

No. 638,346.

Patented Dec. 5, 1899.

E. E. MALLORY.
WINDOW SCREEN.

(Application filed Jan. 27, 1899.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1.

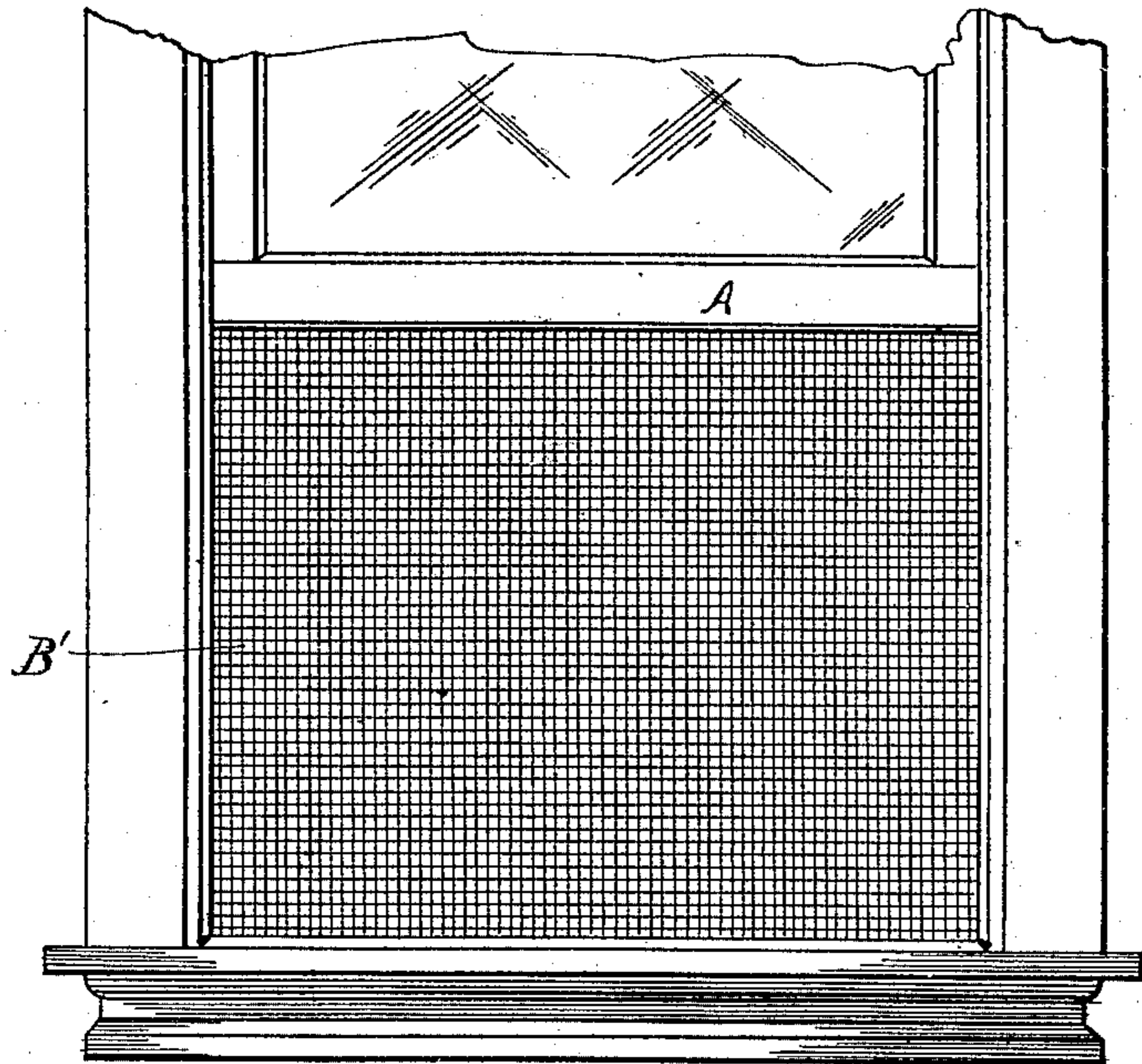


Fig. 2.

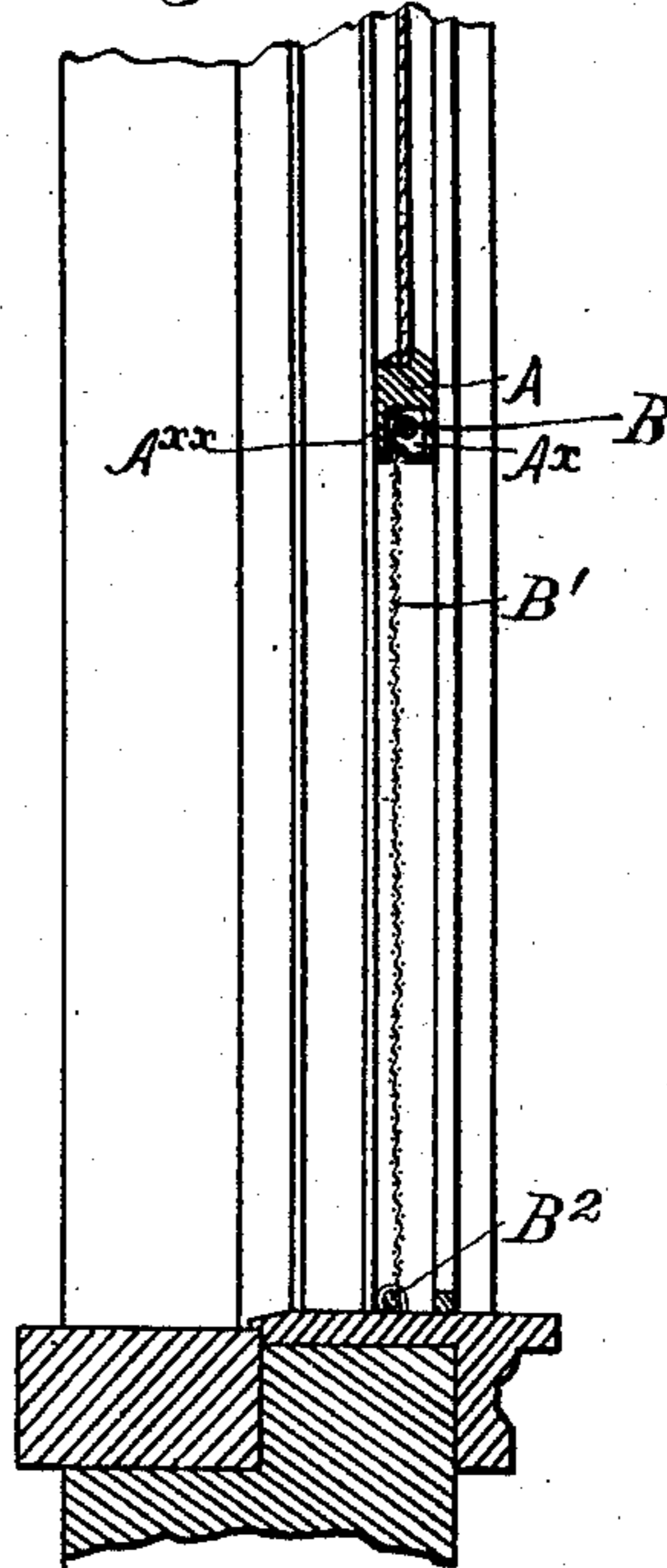


Fig. 3.

