

(No Model.)

J. H. FOOTE.  
WINDOW SASH.

No. 426,792.

Patented Apr. 29, 1890.

FIG. 1.

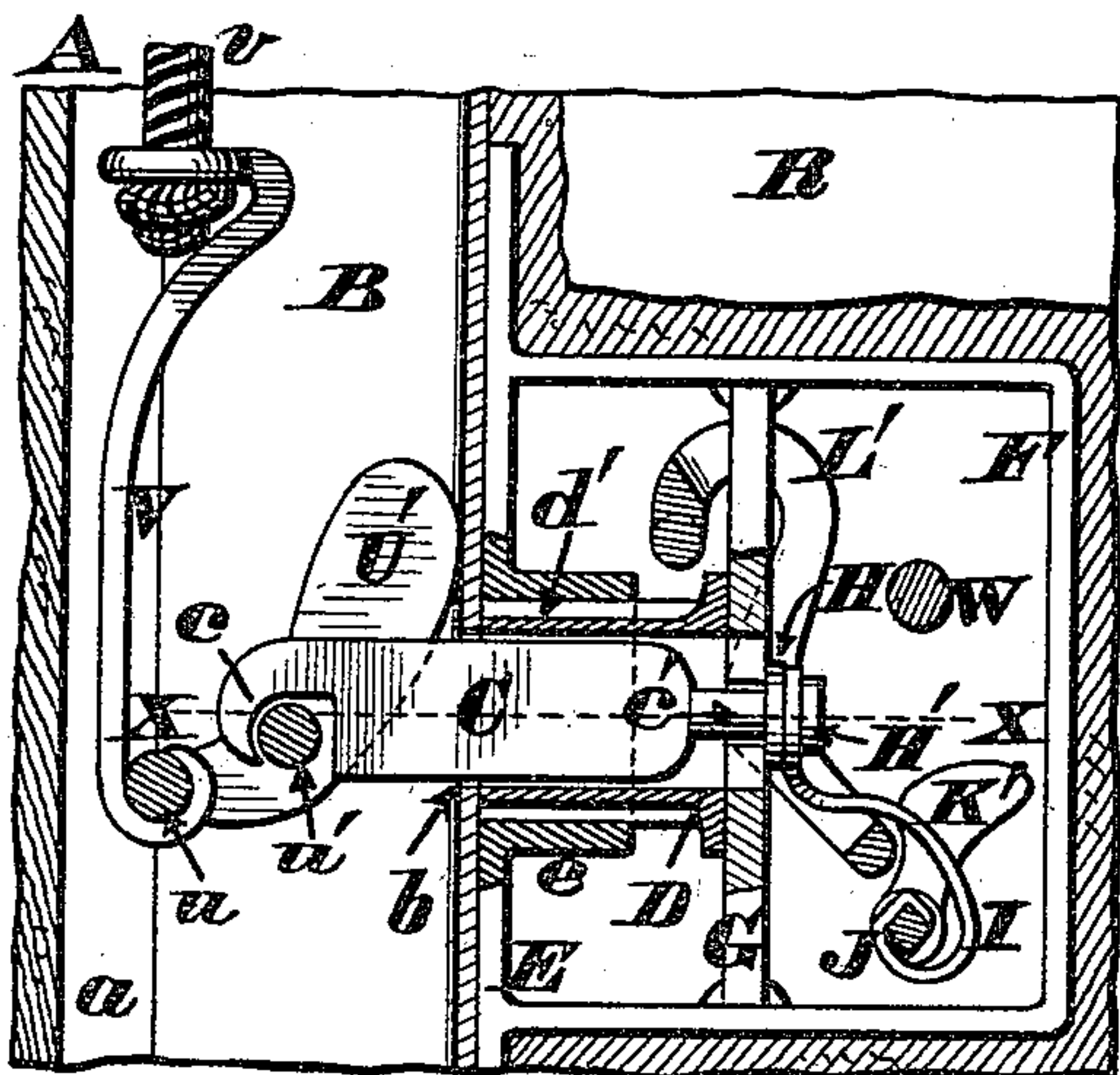


FIG. 3.

