

No. 609,984.

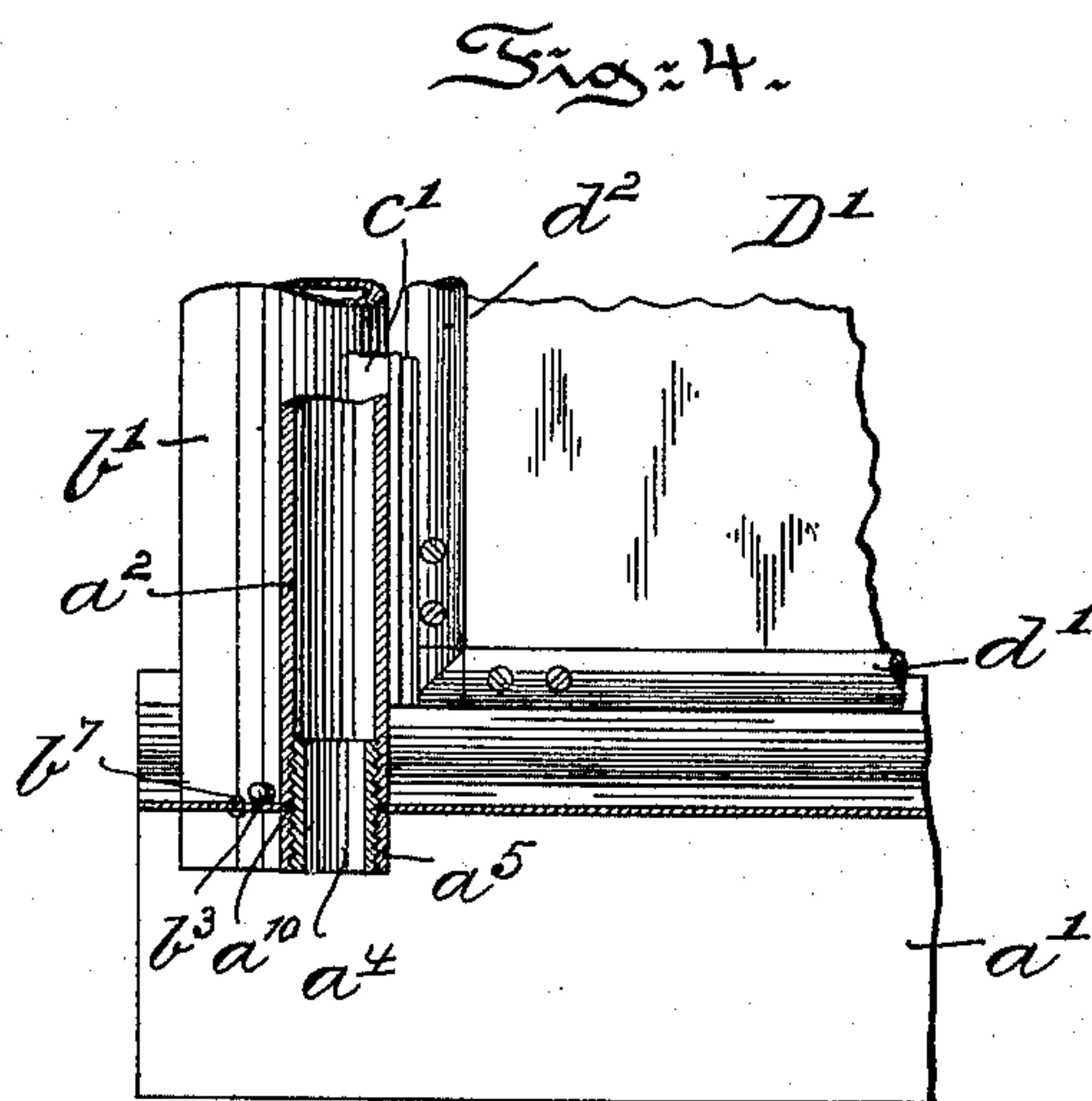
