

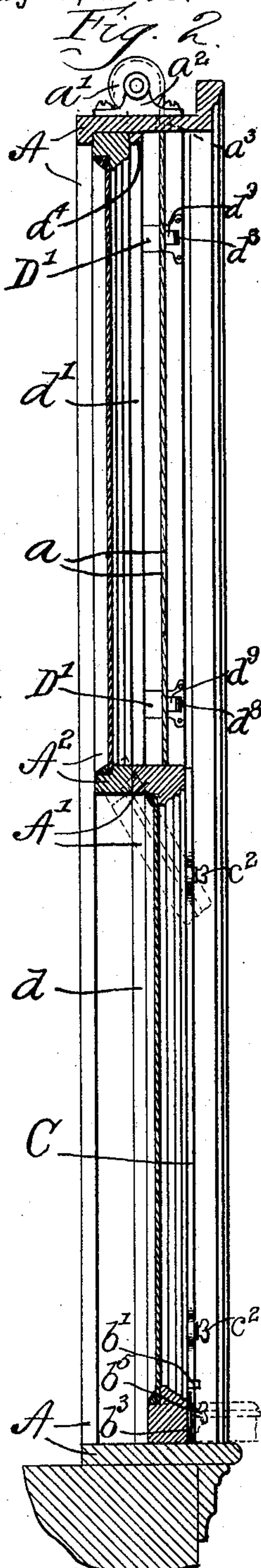
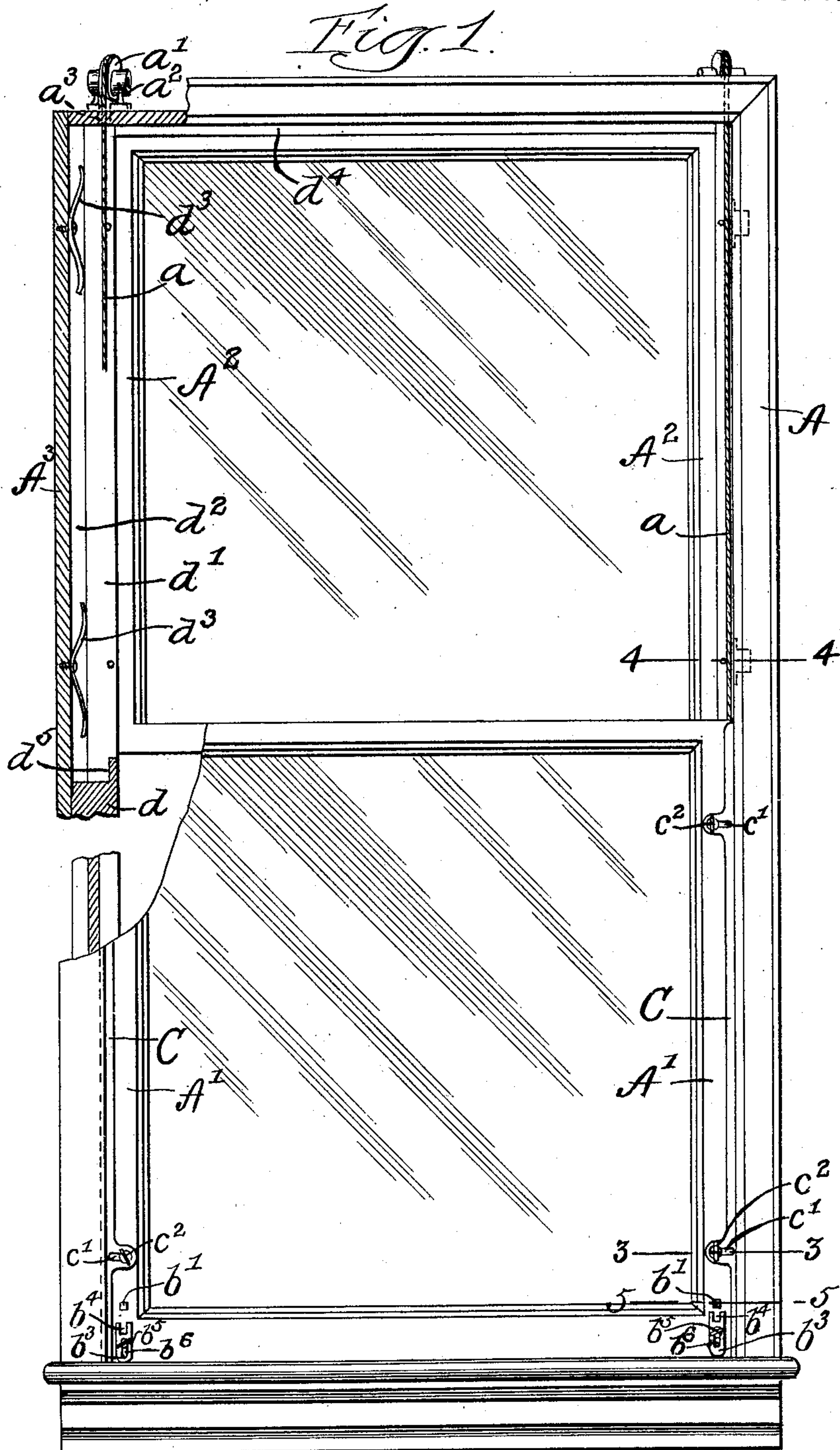
(No Model.)

