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Patented Oct. 21, 1902.

A. B. CLARK.
HINGE.

(Application filed Mar. 5, 1902.)

(No Model.)

2 Sheets—Sheet 1.

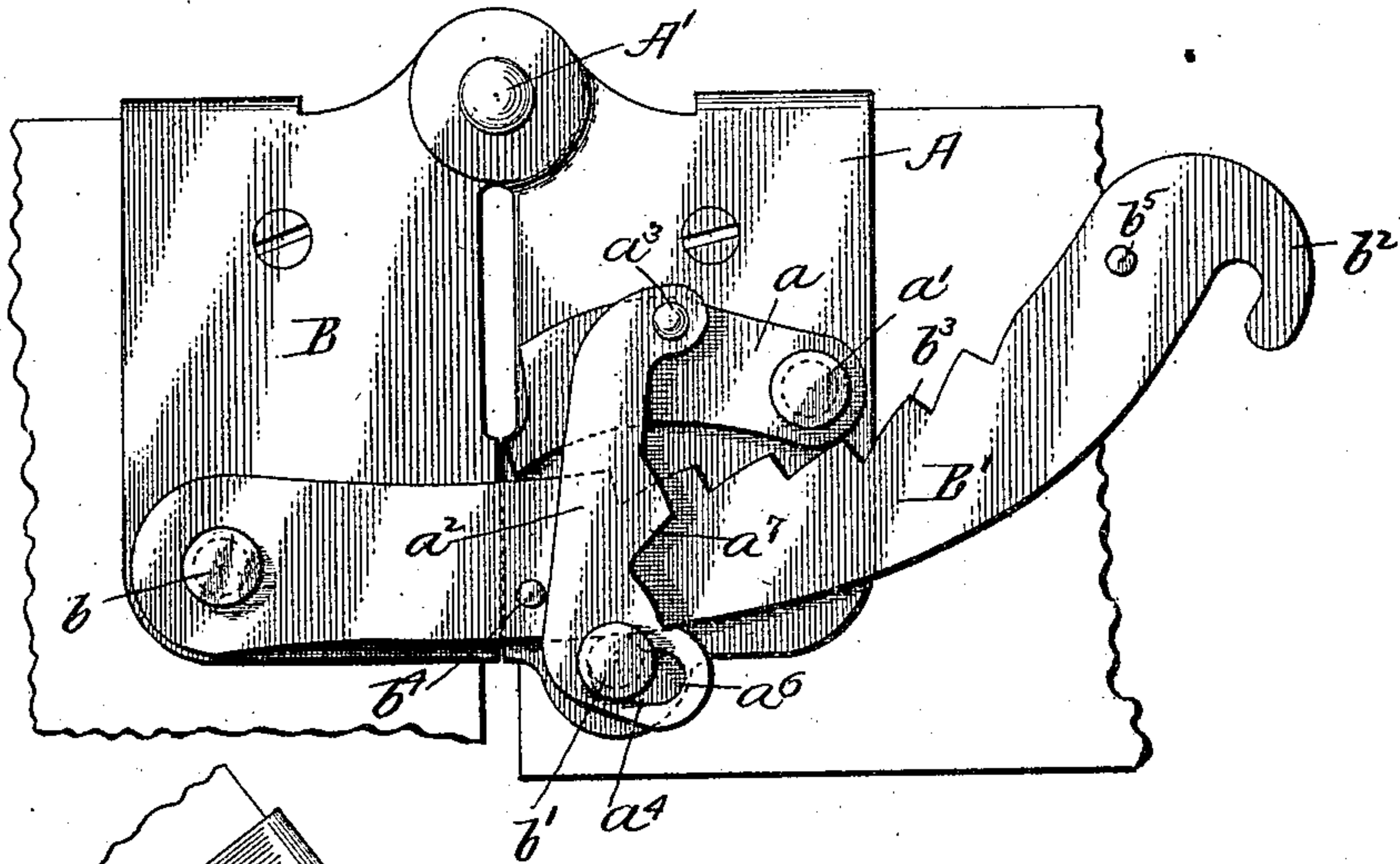


Fig. 1.