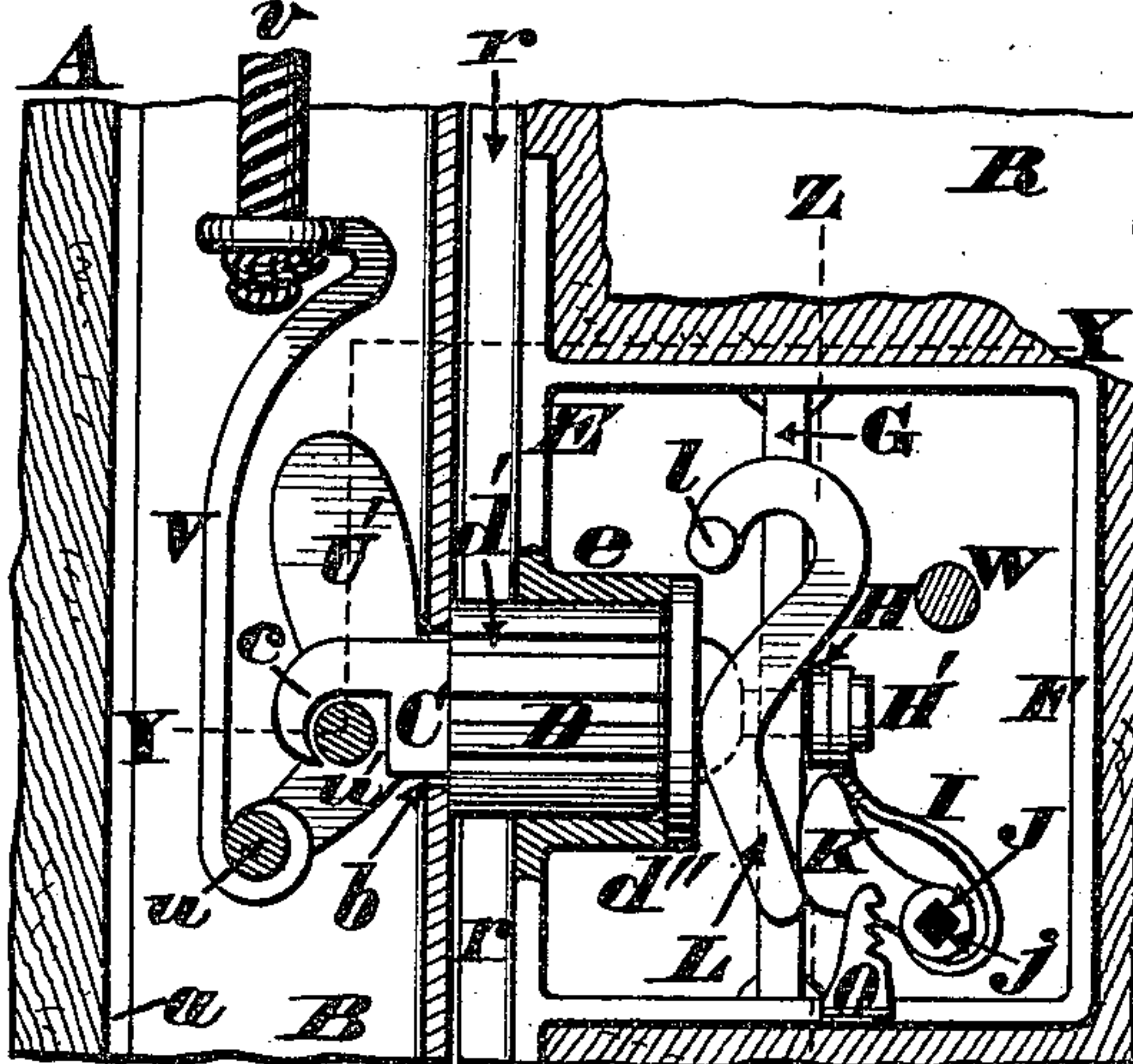


FIG. 2.

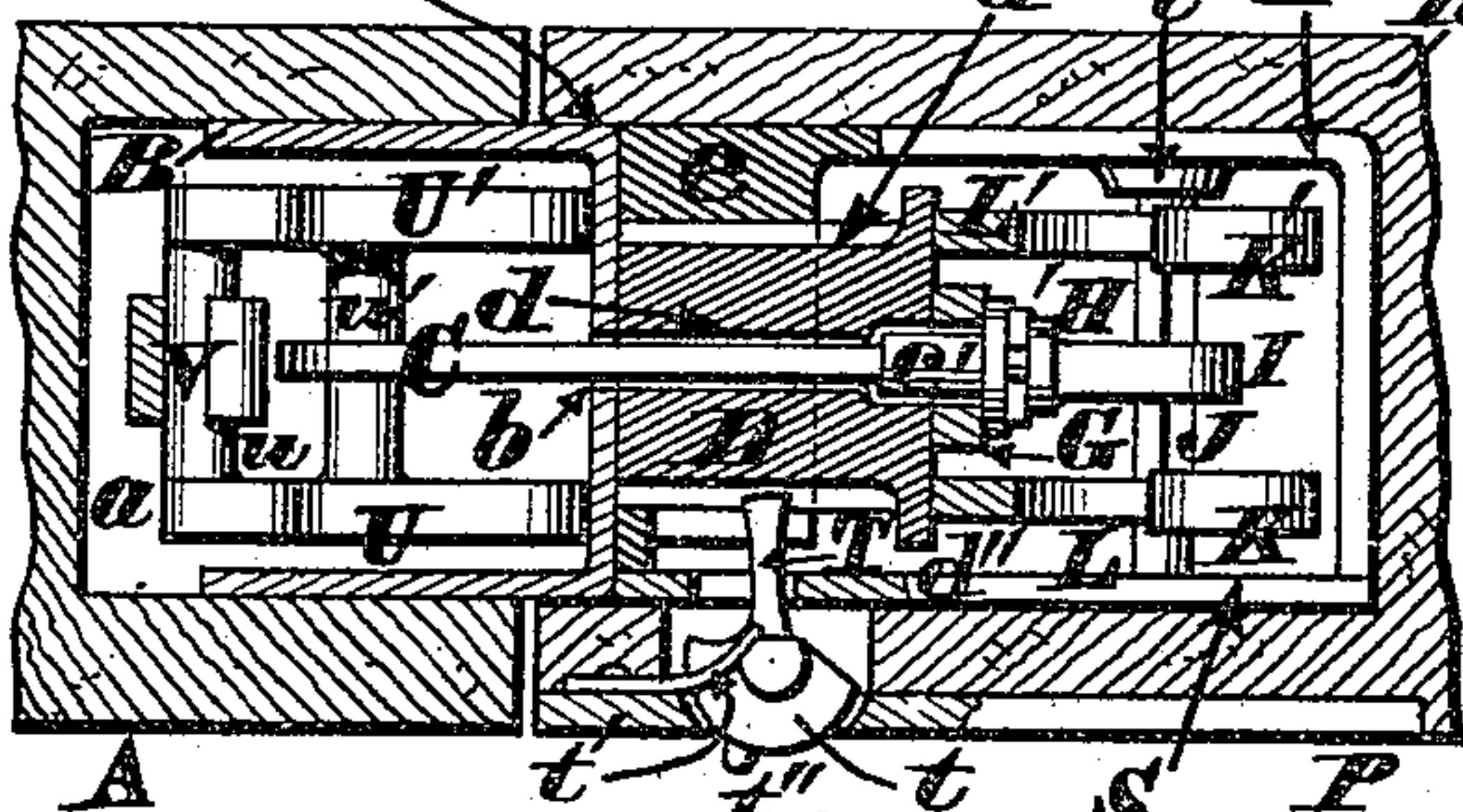


FIG. 4.

