

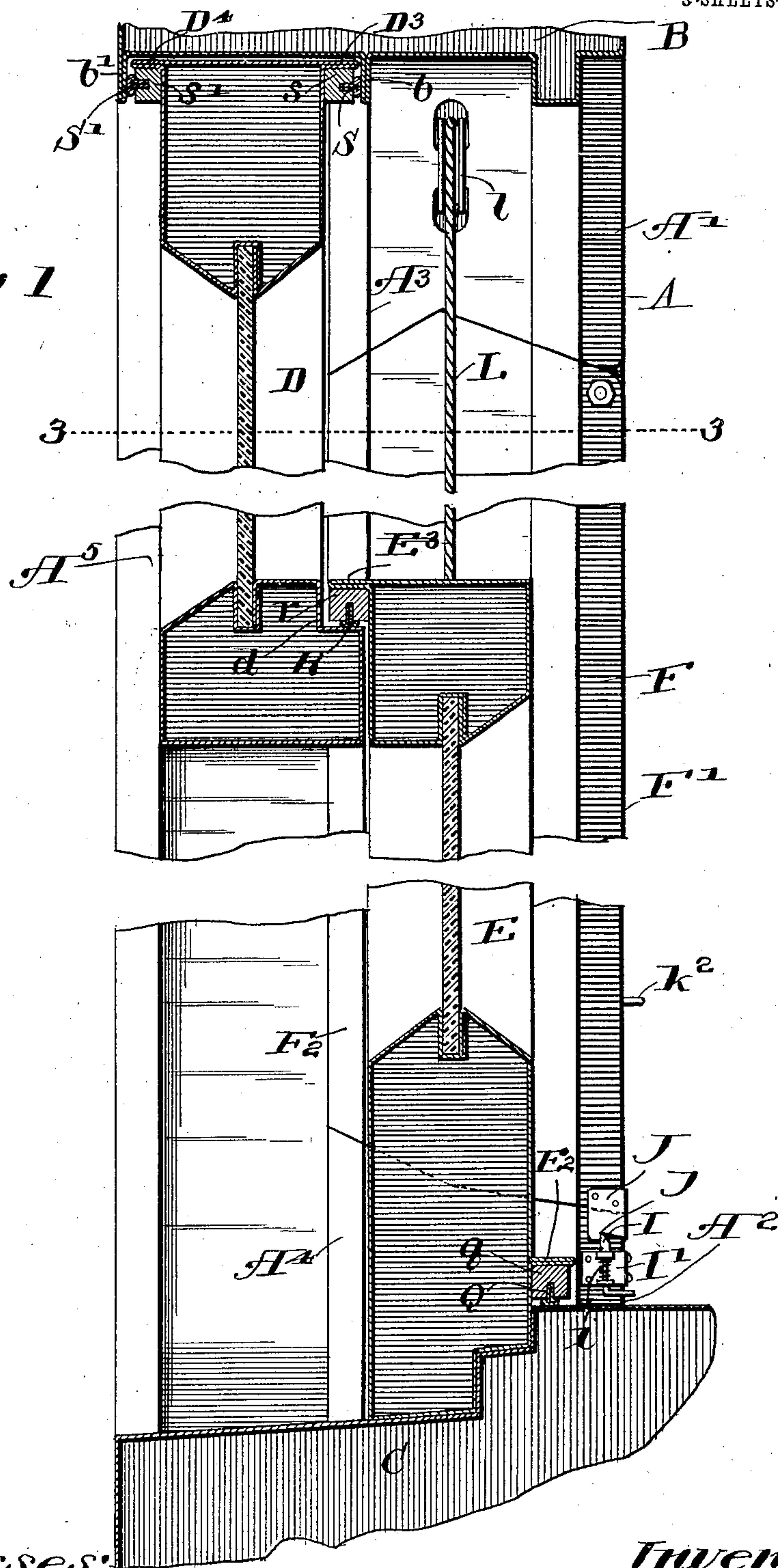
J. H. McILROY.
WINDOW.