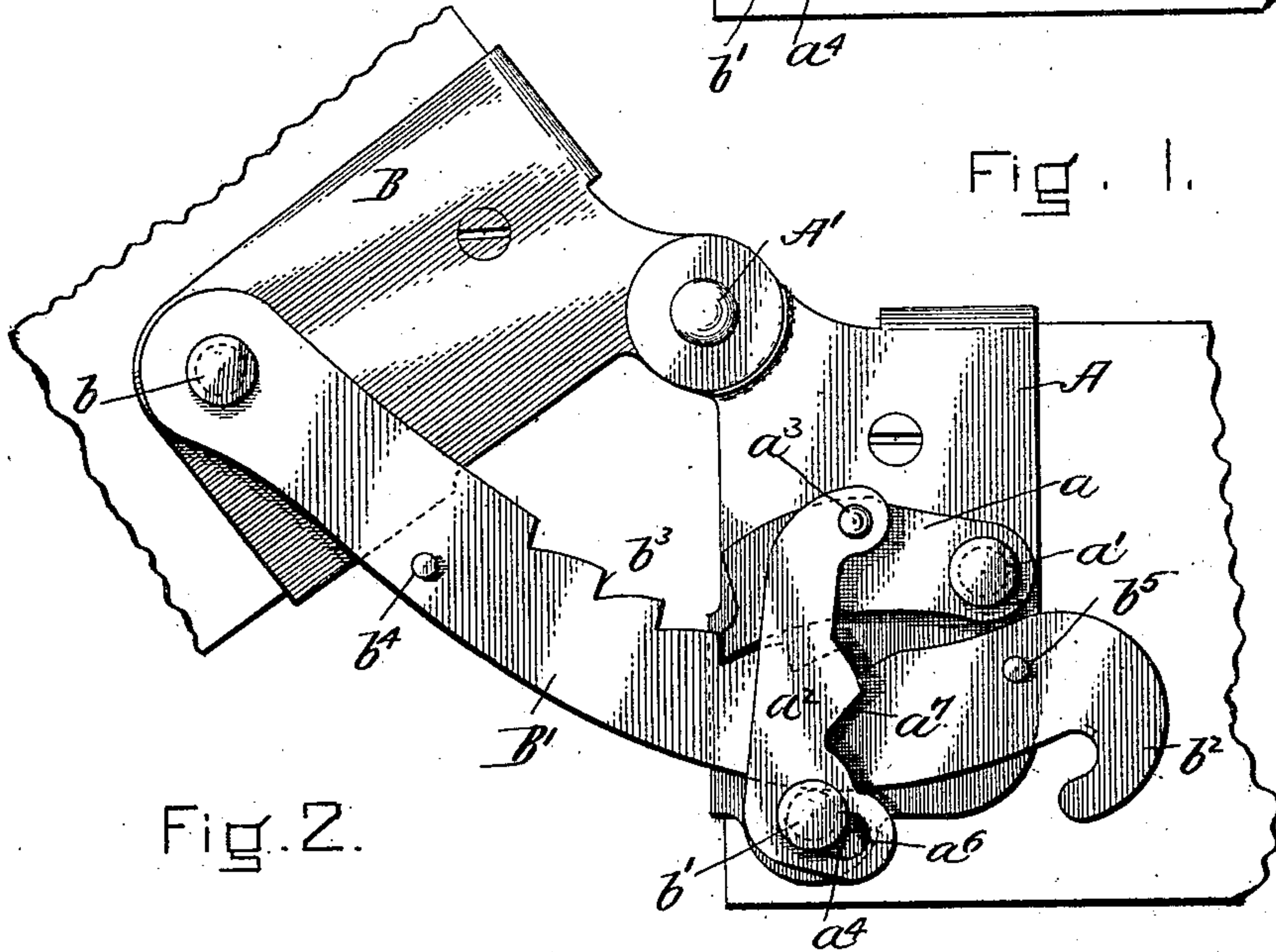


Fig. 2.