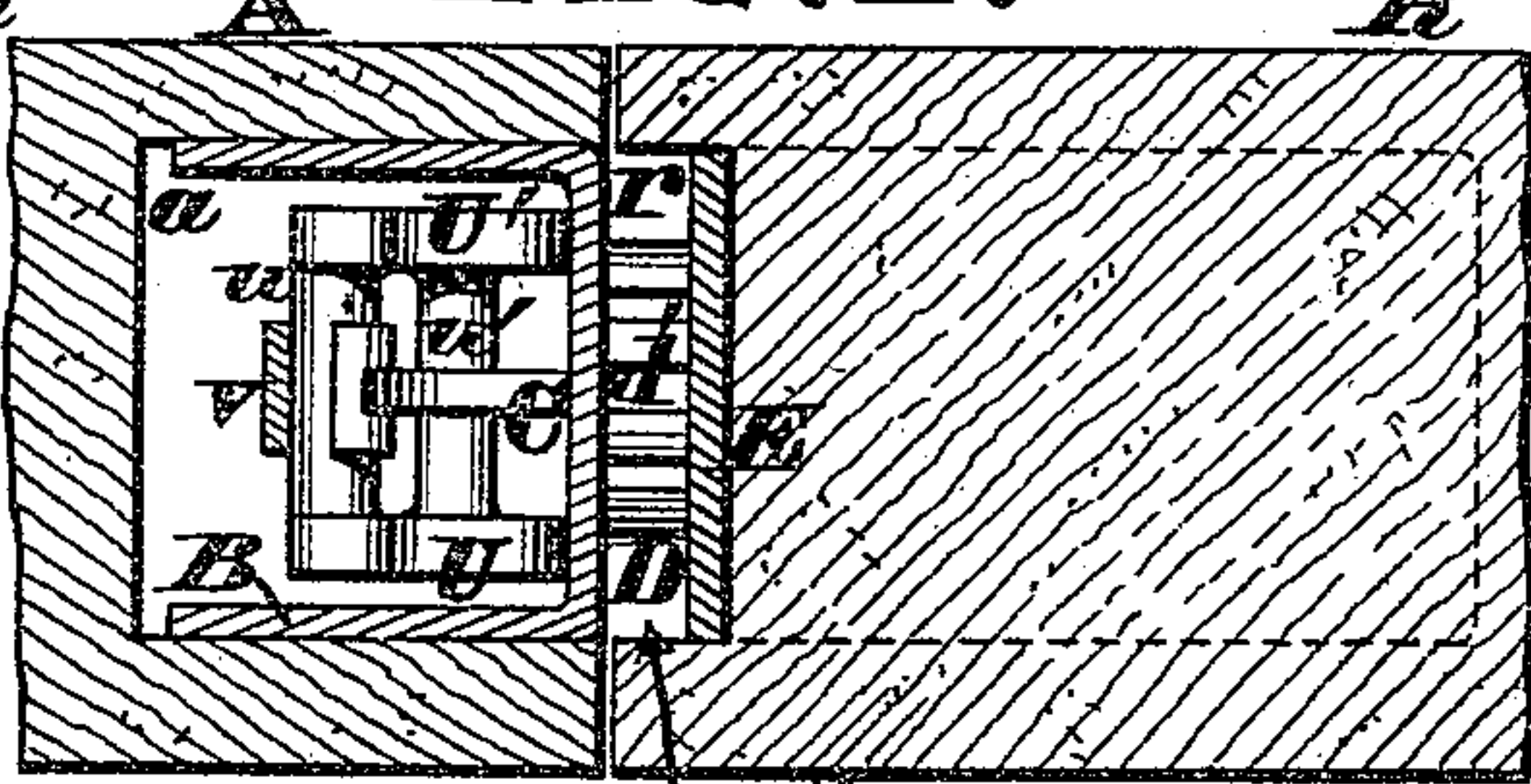


FIG. 5.

