

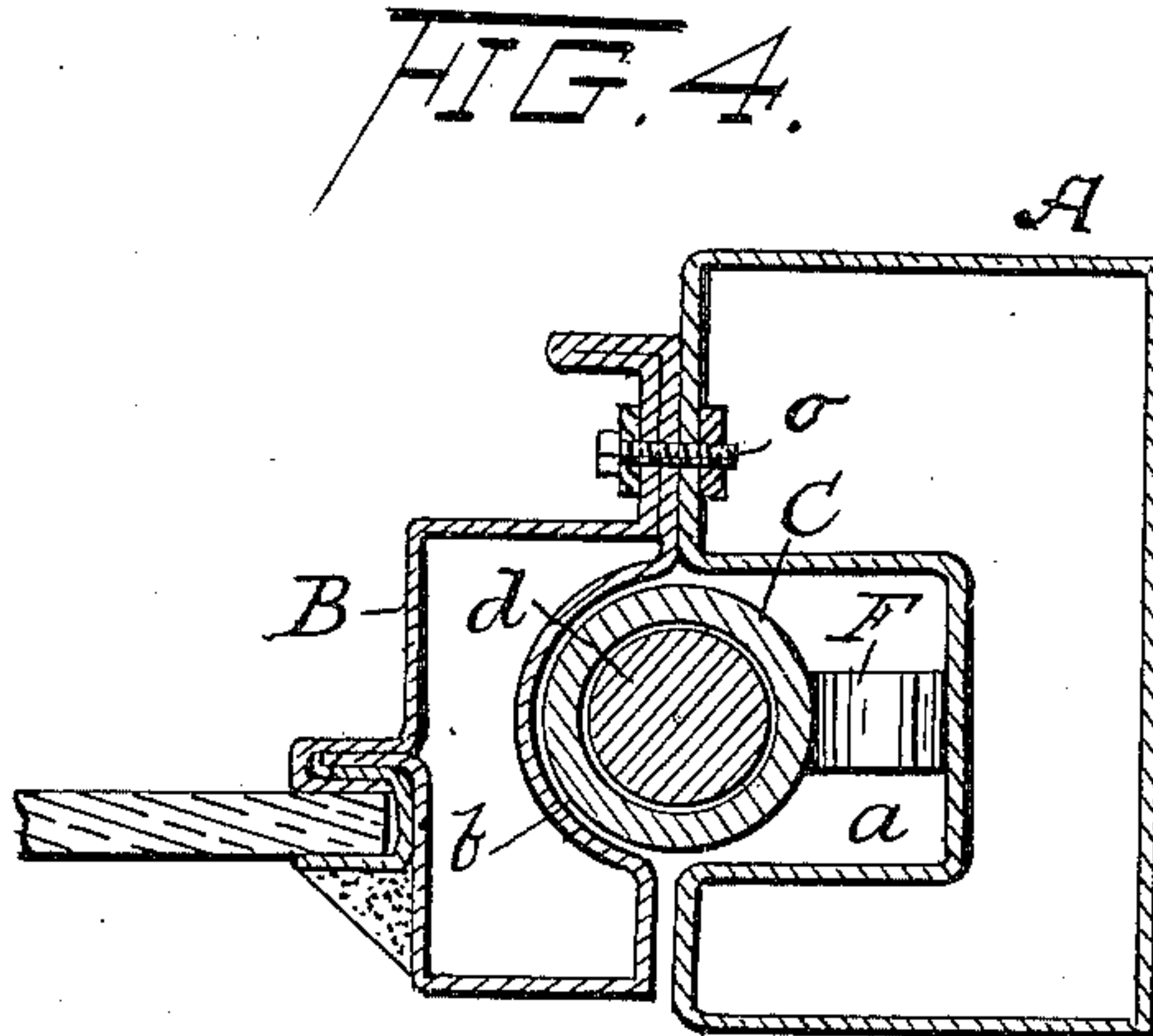