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2 Sheets—Sheet 2.

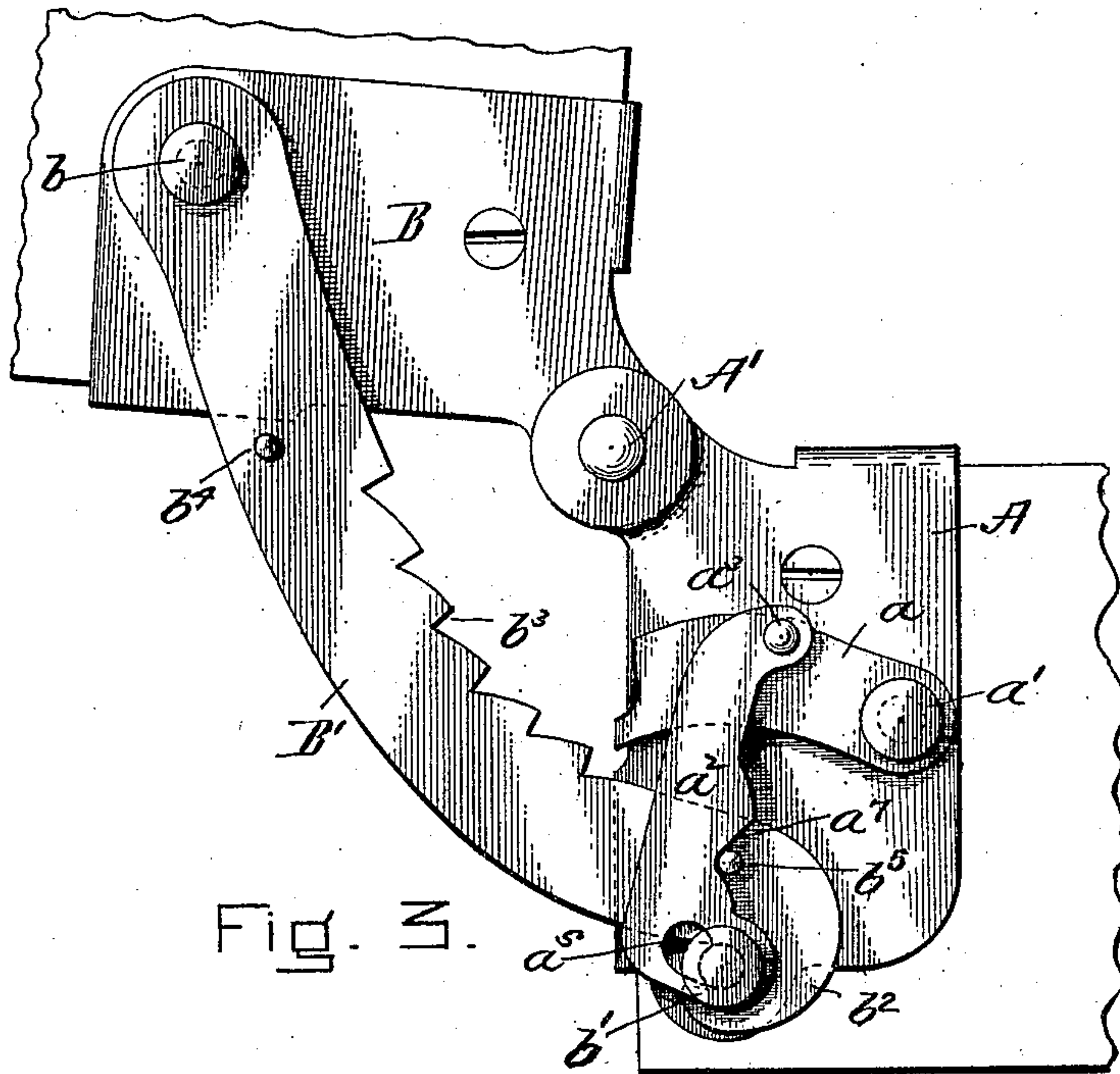


Fig. 3.