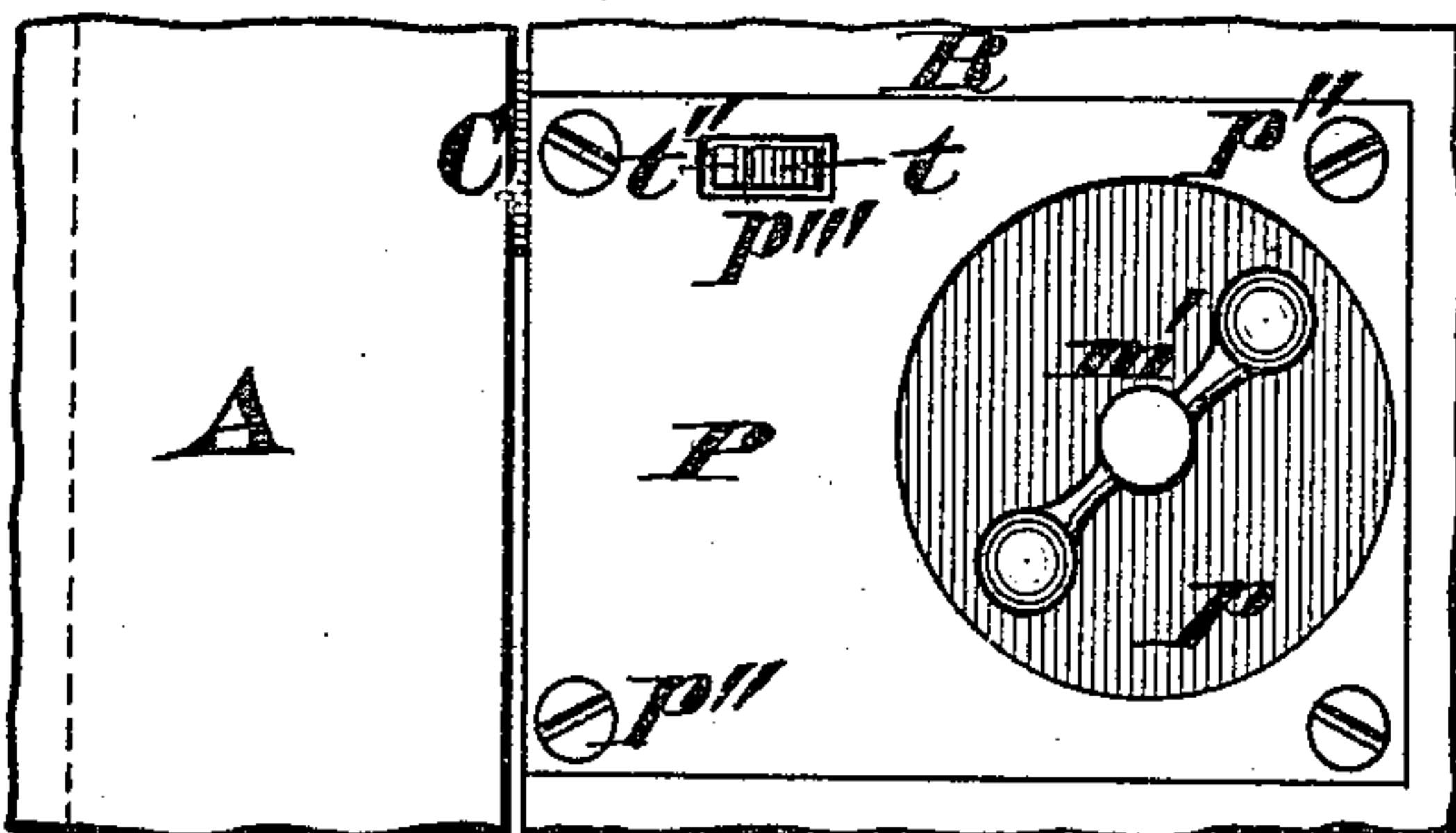


FIG. 6.