APPLICATION FILED APR. 2, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

Fig 1



Witnesses:

Carl H. Crawford
William H. Hall

Inventor

Johnston Henry McIlroy

by Pooler Brown

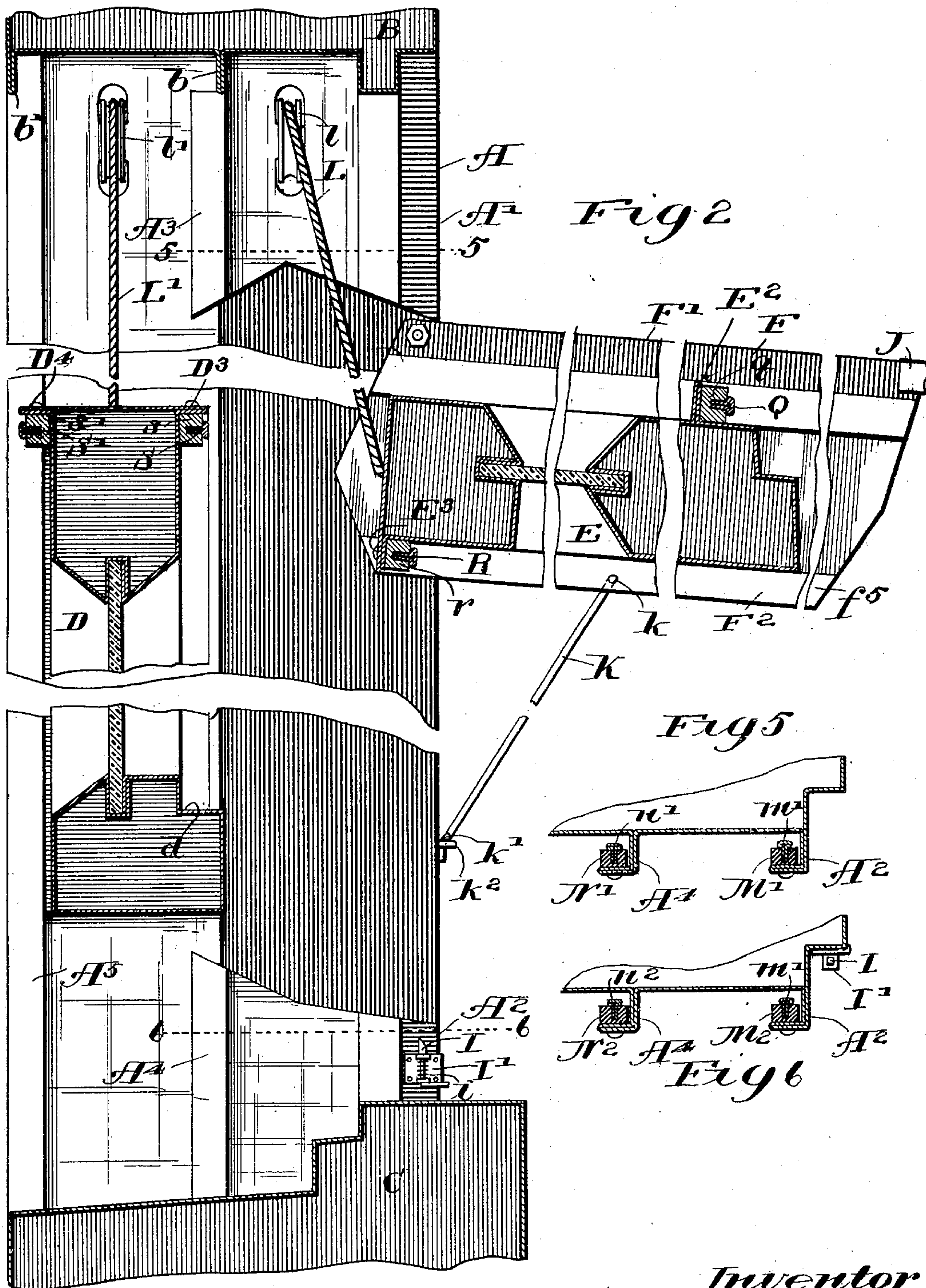
his Attorneys

J. H. McILROY.
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NO MODEL.

3 SHEETS—SHEET 2.



Witnesses:
Carl M. Crawford
William H. Hall

Inventor
Johnston Henry McIlroy
By Pooler Brown
his Attorneys

No. 735,999.