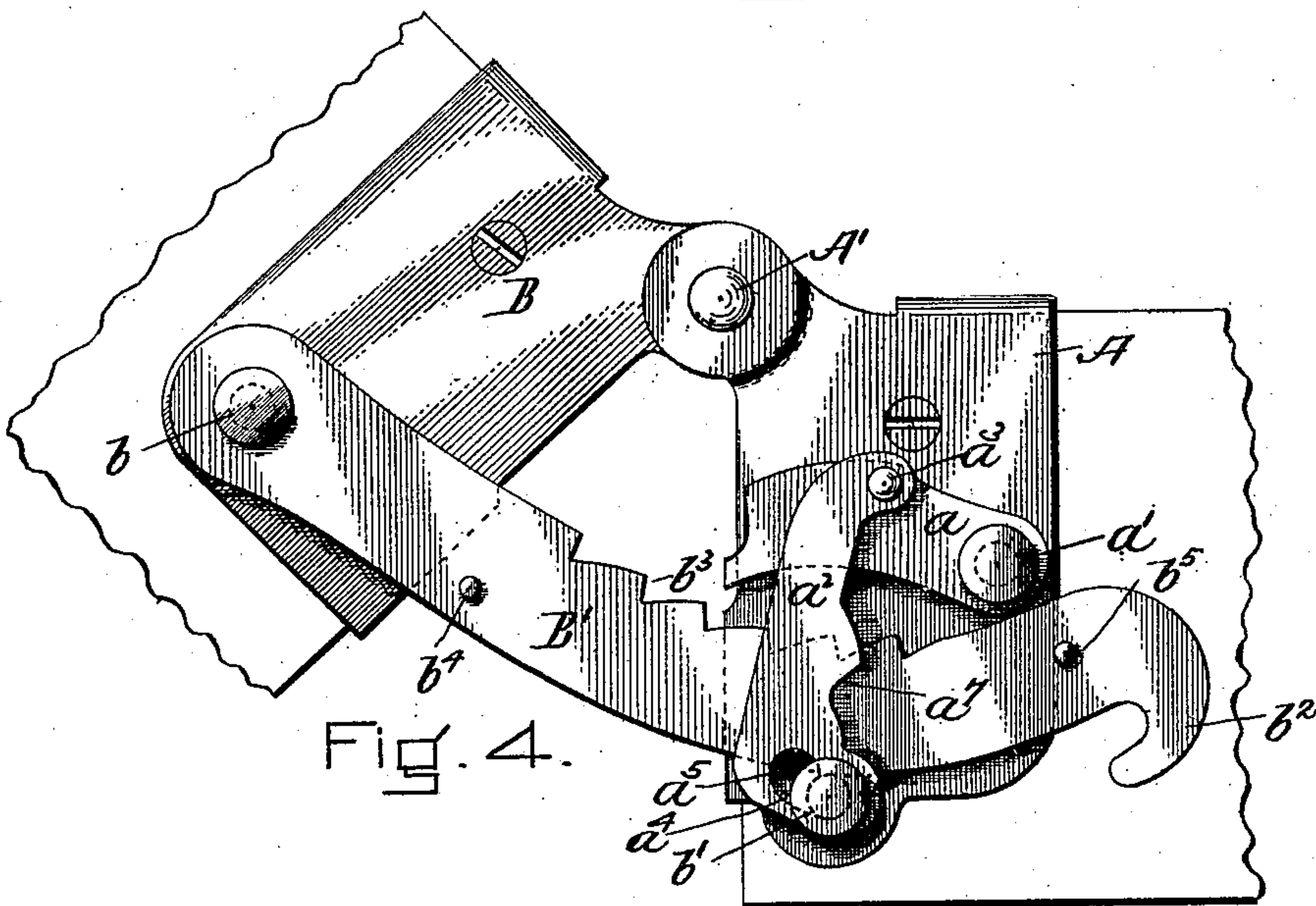


Fig. 4.