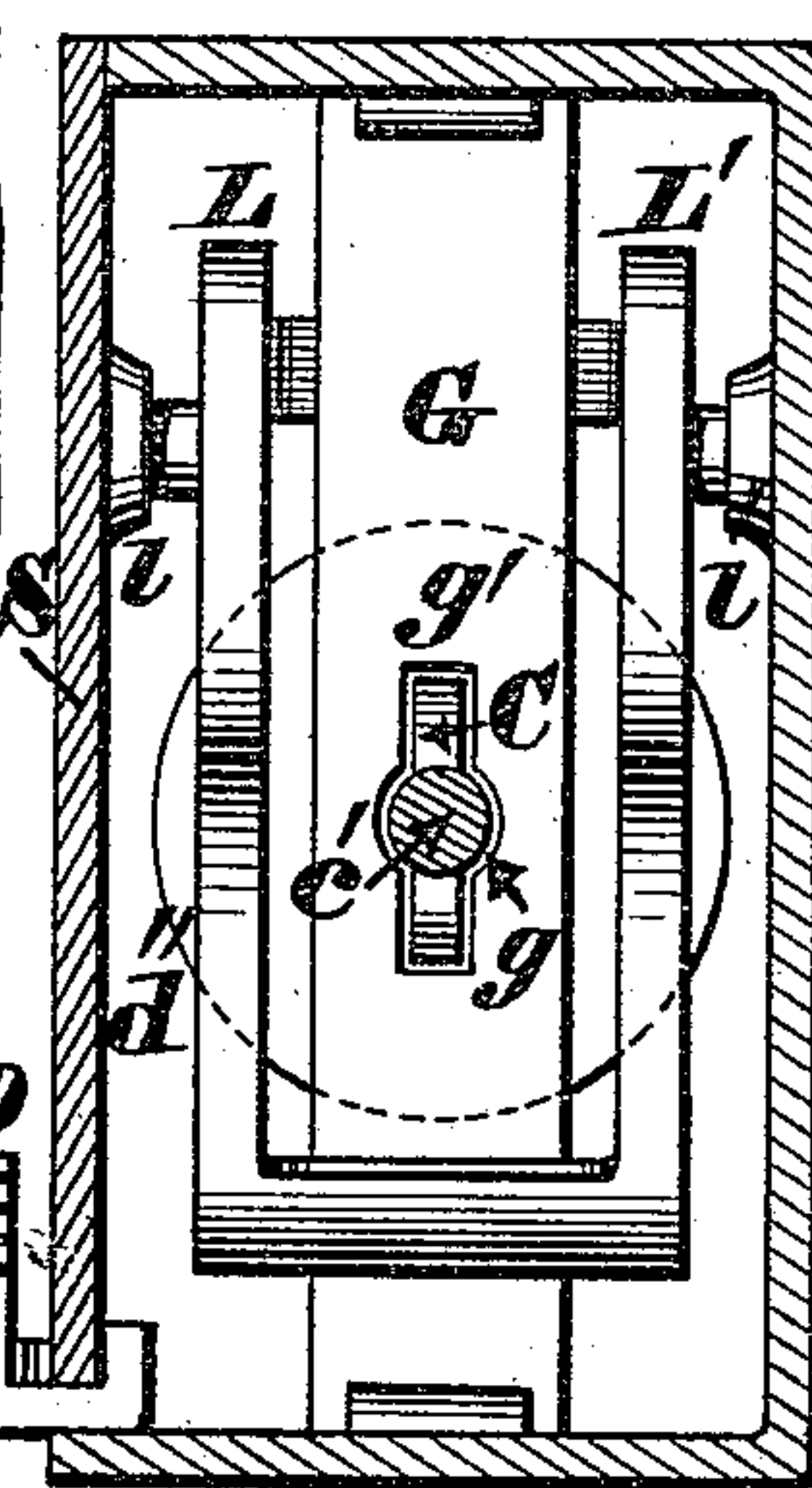


FIG. 7.

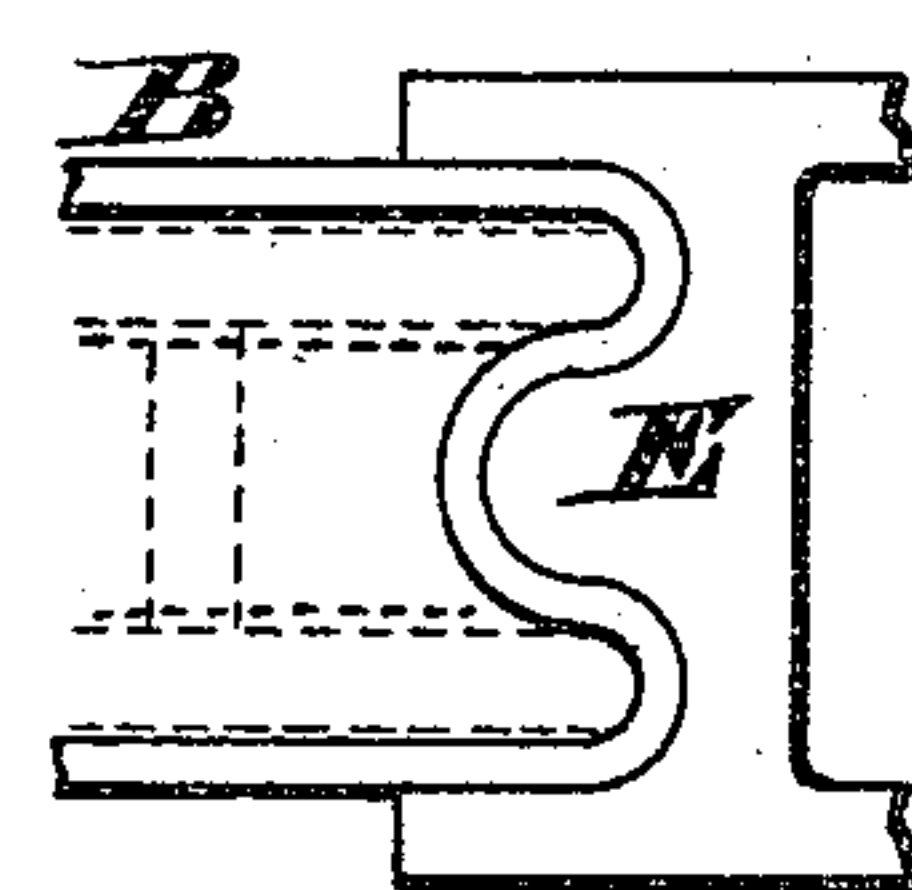


FIG. 8.