2 Sheets—Sheet 1.

N. M. KITTELSEN & M. WALKER.
WINDOW FRAME AND SASH.

No. 603,597.

Patented May 3, 1898.



Witnesses
Wm. F. Fleming
Irvine Miller

Inventors
Nils M. Kittelsen &
Michael Walker,
by Eno. Elvaldo,
their Atty.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

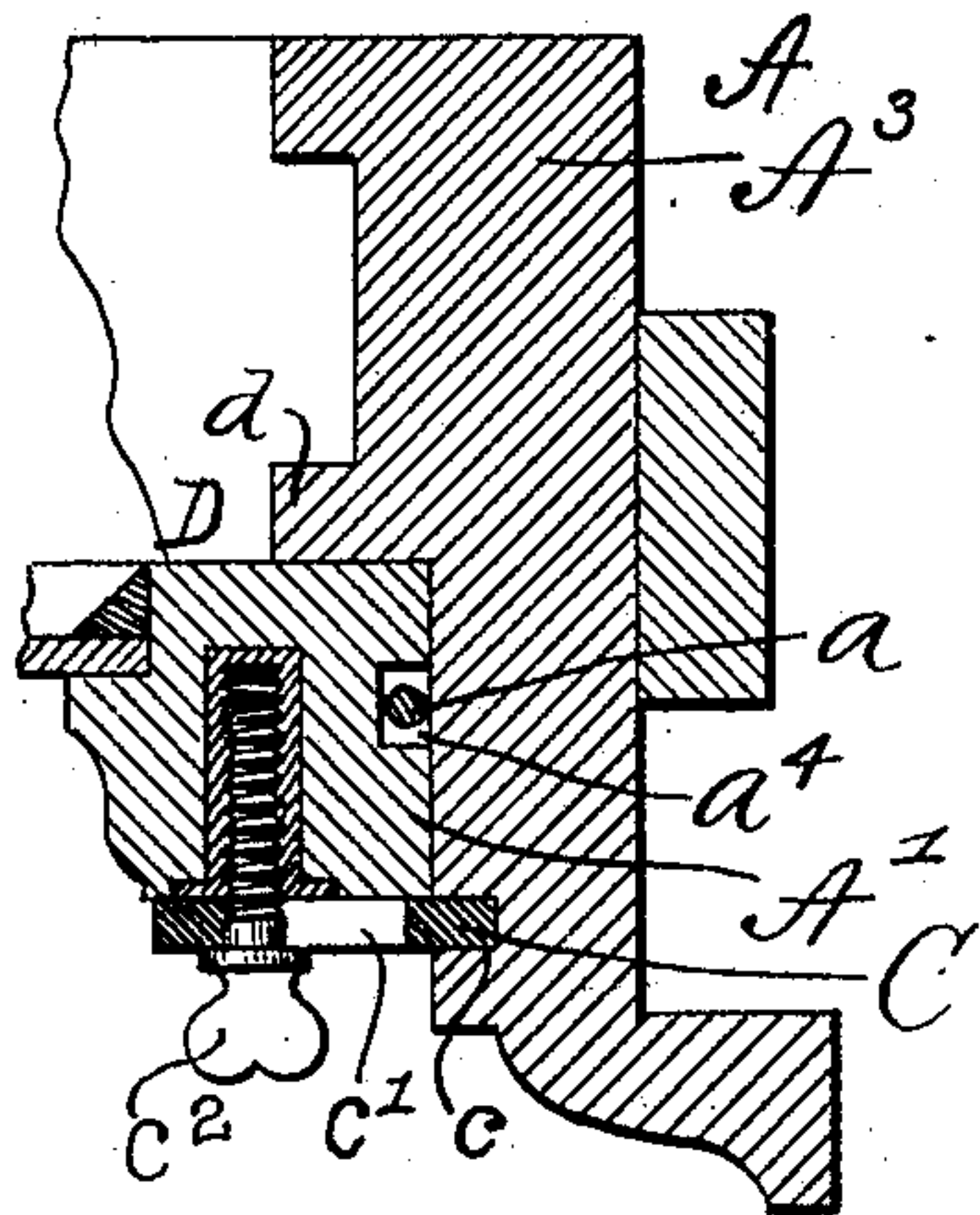


Fig. 4.