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UNITED STATES PATENT OFFICE.

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HINGE.

SPECIFICATION forming part of Letters Patent No. 711,715, dated October 21, 1902.

Application filed March 5, 1902. Serial No. 96,789. (No model.)

To all whom it may concern:

Be it known that I, AMBROSE B. CLARK, a citizen of the United States, residing at Meriden, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Hinges, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

My invention relates to an improvement in hinges whereby the movable member to which one leaf of the hinge is secured may be locked or held in a predetermined angular relation to a fixed or stationary member to which the other leaf of the hinge is attached, and it is preferably used in couches or chairs which have an adjustable head or back, to which it is especially applicable as furnishing a means of graduated support.

I will now describe the invention in conjunction with the drawings forming a part of this specification, in which the device is shown in conjunction with a couch-hinge. The several views are in elevation and show the different positions assumed by the device during the adjustment of the movable leaf or member.

Figure 1 represents its position preparatory to the elevation of the movable leaf or member. Fig. 2 represents the position assumed during the elevation of the movable leaf or member. Fig. 3 represents its position preparatory to the lowering of the movable leaf or member. Fig. 4 represents its position during the lowering of the movable leaf or member.

In the drawings, A represents the stationary member or leaf of the hinge, B the movable member or leaf, pivotal connection being made at the point A', and in this connection it is to be observed that I use the words "member" and "leaf" interchangeably, for the respective members may be made in the form of a hinge, preferably as constructed in the drawings, when they may be conveniently fastened to corresponding members, between which they make a movable connection.

Pivoted to the face of the movable leaf or member and preferably at the point b is the

adjusting-arm B'. The arm extends across the faces of the two leaves or members and bears along its under edge against a stud b', extending from the face of the stationary member. This stud b' acts as a means of support for the arm B', so that as the movable member is raised or lowered the adjusting-arm, correspondingly thrust in or drawn out, will simply wear along its under edge against this stud and sliding in a single path of direction will be held relatively to the fixed leaf or member in but one position.

The adjusting-arm B' terminates in a hook b². After the movable leaf or member has been raised to the limit of desired elevation and the adjusting-arm correspondingly withdrawn this hook b² comes in contact with the stud b', preventing further upward movement of the movable leaf or member and further withdrawal of the adjusting-arm. Thus the bearing of the lower edge of the arm against the stud b' is continually retained.

Into the upper edge of the adjusting-arm are cut a series of notched teeth b³. These teeth are cut at distances corresponding relatively with the positions in which it is desired that the movable member be retained or supported. As a means for locking against these notched teeth, and so for retaining the arm B' in adjusted position, I have shown the pawl a pivoted to the face of the fixed member by the pin a'. The normal bearing of the pawl is against the upper edge of the adjusting-arm, and so one of locking engagement with the teeth b³, and in this connection it is to be observed that the teeth b³ are so cut along their edges that it is only upon an inward movement of the adjusting-arm that engagement can be made between teeth and pawl, the movable member can be raised, and the arm B' freely withdrawn until the hook b² prevents further movement. The pawl being pivoted is capable of being thrown into disengagement with the notched edge of the adjusting-arm. For this purpose I have shown the lifting-bar a² pivoted to the pawl at the point a³. The bar extends downward across the face of the adjusting-arm, and for obtaining its adjustment I have cut in its lower end an angular opening a⁴, having con-

current sections $a^5 a^6$, the one vertical, the other horizontal. The opening a^4 receives the outer end of the stud b' , which preferably is the same lug or stud which supports the adjusting-arm. The stud b' plays into the two sectional openings a^5 and a^6 , depending upon the different relative positions of the lifting-bar. If the lifting-bar is so moved that the stud b' enters section a^6 , then the lifting-arm will be raised and the pawl thrown into a position of disengagement. If the lifting-bar be released from its bearing upon the stud b' , then its section a^5 receives the stud, the lifting-bar simply falls, and the pawl resumes its locking engagement.