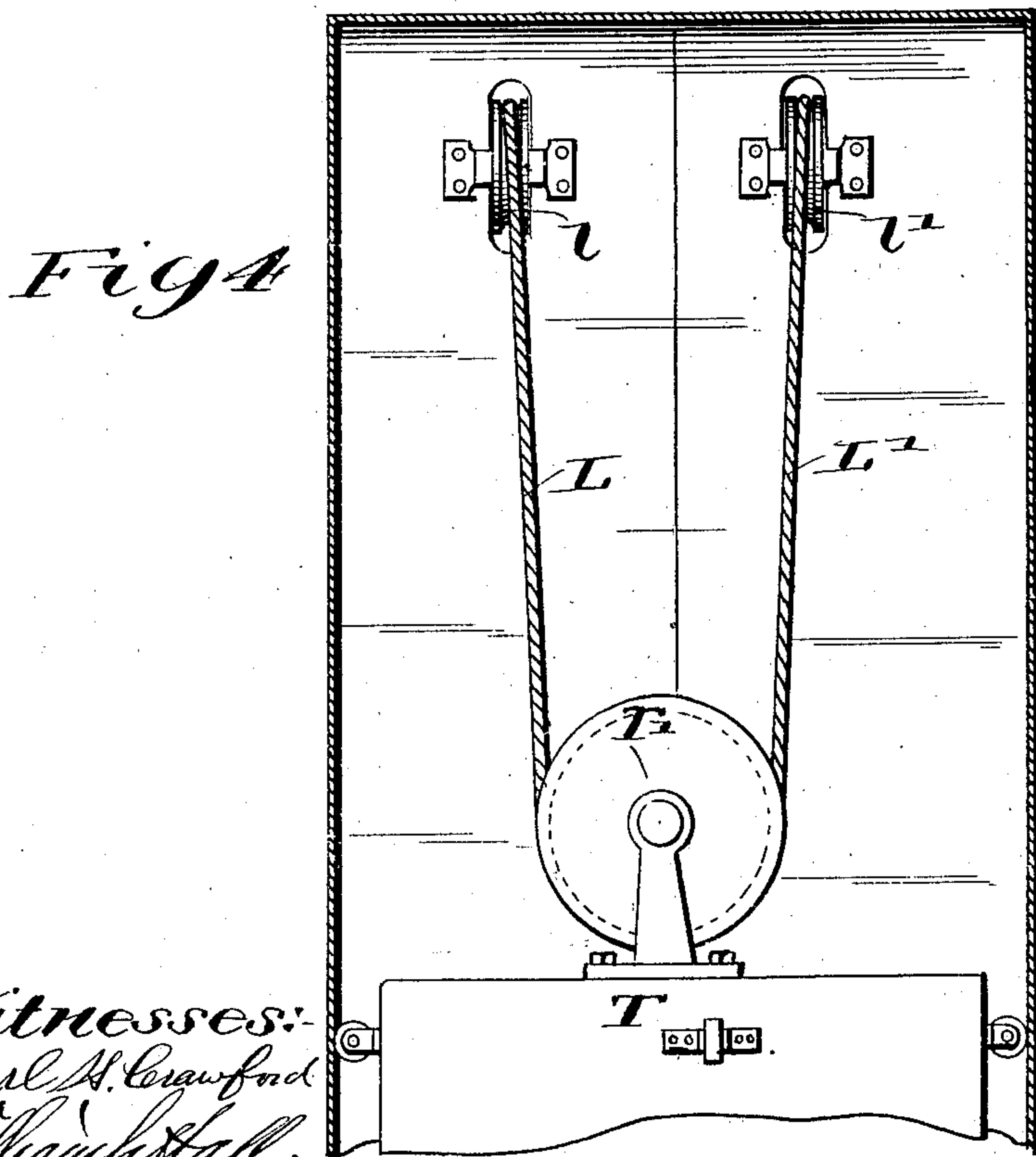
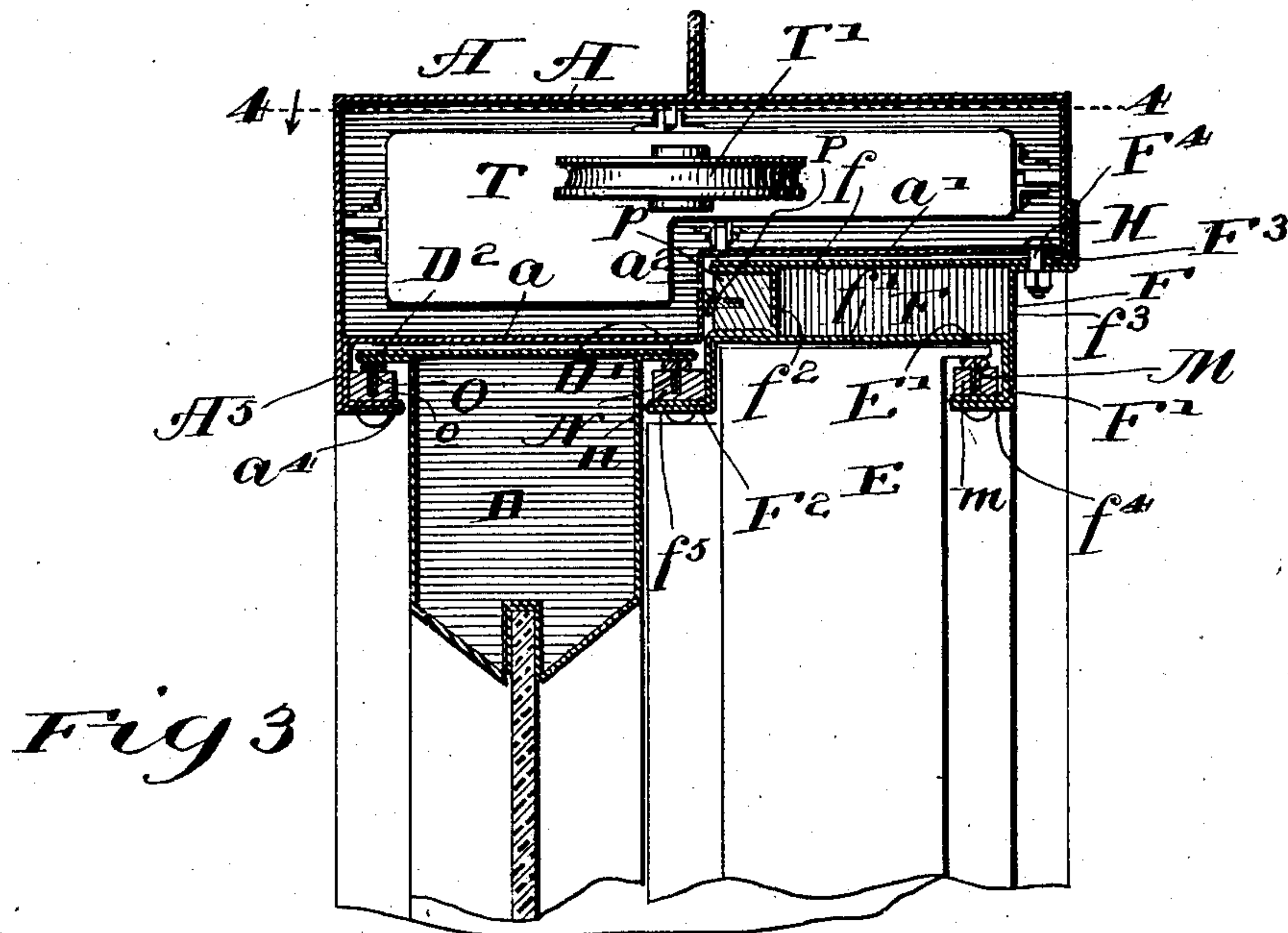
PATENTED AUG. 11, 1903.