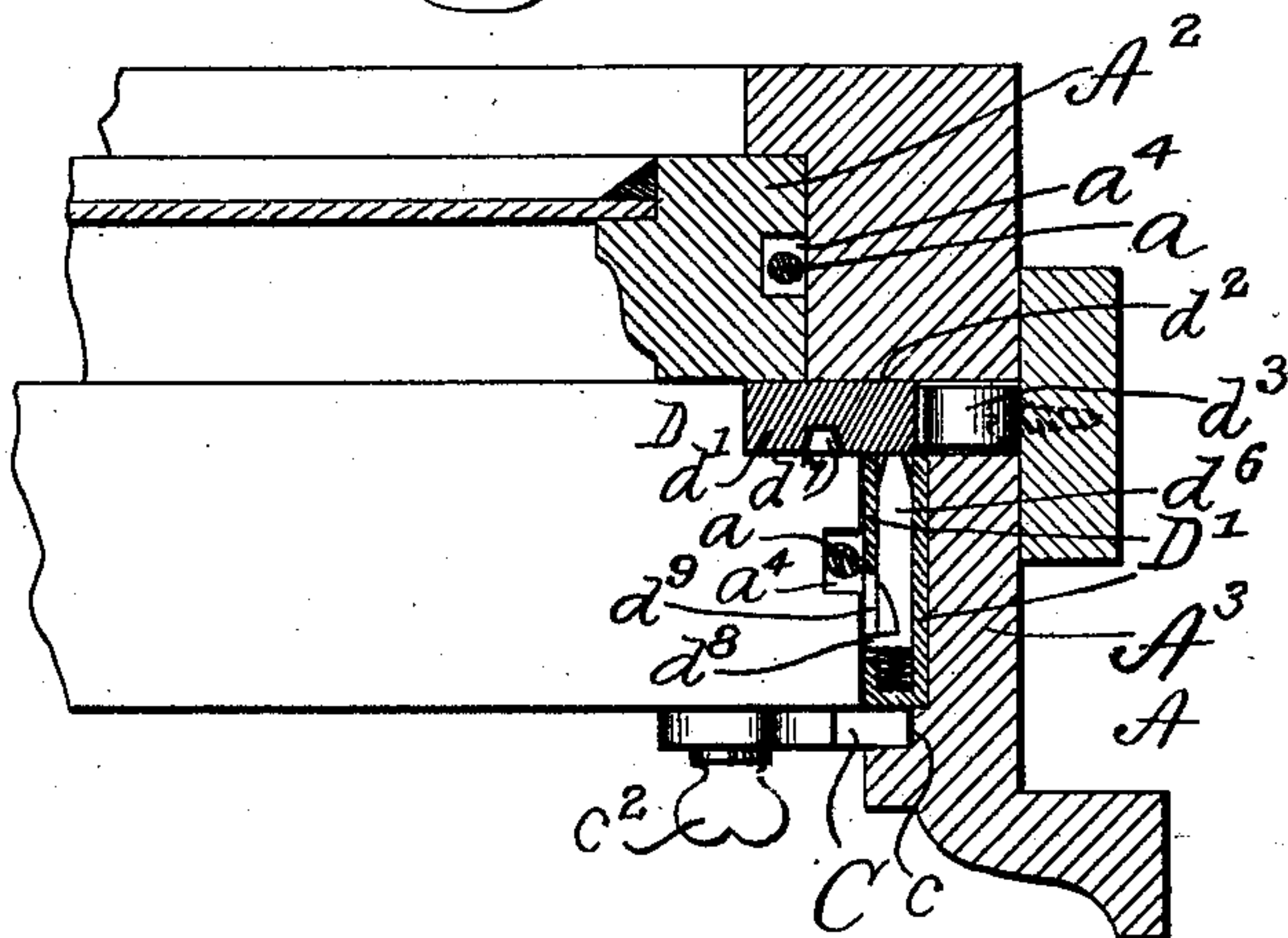


Fig. 5.