It is necessary that the lifting-bar be manipulated into the different positions relatively to the stud b' and the pawl raised or let fall, depending as the movable member be raised or lowered, and the adjusting-arm thrown in or drawn out, for as the movable member is raised it is necessary that the pawl should be in position to make an automatic locking engagement with any one of the several notched teeth of the adjusting-arm that the movable member may be held in any adjusted position, while, on the other hand, when the movable member is lowered the pawl must occupy a position of disengagement. For obtaining this adjustment of the pawl I have employed the lugs b^4 and b^5 . The lug b^4 occupies a position beyond the first of the row of teeth, so that when the leaf or movable member is closed down, as may be seen by a reference to Fig. 1, the lug b^4 will be brought into contact with the outer edge of the lifting-bar a^2 , which being thrown forward by the contact the stud b' will then enter the section a^5 . This releases all stress upon the lifting-bar. It simply falls, and the pawl a is brought to its normal bearing against the upper edge of the adjusting-arm preparatory to making a locking engagement with any of its teeth as the arm is drawn out. The lug a^5 , on the other hand, is placed beyond the outer end of the row of teeth, so that after the movable member has been raised to the limit of desired elevation and the adjusting-arm correspondingly drawn out the lug will be brought to bear against the inner edge of the lifting-bar, raising it, and consequently disengaging the pawl. For facilitating this manipulation of the lifting-bar I have beveled its edge at the point a^7 , so that upon contact of the interfering lug b^5 the bar practically raises itself by the wear of the lug against its beveled edge. The lug b^5 not only raises the lifting-bar, disengaging the pawl, but it also throws it backward, and the stud b' is received into the section a^6 , which holds the lifting-bar in its elevated position until released. Thus the pawl is not only disengaged, but is held in a position of disengagement during the approach of the members.

The operation of my invention is as follows: Assume the leaf or movable member to be in the position shown in Fig. 1, which corre-

sponds with the fold of the leaf or the lowest position of the movable member. It is now in position preparatory to being raised. The adjusting-arm B' simply rests, supported along its under edge by the stud b' . The pawl a is in engagement with the upper edge of the adjusting-arm, ready to make engagement with any of its notched teeth. The lifting member a^2 exerts no stress upon the pawl, for it has been freed by contact of the lug b^4 into an inoperative position in that the stud b' rests within the longitudinal section a^5 , which corresponds with the inoperative position of the lifting-bar. The movable member is now raised. By this movement the adjusting-arm is drawn out, sliding along its under edge against the stud b' . The pawl alternately engages with and rides over the teeth b^3 to the point of desired adjustment, when it is evident, by reference to Fig. 2, that the locking engagement of the pawl firmly holds the movable member in elevated position. The elevation of the movable member is now continued until by the withdrawal of the adjusting-arm the pawl has cleared the last of its notched teeth, and further movement is prevented by the interfering hook b^2 . (See Fig. 3.) The pawl is now shown in a position of disengagement, brought about by contact of the lug b^5 with the beveled edges of the lifting-bar, and not only is the pawl disengaged by this contact, but it is held in a position of disengagement by the stud b' , resting in section a^6 of the angular opening, for the lifting-bar was thrown back simultaneously with its elevation that it might be retained in elevated position by resting upon the stud b' . Thus the pawl is not only raised to disengaged position, but by the bearing of the lifting-bar upon the stud b' is held in a disengaged position. This disengagement of the pawl continues during the entire lowering of the movable member (see Fig. 4) or until the lifting-bar is thrown forward and released from its bearing upon the lug b' by contact of the lug b^4 , when it resumes its normal bearing of engagement. (Shown in Fig. 1.)