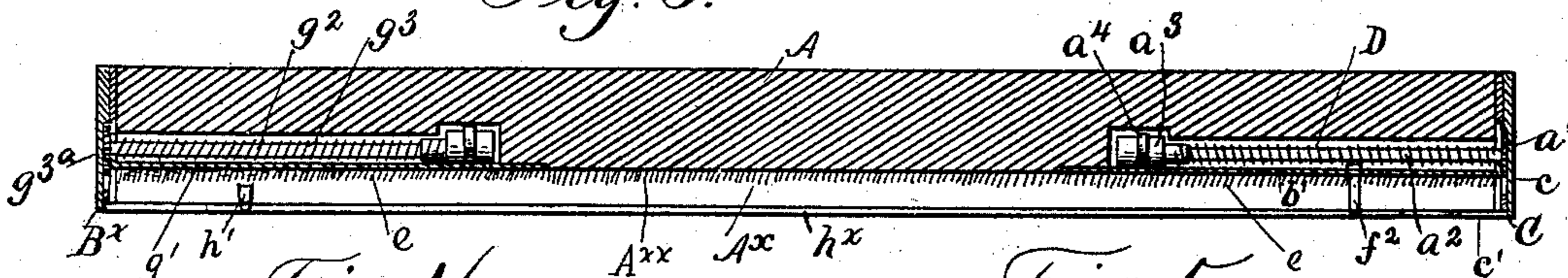


Fig. 4.

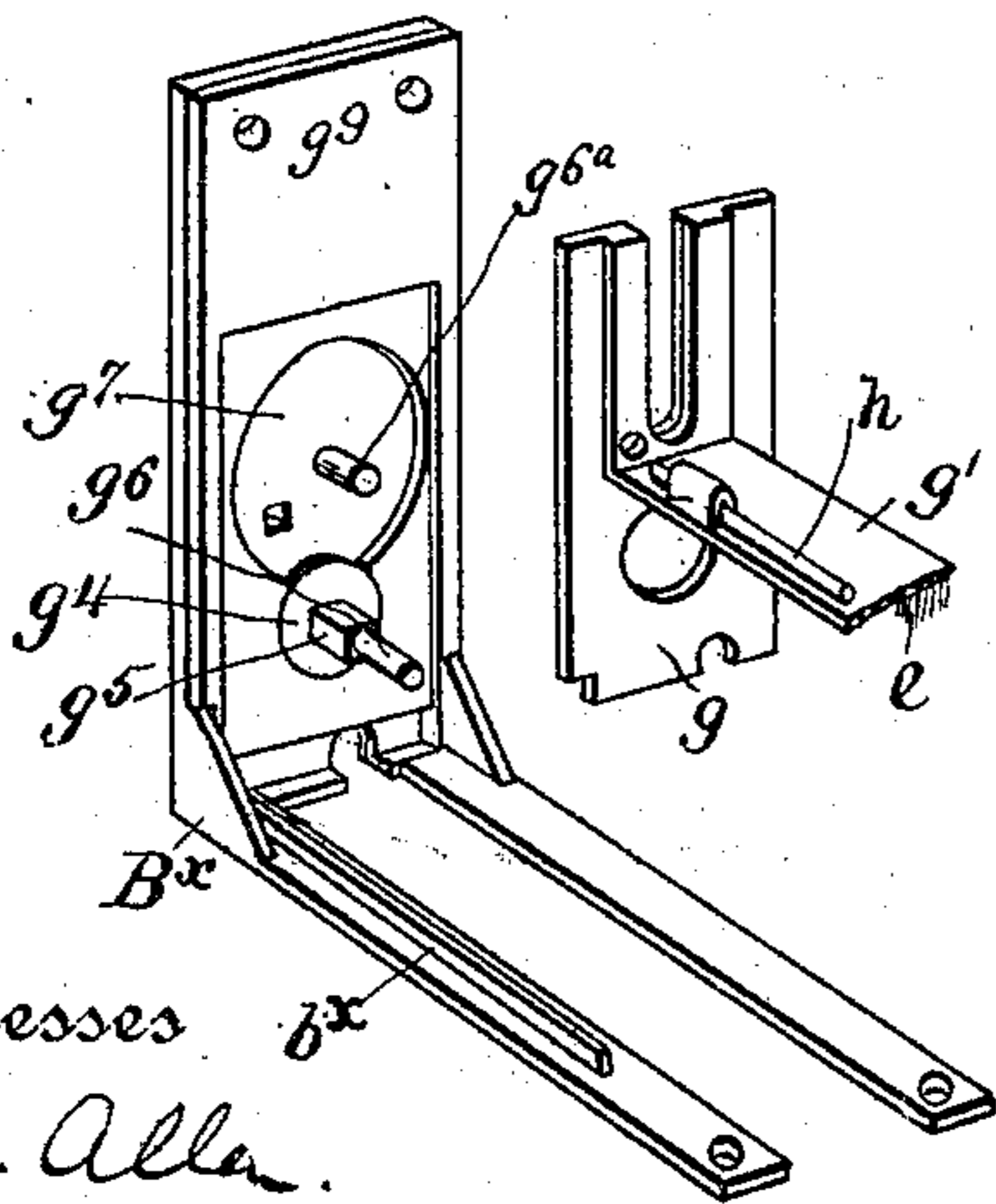
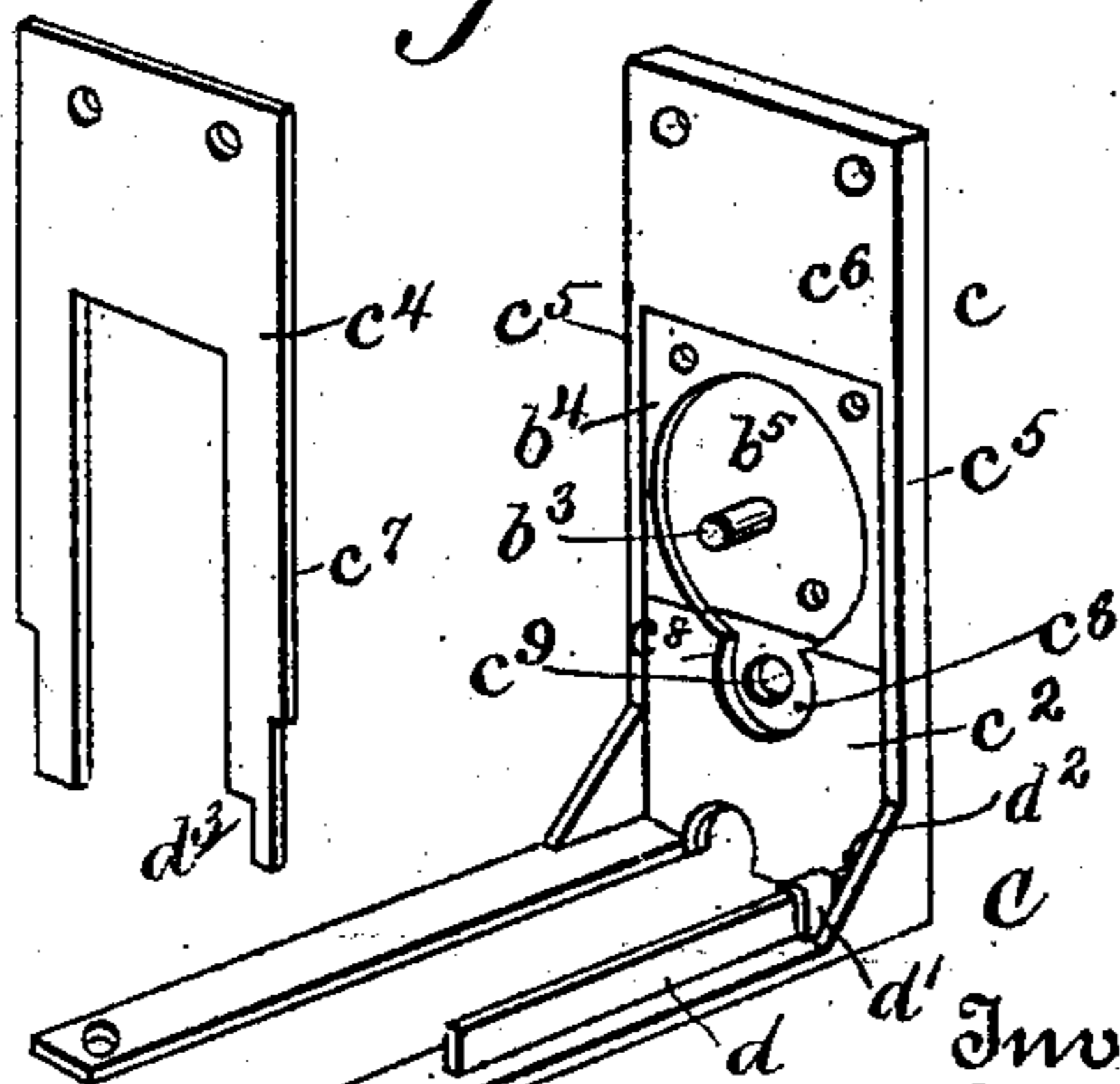


