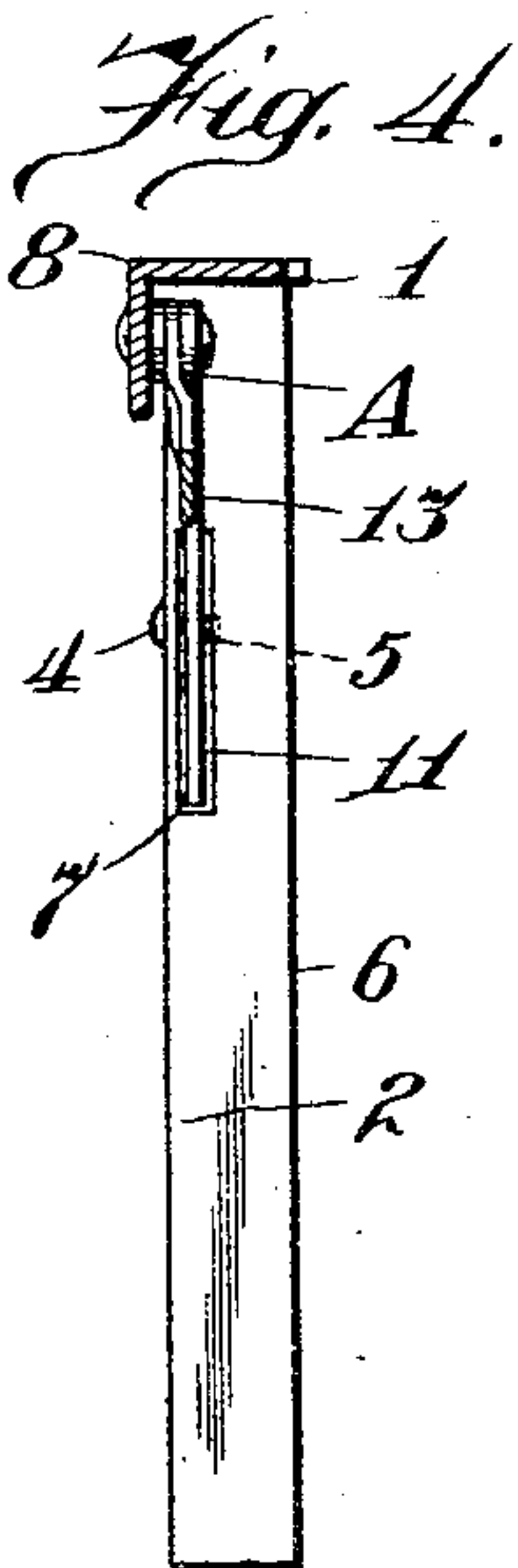
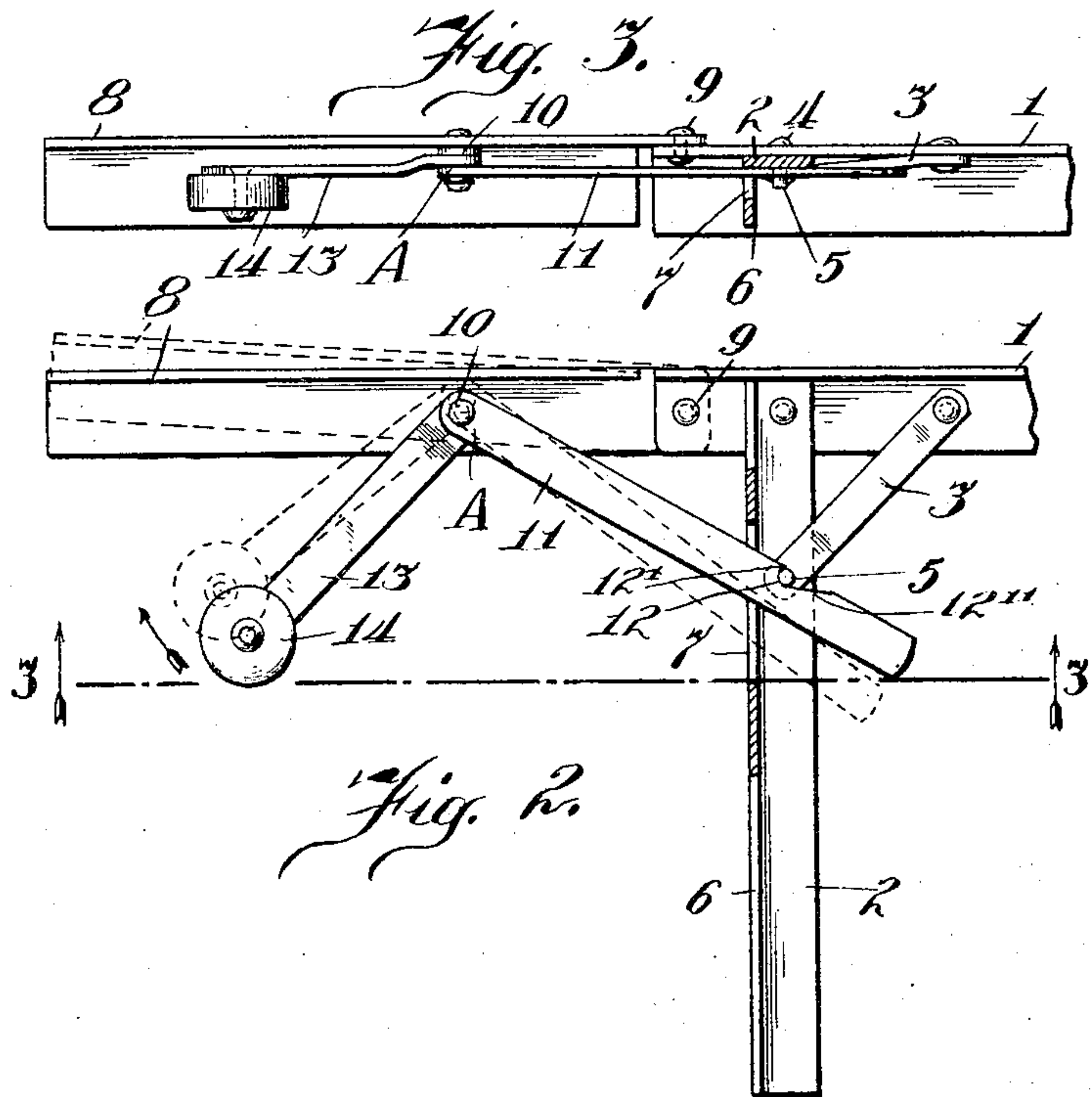