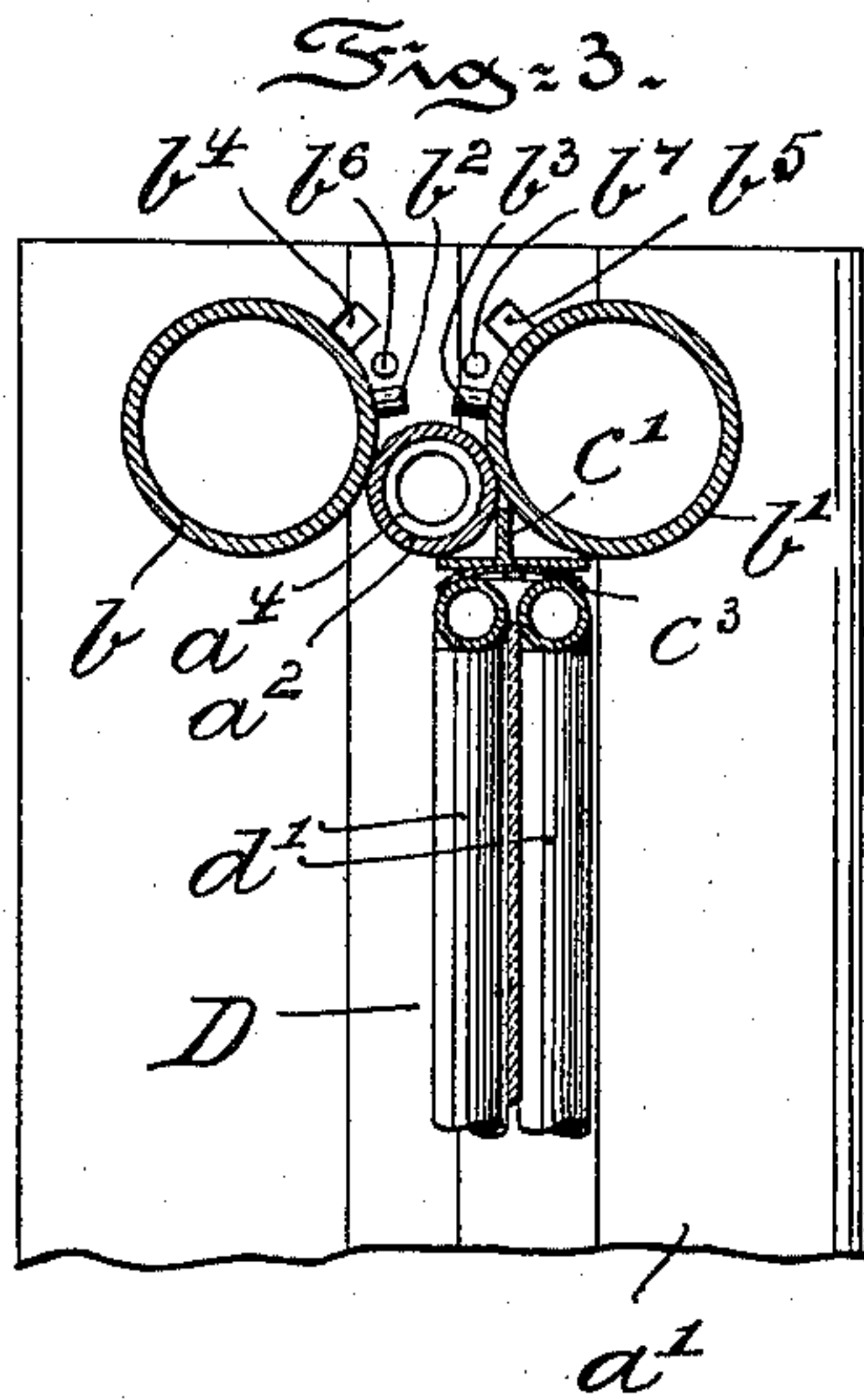
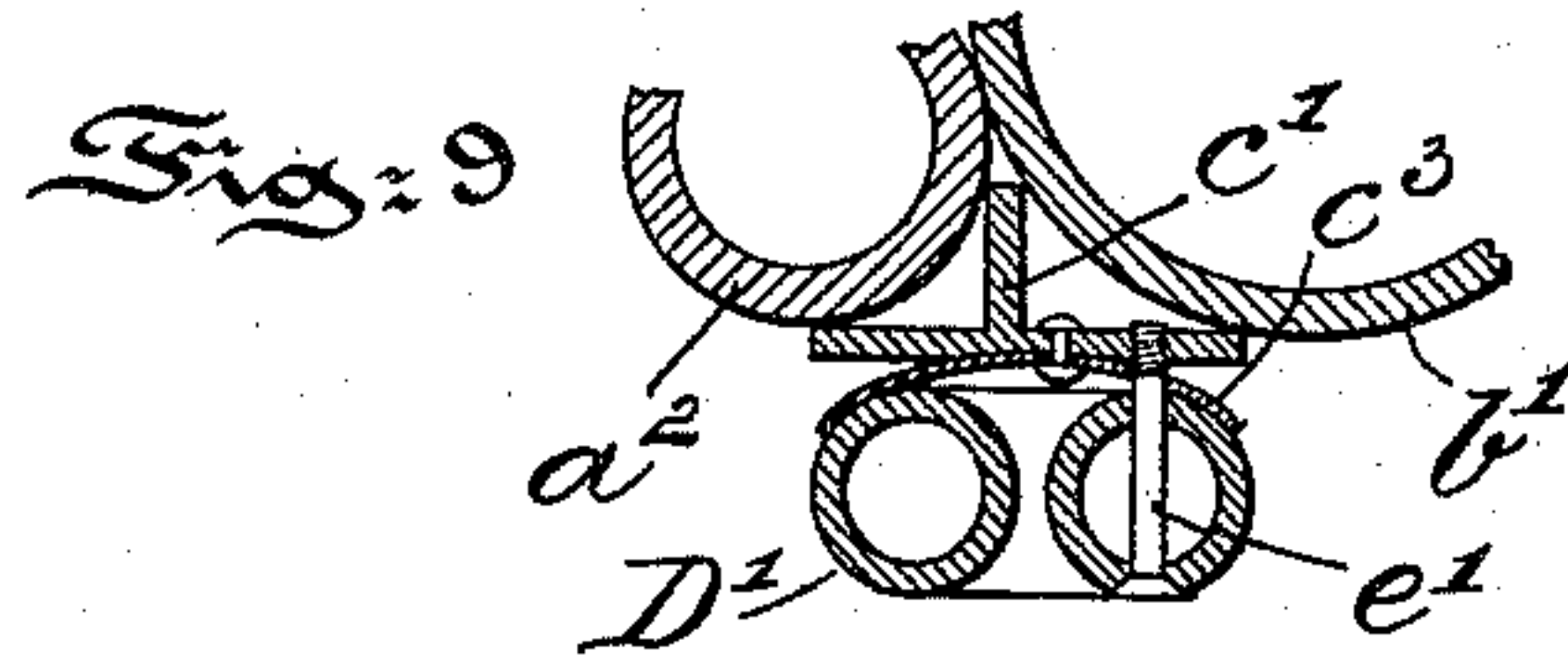