Fig. 5.



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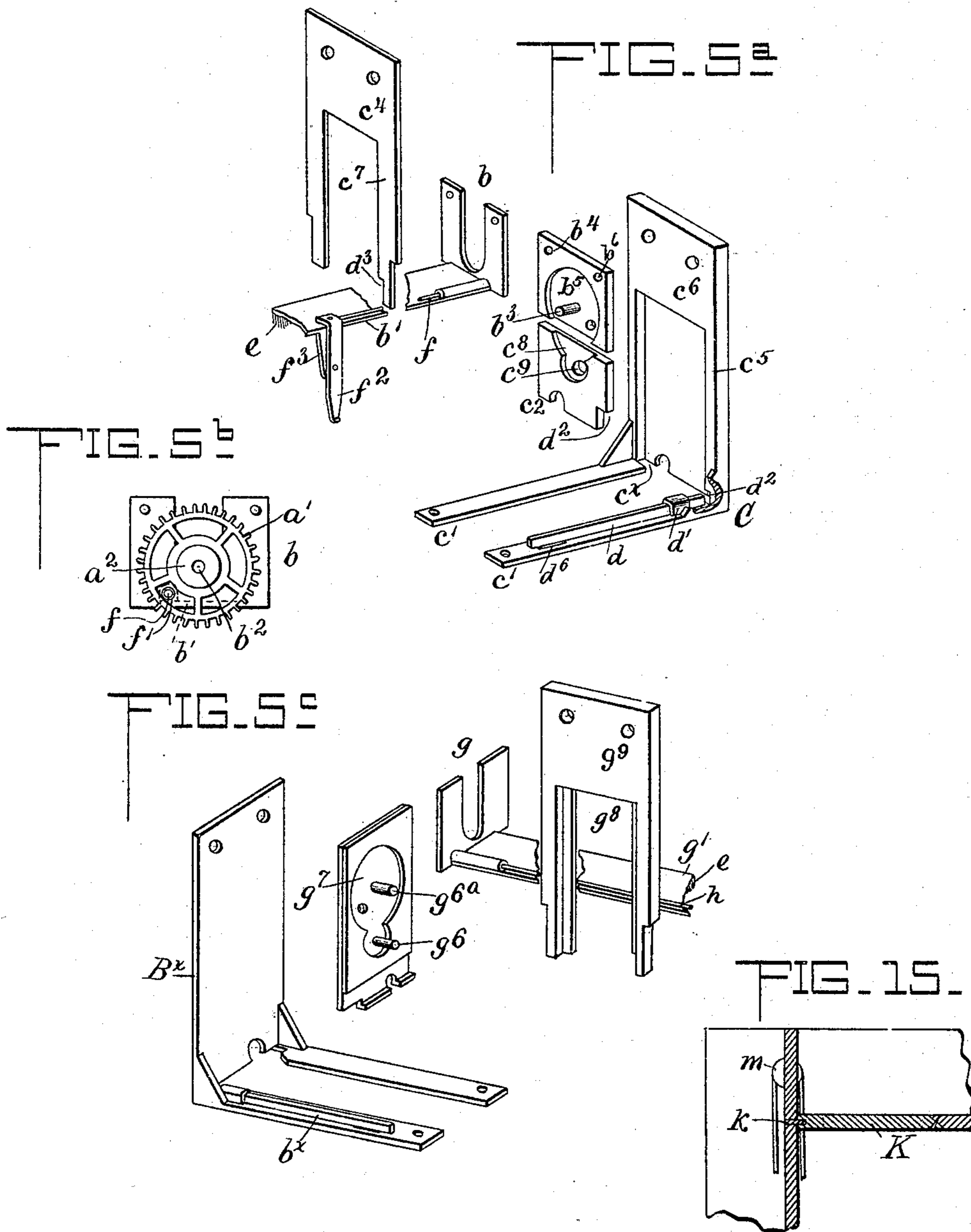
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(Application filed Jan. 27, 1899.)