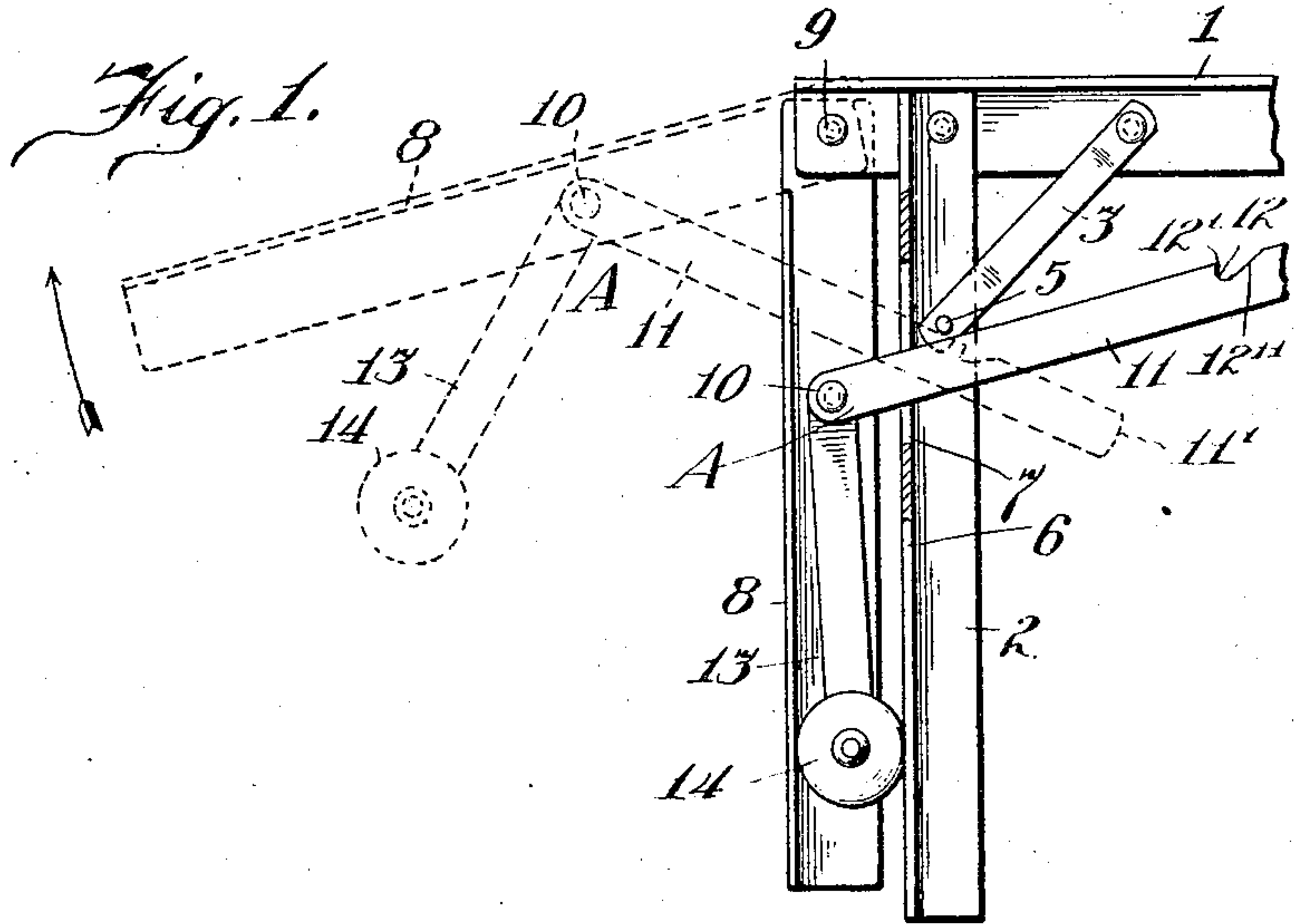