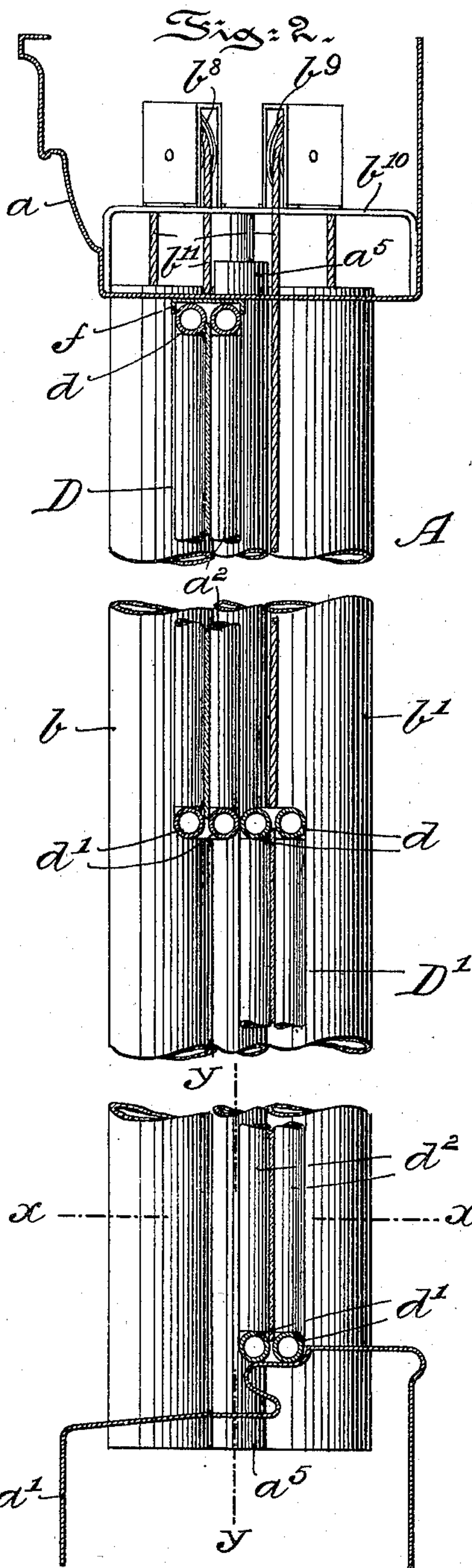
Patented Aug. 30, 1898.