J. H. McILROY.
WINDOW.

APPLICATION FILED APR. 2, 1903.

NO MODEL.

3 SHEETS—SHEET 3.



Witnesses:-
 Carl S. Crawford
 William Hall.

Inventor
Johnston Henry
By McJury
Robert Brown
his Attorneys

UNITED STATES PATENT OFFICE.

JOHNSTON H. MCILROY, OF CHICAGO, ILLINOIS.

WINDOW.

SPECIFICATION forming part of Letters Patent No. 735,999, dated August 11, 1903.

Application filed April 2, 1903. Serial No. 150,783. (No model.)

To all whom it may concern:

Be it known that I, JOHNSTON H. MCILROY, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Windows; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in windows of that class having vertically-sliding sash, and more especially to features of construction in such windows adapting the sash to be readily removed from the frame for the purpose of cleansing the outer face of the glass and to features of construction in sheet-metal windows adapted for making tight or weatherproof joints between the several moving parts of such windows.

The invention consists in the matters hereinafter set forth, and pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a view in central vertical section of a frame and upper and lower sash of a window embodying my invention. Fig. 2 is a similar sectional view showing both the upper and lower sash in changed position. Fig. 3 is a plan section taken through one of the side uprights of the frame on line 3 3 of Fig. 1 and through both the upper and lower sash, said section showing the lower sash partially raised and the upper sash partially drawn down, so that the two sashes are opposite each other. Fig. 4 is a sectional view showing a sash-weight and the sash-cord pulleys, said section being taken on line 4 4 of Fig. 3. Fig. 5 is a detail section taken on line 5 5 of Fig. 2. Fig. 6 is a detail section taken on line 6 6 of Fig. 2.

As shown in said drawings, A indicates one of the side uprights of the window-frame, B the upper cross-piece of the frame, and C the lower cross-piece or sill of the same.