(No Model.)

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Fig. 6.

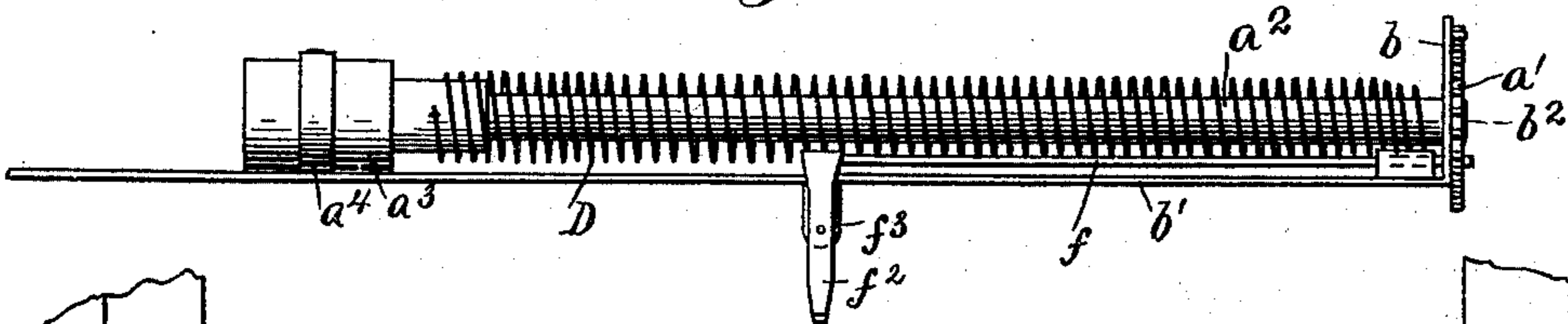


Fig. 7.

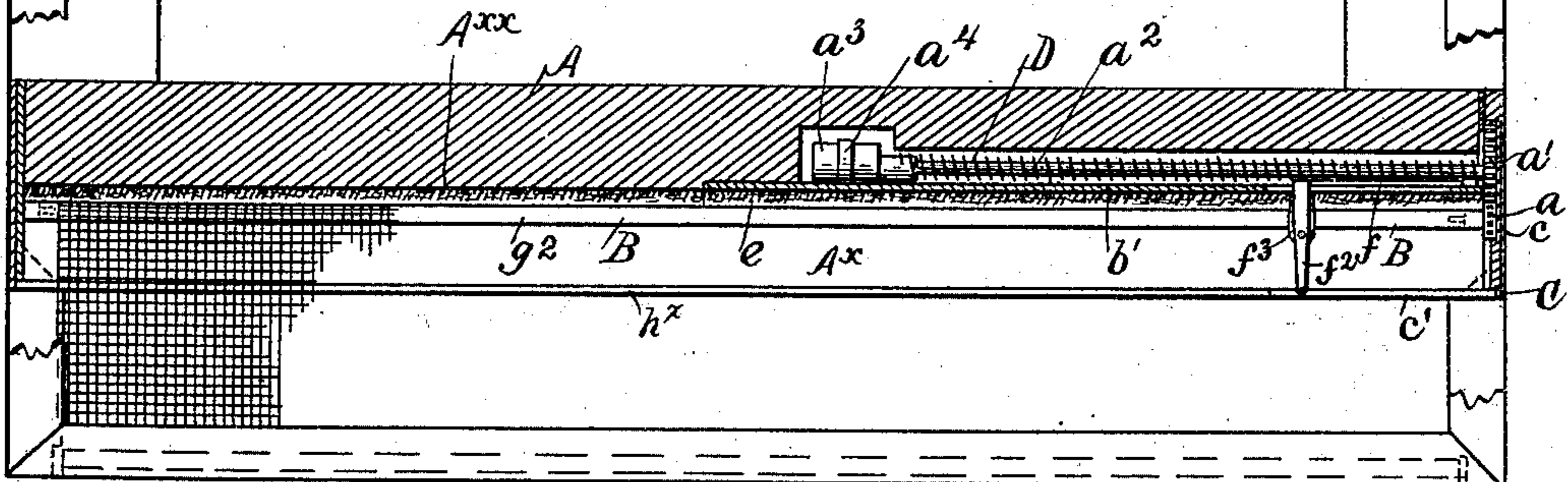
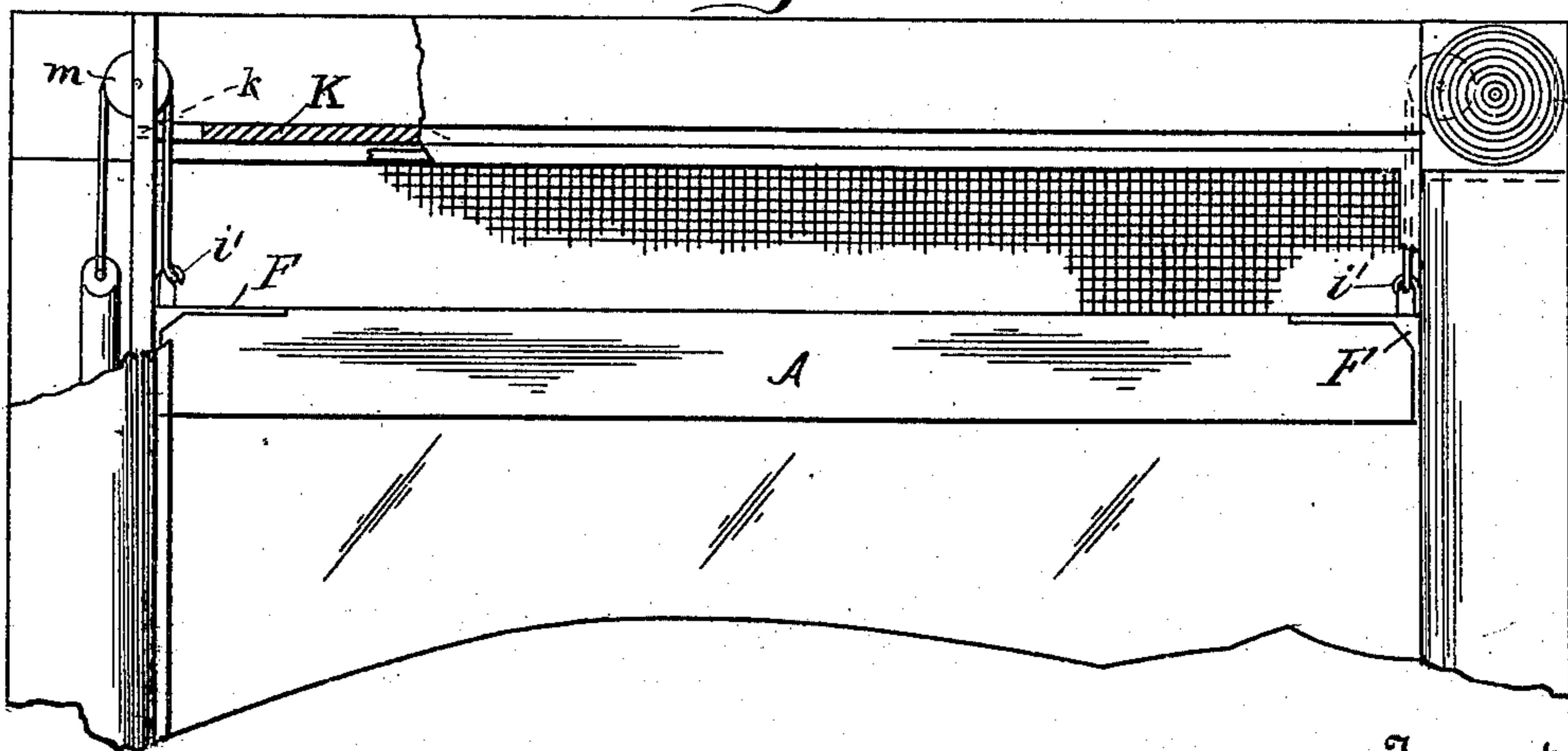