E. F. BERTOLETT.
METAL WINDOW FRAME AND SASH.

(Application filed Nov. 29, 1897.)

(No Model.)

3 Sheets—Sheet 2.



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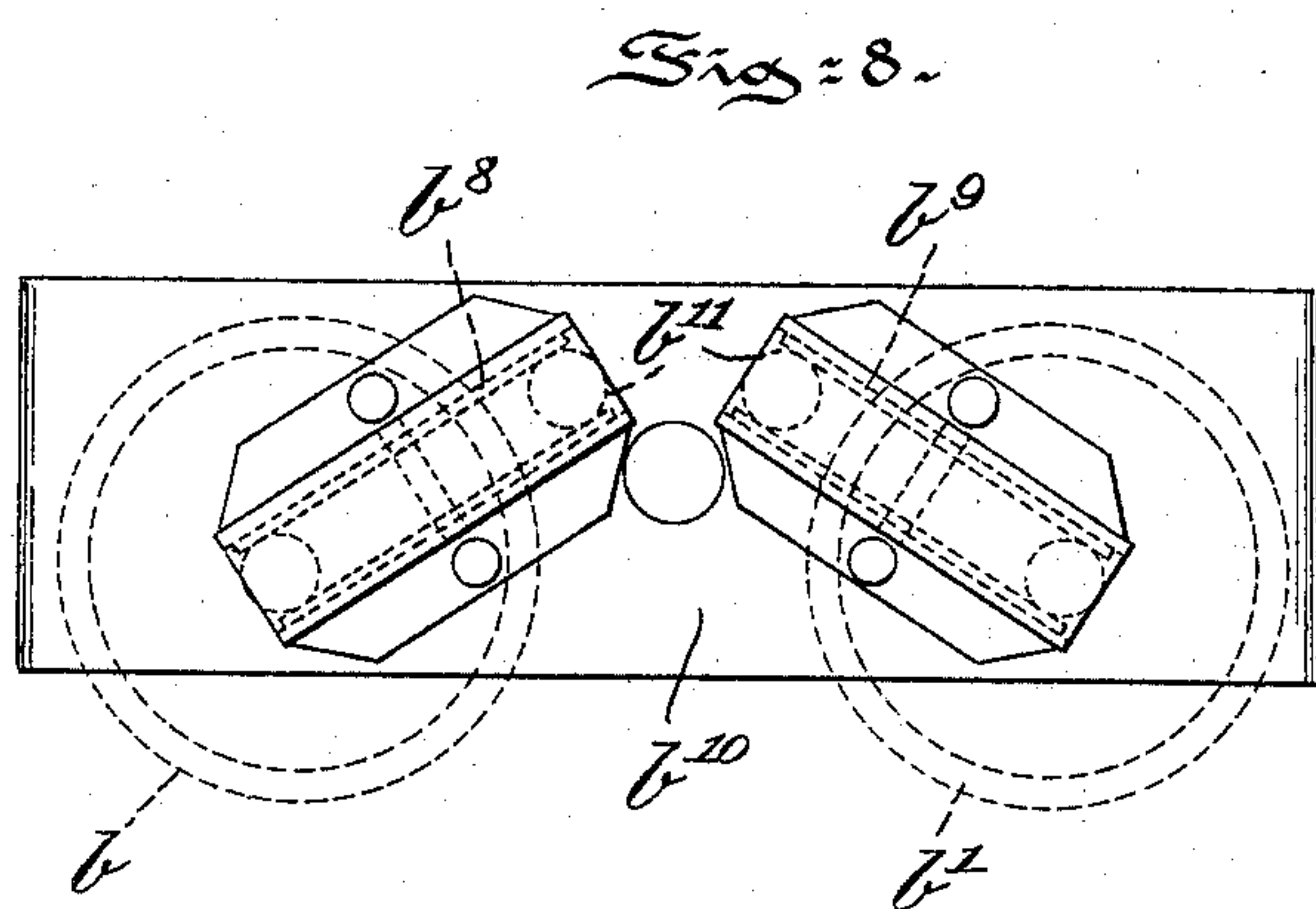
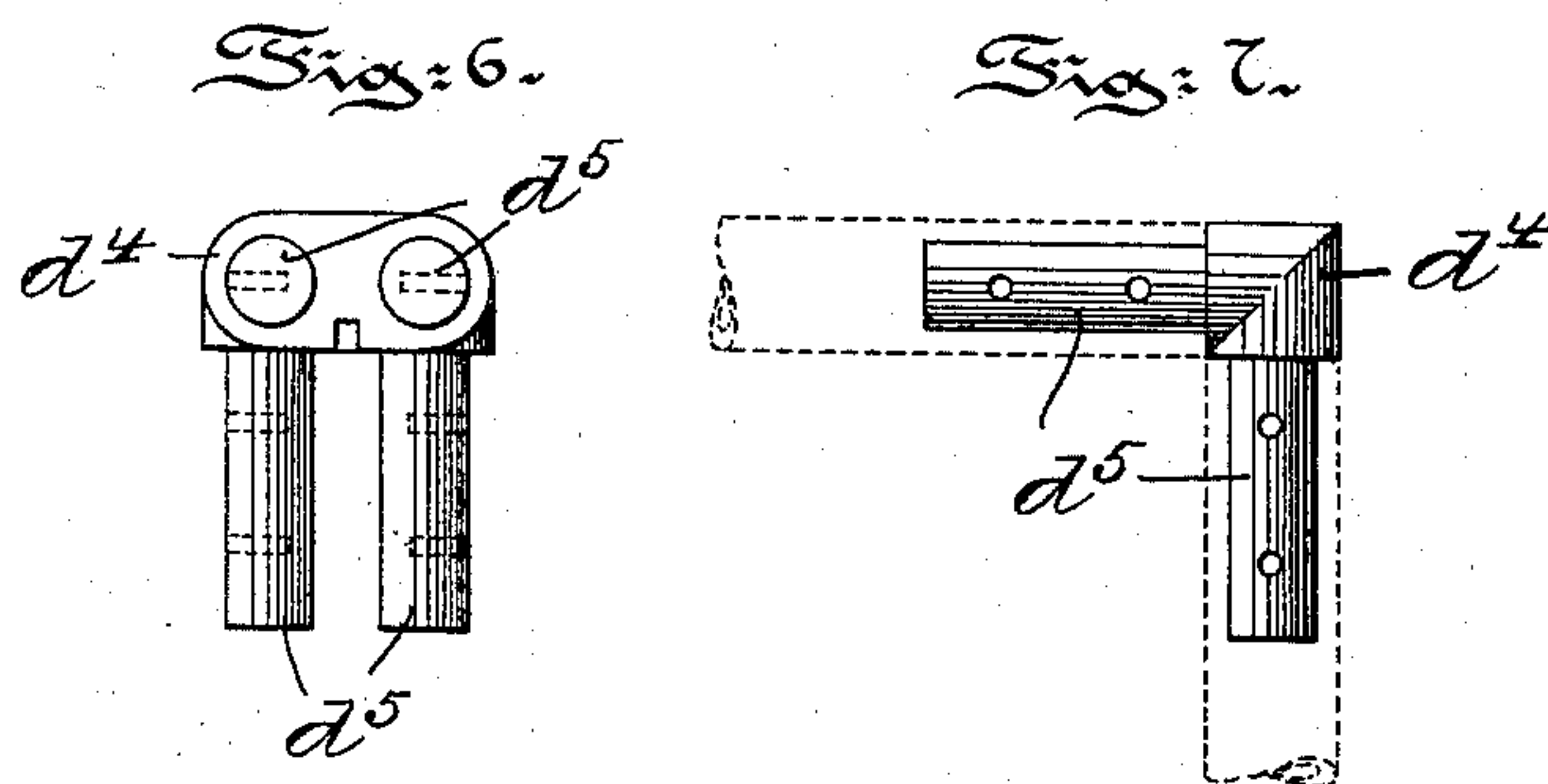