D indicates the upper, and E the lower, sash. The frame-upright A is provided in its inner face with a recess or rebate, which extends from a point near the bottom to a point near the top of said upright, and said recess or rebate is filled by a movable sash-carrying bar F, in which the lower sash slides. Said

bar is pivoted at its upper end to the frame and is adapted to swing at its lower end in a vertical plane and in a direction parallel with the inwardly-facing surface of the upright and inwardly with respect to the wall in which the window is located. The frame-upright is provided with vertical guide-flanges or stops for the upper and lower sash, which guide-flanges in the case of the inner and intermediate flanges, or those which engage the inner and outer faces of the lower sash, are formed in part on the upper and lower portions of the said upright and in part on the movable sash-carrying bar F. The innermost guide-flange consists of upper and lower fixed parts A' and A², formed on the frame-upright itself, and an intermediate part F', formed on the movable bar F. The intermediate guide-flange likewise consists of upper and lower fixed parts A³ A⁴ and an intermediate part F² on the said bar. When the said sash-carrying bar is in its normal position, the said intermediate parts F' F² of the inner and intermediate guide-flanges are in alinement with the fixed end portions A' A² and A³ A⁴ of said inner and intermediate flanges and form guides or stops for the lower and upper sash, extending continuously from the bottom to the top of the frame. The outermost guide-flange A⁵ is attached to or formed on the frame-upright itself and extends from the top to the bottom of the same.

The window frame and sash illustrated are made of sheet metal and of hollow or tubular form. In the case of the frame-upright A the sheet metal constituting the same is bent to form, in the principal part of the length of the upright, two inwardly-facing offset walls *a* and *a'*, connected by a transversely-extending wall *a²*, (see Fig. 3,) the walls *a'* and *a²* constituting the rebate or recess to receive the movable sash-carrying bar F. The stop or guide-flange A⁵ is of L form in cross-section and has its free margin *a⁴* extended upwardly parallel with the wall *a*, so as to form an inwardly-facing groove on the external margin of the frame-upright. Said flange A⁵ is shown as formed by the folded extensions of the sheet metal forming the wall *a* and the adjacent outer wall of the tubular frame-upright. Said bar F is made of sheet metal bent into hollow or tubular form and embracing

parallel side walls $f f'$ and edge walls $f^2 f^3$, arranged to form a rectangular tube. The wall f is arranged adjacent to or in contact with the inwardly-facing wall a' of the frame-upright, while the wall f' is arranged in the same plane with the wall a of the frame and forms the bottom of the groove on which the edge of the lower sash slides. The stop or guide-flange F' is of L shape in cross-section and extends from the inner face of the wall f' at right angles to the same. Said flange has a right-angled bend, so that its marginal part f^4 extends toward the body of the bar and parallel with the said wall f' . Said flange F' is shown as formed by the doubled or folded extensions of the metal of the walls f and f' , at the meeting edges thereof. The stop or guide-flange F^2 is also made of L shape and extends from the wall f' at right angles to the same, being provided with a right-angled bend, which brings its marginal part f^5 in a plane parallel with the wall f' . Said marginal part f^5 is, however, directed outwardly from the inner edge of the bar F , so that it extends past the rebate in the frame-upright and overlaps the wall a thereof. The flange F^2 is shown as formed by the folded extensions of the walls f' and f^2 .

It will be understood from the above that the L-shaped flange F' forms a groove which faces toward the lower sash E , while the flange f^2 forms, with the adjacent part of the wall a , a groove which faces in the same direction and toward the upper sash D . The edge of said lower sash E is held and slides between the said guide-flanges F' and F^2 and has on its inner face a marginal laterally-extending flange E' , which enters the groove formed by the innermost guide-flange F' . The upper sash slides between the guide-flanges F^2 and A and is provided with inwardly and outwardly extending marginal flanges D' and D^2 , which enter the outwardly and inwardly facing grooves formed by said flanges F^2 and A^5 . The rails and stiles of the upper and lower sash are shown as made of sheet metal of hollow or tubular form and the flanges E' , D' , and D^2 as formed by outwardly-extending folded parts of the sheet-metal walls of the hollow stiles. The stops or guide-flanges A' , A^2 , A^3 , A^4 , which are on the frame-upright above and below the rebate for the bar F , correspond in cross-sectional form with the flanges F' and F^2 and form upward and downward continuations thereof, so that when the bar F is in its normal or vertical position, as seen in Fig. 1, the upper and lower sash may slide freely in the frame as do the sash of an ordinary window.

The bar F is pivoted near its upper end to the frame-upright by means of a pivot-bolt H , located near the inner margin of the bar and frame-upright, so that when the bar is swung inwardly or toward the interior of the room or apartment in which the window is located the bar will swing about its upper and inner corner. This construction enables

a close joint to be made between the upper end of the bar F and the end of the rebate above the same, with which it is normally in abutting relation, as seen in Fig. 1. The meeting surfaces of the lower end of said bar F and the lower end of the said rebate are inclined upwardly and outwardly from the inner margins of the upright and bar, so that they will come in close contact when the bar is swung into place, but will not interfere with the movement of the lower end of the bar.