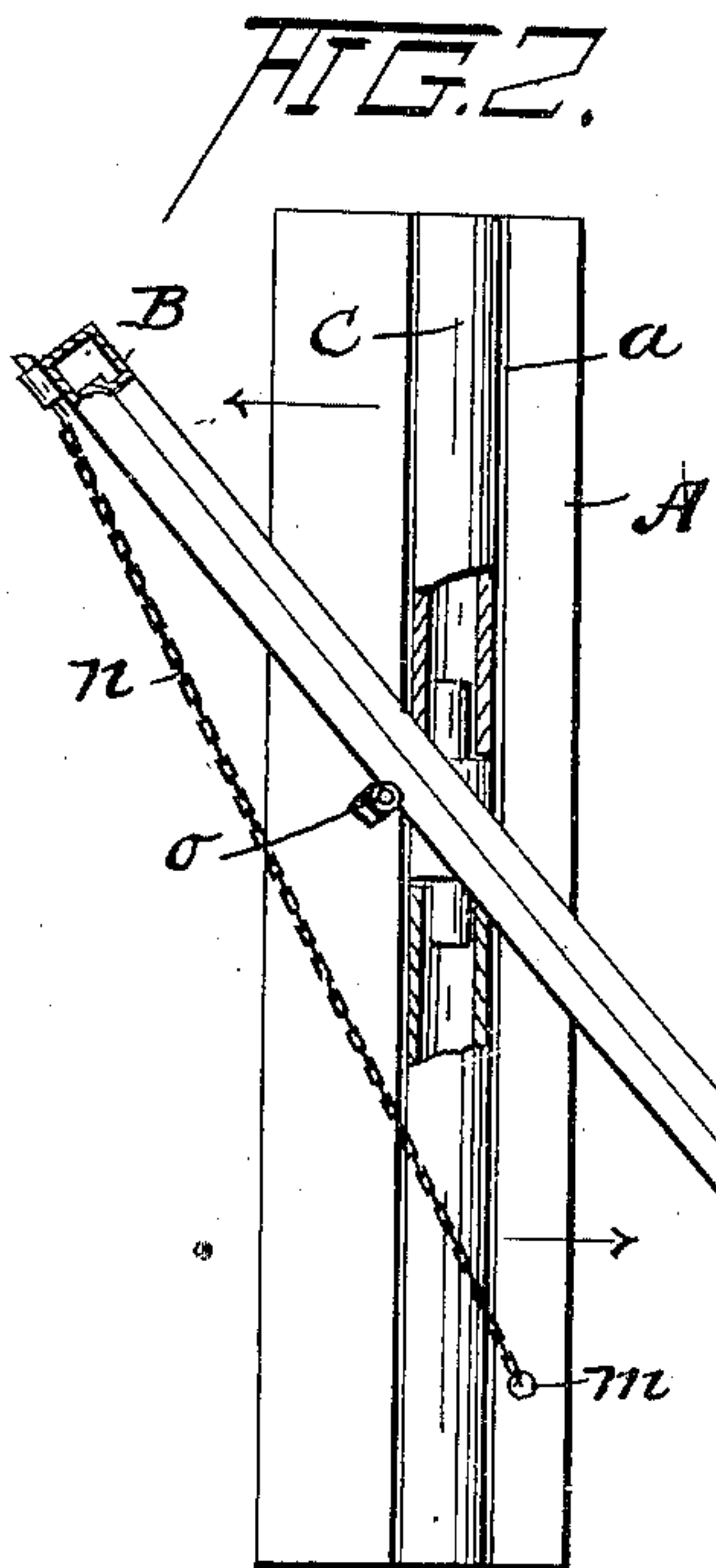
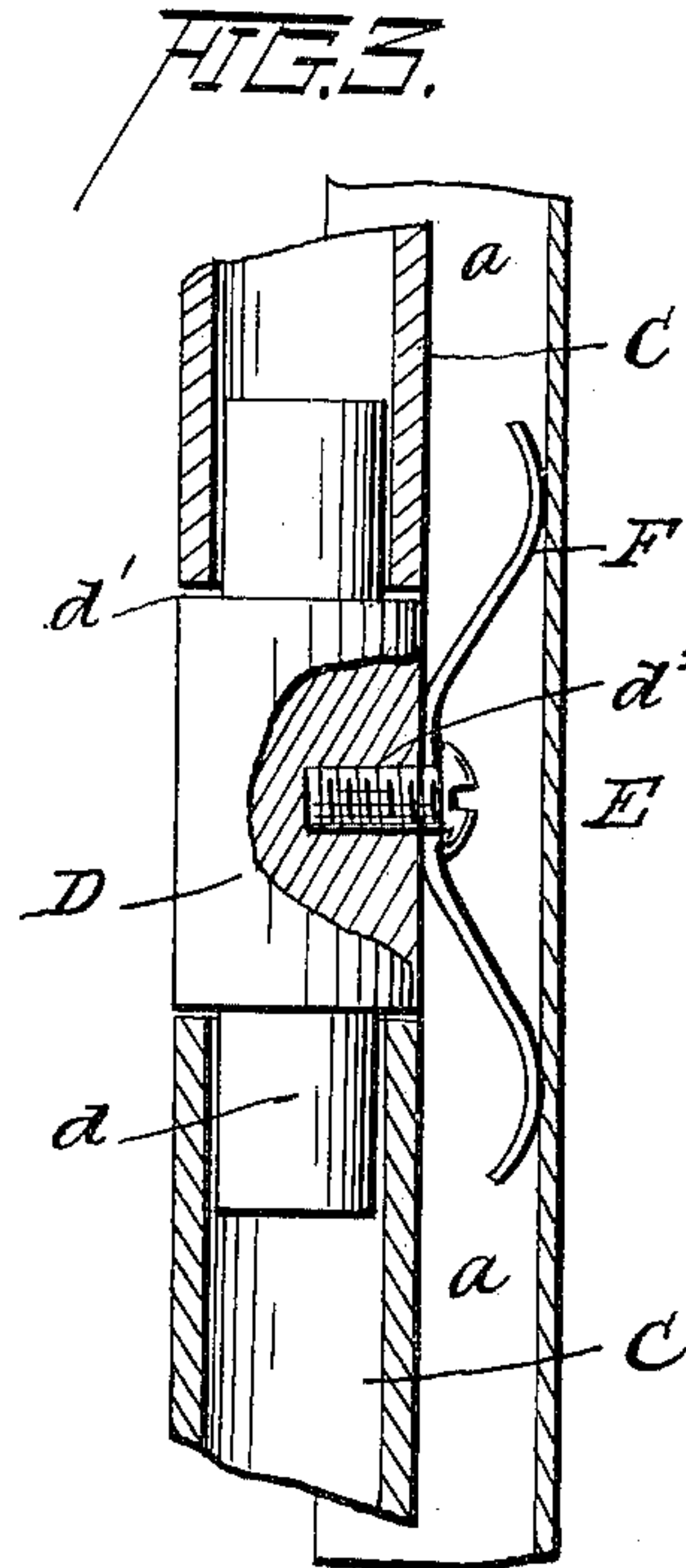