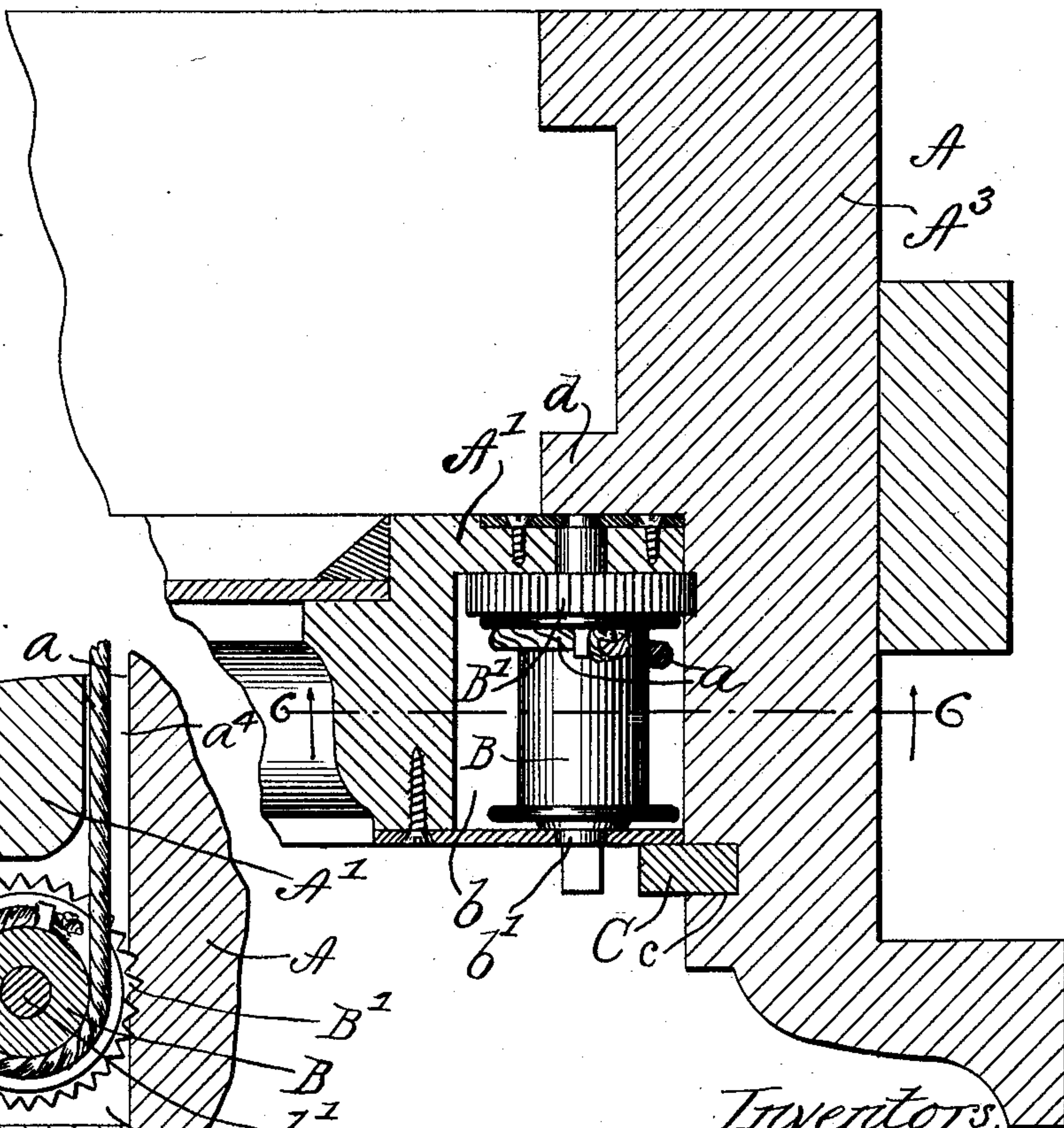