The bar F is shown as made narrower than the width of the rebate or recess in the frame-upright and as provided with a flange F^3 , which extends from the edge of the bar in the plane of its inner wall f' and extends to the inner margin of the frame-upright. The said flange F^3 thus arranged is utilized for making the pivotal joint between the bar F and the frame-upright, the pivot-bolt H being inserted through the said flange and through the wall a' of the frame-upright. The flange F^3 is shown as having a marginal extension F^4 , which projects at right angles to the body of the flange, and is adapted to overlap the inner margin of the frame-upright, as seen in Fig. 3. Said extension F^4 serves to close or cover the joint between the frame-upright and the bar F when the latter is in its normal or vertical position.

For the purpose of locking or holding the bar F in its normal position within the recess or rebate of the frame-upright I provide a locking device adapted to engage the lower end of the said bar. Said locking device, as shown, consists of an endwise-sliding bolt I , which is mounted to slide vertically in a base-plate I' , attached to the inner face of the frame and adapted to engage a notch j , formed in the lower edge of a plate J , which is attached to the lower end of the said bar. The bolt I is shown as provided with a coiled actuating-spring i , which tends to hold the same in engagement with the notch j .

The purpose of providing the frame with bars, which carry the lower or innermost sash and which are pivoted to the frame-uprights, as described, is to enable both the upper and lower sash to be shifted into position for the cleansing of the outer surfaces of the glass therein. The shifting of the lower sash is effected by sliding it upward from its lowermost position until it is clear of the stops or flanges A^2 on the frame and then unlocking the bars F and swinging them inward and upward until the bars and sash are in a horizontal or nearly horizontal position, as shown in Fig. 2. The bars F may be supported in such position by a suitable supporting device. Such a device is shown in the drawings as consisting of a rod E , one end of which is bent at right angles and inserted in a hole k in the flange f^5 , while the lower end has a cross-piece k' , adapted to rest on a staple k^2 , secured in the inner margin of the frame-upright when the lower end of the rod is inserted in said staple. When the bars F are

thus supported in their elevated positions, the outer surface of the lower sash, which is supported thereby, is readily accessible from beneath for the purpose of washing or cleaning the glass therein. Moreover, when the bars and lower sash are swung or thrown inwardly and upwardly the upper sash may be lowered and swung inwardly from its place in the frame, the absence of the guide-flanges F^2 , which are moved with the bar F , enabling said upper sash to be removed from its place when said upper sash is drawn down to the lower part of the frame or until its upper rail is below the level of the pivoted upper ends of the bars F . When the upper sash is thus drawn inwardly from its place in the frame, its outer face will be readily accessible by swinging its lower edge upwardly and inwardly. It will of course be understood that both the upper and lower sash may be removed from their places in the frame without disconnecting therefrom the sash-weight cords L and L' , attached thereto.

In order to provide weatherproof joints between the several parts of the window, I provide features as follows: Attached to the inner face of the marginal part f^4 of the guide-flange F' is a packing-strip M , which bears against the adjacent side face of the flange E' on the stile of the lower sash and makes a close joint between the sash and frame, while permitting the sash to slide freely in the frame. The packing-strip M is shown as consisting of a strip of flexible material, such as rubber or felt, folded along its center line and having its edges inserted in a groove or channel formed in a rectangular wooden strip m , which is attached to the flange F' by screws inserted through the flange into the said strip m or other attaching means engaging the flange and strip. The edges of the packing-strip thus may be secured in the wooden strip by glue or other adhesive means. The folded central portion of the flexible packing-strip is confined and flattened between the wooden strip m and the flange E' and is thus adapted to press yieldingly against the said flange. Attached to the parts f^5 and a^4 of the guide-flanges F^2 and A^5 are like packing-strips N and O , which bear on the flanges D' and D^2 of the upper sash. The strips N and O are attached to wooden strips n and o in the same manner as in the case of the packing M . The fixed flanges A' A^2 A^3 A^4 on the frame above and below the bar F are provided with packing-strips like the strips M and N , the same being shown in Figs. 5 and 6 of the drawings and being marked M' M^2 N' N^2 , while the attaching-strips to which they are secured are marked m' m^2 n' n^2 .

