and C^7 respectively, screwing on the said screws to abut on the fixed nuts C^4 and C^5 respectively.

The sides A^3 and A^4 of the sash frame A are segmental on the outside, the center being in the axial line passing through the centers of the bolts C^2 and C^3 and the inner faces of the sides E^3 and E^4 of the window frame are correspondingly shaped to receive the faces of the sides A^3 and A^4 and to form a comparatively tight fit. See Figs. 3 and 5.

On the inside of the window frame E are arranged a series of boards F, F' , F^2 and F^3 , connected by hinges with the top E' , bottom E^2 and sides E^3 and E^4 respectively, of the window frame E' , the top board F being arranged to swing upward (see Fig. 4), the bottom board F' being arranged to swing downward, while the side boards F^2 and F^3 are arranged to swing outward, as will be readily understood by reference to the said figure. See also Fig. 2.

The inner ends of the boards F, F' , F^2 and F^3 , extend over the inner faces of the top A' , the bottom A^2 , and the sides A^3 and A^4 of the sash frame A, so as to prevent the same from turning on its pivots until the said boards are swung open in the manner above described. The top board F also extends over projections formed on the upper ends of the boards F^2 and F^3 , and the said board F is adapted to be locked in place by suitable catches II and II' , connected with the top E' of the sash frame E. See upper part of Fig. 4. Now, when the board F is locked in place by the said catches II and II' , the side boards F^2 and F^3 are likewise locked in position, as the said board F overlaps the projections on the upper ends of the side boards F^2 and F^3 . The inner window sill G for the window is fitted to slide transversely between the top edge, the bottom board F' , and the lower end of the side boards F^2 and F^3 , the said window sill G being further provided with an inner inward extension G' , fitting between the sides A^3 and A^4 of the sash frame A, to abut with its inner edge against the lower sash B, as will be readily understood by reference to Figs. 5 and 13. This window sill G is locked in place on the bottom A^2 of the sash frame A and on the said window sill is locked the bottom board F' by suitable catches II^2 and II^3 , as plainly shown in Figs. 2, 4 and 13.

In the top of the window sill G is arranged a longitudinally-extending groove G^2 terminating at its ends in downwardly extending apertures G^3 so that water running off the window in cleaning the same from the inside can pass into the longitudinally-extending groove G^2 and along the same to apertures G^3 to pass through the same into a pail or other receptacle set below the said apertures.

As illustrated in the drawings the catches II and II' are adapted to be actuated by a suitable key while the catches II^2 , II^3 and II^4 are provided with ordinary push buttons for conveniently manipulating the said catches

to lock and unlock the respective parts. I do not, however, limit myself to any special construction, as any desired form of catch may be employed.

In order to render the window water-tight, I provide a packing I arranged on the outer face of the window frame E to cover the joint formed between the said frame and the sash frame A as will be readily understood by reference to Figs. 5, 7, 8, 12 and 13, the said packing I being composed of strips I^1 , I^2 , I^3 , I^4 , I^5 and I^6 adapted to slide inwardly over the outer face of the sash frame A, see Fig. 5, or outwardly away from the said sash frame to permit the latter to turn on its pivots when the frame is to be opened for cleaning purposes, as previously mentioned. The packing I is adapted to be actuated to slide inward and outward for the purpose mentioned and in order to accomplish this movement from the inside of the window I provide two devices J and J' arranged in the sides E^3 and E^4 respectively, of the window frame E, the said devices being both alike in construction and shown in detail in Figs. 9, 10 and 11.

Each device J and J' is arranged in a suitable metallic casing J^2 in which is journaled a transversely-extending shaft K reaching with its inner end to the inner face of the frame E, so as to enable the operator to apply a wrench, key or other suitable tool on the inner square end of the said shaft to turn the same to manipulate the devices J and J' , and to cause the packing strips to move inward or outward, according to the direction in which the wrench or key is turned.