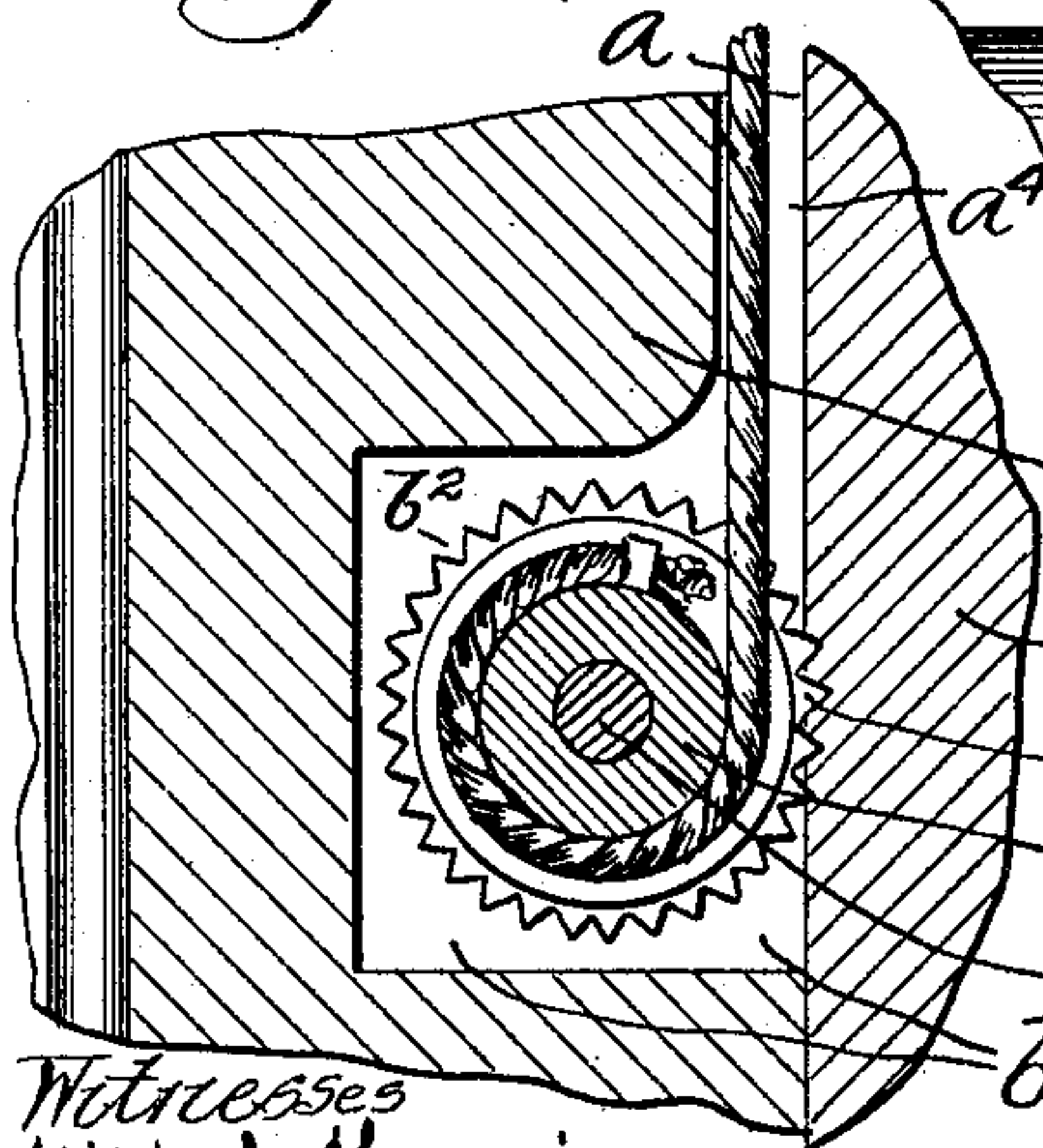


Fig. 6.