In order to provide for a weatherproof joint between the movable bar F and the frame, a packing-strip P is located between the inner edge of said bar and the frame, as shown in Fig. 3 of the drawings. The said packing-strip is attached to the inner edge of the bar and is adapted to bear against the inner wall

or surface of the rebate in the frame-upright, which wall or surface in the sheet-metal frame is formed by the wall a^2 . Said packing-strip P is made like those before described, the same being made of flexible material and folded and secured at its edges in a wooden strip p . The strip p is shown as inserted in a groove formed by setting the edge wall f^2 of the sheet-metal bar F inwardly from the edge of the side walls f and f' , so as to form a groove for the strip practically equal to the width of the bar.

Provision is made for forming a tight joint between the lower rail of the lower sash and the window-sill e when the sash is closed, consisting of a flange E^2 , which projects horizontally from the inner face of the said lower rail, and to which is attached a downwardly-facing packing consisting of a folded flexible strip Q , inserted in a groove in a wooden attaching-strip q , which latter is secured by screws or like means to the flange E^2 . Said flange E^2 is shown as formed by an outward fold of the sheet metal constituting the tubular lower rail.

To provide a close joint between the meeting-rails of the upper and lower sash, the top rail of the lower sash is provided with an outwardly-extending horizontal flange E^3 , to the under surface of which is applied a downwardly-facing packing R , adapted for contact with an upwardly-facing surface on the bottom rail of the upper sash. The packing R is formed by a folded flexible strip attached to a wooden strip r , which latter is secured to the flange E^3 as before described in connection with the packing-strip M . The lower rail of the upper sash is shown as provided with a rebate d to receive the packing-strip R and its attaching-strip r .

I provide for the making of a weatherproof joint at the top of the upper sash as follows: The horizontal top member B of the frame is provided with depending vertical flanges b b' , located inside and outside of the upper sash. On its upper margin the top rail of said upper sash is provided with inwardly and outwardly extending horizontal flanges D^3 and D^4 , shown in the drawings as formed by outwardly-extending folded parts of the sheet metal of the tubular rail. Attached to the said flanges D^3 and D^4 are packing-strips S and S' , which face laterally or toward the adjacent faces of the flanges b and b' . The packing-strips S and S' , as before described, are made of flexible strips secured in wooden attaching-strips s and s' , which latter are secured to the flanges D^3 and D^4 by screws or like means.

As a further and separate improvement the window illustrated is provided with a single counterbalance-weight T at each side thereof, adapted to act as a counterbalance for both the upper and lower sash. The said weight, which is located in the hollow frame-upright, is provided with a pulley T' , and the sash-weight cords L and L' are continuous

with each other and pass around the said pulley T' and over the two guide-pulleys l l', which are attached to the frame-upright in the usual manner. The single weight T, on each side connected with the sash as described, has the same effect in counterbalancing the upper and lower sashes as would separate weights attached one on each side of each sash, while it has the advantage of being cheap and easily made and of moving only one-half the distance than would one of two weights when one of the sashes is raised or lowered. I reserve the right to claim this invention in a separate application.

I claim as my invention—

1. The combination with a window-frame and a sliding sash, of pivoted sash-carrying bars located in rebates in the frame-uprights and provided with grooves to receive the sash, and packing-strips interposed between the edges of the said bars and the frame-uprights.

2. The combination with a window-frame and upper and lower sliding sash, of pivoted sash-carrying bars located in rebates in the frame-uprights and provided each with two guide-flanges forming grooves which face one toward the lower and the other toward the upper sash, said upper and lower sash having laterally-extending marginal flanges which enter said grooves.

3. The combination with a window-frame and upper and lower sliding sash, of pivoted sash-carrying bars located in rebate in the frame-uprights and provided each with two guide-flanges forming grooves which face one toward the upper and the other toward the lower sash, said frame-uprights being provided with similar fixed guide-flanges above and below the said rebate, and the upper and lower sash having laterally-extending, marginal flanges which enter said grooves.

4. The combination with a window-frame and upper and lower sliding sash, of pivoted sash-carrying bars located in rebates in the frame-uprights and provided each with two guide-flanges forming grooves which face, one toward the lower and the other toward the upper sash, said sash having laterally-extending marginal flanges which enter said grooves, and packing-strips located in said groove between the flanges on the frame and sash.

5. The combination with a window-frame and upper and lower sliding sash, of pivoted sash-carrying bars located in rebates in the frame-uprights and provided each with two guide-flanges forming grooves which face one toward the upper and the other toward the lower sash, said frame-uprights being provided with similar fixed guide-flanges above and below the said rebate, and the upper and lower sash having laterally-extending marginal flanges which enter said grooves, and packing-strips located in the grooves formed by said flanges on the sash-carrying bars and frame-uprights, and adapted to bear against the said flanges on the upper and lower sash.