On the shaft K within the casing J^2 is secured a pinion K^1 in mesh with a segmental gear wheel K^2 mounted on a stud K^3 , arranged in the casing J^2 , the said segmental gear wheel K^2 being provided on one face with a transversely-extending pin K^4 passing through a segmental slot J^3 in the casing J^2 to connect at its outer end with the side strips I^1 and I^3 forming part of the packing I. On the stud K^3 is also mounted a second segmental gear wheel K^5 provided at one face with a pin K^6 extending through a segmental slot J^4 in the outer plate of the casing J^2 , to connect with the side strips I^2 and I^4 , also forming part of the packing I. The segmental gear wheel K^5 is in mesh with a pinion K^7 journaled loosely in the casing J^2 and in mesh with rack teeth K^8 formed on a slide K^9 mounted to slide vertically in guideways J^5 arranged within the casing J^2 . The slide K^9 is also provided with a second set of rack teeth K^{11} in mesh with the pinion K^7 previously described, the latter being sufficiently wide to engage both the segmental gear wheel K^2 and the said rack teeth K^{11} .

On the casing J^2 and on opposite sides of the stud K^3 are arranged two stop pins J^6 for limiting the turning motion of the two segmental gear wheels K^2 and K^5 . Now, when the shaft K of either of the two devices J or J' is turned, then the pinion K^1 held on the

said shaft imparts a turning motion to the segmental gear wheel K^2 , so that the pin K^4 thereof, connected with the side strip I' or I^3 causes a sliding motion thereof in an oblique direction, as the said side strips are guided at their upper ends in pins L and L^2 respectively, extending into angular slots I^8 formed in the said side strips I' and I^3 respectively. At the same time, the other side strips I^2 and I^4 receive a similar motion, as the pinion K^7 imparts a sliding motion to the slide K^9 by engaging the rack teeth K^{11} and as the said slide K^9 engages with its rack teeth K^8 , the pinion K^7 , the latter is turned and imparts a turning motion to the segmental gear wheel K^5 , so that the two segmental gear wheels swing simultaneously toward or from each other. The movement of the segmental gear wheels K^5 in the two devices J and J' , causes their pins K^6 to impart an oblique sliding motion to the lower side strips I^2 and I^4 respectively, the latter being provided near their lower ends with angular slots I^8 engaged by pins L' and L^3 respectively, secured in the window frame E .

Now, it will be seen that when the several parts are in the position, shown in Figs. 7 and 9, and the shafts K are turned in the direction of the arrow a' , see Fig. 9, then the segmental gear wheels K^2 and K^5 , by their pins K^4 and K^6 , impart an inward sliding motion to the side strips I , I^3 , and I^2 , I^4 , respectively, to move the said strips over the joint of the sash casing and window casing, to render the window airtight and watertight. The upper ends of the side strips I' and I^3 are pivotally-connected with a top packing strip I^5 , and the other side strips I^2 and I^4 are likewise connected with a bottom packing strip I^6 , so that when the side strips I' , I^3 and I^2 , I^4 , move simultaneously inward in an oblique direction, as above described, the said top and bottom strips I^5 and I^6 are moved inward to cover the top and bottom joints.

By reference to Figs. 7 and 12, it will be seen that the pivots I^7 connecting the side strips with the top and bottom strips I^5 and I^6 , engage slots in the said top and bottom strips, to compensate for the inward sliding movement of the side strips. Each of the side strips may be made in sections, and the side strip I' is in addition made articulated as shown in the said Figs. 7 and 12, to prevent undue strain when the operator first turns one shaft K and then the other in the two devices J and J' , instead of turning the shafts simultaneously.

The packing I is covered up by suitable covering boards N fastened by screws or other means to the outside of the window frame E , as plainly shown in Fig. 1. The sides of the covering boards N have a removable section N' adapted to be locked in place by a suitable catch P arranged on the inside of said removable section, as shown in Fig. 2, the said catch being adapted to be unlocked by inserting a pin, rod or other device in a tube

Q held in the adjacent part of the respective side so that this removable section N' in each side of the covering boards can be readily taken out to remove the side packing strips I' , I^2 , I^3 , I^4 , to permit of conveniently removing the actuating devices J and J' in case the latter gets out of order. The lower ends of the side strips I^2 and I^4 are formed near their inner edges with grooves I^9 registering with similar grooves A^6 formed in the lower part or sill of the frame A to carry off any water or moisture which may accumulate on the outer face of the window.

As shown in Fig. 8, each of the pins L , L' , L^2 or L^3 screws in a suitable keeper attached to the frame E at the inside thereof, so that the said pins can be conveniently removed whenever desired from the inside of the room. The bottom or sill A^2 of the sash frame A is formed with diagonally-extending grooves for carrying off the water running down the window panes, so as to lead the water off the side of the building, the water dropping off the base of the window frame E , as will be readily understood by reference to Fig. 5.