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UNITED STATES PATENT OFFICE.

NILS M. KITTELSEN AND MICHEL WALKER, OF CHICAGO, ILLINOIS.

WINDOW FRAME AND SASH.

SPECIFICATION forming part of Letters Patent No. 603,597, dated May 3, 1898.

Application filed July 22, 1897. Serial No. 645,603. (No model.)

To all whom it may concern:

Be it known that we, NILS M. KITTELSEN, a subject of the King of Sweden and Norway, and MICHEL WALKER, a citizen of the United States, residents of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Window Frames and Sashes, of which the following is a specification.

This invention relates to improvements in window-frames and window-sashes.

Primary objects of the invention are, first, to simplify the construction of window-frames and window-sashes generally, thus cheapening the cost of manufacture thereof, and, second, to provide a window-frame and window-sashes constructed in such manner that the sashes may be quickly and conveniently disengaged from the frame and drawn or swung into the room, thus rendering the outside of the window accessible for purposes of cleaning.

A window frame and sashes embodying our invention consist of the various features, combinations of features, and details of construction hereinafter described and claimed.

In the accompanying drawings a window frame and sashes embodying our invention are fully illustrated.

Figure 1 is a front view, partly in section, of a window embodying our invention. Fig. 2 is a vertical sectional view thereof. Figs. 3 and 4 are enlarged sectional views thereof on the lines 3 3 and 4 4, respectively, of Fig. 1. Fig. 5 is an enlarged sectional view on the line 5 5 of Fig. 1, and Fig. 6 is a sectional view on the line 6 6 of Fig. 5.

Referring now to the drawings, A designates the window frame or casing, A' the lower sash, and A² the upper sash.

One feature of our invention relates to improved means for balancing the window-sashes, whereby the use of sash-balance weights is dispensed with, thus eliminating this item of expense and also enabling the construction of the window frame or casing to be materially simplified by dispensing with boxes for said sash-balance weights and correspondingly reducing the cost of manufacture. As it relates to this feature our invention consists in balancing the sashes against each other by means of cords *a*, the

ends of which are secured adjacent to the bottoms of both sashes and which are adjusted to pulleys *a'*, which, as shown, are revolvably supported in suitable housings or standards *a*², secured to the top of the window frame or casing A, holes *a*³ being formed in the top of said window-frame to permit the passage of said sash-cords *a* and longitudinal grooves *a*⁴ being formed in both of the sashes A' A² to receive said cords.

By balancing the window-sashes against each other in the manner described we dispense with the sash-balance weights and are also enabled to form the sides of the window frame or casing from plain side pieces A³, thus effecting a material saving in material and labor necessarily incurred in providing boxes for said sash-balance weights in window frames or casings as heretofore constructed.

With the described construction it is obvious that movement of either sash will produce a corresponding movement of the other sash, one sash moving up as the other moves down. In the preferable construction shown, however, means are provided for producing a differential movement of said sashes, whereby when the lower sash is fully raised a space will be left below the upper sash and the bottom of the window frame or casing, thus providing for the use of a screen in said window without leaving unprotected openings. The means for producing such differential movement of the sashes are as follows: Formed in the sides of the lower sash, adjacent to the bottom thereof, are recesses *b*, through which extend revoluble shafts *b'*. Rigidly secured to the shafts *b'* are drums B, to which one end of each sash-cord *a* is attached in such manner that said cords will be wound upon said drums as said drums rotate. Also secured to the shafts *b'* are what for purposes of convenient reference may be termed "traction-wheels" B', which extend through lateral openings in the window-sash in position to come into contact with the window frame or casing. Series of sharp teeth *b*² are formed in the peripheries of the traction-wheels to insure an engagement of said traction-wheels B' with the window frame or casing sufficient to rotate the shafts *b'* when said sash is raised or lowered. With this construction it is obvious that the sash-cords *a* will be wound upon

or unwound from said drums B as the lower sash is raised or lowered. As shown, said cords are attached to said drums in such manner that they will be wound upon said drums 5 as the sash is raised or unwound therefrom as the sash is lowered. It is also obvious that by properly proportioning the sizes of the drums B and disks B' any desired relative movement of said upper and lower sashes 10 may be obtained. A desirable proportion is such that the movement of the upper sash will be about one-quarter ($\frac{1}{4}$) of the movement of the lower sash.