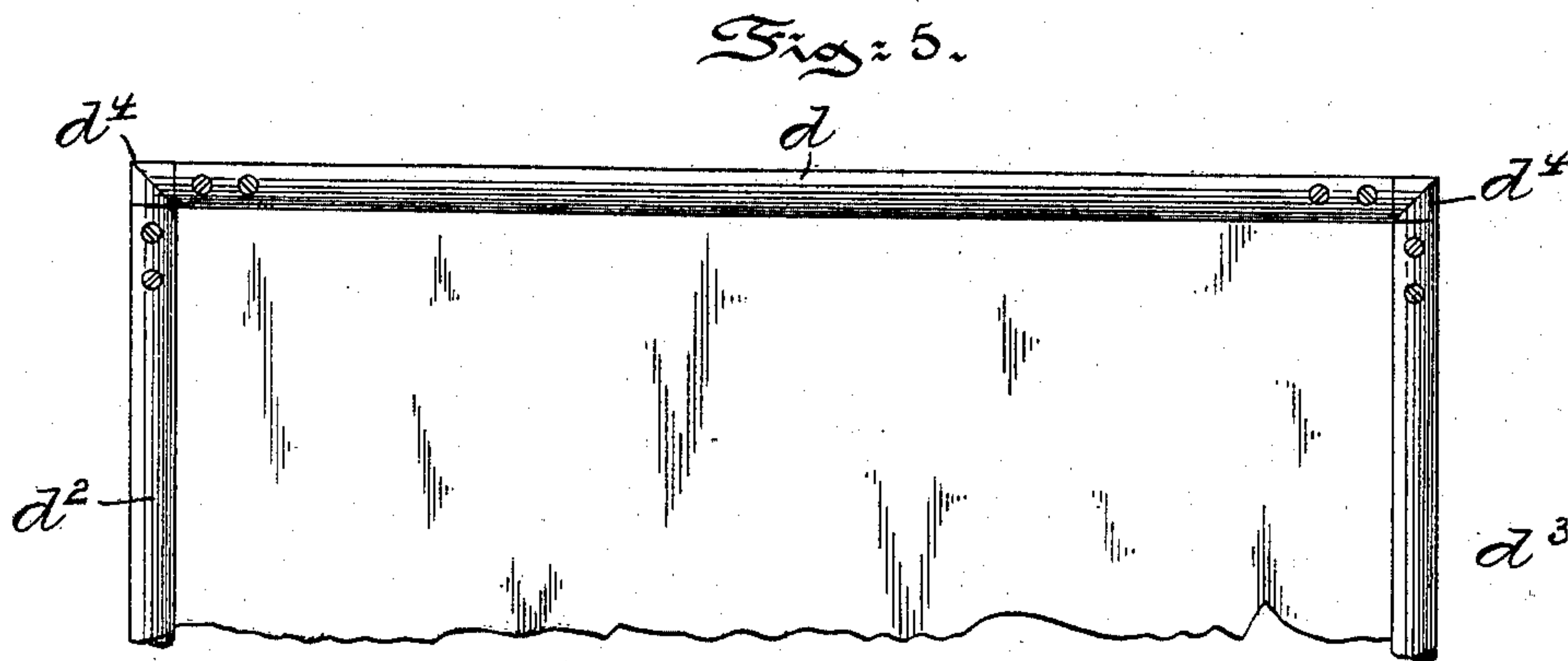
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UNITED STATES PATENT OFFICE.