H. W. HENNEBERG.
 LOCKING MECHANISM FOR FOLDING COUCHES.
 APPLICATION FILED MAY 13, 1910.

969,104.

Patented Aug. 30, 1910.



Witnesses
 Milton Lenoir
 E. S. Sugrue

Inventor,
 Henry W. Henneberg.
 By Offield Cowle & Offield,
 Attorneys.

UNITED STATES PATENT OFFICE.

HENRY W. HENNEBERG, OF CHICAGO, ILLINOIS.

LOCKING MECHANISM FOR FOLDING COUCHES.

969,104.

Specification of Letters Patent.

Patented Aug. 30, 1910.

Application filed May 13, 1910. Serial No. 561,045.

To all whom it may concern:

Be it known that I, HENRY W. HENNEBERG, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Locking Mechanism for Folding Couches, (Case A,) of which the following is a full, clear, and precise specification.

My invention relates to improved lock or latch mechanism for swinging leaves of couches, beds, or the like.

In some prior devices of this kind latch arms are pivoted at their extreme outer ends to the leaves and extend inwardly through slots in the posts of the couch or bed body to cooperate with locking edges to lock the leaves in horizontal position, and to drop the leaves to their vertical position they are first raised a distance and then given a sudden downward impetus to cause the inertia acquired by the latch arms to carry the latch arms clear of the locking edges so that the leaves can be completely dropped. In other prior arrangements additional supports are provided for temporarily holding the latch arms clear of the locking plane, whereupon the leaves are first given a sudden impetus so that the inertia acquired by the locking arms will maintain them clear of locking engagement for a sufficient length of time to allow lowering of the leaves. In all these prior arrangements, however, the entire weight of the latch bars or arms must be overcome during the impetus of movement of the leaves, and the operation is not always reliable.