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The combination of a stationary member, a hinged or other movable member attached thereto, an adjusting-arm pivoted to the movable member for its support and graduated retention having any number of teeth along its upper edge, a stud affixed to the stationary member against which the said arm may rest for a sliding inward-and-outward movement, a hooked end to said arm for engagement with said stud, a pawl for making engagement with the teeth to said arm, and means for adjusting the pawl substantially as described.

2. The combination of a stationary member, a hinged or other movable member attached thereto, an adjusting-arm pivoted to the movable member for its support and grad-

uated retention, having any number of teeth along its upper edge, a stud affixed to the stationary member against which said arm may slide along its under edge and be supported, a pawl for engagement with said teeth, and means for its adjustment that upon the approach of the movable member to the stationary member it may be raised to, and held in a position of disengagement.

3. The combination of a stationary member, a hinged or other movable member attached thereto, an adjusting-arm pivoted to the movable member for its support and graduated retention having any number of teeth along its upper edge, a stud projecting from the stationary member against which the said arm may rest along its lower edge and be supported, a pawl for engagement with the said teeth of the adjusting-arm, a lifting-bar for disengaging the pawl, and means for the manipulation of said lifting-bar that it may hold the said pawl in a position of disengagement during the approach of the movable to the stationary member.

4. The combination of a stationary member, a hinged or other movable member attached thereto, an adjusting-arm pivoted to the movable member for its support and graduated retention having any number of teeth along its upper edge, a stud projecting from the stationary member against which the said arm may rest along its lower edge and be supported, a pawl for engagement with the said teeth of the adjusting-arm, a lifting-bar for disengaging the pawl, means for manipulating the lifting-bar that it may hold the said pawl in a position of disengagement during the approach of the movable to the stationary member, and means for then effecting the release of said pawl that it may resume its normal bearing substantially as described.

5. The combination of a stationary member, a hinged or other movable member attached thereto, a sliding arm pivoted to the movable member for its support and graduated retention, and having any number of teeth along its upper edge, a stud projecting from the stationary member against which the said arm may rest and be supported, a pawl normally engaging with the teeth to the said sliding arm, a lifting-bar pivoted to the pawl at one end and having an angular opening adapted to receive the stud aforesaid, and comprising two concurrent sections one of which is adapted to receive the said stud and so hold the said arm in an elevated position

and so the pawl in a disengaged position, the other of which permits of the arm's release and so the return of the pawl to its normal engaging position, and means for manipulating the said arm that within the angular opening it may play upon the stud aforesaid and so raise or release the pawl depending upon the movement of the movable members substantially as described.

6. The combination of a stationary member, a hinged or other movable member attached thereto, a sliding arm pivoted to the movable member for its support and graduated retention, and having any number of teeth along its upper edge, a stud projecting from the stationary member against which the said arm may rest and be supported, a pawl normally engaging with the teeth to the said sliding arm, a lifting-bar pivoted to the pawl at one end and having an angular opening adapted to receive the stud aforesaid, and comprising two concurrent sections one of which is adapted to receive the said stud and so hold the said arm in an elevated position and so the pawl in a disengaged position, the other of which permits of the arm's release and so the return of the pawl to its normal engaging position, and lugs movable with the sliding arm for manipulating the said lifting-arm that the said stud may be brought into the openings aforesaid, and correspondingly retaining the said pawl in disengaged position during the approach of the movable to the fixed member, or releasing the same to its normal engaging position, as the movable member is raised.

7. The combination of a stationary member, a hinged or other movable member attached thereto, a sliding arm pivoted to the movable member, having any number of teeth along its upper edge and a hook at its inner end, a stud projecting from the stationary member against which the said arm may rest and be supported, a pawl normally engaging with the teeth to said sliding arm, a lifting-bar pivoted to the pawl having the beveled edge a^7 and angular recess a^4 adapted to receive the headed end of the stud aforesaid, and the lugs b^4 , b^5 adapted to engage with the said lifting-bar as and for the purposes set forth.

AMBROSE B. CLARK.

In presence of—

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CHAS. N. FOSTER.