EDWIN F. BERTOLETT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
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METAL WINDOW FRAME AND SASH.

SPECIFICATION forming part of Letters Patent No. 609,984, dated August 30, 1898.

Application filed November 29, 1897. Serial No. 660,054. (No model.)

To all whom it may concern:

Be it known that I, EDWIN F. BERTOLETT, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Metal Window Frames and Sash, of which the following is a specification.

My invention has relation to a fire and water proof polygonal-form or tubular metal window frame and sash, and in such connection it relates to the general construction and arrangement of the same.

The principal objects of my invention are, first, to provide a comparatively inexpensive, durable, and efficient fire and water proof metal framework for windows, as well as the sash thereof, the metal-work of the same being of tubular or polygonal form or shape, and, second, to provide a tubular or polygonal metal framework for windows and the sash thereof so arranged as that the parts or members of the same can be readily assembled and when necessary taken apart, and a window frame and sash which is fire and water proof, substantial or solid, and the use affording greater protection to the structure into which applied, and adapted to be made ornamental and the sash made practically air and water tight.

My invention, stated in general terms, consists of a metal window-frame and sash therefor when constructed and arranged in substantially the manner hereinafter described and claimed.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part thereof, in which—

Figure 1 is a perspective view of a metal window frame and sash embodying characteristic features of my present invention, a portion of the metal framework being broken away to expose to view inner portions of the same, as well as the sash thereof. Fig. 2 is a vertical central sectional view of the window-framework, partly broken away in order to illustrate the metal window-sash and also a preferred shape of head and sill of the win-

dow-framework. Fig. 3 is a transverse sectional view on the line xx of Fig. 2, showing a portion of the metal framework and sash, weight boxes or tubes, and tubular supports, to which are suitably secured the head of the framework and the sill thereof. Fig. 4 is a vertical sectional view of the lower part of the metal framework of the window on the line yy of Fig. 2. Fig. 5 is a plan view, in broken section, of a portion of the tubular metal sash. Figs. 6 and 7 are respectively front and side elevational views of the corner-unions for the respective tubular metal sash. Fig. 8 is a top or plan view of the pulleys over which the cords connected with weights are adapted to travel in the boxes or tubes of the framework of Figs. 1 and 2; and Fig. 9 is a cross-sectional view, enlarged, in detail of the lower window sash and runner at the left-hand side of Fig. 1, illustrating the pivotal connection between the sash and runner.

Referring to the drawings, A represents the metal framework of the window in tubular or polygonal form, as clearly illustrated in Fig. 1 of the drawings.

a is the metal head, and a' the metal sill, of the framework.

a^2 and a^3 are vertical metal tubes on each side, engaging, respectively, the head a and sill a' for holding the same required distances apart. These tubes a^2 and a^3 at their upper and lower ends are provided with threaded nipples a^4 , secured into the upper and lower ends of said tubes a^2 and a^3 and passing through openings a^{10} , provided therefor in the metal head a and sill a' of the framework A, and the said nipples a^4 having applied to them bushings or the like a^5 for securely holding said head and sill to position, as illustrated in Figs. 1 and 4.

b and b' are metal weight-tubes inserted through the head a and sill a' of the framework, as clearly illustrated in Figs. 1, 2, and 3 of the drawings. These tubes b and b' at their lower ends are provided with lugs or projections b^2 and b^3 , resting upon the window-sill and holding thereby the said tubes in required operative or vertical position. These lugs or projections b^2 and b^3 are prevented from entering the openings b^4 and b^5 ,

provided in the window-sill a' , by bolts b^6 and b^7 , secured in any preferred manner into the sill a' , as clearly illustrated in Fig. 3. The weight-tubes b and b' may be readily removed from the head and sill by sufficiently raising the same to cause the lugs or projections b^2 and b^3 to be brought beyond the bolts b^6 and b^7 and above the openings b^4 and b^5 , through which openings the lugs or projections may be withdrawn to disengage the upper ends of said tubes from the head a . The lower ends may be withdrawn from their engagement in the sill by raising the tubes b and b' and passing the lugs or projections b^2 and b^3 of the same through the openings b^4 and b^5 . This withdrawal or release of the tubes b and b' will only be resorted to in the event of the sash-weight cord being broken, affording thereby a ready as well as quick means for replacing the same.

b^8 and b^9 are pulleys journaled to a bridge-piece b^{10} , supported on the head a , as clearly illustrated in Figs. 1 and 2. Over each of the said pulleys passes a cord, chain, or wire b^{11} , connected at one end with weights (not shown) adapted to be mounted in the respective tubes b and b' and at the other end connected with T-shaped runners c and c' , provided with concave-shaped faces having arched springs with which the sash-frames D and D' engage, as will be presently more fully explained. The rear shanks of the T-shaped runners c and c' rest between the stationary supporting tubes or cylinders for the head a and sill a' and one of the weight-tubes b or b' to form thereby a good bearing-surface in the sliding movements of the said runners c and c' .

The concave faces of the runners c and c' on each side of the framework A are provided with concave-shaped springs c^2 and c^3 , with which the tubular metal sides of the respective sash engage, as shown in Figs. 1 and 9, in order to form a tight connection between the said runners and the sash.