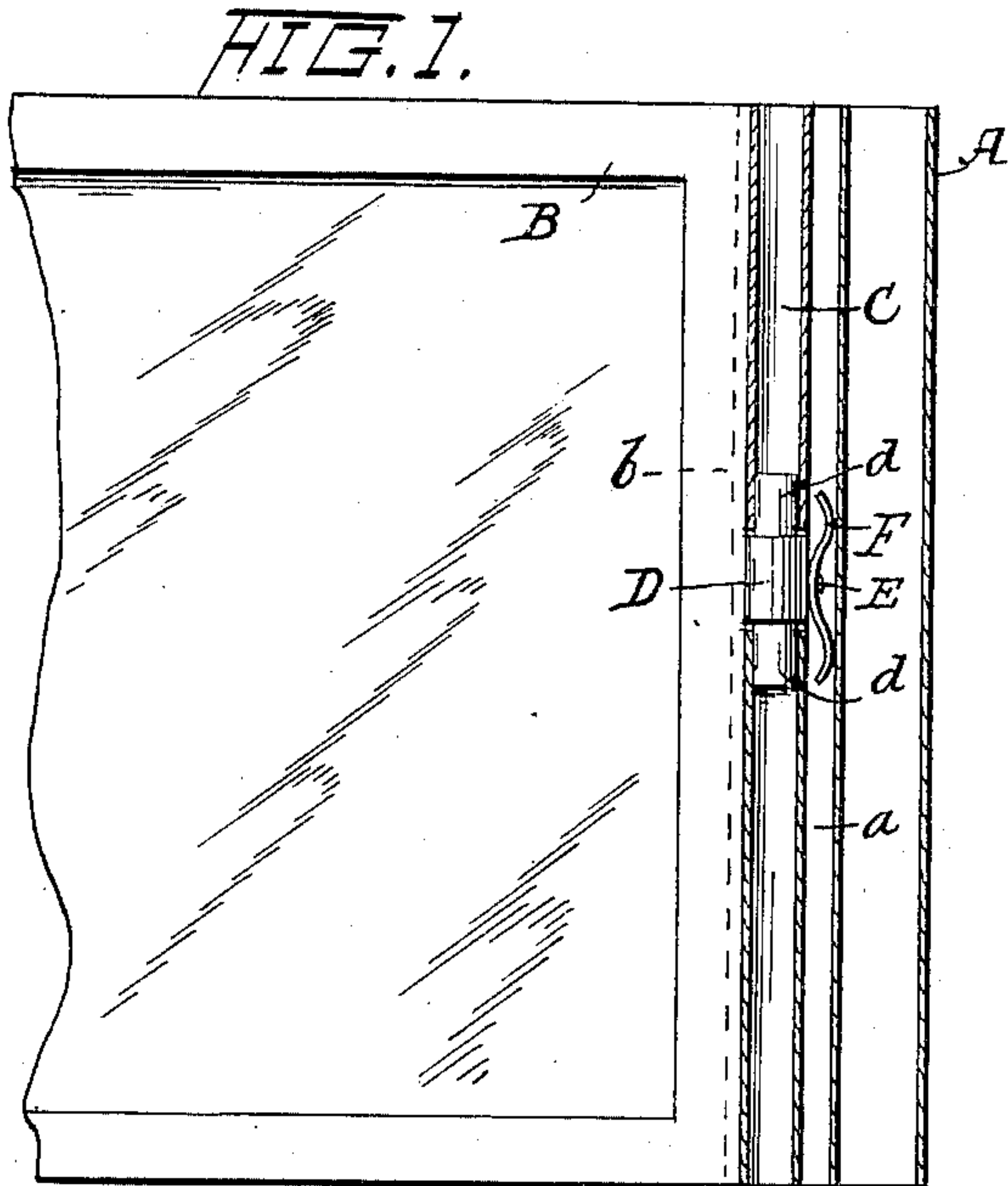
No. 652,120.