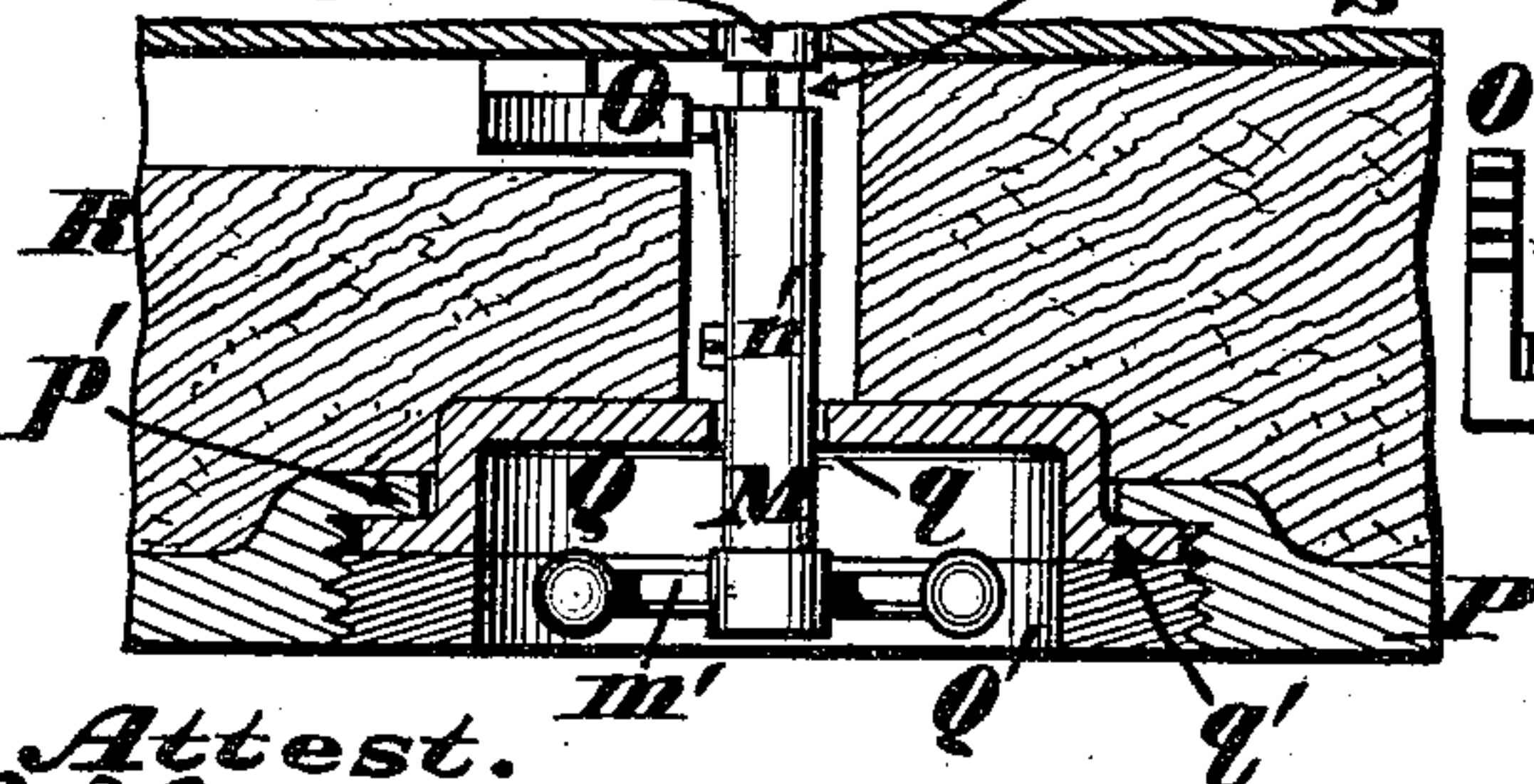
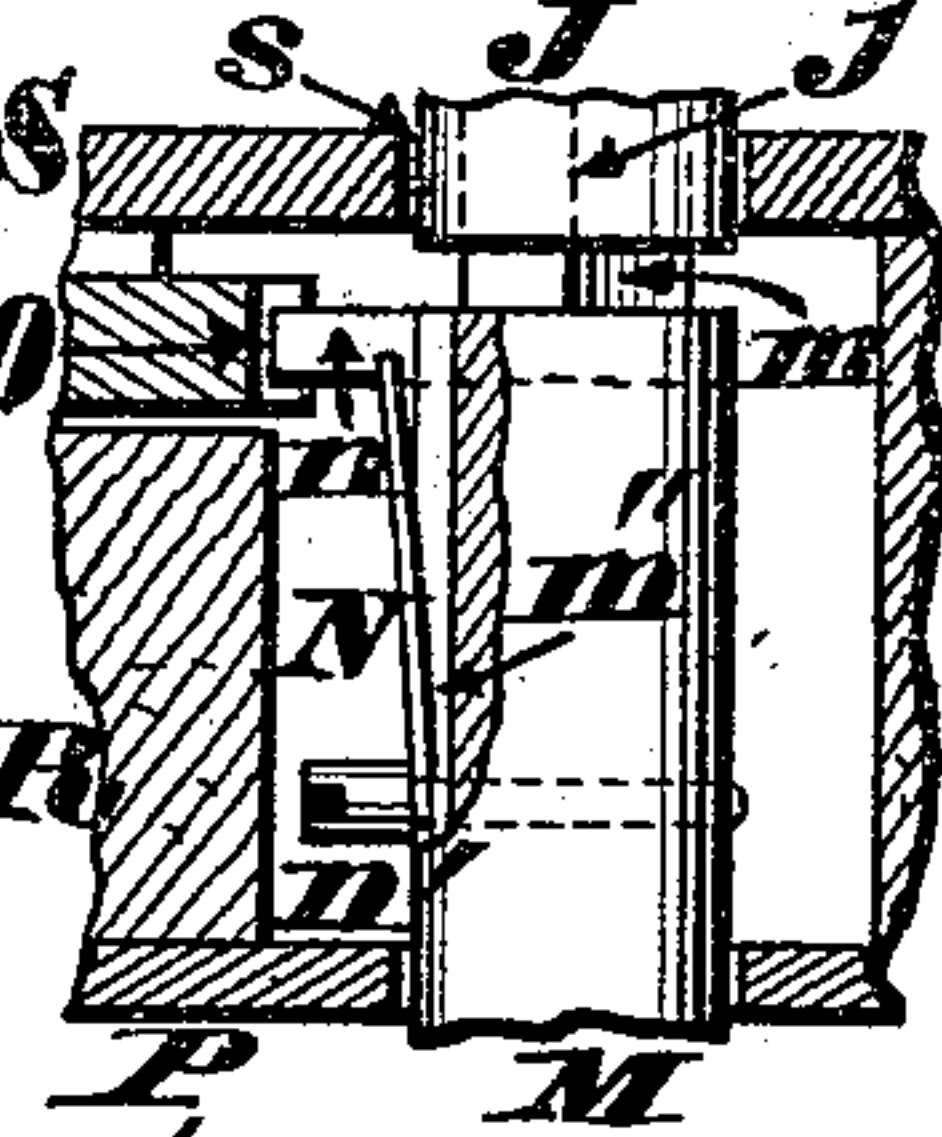


FIG. 9.



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# UNITED STATES PATENT OFFICE.

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## WINDOW-SASH.

SPECIFICATION forming part of Letters Patent No. 426,792, dated April 29, 1890.