Fig. 8.



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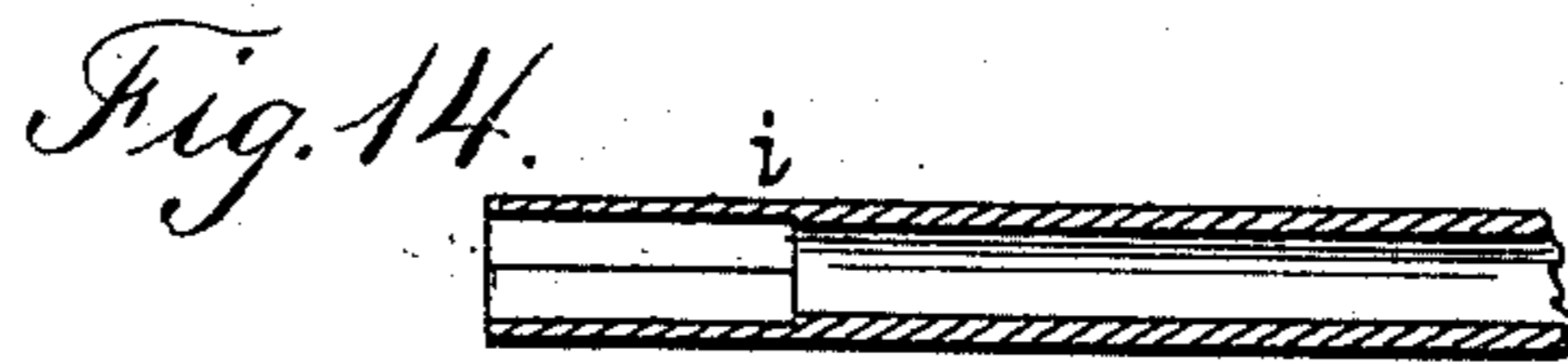
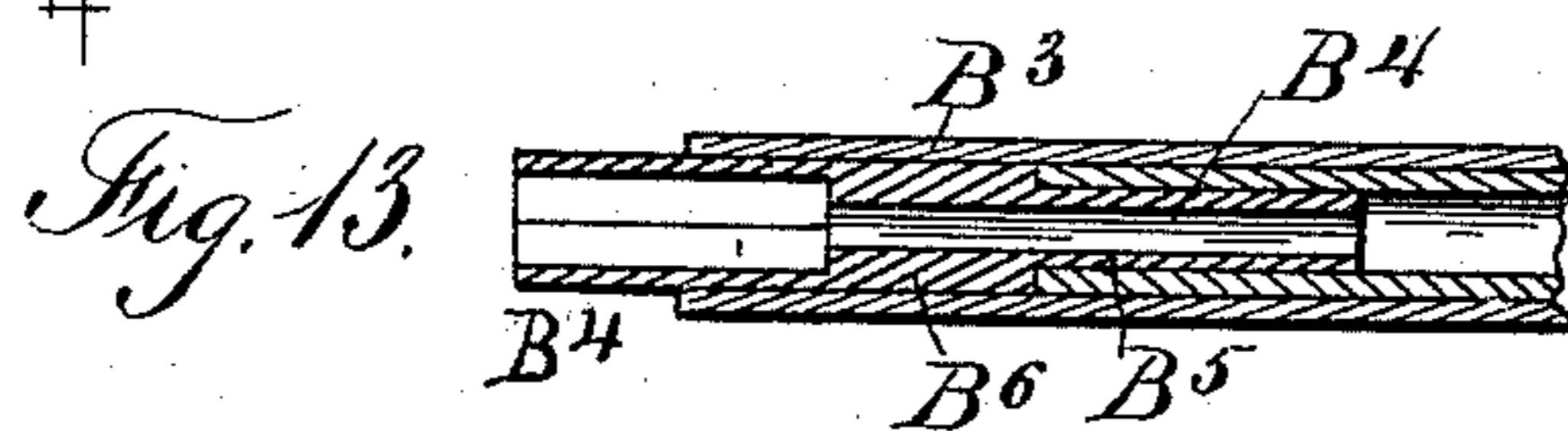
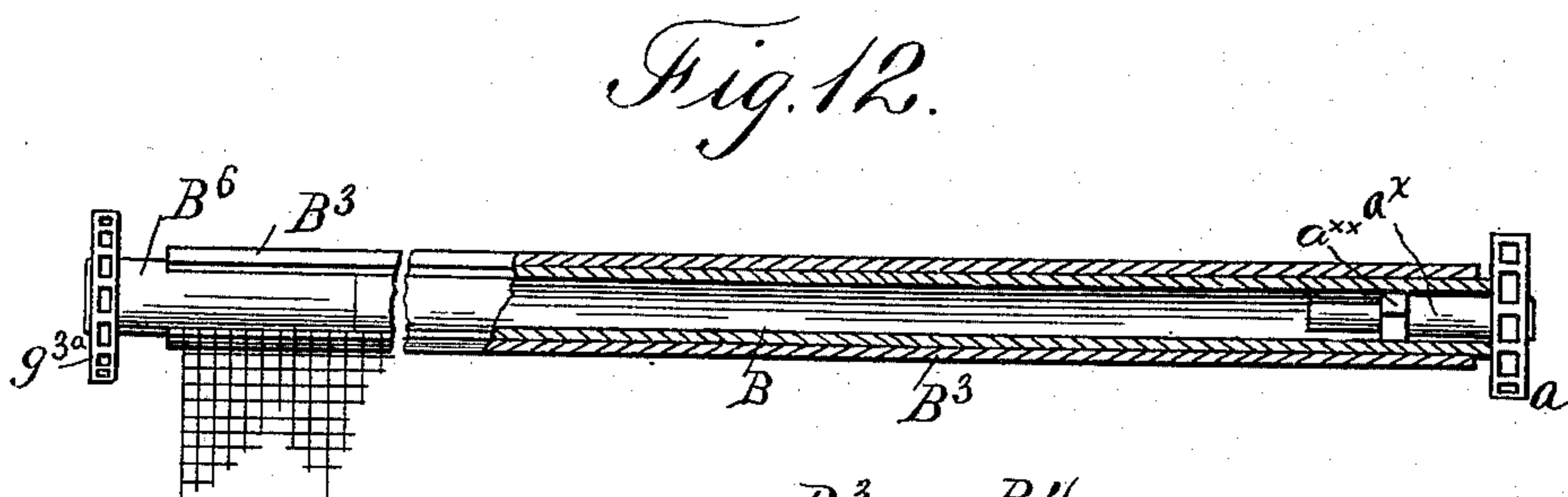
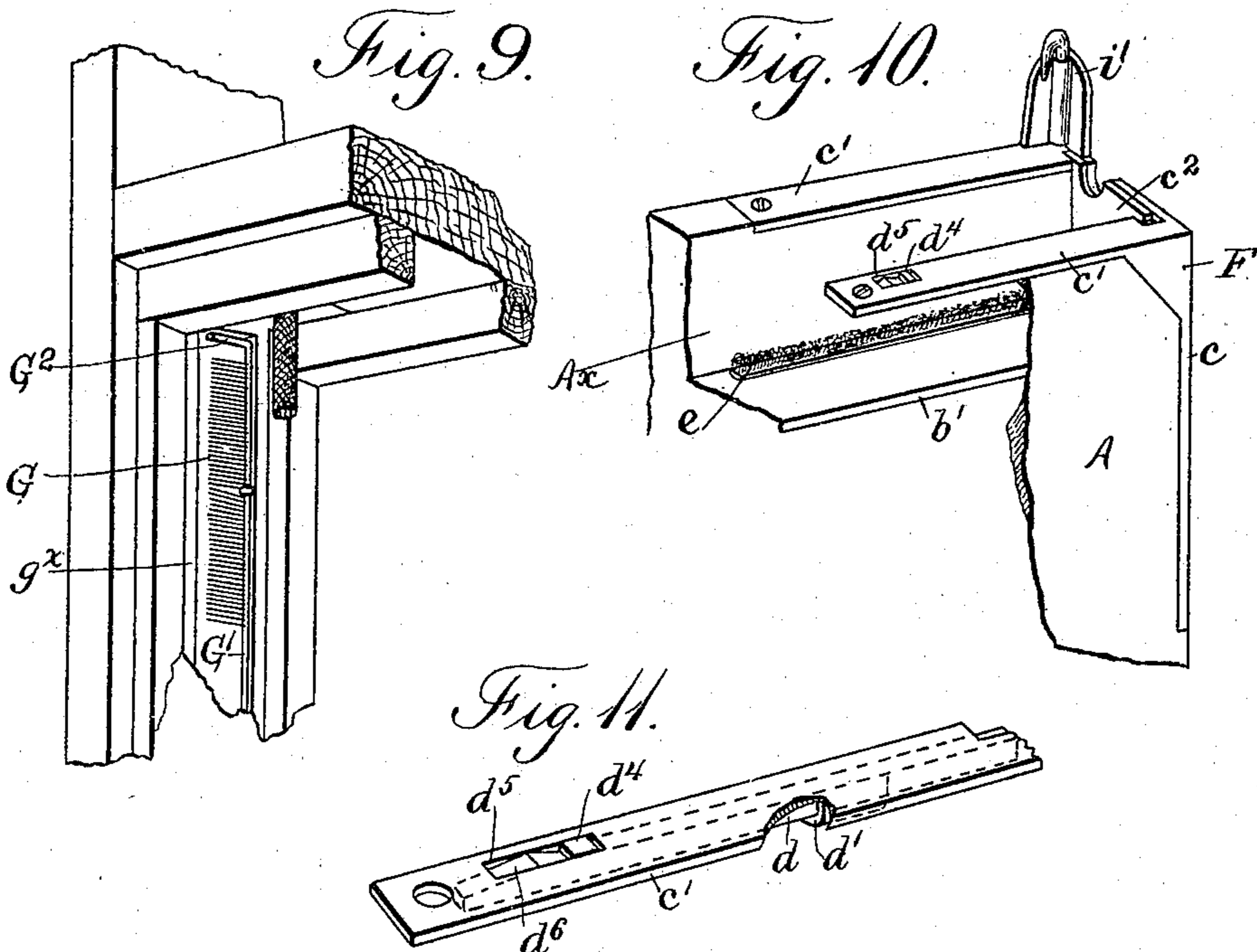
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UNITED STATES PATENT OFFICE.

ERNEST E. MALLORY, OF WEST UNITY, OHIO.

WINDOW-SCREEN.

SPECIFICATION forming part of Letters Patent No. 638,346, dated December 5, 1899.

Application filed January 27, 1899. Serial No. 703,600. (No model.)

To all whom it may concern:

Be it known that I, ERNEST E. MALLORY, a citizen of the United States, residing at West Unity, in the county of Williams and State of Ohio, have invented certain new and useful Improvements in Window-Screens; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain improvements in window-screens for use in railroad-cars, boats, and in other places where the use of such is desirable, especially that class of screens employing a spring-actuated or automatically-rolled screen.

It has for its objects principally to readily provide for making repairs of the several parts, to adjust or accommodate the screen to windows of different widths with facility, to provide for the ready assembling of the parts, to initiate the tension and effect the holding of the spring or springs when under tension, and to expedite and facilitate the putting of the parts in position.

It consists of the combinations and arrangements of parts, including their construction, substantially as hereinafter more fully disclosed, and specifically pointed out in the claims.

It will be understood that latitude is allowed herein as to details, as they may be varied or changed as circumstances dictate without departing from the spirit of my invention and the same yet remain intact and be protected.