6. The combination with a window-frame

and upper and lower sliding sash, of pivoted sash-carrying bars located in rebates in the frame-uprights and provided each with two guide-flanges forming grooves which face, one toward the upper and the other toward the lower sash, said frame-uprights having like guide-flanges forming grooves which face toward the upper sash, the lower sash having marginal flanges which project from the inner side thereof, and enter the grooves formed by the flanges at the inner face of said lower sash and the upper sash having marginal flanges which project from both sides thereof and enter the grooves in the guide-flanges at both sides of said upper sash.

7. The combination with a window-frame and upper and lower sliding sash, of pivoted sash-carrying bars located in rebates in the frame-uprights, and provided each with two guide-flanges forming grooves which face toward the lower and upper sash, laterally-projecting marginal flanges on the upper and lower sash adapted to enter said grooves, packing-strips interposed between the inner edge of said sash-carrying bars and the frame, and packing-strips interposed between said guide-flanges and the flanges on the sash.

8. The combination with a window-frame and a sliding sash, of pivoted sash-carrying bars located in rebates in the frame-uprights, said bars being made of sheet metal bent into tubular form and having marginal flanges arranged parallel with the inner faces of the said uprights, and pivots for connecting the bars with the frame, said pivots being inserted through said flanges in the bars.

9. As a means of making weatherproof joints between a metal window frame and sash, a packing consisting of a folded flexible strip, and a wooden attaching-strip provided with a groove in which the edges of said folded strip are inserted and secured, that part to which the packing-strip is attached being provided with flanges and the wooden attaching-strip being secured to said flanges by screws or the like inserted through said flanges.

10. The combination with a sheet-metal frame and sheet-metal sash, said frame and sash having flanges which on one of the parts form a groove to receive the flange on the other part, and a packing-strip interposed between the said flanges in the frame and sash, said packing-strip consisting of folded strips of flexible material and wooden attaching-strips provided with grooves to receive the edges of the said flexible strips, attaching-strips being secured to the flanges on one of said parts.

11. The combination with a window-frame and a sash having a sheet-metal top rail, of means for making a weatherproof joint between the top rail of the sash and the frame, comprising a depending flange on the frame, a wooden attaching-strip secured to the side face of the rail, and a flexible, folded packing-strip, the edges of which are inserted and secured in the lateral face of said strip, and

which is adapted for contact with the vertical face of the said depending flange on the frame.

12. The combination with a window-frame and a sash having a sheet-metal top rail, of means for making a weatherproof joint between said top rail and the frame, consisting of a depending flange in the frame, a flange on the rail which projects horizontally from the side face of the same, a wooden attaching-strip secured to the flange beneath the same, and a flexible, folded, packing-strip, the edges of which are inserted and secured in the lateral face of the said attaching-strip and which is adapted for contact with the adjacent vertical face of the flange on the frame.

13. The combination with upper and lower sash having sheet-metal meeting-rails, the upper rail of the lower sash having a horizontal flange, which overlaps the lower rail of the upper sash, a wooden attaching-strip secured to the said flange by screws or the like, and a flexible, folded, packing-strip, the edges of which are inserted and secured in the said attaching-strip.

14. The combination with upper and lower sash having tubular sheet-metal meeting-rails, the rail of the lower sash having a horizontal flange formed by integral folded extensions of the sheet metal constituting said rail, which flange overhangs the rail of the upper sash, a wooden attaching-strip secured beneath the said flange to the rail of the lower sash, and a flexible, folded, packing-strip, the edges of which are inserted and secured in

the downwardly-facing surface of said attaching-strip.

15. The combination with a window-frame and sliding sash having a tubular sheet-metal lower rail, of means for making a weatherproof joint between the said lower rail and the frame-sill, comprising a horizontal flange which projects from the face of the said lower rail above the sill, a wooden attaching-strip secured to the rail beneath said flange, and a flexible folded, strip, the edges of which are inserted and secured in the downwardly-facing surface of said attaching-strip.

16. The combination with a window-frame and sash of pivoted sash-carrying bars located in rebates in the frame-uprights, said bars being provided with marginal flanges adapted to extend over the inner edge of the frame-uprights when the bars are in place in said rebates.

17. The combination with a window-frame and sash, of sash-carrying bars located in rebates in the frame-uprights and pivoted at their upper ends to said uprights, and spring-actuated locking devices for holding the bars in place in said rebates.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 27th day of March, A. D. 1903.

JOHNSTON H. McILROY.

Witnesses:

WILLIAM L. HALL,
TAYLOR E. BROWN.