In order to secure the lower sash in raised 15 position, means are provided as follows: The ends of the shafts b' project outwardly beyond the window-sash and are squared, and secured to said sash are longitudinally-movable plates b^3 , in which are formed slots b^4 , adapted to 20 engage the squared ends of the shafts b' and prevent rotation thereof. As shown, the plates b^3 are secured to the window-sash by means of screws b^5 , preferably thumb or wing screws, which pass through slots b^6 , formed 25 in said plates, thus providing for necessary longitudinal movement of said plates to lock and release the shafts b' . Said screws also provide convenient means for securing said plates in adjusted position.

30 As it relates to means for removably securing the sashes in operative position the construction of our improved window is as follows: Secured to the inner side of the lower sash A' are stops C, which are adapted to be 35 moved into and out of engagement with longitudinal grooves c , formed in the faces of the sides A^3 of the window-frame. As shown, transverse slots c' are formed in the stops C, through which pass clamping or binding 40 screws c^2 , preferably wing or thumb screws, by means of which said stops may be secured in adjusted position. By moving the stops C outwardly into engagement with the grooves c they will operate in an obvious manner to 45 secure said lower sash A' in position in the window frame or casing A. By retracting said stops from engagement with said grooves said sash is released from said window frame or casing and may be swung or drawn in- 50 wardly.

The parting-strips D consist of fixed lower sections d and upper sections d' , fitted to grooves or slots d^2 , formed in the window frame or casing and adapted to be depressed 55 into said grooves or slots, so that the outer edges thereof will be flush with the faces of said window frame or casing. The upper sections d' of said parting-strips D are longer than the upper sash A^2 , so that when they are 60 depressed said upper sash will be free and may be swung or drawn inwardly.

In the construction shown springs d^3 are applied to the inner edges of the sections d' of the parting-strips D, which are adapted to 65 maintain said sections d' normally extended or advanced, and stops are provided which operate to limit the movement of said sec-

tions d' under the influence of the springs d^3 . As shown, said stops are formed by the ends of a strip d^4 , secured to the top of the window 70 frame or casing, and by the lower sections d of the parting-strips, shoulders d^5 being formed on said upper sections d' , which are adapted to come into contact with the upper 75 ends of said lower sections d . In the preferable construction, also, means are provided to secure the upper sections d' of said parting-strips in depressed position against the force of the springs d^3 . As shown, the means 80 provided for this purpose consist of spring-actuated bolts or pins d^6 , which are adapted to engage holes d^7 , formed in said sections d' of the parting-strips, when said sections d' are fully depressed. In the preferable construction shown, also, the bolts or pins d^6 are fit- 85 ted to suitable bearings formed in housings or casings D' , which are let into the sides of the window frame or casing, so as to be flush therewith. The bolts or pins d^6 are with- 90 drawn to release said movable sections d' of the parting-strips and allow them to return to their normal advanced or extended positions by means of pins d^8 , secured therein, which extend into slots d^9 , formed in the hous- 95 ings D' , so as to be accessible.

In assembling our improved window the movable sections d' of the parting-strips are secured in retracted or depressed position by the pins or bolts d^6 . The upper sash A^2 is then 100 placed in position and the bolts or pins d^6 retracted, thus allowing said sections d' to assume their normal advanced positions. The lower sash is then placed in position and the stops C moved outwardly into engagement 105 with the grooves c and secured in engagement therewith by means of the screws c^2 .