Patented June 19, 1900.

J. A. KNISELY.  
WINDOW.

(Application filed Mar. 23, 1900.)

(No Model.)



Witnesses

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# UNITED STATES PATENT OFFICE.

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## WINDOW.

SPECIFICATION forming part of Letters Patent No. 652,120, dated June 19, 1900.

Application filed March 23, 1900. Serial No. 9,935. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN A. KNISELY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Windows, of which the following is a specification.

My invention relates to the construction and arrangement of sash-frames and window-casings made of metal, in which the sashes are adapted to turn or rotate on horizontal pivots secured in the window-frame and in which there is a yielding joint between the sash and the casing. In frames of this character there are three important features to be considered:

First. When the window is closed there must be a tight joint between the sash and casing in order to exclude cold air, wind, and dirt.

Second. The joint between the sash and frame or casing must be easily broken when it is desired to open the window. Hence there must not be too much "bind" between said parts. This also applies to the closing of the window, which in many instances must be effected automatically by hanging the window from a point above its center, so that when it is released the excess of weight below the pivotal point will throw the window closed. If the parts are not sufficiently yielding, the window will not close, and hence one of the objects of a metal window—protection from fire—is defeated in whole or in part.

Third. Simple means must be provided for holding the window open, and preferably the same means should provide automatically for the closing of the window when exposed to fire.