Among the important objects of my invention are to provide a construction of locking or latching mechanism in which the locking or latch arms are pivoted quite close to their center of gravity so that the arms will be more evenly balanced and so that less effort will be required to effect the automatic release of the locking or latching engagement, at the same time assuring perfect and reliable latching engagement to properly hold the leaves rigidly in their raised position; to provide an arrangement which will not require additional mechanism for cooperating with the latch arms to effect their release or locking engagement; and in general to provide a more simplified and more efficient construction and arrangement of latching mechanism.

The nature of my invention is clearly disclosed in the following specification and shown on the accompanying drawing, in which drawing—

Figure 1 is an elevation view of one corner of a metallic couch showing a leaf in various positions, and part of the couch supporting post being cut away, Fig. 2 is a similar view, showing the leaf and latch arm in other positions, Fig. 3 is a sectional view taken on plane 3—3, Fig. 2, and Fig. 4 is a view looking from the leaf of Fig. 2, part of the outer end of the latch arm being cut away.

The couch shown is of well-known construction, whose end frames each comprise a top bar 1 and legs or posts 2, one of which is here shown, the top bar and legs being of angle iron. Each corner between the top bar and post is strengthened by a corner strap 3 in which the rivet 4 connecting the strap with the post is extended inwardly to form a locking or latch pin 5. Adjacent this latch pin the longitudinal flange 6 of the post has the vertical slot 7. Each leaf comprises side bars 8 of angle iron pivoted at their inner ends 9 to the outer ends of the top bars 1 at a point outside of the adjacent posts 2. Each side member of the leaf has pivoted thereto at an intermediate point 10 a latch member A. The pivoted engagement of this latch member is at a point near its center of gravity. A preferred construction is to have this member in the form of a bell crank lever pivoted at its elbow, whose inner arm 11 in its upper edge has a locking pocket 12 for cooperating with the latch pin 5, and whose outer arm 13 is heavier than the arm 11. As the distance between the pivot point 10 and the outer end of the leaf members 8 is more or less limited, the arm 13 is preferably provided with a weight 14 so that the center of gravity of the lever A is outside of its pivot plane, the tendency being then for the inner arm 11 to bear always upwardly against the latch pin 5. The latch pocket 12 has the abrupt locking point 12' and the gradual entrance surface 12''. The position of the locking pocket is such that when the leaf is at its permanent upper position or horizontal position, as shown in Fig. 2, the latch pin will be in locking engagement in the pocket, this engagement being maintained by the weighted end of the latch

lever. The inner end 11' of the arm 11 is of sufficient extent to prevent this arm from leaving the slot 7 at any time.

The operation of the latching mechanism is as follows: In Fig. 1 the full lines show the leaf in its lower position, the arm 13 being in a substantially vertical position between the leaf and the post 2, and the arm 11 extending diagonally upwardly. To open the leaf it is raised up in the natural manner and a sufficient distance beyond the horizontal or permanent outer position to carry the locking point 12' clear of the latch pin, whereupon the arm 11 swings upwardly to carry the entrance surface 12'' against the latch pin so that when the leaf is then dropped to its permanent upper position the pocket 12 receives the latch pin and the leaf will be held in its permanent upper position. The dotted lines in Fig. 1 show an intermediate upper position of the parts just before the pocket reaches the latch pin. If it is now desired to restore the leaf to its lower or closed position the leaf is raised slightly in a normal manner until the point 12' is carried clear of the latch pin, whereupon a light, sudden, downward impulse is given the leaf. Owing to its inertia, the weighted arm 13 of the lever A will not move in synchronism with the leaf during such sudden downward impulse thereof, the result being that the latch pocket will be carried below and clear of the latch pin before the movement of the weighted arm has time to catch up with the sudden movement of the leaf, and after such clearance of the latch pin by the latch pocket the leaf can be dropped normally to its lowered position. To assure unlatching engagement when the leaf is to be dropped the leaf can be first given a sudden upward impulse and then immediately a sudden downward impulse, the sudden impulse being communicated to the latch lever to swing the arm 11 downwardly to carry the latch pocket a considerable distance away from the latch pin, whereupon during the sudden downward impulse the inertia effect of the weighted arm 13 will be prolonged, and the locking pocket carried safely downwardly beyond the latching pin during this downward impulse of the leaves. The dotted lines in Fig. 2 show the position of the leaf after a sudden upward impulse and the corresponding position of the lever A with its arm 11 well below the latch pin.