In the accompanying drawings, illustrating the preferred embodiment of my invention, Figure 1 is a view showing the application of the same to a window. Fig. 2 is a vertical section thereof. Fig. 3 is an enlarged vertical section taken through the sash-rail, disclosing more fully the general arrangement of the springs, their tension-adjusting devices, and screen-roll brackets. Fig. 4 is an enlarged detail view of the bracket for one end of the screen-roll. Fig. 5 is a similar view of the bracket for the other end of said screen-roll. Fig. 5^a is a perspective view disclosing the sundry parts of the bracket C disassembled. Fig. 5^b is an end view of the bearing-plate *b*, with the pinion or gear of the shaft compassed

by the roll tension-spring assembled therewith. Fig. 5^c is a perspective view showing the various parts of the bracket B^x disassembled. Fig. 6 is a detailed view of one of the tension-springs, the shaft compassed thereby, and its gear, with the lever and retaining device engaging said gear. Fig. 7 is a modification disclosing the invention adapted to be used with a single spring. Fig. 8 is a second modification showing the upper sash as adapted for the embodiment of my invention. Fig. 9 is a detailed view of the insect-guard. Fig. 10 is a similar view of one of the screen-roll brackets of modified construction to provide for the attachment thereto of the sash-weight cord. Fig. 11 is a detailed view of a broken-off portion of a roll-bracket, more fully disclosing the detent *d*. Figs. 12 and 13 are a partly-sectional view of the screen-roll and a broken-away detailed section thereof, respectively. Fig. 14 is a broken detailed sectional view of the key which may be used for putting under tension the screen-roll spring. Fig. 15 is a broken-away sectional view disclosing the removable part of the modification pertaining to the weight-and-pulley arrangement of my invention.

In carrying out my invention I suitably recess or adapt the sash-rail A, as at A^x, to receive the screen-roll B of any preferred construction, to which the screen B' is suitably attached by means of a clip B³, adapted to be sprung over the upper edge or end of the screen, clasp ing it upon said roll, said screen being suitably weighted, it may be, by a rod B², as disclosed in my Patent No. 619,198.

In the recess A^x of the sash-rail, intermediately of the screen-roll-actuating springs, &c., is arranged, preferably, a guide A^{xx}, coinciding with a similar guard, as hereinafter described, to exclude insects, &c., of preferably buffalo-hide with the hair on.

The screen-roll B has fitted to it removably at one end a small pinion *a*, preferably of the peripherally-socketed type, whose spindle *a*^x is inserted and held from turning in said roll by an angular portion or shoulder *a*^{xx}, and with this pinion is adapted to engage a toothed pinion or wheel *a'* on the tension-spring shaft *a*², described farther on. C is a bracket for this end of the screen-roll and tension-spring shaft, consisting principally of a vertical

plate or casting c , also of plates or sections $c^2 b^4 c^4$, said plate c being adapted to be suitably secured to the end of the sash-rail and having horizontal parallel arms c' at its lower end adapted to be secured to the bottom edge of said rail. The plate c is also adapted to laterally guard, by means of flanges c^5 , said plates or sections $c^2 b^4$, also a supplemental bearing-plate b of the tension-spring-shaft supporting-plate, interposed between the plates or sections $b^4 c^4$ and abutting a shoulder c^6 of the plate c . The plate c^4 is suitably secured to the plate c and cut away to form contracted extensions or arms c^7 , reaching down and notched to properly fit other parts and adapted to rest upon and prevent the inward displacement of the sections $c^2 b^4$ and bearing-plate b , its cut-away portion permitting the passage of the tension-spring shaft. The sections or plates $b^4 c^2$ are recessed, as at $b^5 c^8$, respectively, to receive the pinion or wheel a on the tension-spring shaft a^2 to permit the engagement with said pinion or wheel of the peripherally-socketed pinion a of the screen-roll. The plate or section c^2 is also provided with a smaller recess c^9 to receive and form a bearing for the end of the spindle a^x of the pinion a . The plate or section b^4 is suitably secured or fixed at b^6 to the bracket plate or casting c , while the plate or section c^2 is held removably in place, as presently disclosed, to permit the ready removal of the spring-roll. The removability of the section or plate c^2 , supporting one end of the screen-roll, is permitted through an opening c^x in the lower end of the bracket-plate c , and this section or plate c^2 is held in place by a sliding detent or dog d , arranged upon the upper side of one of the horizontal arms c' of the bracket plate or casting c . The inner end of the dog or detent d is arranged in a keeper d' , fast to said arm of said bracket-plate, and is adapted to engage a notch d^2 in the lower edge of the section or plate c^2 and incidentally a notch d^3 in the edge of one of the arms c^7 of the plate c^4 . The dog or detent d has a laterally-flanged thumb-piece or projection d^4 , extending through an elongated slot d^5 in the arm c' , for its ready manipulation, and a cam-actuated beveled portion d^6 upon its edge, riding in contact with the under side of said arm, to wedge it in its retracted position as against accidental displacement.

The spring-shaft bearing-plate b has fixed to it the horizontal shaft-supporting plate b' suitably secured and let into the recess, into which said spring and shaft are arranged, and has suitably connected to it at its longitudinal edge a guard or packing e , preferably of buffalo-hide with hair on or other suitable material, to exclude insects, dust, &c.

The tension-spring shaft a^2 has one end preferably loosely let into a cylindrical support or bearing a^3 , compassed by and secured to a ring-like bracket a^4 , suitably secured upon the upper side of the plate b' . The opposite end of said shaft is preferably provided with

a socket b^2 , receiving a pin or stud b^3 of section or plate b^4 , said shaft passing through the cut-away portion of the bearing-plate b , the pinion a' on said shaft being received between the plates $b b^4$.

Upon the upper side of plate b' is suitably supported a sliding rod or detent f , with one end adapted to project through a hole f' in the bearing-plate b to enable it to laterally engage the wheel or pinion a' , passing into a coincident space between the spoke-like portions thereof to hold it against turning when under stress, as desired in putting the spring under tension. The rod or detent f has its opposite end connected to a lever f^2 , suitably pivoted to a bracket f^3 , fixed to the plate b' , to provide for convenient manipulation of said detent. The connection between said lever and said detent is effected by bending the end of said detent and passing it upwardly through a lateral extension of said lever, as disclosed in Fig. 5^a.

D is the spring, preferably helical or spiral, compassing the shaft a^2 and having one end secured to the bearing or support a^3 and its other end connected to said shaft to put it under stress as the spring is coiled or compressed.