The object of my improvements in windows is to secure the foregoing features in a most efficient degree in a simple and economical manner, and in carrying out this object I produce a window in which the casing is of rectangular tubular form, having a longitudinal recess opposite the side rail or stile of the sash, in which yielding and rotatable bearings are seated in said longitudinal recess and contact with the edge of the sash-stile, in which said bearings consist of two or more tubes rotatably mounted on blocks, the latter being spring-supported in said recess, in

which the sash is pivoted above its horizontal center and at one side of its vertical center, in which the sash is held open by a chain in which a fusible link is inserted, in which the rotatable bearings may also become sliding bearings, and in which there are other features of detail, which will hereinafter appear.

In the drawings which form a part of this application, Figure 1 is a view, partly in elevation and partly in section, of a sash and frame embodying my improvements. Fig. 2 is a vertical cross-section showing the sash in an open position, portions being broken away. Fig. 3 is a detail of the tubes and supporting block and spring, and Fig. 4 is a detail showing the manner of pivoting the sash to the frame at one side of the vertical center of the sash.

It will be understood that though I have shown but one side of a window made in accordance with my invention both sides will be of identical construction; also, that while I have shown the simplest form of sheet-metal sash and frame other forms may be utilized, and that I do not limit myself to metal frames and sash, and that while I have shown the sash as non-sliding it may be made to slide without departing from the principles and essential features of my invention. On the other hand, I am aware that it is not new *per se* to hinge or pivot sash above their center or provide them with fusible means for closing when exposed to fire, so that I do not broadly claim such construction, but only in combination with peculiar and novel means whereby such construction is made practical and most effective.

Referring to the drawings, A represents one side of a metal window frame or casing made in rectangular shape in cross-section and formed with a longitudinal recess *a*, extending from the top to the bottom of the frame.

B represents a hollow metal window-sash having formed in its stile a longitudinal groove *b*, extending throughout the length of the stile and registering with the recess in the frame A. As shown, the sash is pivoted to the frame by pin *o* at a point above the horizontal center and at one side of the vertical center of the sash. Loosely placed in



the recess are two tubes C C, in position to contact with the groove in the sash and rotatably mounted on the projecting portions  $d$  of the block D, the central portion of the latter being of equal diameter with the tubes and cylindrical in cross-section, thus forming annular shoulders  $d'$ , against which the ends of the tubes bear, as clearly shown in Fig. 3. The block D is provided with a threaded opening  $d^2$  in its central or hub portion, which is adapted to receive a screw E, which passes through a suitable opening in the spring F and secures the latter to the block. The spring F is preferably made from flat strap-steel, bent in the form shown, and is positioned between the block and the rear wall of the recess  $a$ , so that as the ends of the spring bear against said rear wall the block and the tubes mounted thereon are normally held in frictional contact with the grooved face of the sash-stile. In long windows I may employ three tubes and two blocks or four tubes and three blocks, and each block may be supported by a spring.

In opening the sash, as shown in Fig. 2, the upper tube will rotate in the direction shown by the arrow, while the lower tube will rotate in the opposite direction, thus making antifriction-bearings for the sash above and below the pivots. While the tubes are turning on the extensions  $d$  of the block D the latter will yield sufficiently to permit the stile to be opened or tilted, the effect of the entire construction being that of a yielding roller-bearing.

Secured to the stile  $b$  at a point on its upper rail is a chain  $n$ , near the lower end of which a fusible link  $m$  is inserted, and the end of the chain is suitably secured to the frame A. Upon exposure to a high degree of heat the link  $m$  will melt or fuse, thus releasing the window-sash when in an open position and permitting it to regain its vertical or closed position through the overbalancing of the lower portion of the sash. While similar means have been shown for permitting the closing of other windows, in practice they have been found defective or inoperative where there was a tight joint between the sash and the frame, the friction being so great as to prevent the closing of the sash tightly by mere operation of gravity. Attempts to overcome this objection by hanging the sash considerably above its center are not satisfactory because of the resulting projection of the lower part of the sash and because of the difficulty of regulating the extent of the overbalance under the varying conditions met with in the erection of such windows. In my invention the antifrictional construction and arrangement of making the tubes roller-bearings, as well as yielding closures, makes a sensitive device, which greatly adds to the effectiveness of the releasing and gravity closing features described.