In my arrangement, therefore, on account of the more balanced pivotal suspension of the latch lever, very little exertion is required to effect unlatching, while at the same time the most efficient latching conditions are maintained to securely lock the leaves in their upper positions.

I do not desire to be limited to the precise construction and arrangement herein shown,

as changes and modifications are possible which would still be included in my invention, and I therefore claim the following:

1. In combination, a standard, a vertical slot in said standard, a locking pin on said standard to the rear of and adjacent said slot, an arm swingingly hinged adjacent the upper end of said standard, and a latch bar pivoted at an intermediate point to said arm, the part of said bar to the rear of its pivotal connection extending rearwardly through said slot and below said latch pin, and the part of said bar in front of its pivotal connection being heavier than the rearwardly extending part whereby said bar has a tendency to hold the upper edge of the rearwardly extending part against said pin, and said rearwardly extending part having a locking pocket in its upper edge for receiving said latch pin when the arm is in a raised position, a slight swing of said arm beyond its normal upper position serving to move the locking pocket in front of and clear of said latch pin whereupon a sudden downward movement of said arm below its normal upper position will cause downward movement of the locking pocket past the latch pin without effecting swing of said locking bar during such downward impulse.

2. In combination, a standard, a vertical slot in said standard, a latch pin on said standard to the rear of said slot and adjacent thereto, an arm swingingly pivoted adjacent the top of said standard and said slot and adapted to assume a lowered position and an upper position at substantially right angles to the standard, and a bar pivoted at an intermediate point to an intermediate point of said arm, the center of gravity of said bar being at the outside of its pivot plane, the inner end of said arm extending through said slot and below said latch pin and provided in its top edge with a latch pocket for receiving said latch pin when the arm is in its upper position, a sudden upward swing followed by a sudden downward swing of said arm beyond its normal upper position causing the bar to be rotated first out of latching engagement with the latch pin and then to a position below the latch pin with its upper edge in engagement with the latch pin at a point in front of the latching pocket.

3. In combination, a standard having a vertical slot cut through a wall thereof, a latch pin adjacent said slot, an arm pivoted adjacent the upper end of said standard and adapted to assume a down position substantially against said standard and an up position substantially at right angles with said standard, a bell crank lever pivoted on its elbow at an intermediate point of said arm, the inner arm of said lever extending rear-

wardly through said slot and below said latch pin, the outer arm of said lever being heavier than said inner arm whereby the lever has a tendency to swing to carry the upper edge of the inner arm against said latch pin, the upper edge of said inner arm having a pocket for receiving the latch pin when the arm is in its up position to thereby lock said arm in its up position, upward swing of the arm a short distance beyond its normal up position causing the locking pocket to be carried forwardly vertically clear of said latch pin, and a sudden downward swing then of said arm below its normal up position causing said pocket to be carried vertically downwardly below the latch pin against the inertia of said lever.

4. In combination, a standard, a latch extension on said standard, an arm pivoted to said standard above said latch extension and adapted to swing toward said standard and away therefrom, and a latch bar pivoted near its center of gravity to said arm at an intermediate point of said arm, the inner end of said latch bar being adapted to cooperate with said latch extension to lock the arm in a normal upper position.