One end of the screen-roll proper, B , is adapted to receive the somewhat slightly lessened diametere portion of an angular-apertured removable extension B^4 , whereby by shortening up the screen-roll by cutting it the required extent after the removal of said extension the screen is adapted to accommodate or fit windows of different widths, said extension then being reinserted or replaced. This extension B^4 is composed of a lesser diametere portion B^5 and a greater diametere portion B^6 , the portion B^5 being adapted to slide closely in the end of the screen-roll and the portion B^6 being the same in diameter as the screen-roll, said portions, however, being in a single piece. Also, the opposite end of the screen-roll B is preferably passed through a vertically-slotted or cut-away plate g , fastened or fixed to the horizontal spring-tension-shaft covering-plate g' , similarly arranged within the sash-rail, and said shaft (lettered g^2) arranged upon the upper side of said plate, and the spring g^3 compassing said shaft, all in like manner as the same-named parts aforesaid described. The shaft g^2 has fixed to its end a pinion or wheel g^{3a} , just outside of the plate g , engaging a peripherally-socketed pinion g^4 , turning with a short angular sleeve g^5 , slipped on a short shaft g^6 , fixed to a second bearing-plate g^7 , removably held upon the inside of a bracket B^x , similar in all essentials, including its detent or dog b^x , as the right-angled part $c c'$ of the bracket C , above described, and fastened to the end of the sash-rail. Upon the angular sleeve or hub g^5 is received the angular socketed end of the screen-roll B to transmit the action of the tension-spring to said roll, the end of the tension-spring shaft g^2 bear-

ing on the fixed stud or gudgeon g^{6a} of the bearing-plate g^7 . The bearing-plate g^7 rests against an offset g^8 on the inner side of a holding-plate g^9 , suitably secured to the bracket B^x and of similar construction in all its essential details as the plate c^4 before described. As employed in connection with the other end screen-roll gear I similarly provide for this screen-roll gear a sliding rod or detent h , having an actuating-lever h' , in like manner arranged upon the plate g' . It will be understood that in putting the spring aforesaid under tension the gears of the screen-roll at its respective ends are turned in opposite directions, that at the right-hand end being turned to the left and that at the left-hand end being reversely turned.

All the parts being properly assembled or in position and the screen rolled up, unroll or "pull down" the screen and engage the detent f with the pinion or wheel a' , locking the tension thus obtained. Remove the screen-roll and roll up the screen. Then put the screen-roll back in position. Now unlock or loosen the tension by disengaging the detent f from said pinion, the screen being again unrolled or pulled down, thus securing the required tension; or the tension may be obtained by applying a key i to the socketed angular pinion sleeve or hub g^5 at the left-hand end of the sash-rail, the screen-roll having been removed, and turning said key a certain number of times—say about sixteen. Then bring into requisition the detent h and put the screen-roll back into position, the detent now being retracted. In using the key for the right-hand end of the screen-roll it is applied to the angular portion or shoulder of the spindle a^x . In putting on tension with the key it can be determined if the tension is "caught" by relaxing the hold on the key, when if the tension is not caught or locked the key will tend to turn. It will be seen that all these adjustments and changes and repairs can be effected without removing the sash from the window.

Upon the bottom edges the sash-rail may be reinforced or armed with strips of metal h^x to prevent the otherwise unduly wearing or "chipping" of said edges.

In Fig. 7 is disclosed an embodiment of my invention using only a single spring, such as either one of the arrangements above described, being adapted to be employed therein, therefore it not being necessary to enter into a detailed description thereof here.

In Figs. 8 and 10 are disclosed end castings F to substitute the brackets above used for the screen-roll for the sash-rail, particularly the upper rail of the upper sash, where weight-cords and pulleys are used, said castings each having integral therewith at one end a hook-ended vertical projection or extension i' to provide for the convenient attachment of the weight-cord thereto, greatly simplifying the manner of heretofore effect-

ing the connection between the weight-cord and the sash. Also in this arrangement the weight-cord pulleys m are arranged above the plane of the top cross-piece of the window-frame and the weight-cords are passed directly vertically up through an opening of said top cross-piece, closed by a removable piece or section K , held in place by a single screw and dowel k at opposite ends thereof. This arrangement obviates the hanging or arranging of the sash-cord pulley for the upper sash in the window-frame stile below the top cross-piece and attaching the cord to the side of the sash, as heretofore practiced. In this form of my invention, as disclosed in Fig. 9, I have shown what may be termed a "guard" G , substantially and preferably comprising a comb-like arrangement of fibers to exclude insects, dust, cinders, &c., said fibers being suitably attached to a rod G' with an upper right-angled bent arm G^2 , the same being arranged in a recess or channel g^x in the window-frame back of the sash-groove, said guard being shown thrown back at right angles to the position it would occupy if the sash-frame and screen were in place. It (said guard) is adapted to lie against the screen at its edges in practice, being readily turned into such position by manipulating it by its arm G^2 , as will be readily appreciated, and when not used readily turned back out of the way into its receiving channel or recess.

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

1. In a window-screen, the combination of a screen-roll, a tension-spring, a suitably-supported shaft, actuated by said spring, said screen-roll and shaft being intergeared at one end, and a sliding lever-actuated rod or detent adapted to laterally engage or lock the gearing and means to support the other end of said screen-roll, substantially as set forth.

2. In a window-screen, the combination of a screen-roll, a suitably-supported shaft geared to said screen-roll at one end, a spring arranged on and actuating said shaft, a bracket having bearing-plates for said screen-roll and shaft, the screen-roll bearing-plates being removable, and a sliding lever-actuated rod or detent adapted to engage or lock the gearing between said shaft and screen-roll and means to support the other end of said screen-roll, substantially as set forth.

3. In a window-screen, the combination of a screen-roll, a shaft geared with said screen-roll at one end, a spring arranged in connection with and actuating said shaft, a bracket provided with a shoulder and having horizontal arms, one of said arms being provided with a sliding detent or dog, a removable bearing-plate adapted to support one end of the screen-roll and held in position by said detent, and a second bearing-plate for one end of said shaft let into said bracket and arranged between the shoulder of said bracket

and said removable bearing-plate and means to support the other end of said screen-roll, substantially as set forth.

4. In a window-screen, the combination of
5 a screen-roll, a shaft provided at one end with a pinion, a spring arranged in connection with, and actuating, said shaft, a bracket, a plate secured in said bracket, a fixed stud or axis on said plate to engage said shaft, and
10 a fixed pin or stud on said plate just below said axis, an angular sleeve or hub loosely arranged on said pin and having a peripherally-socketed pinion geared to the pinion of the shaft, substantially as set forth.
- 15 5. In a window-screen, the combination of a screen-roll, a shaft geared to said screen-roll at one end, a spring arranged in connection

with and actuating said shaft, a bracket, a plate secured in said bracket, a fixed stud or axis on said plate to engage said shaft and 20 a fixed pin or stud on said plate just below said axis, an angular sleeve or hub loosely arranged on said pin and having a peripherally-socketed pinion geared to the pinion of the spring-shaft and means to support the 25 other end of said screen-roll, substantially as set forth.

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

ERNEST E. MALLORY.

Witnesses:

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W. A. HOLLINGTON.