Application filed June 28, 1889. Serial No. 315,910. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES H. FOOTE, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Window-Sashes; and I do declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to those window-sashes which are capable of being raised and lowered within a frame or casing and of being turned on pivots, so as to be either horizontal or inclined at any position that will be most convenient or effective for cleaning or ventilation; and the first part of my improvements comprises a novel combination of devices for operating a hollow guide that traverses a vertical groove of the frame. When these devices are so operated as to advance the guide laterally within the groove, the sash can then be raised and lowered in unison with said guide; but when the latter is retracted within said groove the sash is free to be turned on its pivots, as hereinafter more fully described.

The second part of my improvements comprises a novel combination of devices for locking the pivots, in order that the sash may be retained in an inclined or horizontal position, as hereinafter more fully described.

My improvements further comprise certain details in the construction of the pivot mechanism, the particulars of which will be hereinafter more fully described, and set forth in the claims.

In the annexed drawings, Figure 1 is a sectionized elevation of one of my pivot-bearings for a sliding and swinging window-sash, said sash being arranged to be raised and lowered with the guide. Fig. 2 is a horizontal section of said bearing, taken at the line X X. Fig. 3 is another sectionized elevation, but showing the sash supported by the pivot, so as to be turned thereon. Fig. 4 is a horizontal section thereof, taken at the line Y Y. Fig. 5 is a front elevation of the face-plate of the case that contains the pivot mechanism. Fig. 6 is an enlarged vertical section of said case, taken at the line Z Z. Fig. 7 is an enlarged plan of a portion of the guide and the edge

plate of the case. Fig. 8 is an enlarged horizontal section of the devices that operate the cam-shaft of said case. Fig. 9 is a detail view of a portion of said shaft.

A represents a portion of a box window frame or casing, and *a* is a vertical groove therein, which groove is traversed by a hollow three-sided guide B, that is preferably made of sheet metal, and is usually as long as the sash to which it is applied. This hollow guide has near its mid-length a vertical slot *b*, traversed by a bolt C, having a notch *c* at one end and a cylindrical shank *c'* near its opposite end, said bolt being adapted to slide within a vertical slot *d* of a barrel D, whose periphery is grooved or fluted longitudinally at *d'*.

*d''* is a head on one end of this barrel, which latter is adapted to slide freely within a cylindrical neck or socket *e* of the edge plate E of a case F, within which case the principal operative parts are housed, in the manner shown. G is a vertical stop secured within this case, as seen in Fig. 6, said stop being furnished with a circular opening *g*, to admit the bolt-shank *c'*, and a vertical slot *g'*, through which said bolt passes, the inner end of said bolt having a pair of collars or nuts H H', between which is inserted the free and forked end of a spring I, the fixed extremity of the latter being fastened to a rock-shaft J, carrying a pair of cams K K'. These cams are adapted to bear against the lower ends of bent levers L L', pivoted at *l l'* to the case and its cap and normally held in contact with the barrel-head *d''*. Rock-shaft J is suitably journaled within the case and cap and has at one end a socket *j*, (seen in Fig. 3 and indicated by dotted lines in Fig. 9,) which socket receives a square or other non-circular arbor *m* at the inner end of a spindle M, the exposed end of the latter being provided with any approved form of handle or other convenient turning device *m'*. Spindle M is grooved longitudinally at *m''* to admit a plate-spring N, whose free end carries a pawl *n*, adapted to engage with a segmental ratchet O, properly secured outside the case, the screw or pin *n'*, that fastens said spring, serving as a stop to prevent said spindle being drawn too far forward. The spindle-handle *m'* may turn within a pit *p*, cast in the face-plate P of the case,



as seen in Fig. 5; but I prefer the arrangement represented in Fig. 8, in which illustration the spindle M is shown as passing through a central circular hole  $q$  of a dished plate Q, having an annular flange  $q'$ , seated against a bearing  $p'$  of the face-plate and held in place by a screw-threaded ring  $Q'$ .  $p''$  are screws that secure this plate to the window-sash R, the edge of the latter having a vertical groove  $r$ , suitably mortised to admit the case F and its cap S, which cap is pierced, as at  $s$  in Fig. 9, to receive the end of rock-shaft J.

Face-plate P is slotted horizontally at  $p'''$  for the passage of the rounded portion  $t$  of a catch T, suitably pivoted to the rear of said plate, as seen in Fig. 2, the free end of this swinging catch being adapted to enter either one of the grooves  $d'$  of barrel D. The pivot of this catch has a pair of flat facets, against either one of which the spring  $t'$  bears, and thus holds said catch either in gear with the barrel or out of gear therewith.

$t''$  is a small projection wherewith the catch T is swung either to the right or left, as occasion requires.

U U' are duplex eccentrics or cams united by a pair of rounds or bars  $uu'$ , one of which, as  $u'$ , is grasped by the notch  $c$  of bolt C, while the other bar  $u$  has a hook V attached to it.  $v$  is a sash-cord attached to this hook, which cord or chain is passed over a pulley in the frame, and is then carried down within a suitable box or casing and furnished with a customary weight capable of balancing the sash in the usual manner. W is a screw that unites the cap S to the case F.