The operation is as follows: When the several parts are in position as illustrated in Figs. 4, 5 and 6, then the window sashes B and B' can be raised and lowered in the usual manner in their sash frame A , the latter being locked in place in the window frame E by the inside hinged boards F , F' , F^2 and F^3 , and the sill G and on the outside by the packing strips of the packing I . Now, when it is desired to clean the outside of the window proper from the inside of the room, the operator unlocks the several inside boards F , F' , F^2 and F^3 , and swings the same open and removes the sill G so that the inner ends of the shafts K are uncovered by the opening of the side boards F^2 and F^3 . The operator now inserts a key on the inner ends of the said shafts K and turns the same to cause the packing strips I' , I^2 , I^3 , I^4 , I^5 and I^6 , to slide outwardly to unlock the sash frame A on the outside. The sash frame can now be turned on its pivots C^2 and C^3 so that the outer side of the window proper turns to the inside to enable the operator to conveniently clean this face of the window proper from the inside of the room. When it is done, the sash frame A is again turned to its normal position within the window frame E , after which the shafts K are turned in an opposite direction to again cause the strips of the packing I to move inward to form a tight joint and pack the outside of the window frame at the junction with the sash frame. The inner boards F , F' , F^2 , F^3 are then again closed and the sill G is inserted and locked in position as above described, so that the window is again in its normal position.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent--

1. A window comprising a window frame carrying central pivots, a sash frame hung on

the said central pivots within the said window frame, and boards hinged to the top, bottom and sides of the said window frame at the inside thereof and engaging the top, bottom and sides of the said sash frame to lock the latter in place, substantially as shown and described.

2. A window, comprising a window frame carrying pivots, a sash frame hung on pivots within the said window frame, boards hinged to the top, bottom and sides of the window and projecting over the sash frame, the upper board projecting over the upper ends of the side boards, and means for locking the said upper board in position, substantially as described.

3. A window, comprising a window frame, a sash frame pivoted in the window frame, and a packing for covering the joint between the sash frame and the window frame composed of strips connected together and fitted to slide on the window frame, substantially as described.

4. A window comprising a fixed window frame carrying pivots, a sash frame hung on the said pivots in the said window frame, and a packing for covering the joint between the said sash frame and window frame at the outside thereof, the said packing comprising movable top, bottom and side strips, substantially as shown and described.

5. A window comprising a fixed window frame carrying pivots, a sash frame hung on the said pivots in the said window frame, a packing for covering the joint between the said sash frame and window frame at the outside thereof, the said packing comprising movable top, bottom and side strips, and actuating devices held on the said window frame to move the said packing strips inward and outward, substantially as shown and described.

6. A window comprising a fixed window frame carrying pivots, a sash frame hung on the said pivots in the said window frame, a packing for covering the joint between the said sash frame and window frame at the outside thereof, the said packing comprising movable top, bottom and side strips, actuat-

ing devices held on the said window frame to move the said packing strips inward and outward, and boards hinged on the inside of the said window frame and adapted to engage the top, bottom and sides of the said sash frame, substantially as shown and described.

7. A window provided with a packing comprising sectional side strips, means for imparting an oblique motion inward and outward to the said side strips, and top and bottom strips pivotally-connected with the said side strips, substantially as shown and described.

8. A window provided with packing strips, actuating devices, each comprising segmental gear wheels carrying pins adapted to engage the packing strips, pinions in mesh with the said segmental gear wheels, means for turning one of the said pinions, and a slide provided with rack teeth engaging the said pinions so that when one of the latter is turned, motion is given to the other to actuate its segmental gear wheel, substantially as shown and described.

9. In a window, a window frame having its top and bottom formed with recesses closed by doors, and provided with pivots projecting into said recesses, substantially as and for the purpose set forth.

10. In a window the combination with the window frame of a sill detachably secured to the inner surface of the same, substantially as described.

11. In a window, the combination with the window frame, and the sash frame of a sill detachably secured to the inner surface of the window frame and provided with an extension fitting between the sides of the sash frame, substantially as described.

12. In a window the combination with the frame, and a sash frame pivoted therein, of top, bottom and side boards hinged to the window frame, and projecting over the sash frame, and a detachable inner sill, substantially as described.

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