5. In combination, a standard, a latch extension on said standard, an arm pivoted to said standard above said latch extension and adapted to swing toward said standard and away therefrom, and a latch bar pivoted near its center of gravity to said arm at an intermediate point of said arm, the inner end of said latch bar being adapted to cooperate with said latch extension to lock the arm in a normal upper position, and said latch bar being adapted to automatically unlatch from said extension upon first a slight upward swing of said arm above its normal up position and then a sudden downward swing of said arm below its normal up position.

6. In a folding couch, the combination of end frames each comprising a top bar and supporting standards, a longitudinal leaf at one side of the couch having end bars pivoted at their inner ends to the adjacent ends of the top bars, each of said standards adjacent said leaf having a latch abutment near the top thereof, a latch bar pivoted near its center of gravity to each of the side bars of the leaf to be only slightly overbalanced, the inner ends of said latch bars having latching engagement with the latch abutments when said leaf is in a normal upper position.

7. In a folding couch, the combination of end frames each comprising a top bar and supporting standards, a longitudinal leaf at one side of the couch having end bars pivoted at their inner ends to the adjacent ends of the top bars, each of said standards adjacent said leaf having a latch abutment

near the top thereof, and a latch bar pivoted near its center of gravity to each of the side bars of the leaf to be only slightly overbalanced, the inner ends of said latch bars having latching engagement with the latch abutments when said leaf is in a normal upper position, a slight upward swing of the leaf beyond its normal upper position and then a downward swing of said leaf below its normal upper position automatically causing first unlatching of the latch bar and latch abutment and then movement of said latch bar out of latching range.

8. In a folding couch, the combination of end frames each comprising a top bar and supporting standards near the ends thereof, a leaf comprising side members pivoted at their ends to the adjacent ends of said top bars, each standard adjacent said leaf having a latching abutment near its upper end, a bell crank latch bar for each leaf side bar pivoted at its elbow thereto at an intermediate point, the inner arms of said bell crank latch bars being adapted for latching engagement with the latching abutments when said leaf is in a normal upper position to lock said leaf in said normal upper position, the other arms of the bell crank latch bars being heavier than the inner arms and tending to hold said inner arms in such latching engagement.

9. In a folding couch, the combination of end frames each comprising a top bar and supporting standards near the ends thereof, a leaf comprising side members pivoted at their ends to the adjacent ends of said top bars, each standard adjacent said leaf having a latching abutment near its upper end, a bell crank latch bar for each leaf side bar pivoted at its elbow thereto at an intermediate point, the inner arms of said bell crank latch bars being adapted for latching engagement with the latching abutments when said leaf is in a normal upper position to lock said leaf in said normal upper position, the other arms of the bell crank latch bars being heavier than the inner arms and tending to hold said inner arms in such latching engagement, a slight upward swing of the leaf beyond its normal upper position followed by a sudden downward swing of said leaf below its normal upper position causing first unlatching engagement between said inner arms and latch abutments and then bodily downward movement of said latch bars below latching range.

10. In a folding couch, the combination of end frames each comprising a top bar and supporting standards near the ends thereof, a leaf comprising side members pivoted at their ends to the adjacent ends of said top bars, each standard adjacent said leaf having a latching abutment near its upper end, a bell crank latch bar for each leaf side bar

pivoted at its elbow thereto at an intermediate point, the inner arms of said bell crank latch bars being adapted for latching engagement with the latching abutments
5 when said leaf is in a normal upper position to lock said leaf in said normal upper position, the other arms of the bell crank latch bars being heavier than the inner arms and tending to hold said inner arms in such
10 latching engagement, each standard having

a vertical guide slot through which the corresponding inner arm of the latch bar passes.

In witness hereof, I hereunto subscribe my name this 7th day of May, A. D., 1910. 15

HENRY W. HENNEBERG.

Witnesses:

E. G. INGERSOLL,

ALBERT H. GRAVES.