When for any reason it is desired to obtain access to the exterior of the window, the screws c^2 are loosened and the stops C with- 110 drawn from engagement with the grooves c . The lower sash is thus disengaged from the window frame or casing and may be drawn or swung inwardly, and the sash-cords being attached adjacent to the bottom of said sash 115 admit of the top of said sash being swung inwardly, so that said sash will assume a position substantially as shown in diagram in Fig. 2. After removing the lower sash the movable sections d' of the parting-strips are 120 depressed until the pins or bolts d^6 engage the holes or sockets d^7 formed therein, thus securing said sections d' in position to disengage said upper sash from the window-casing. Said sash being supported adjacent to its 125 lower end by the sash-cords, the top thereof may be swung inwardly, substantially as shown in diagram in Fig. 2 of the drawings. When in the positions described, it is obvious that the exteriors of both of said windows will be accessible. 130

We claim—

1. The combination with a movable window-sash, of drums revolubly mounted in said sash, sash-cords, one end of each of which is

attached to said drums, traction-wheels secured to said drums which run in contact with the window-casing, whereby movement of said sash will impart rotation to said drums, and means to secure said drums against rotation, substantially as described.

2. The combination with movable window-sashes, of shafts revolubly mounted in said sashes, drums secured to said shafts, traction-wheels likewise secured to said shafts, which run in contact with the window-casing, sash-cords, one end of each of which is secured to the upper sash and the other ends of which are attached to the drums mounted in the lower sash, the ends of said shafts projecting from said sash and being squared, and slotted, longitudinally-movable plates secured to said window-sash, in such position that movement thereof in the proper direction will cause the slots therein to engage the squared heads of said shafts and secure said shafts against rotation, substantially as described.

3. The combination with a window-frame and movable upper and lower window-sashes, of grooves formed in the sides of said window-frame, strips or stop-plates secured to the lower sash by means of clamping or binding screws, which pass through transverse slots formed in said strips or stop-plates, said strips or stop-plates being adapted to be moved outwardly into engagement with said grooves and to be retracted out of engagement therewith, the parting-strips of said window-frame comprising upper sections, fitted to and adapted to be depressed into grooves or slots formed in the sides of said window-frame, springs applied to the rear sides of said movable sections of said parting-strips and adapted to maintain the same normally advanced or extended, and stops to limit the movement of said movable sections under the influence of said springs, substantially as described.

4. The combination with a window-frame and movable upper and lower window-sashes, of grooves formed in the sides of said window-frame, strips or stop-plates secured to the lower sash by means of clamping or binding screws, which pass through transverse slots formed in said strips or stop-plates, said strips or stop-plates being adapted to be moved outwardly into engagement with said grooves and to be retracted out of engagement therewith, the parting-strips of said window-frame comprising upper sections, fitted to and adapted to be depressed into grooves or slots formed in the sides of said window-frame, springs applied to the rear sides of said movable sections of said parting-strips and adapted to maintain the same normally advanced or ex-

tended, stops to limit the movement of said movable sections under the influence of said springs and sash-cords attached adjacent to the bottoms of said upper and lower sashes, substantially as described.

5. The combination with a window-frame and movable upper and lower window-sashes, of guide-grooves formed in the sides of said window frame or casing, strips or stop-plates secured to the lower window-sash and adapted to be moved outwardly into engagement with said grooves and adapted to be withdrawn from engagement therewith, the parting-strips of said window-frame comprising upper sections fitted to and adapted to be depressed into grooves or slots formed in the sides of said window-frame, springs applied to said movable sections of said parting-strips and adapted to maintain the same normally advanced or extended, stops to limit the movement of said movable sections of said parting-strips under the influence of said springs and bolts or pins adapted to secure said movable sections of said parting-strips in depressed position, substantially as described.

6. The combination with a window frame or casing and movable upper and lower sashes, of grooves formed in the sides of said window frame or casing, strips or stop-plates secured to the lower window-sash and adapted to be moved outwardly into engagement with said grooves and to be retracted from engagement therewith, the parting-strips of said window-frame comprising upper sections fitted to and adapted to be depressed into grooves or slots formed in the sides of said window-frame, means to secure said movable sections of said parting-strips in advanced or extended position, drums revolubly mounted in the lower sash, traction-wheels secured to said drums, which run in contact with the window-casing and impart rotary movement to said drums when said sash is raised or lowered, sash-cords, the corresponding ends of each of which are attached to the drums mounted in said lower sash, and the opposite ends of which are attached to the upper sash, and pulleys supported at the top of said window-frame over which said sash-cords pass, substantially as described.

In testimony that we claim the foregoing as our invention we have hereunto set our hands this 24th day of June, 1897.

NILS M. KITTELSEN.
MICHEL WALKER.

Witnesses:

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JOHN C. BLEY.