The upper and lower sash D and D' are composed of preferably double top, bottom, and side metal tubes d , d' , d^2 , and d^3 and at the respective ends are joined to double elbows d^4 , provided, respectively, with sleeves d^5 , entering and suitably secured into said tubes, as clearly illustrated in Figs. 6 and 7. The double tubular sash D and D' have the glass inserted between the tubes constituting the sash in a body or mass of rubber, cement, putty, or other preferred material. The respective upper and lower sash D and D' are connected with the runners c and c' by means of pivots e and e' on the respective sides passing through the inner tubing of the upper sash D and through the outer tubing of the lower sash D' , as clearly illustrated in Fig. 1 of the drawings. The pivoting or supporting of the sash D and D' in the above manner within the framework and to the slidable runners c and c' enables the sash when brought into their respective operative positions to establish a good binding-surface between meet-

ing parts of both members of the said sash. Moreover, it may be remarked that by pivotally supporting the sash as explained the same may be freely turned for cleaning both sides of the glass therein, as well as affording greater ventilation of a room provided with such a framework and sash.

At the top or head a of the framework A is provided a U-trough f , into which the double tubular members of the sash D and D' are adapted to enter or seat in order to insure a tight joint thereabout or prevent passage of air between the sash and the head a . The interior of the trough f may be provided with a packing of rubber or other yielding material, so as to form a cushion and thereby an absolutely air-tight connection of the upper end of the sash D with the head a of said window-framework A . The sill a' is so constructed and arranged as that a seat for the lower portion of the sash D' is provided to insure an air and water tight connection of the same with said sill a' , as will be readily understood from Figs. 1 and 2 of the drawings.

It will be manifestly obvious that the framework and sash may, instead of being tubular, as shown in the drawings, be made polygonal in form and equally good results be obtained in the assembling and use of the parts constituting my invention, and hence I do not wish to be understood as limiting myself to the precise construction and arrangement of all the parts of my said invention as hereinbefore described and illustrated; but,

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A metal window frame and sash, comprising a metal head and sill supported by tubular uprights, weight-tubes extending into said head and sill and slidable runners connected with means passing over pulleys from weights adapted to travel in said tubes and sash pivotally supported from said runners, substantially as and for the purposes described.

2. A metal window frame and sash, comprising a metal head and bottom sill supported by tubular uprights engaged by nipples, bushings applied thereto, slidable T-shaped inner and outer runners, weight-tubes held in said head and sill, sash pivoted respectively to said inner and outer runners connected with a cord, chain or wire passing over pulleys and carrying weights traveling within said weight-tubes, substantially as and for the purposes described.

3. A metal window frame and sash, comprising a metal head and bottom sill supported by tubular uprights engaged by nipples provided with removable bushings, weight-tubes held in said head and sill, slidable runners afforded their ranges of movement respectively between the tubular uprights and said weight-tubes, sash pivoted to said runners and connected respectively with cords, chains or wires passing over pulleys

and carrying weights adapted to travel within said tubes, substantially as and for the purposes described.

4. A metal window frame and sash, comprising a metal head and bottom sill supported by tubular uprights, weight-tubes held in said head and sill and provided with lugs or projections and said sill provided with bolts or screws, movable T-shaped runners, sash pivoted to said runners, cords, chains or wires connected with said runners and passing over pulleys and having weights, substantially as and for the purposes described.

5. A metal window frame and sash, comprising a metal head and bottom sill supported by tubular uprights, weight-tubes removably connected with said head and sill, T-shaped metal runners slidable between said uprights and weight-tubes, upper and lower sash respectively pivoted to said runners, cords, chains or wires connected with said runners and passing over pulleys and carrying weights adapted to travel within said weight-tubes, substantially as and for the purposes described.

6. A metal window frame and sash, comprising a metal head and bottom sill sup-

ported by vertical uprights nipped in said head and sill and with bushings applied thereto, weight-tubes provided with lugs or projections so as to be removably mounted in said head and sill, slidable runners provided with concave-shaped faces having complemental springs, sash pivoted to said runners, cords, chains or wires connected with said runners and passing over pulleys and carrying weights adapted to travel in said tubes, substantially as and for the purposes described.

7. A metal window frame and sash, comprising a head and sill supported by vertical uprights, weight-tubes entering said head and sill and removably connected therewith, runners provided with concave-shaped faces, and complemental springs, sash pivoted to said runners, and means for actuating said runners, substantially as and for the purposes described.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

EDWIN F. BERTOLETT.

Witnesses:

J. WALTER DOUGLASS,
THOMAS M. SMITH.