When the various parts of my sash are in their normal positions, the upward pull of sash-cord  $v$  causes the freely-suspended cams U U' to bear against the guide B with sufficient pressure to force it into the groove  $r$  until it comes in contact with the edge plate E of case F, as more clearly seen in Fig. 1, and the hook  $c$ , being engaged over the bar  $u'$ , couples the sash R to said cams and through them to the sash-cord, the spring I preventing any accidental detachment of said hook. It is evident the sash is now suspended from the cord  $v$ , and as the hollow guide B is inserted in part within the groove  $a$  of the frame and in part within the groove  $r$  of the sash it is apparent said sash is now incapable of being swung or turned in either direction, but is free to be raised and lowered in the usual manner, the guide B confining said sash to a strict vertical path; but when it is desired to swing or turn the sash the small projection  $t''$  is pushed to the right, so as to throw the catch T out of gear with the grooved barrel D  $d'$ , and the handle  $m'$  is then turned in the proper direction to cause the cams K K' to act against the levers L L', and thereby shift said barrel longitudinally until its head  $d''$  strikes against the end of neck  $e$ , as seen in Fig. 3. This advance movement of the barrel forces the guide B entirely out of the sash-groove  $r$  and drives said guide into the frame-

groove  $a$ , as seen in Figs. 3 and 4. Consequently the sash is now supported wholly upon the barrel D, which serves as a pivot or bearing around which the collar  $e$  turns with perfect freedom, and when the sash has been turned in this manner until the desired angle is obtained the catch T is brought into service and by engaging with another one of the barrel-grooves serves to lock the sash in position. Although the sash is now inclined or perfectly horizontal, if desired, it can be raised or lowered as before, but cannot accidentally turn upon its pivots. To restore the sash to a vertical position, the catch T must first be intentionally disengaged from the grooved barrel D  $d'$ , as previously described, and then by retracting said barrel the guide B advances into the groove  $r$  and all the parts are restored to their normal places. This lateral sliding of the guide into the sash-groove is readily effected on account of the pressure exerted against said guide by the sash-weight pulling on the freely-suspended eccentrics U U', which have no connection with said guide, but simply bear against it. Previous to advancing the guide the spindle M is shifted forward as far as the pin  $n'$  will permit, which act disengages the pawl  $n$  from ratchet O and allows the rock-shaft J to be turned back until the cams K K' assume the position seen in Fig. 1. Spindle M is then forced back, so as to enable the pawl  $n$  to re-engage with the ratchet O, when the sash is again operated, as previously described. It is preferred to corrugate the face of the edge plate E, as seen in Fig. 7, and also to corrugate the guide, thereby stiffening the latter and causing it to have a spring action within the frame-guide. The dotted lines in this illustration show that the cams U U' can bear against the concave portions of the corrugated guide.

In Figs. 2 and 4 considerable space has been left between the bolt C and cams U U' and between the latter and the sides of guide B, so as to prevent these parts being confused in the drawings; but said parts should be fitted up quite snugly to each other, as indicated by dotted lines in Fig. 7, so as to prevent any material play.

I claim as my invention—

1. The combination of a vertically-grooved window-frame, a vertically-grooved sash applied thereto, a laterally-shiftable hollow guide traversing the groove of said frame, a sash-cord fastener freely suspended within said guide and normally forcing it into the groove of the sash, a pivot mechanism applied to the sash and engaging with said cord-fastener, and devices for shifting said mechanism so as to drive the guide into the frame-groove and support the sash upon said pivot mechanism, substantially as herein described.

2. The combination of a vertically-grooved window-frame A  $a$ , a vertically-grooved sash R  $r$ , applied thereto, a laterally-shiftable hollow guide B, traversing the groove  $a$ , a double



cam  $U U' u u'$ , freely suspended within said guide, a sash-cord  $v$ , attached to said cam, a bolt  $C c$ , engaged with said cam, a pivot mechanism, as the barrel  $D$ , for retaining said bolt, and devices for shifting said mechanism, for the purpose described.

3. The combination, with a sliding and swinging window-sash, of a longitudinally-shiftable but non-rotatable pivot upon which the sash turns, and a locking device secured to said sash and engaging with said pivot, for the purpose described.

4. The combination, with a sliding and swinging window-sash, of the longitudinally-grooved barrel  $D d'$ , and spring-catch  $T t'$ , for the purpose described.

5. The combination, with a sliding and swinging window-sash, of a laterally-shiftable hollow guide, as  $B$ , a sash-cord fastener freely suspended within said guide, a bolt  $C c$ , engaged with said fastener, a longitudinally-shiftable barrel  $D$ , traversed by said bolt, a housing  $e$  for said barrel, levers  $L L'$ , for shifting said barrel, and cams  $K K'$ , for operating said levers, as herein described.

6. In combination with the cams  $K K'$ , operating a sash-pivot mechanism, in the manner described, the rock-shaft  $J$ , socket  $j$ , spindle  $M$ , arbor  $m$ , spring  $N$ , pawl  $n$ , stop  $n'$ , and fixed segmental ratchet  $O$ , for the purpose described.

7. The spindle  $M$ , journaled in an opening  $q$  of the dished plate  $Q q'$ , in combination with the bearing  $p'$ , and screw-threaded ring  $Q'$ , for the purpose described.

8. The combination of a grooved window-

frame, a sliding sash having a corrugated groove, and a hollow guide that travels with said sash and has corrugations that enter the sash-groove, said guide being provided with outwardly-springing wings that bear against the sides of the frame-groove, for the purpose described.

9. In combination with the bolt  $C c c'$ , having collars  $H H'$ , the spring  $I$ , having its free end inserted between said collars and its fixed end secured to the rock-shaft  $J$ , as described.

10. The case  $E$ , provided with neck  $e$  and stop  $G g g'$ , in combination with the barrel  $D d$  and bolt  $C c c'$ , which barrel is operated by levers  $L L'$ , for the purpose described.

11. In a window-sash of the class specified, the hollow guide  $B$ , which is forced laterally into the sash-groove  $r$  by freely-suspended cams  $U U'$ , to which the sash-cord is attached, for the purpose described.

12. The combination, with a sliding and swinging window-sash, of a longitudinally-shiftable but non-rotatable pivot, upon which the sash turns, a catch traversing said pivot and engaging with a sash-cord fastener, and a locking device secured to said sash and engaging with said pivot, for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES H. FOOTE.

Witnesses:

JAMES H. LAYMAN,  
FRANCIS M. BIDDLE.