If it be desired to lock the window closed, the chain  $n$  will be attached to a suitable

catch secured to the upper rail of the sash, so that by pulling on the chain the catch will be released from the frame above the rail and the sash pulled open at the same operation.

Though I have not so shown it, it will be apparent that the sash may be pivoted in the block D instead of to the frame, such arrangement being desirable in a sliding-sash construction. In this event the sash-cord will be secured to the top of the upper tube, and both tubes will be secured to the block in a manner to permit their rotating and their sliding movement in the recesses  $a$  with the block and the spring.

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

1. In a window, the combination with a pivoted sash having grooved side rails, of a recessed window-frame, and tubes rotatably mounted on blocks yieldingly supported in said frame, said tubes adapted to engage the grooves in said sash-rail, substantially as set forth.

2. In a window, the combination with a pivoted sash having grooved side rails, a recessed window-frame, tubes arranged in the recess in said frame, and adapted to rotate, and yielding supports for said tubes, substantially as described.

3. In a window, the combination with a sash having grooved side rails, a window-frame having a recess formed therein, tubes arranged in said recess and fitting the groove in the said side rails, said tubes being rotatably and yieldingly supported in said recess.

4. In a window, a pivoted sash, a frame or casing, and a yielding and rotatable bearing between said casing and sash.

5. In a window, a pivoted sash, a frame or casing supporting said sash, and a yielding and rotatable bearing between said sash and frame, said bearing formed in sections, substantially as set forth.

6. In a window, a pivoted sash, a frame or casing supporting said sash, and a yielding and rotatable bearing between said sash and frame, said bearing formed in sections, and the sections above the pivotal point rotating in opposite direction from the sections below said pivotal point, substantially as described.

7. In a window, the combination with a sash having grooved side rails, of a recessed window-frame, tubes rotatably mounted in said frame and adapted to engage the grooves in the side rails, blocks yieldingly supported in said frame, said blocks having extensions fitting within said tubes, substantially as shown and described.

8. In a window, the combination with a sash pivotally mounted in a frame, a frame supporting said sash, tubular bearings rotatably and yieldingly mounted in said frame and adapted to engage the side rails of the sash.

9. In a window, a sash having grooved side rails, a recessed frame supporting said sash,



the latter being pivotally mounted on said frame, and yielding and rotatable bearings formed in sections, said sections contacting with the grooved side rails and adapted to rotate in opposite directions upon the opening and closing of the sash, substantially in the manner and for the purpose set forth.

10. In a window, a recessed tubular frame, a sash rotatably mounted in said frame on horizontal pivots and having grooved side rails, yielding bearings arranged in said recesses, contacting with said side rails and formed in sections adapted to rotate in opposite directions, in combination with means for holding said sash in an open position, said means having a fusible link therein and secured to the sash and frame respectively, substantially in the manner and for the purpose set forth.

11. In a window, a recessed tubular frame, a sash pivoted in said frame on horizontal pivots at points above its horizontal center and at one side of its vertical center, bearings arranged in said frame, said bearings formed in sections and rotatably and yieldingly mounted, and adapted to contact with said sash, as set forth.

12. In a window, a recessed frame, a sash pivoted on said frame at points above its hori-

zontal center and at one side of its vertical center, bearings arranged in said frame and yieldingly and rotatably mounted and adapted to contact with the sash-stiles, and means for holding said sash in an open position, said means having a fusible link therein, substantially in the manner and for the purpose set forth.

13. In a window, a recessed frame, a sash sliding on said frame, yieldingly and rotatably mounted bearings in said frame adapted to contact with the stiles of the sash, and means for holding the sash in open position, said means having a fusible link therein, substantially as set forth.

14. In a window, a recessed tubular metal frame, a sash adapted to slide on said frame, yieldingly and rotatably mounted bearings in said frame adapted to contact with the stiles of the sash and to slide therewith, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two witnesses.

JOHN A. KNISELY.

Witnesses:

F. BENJAMIN,  
G. MILLER.