

W. McCONWAY, JR. & J. KELSO.
CAR COUPLING.
APPLICATION FILED MAR. 1, 1907.

913,230.

Patented Feb. 23, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

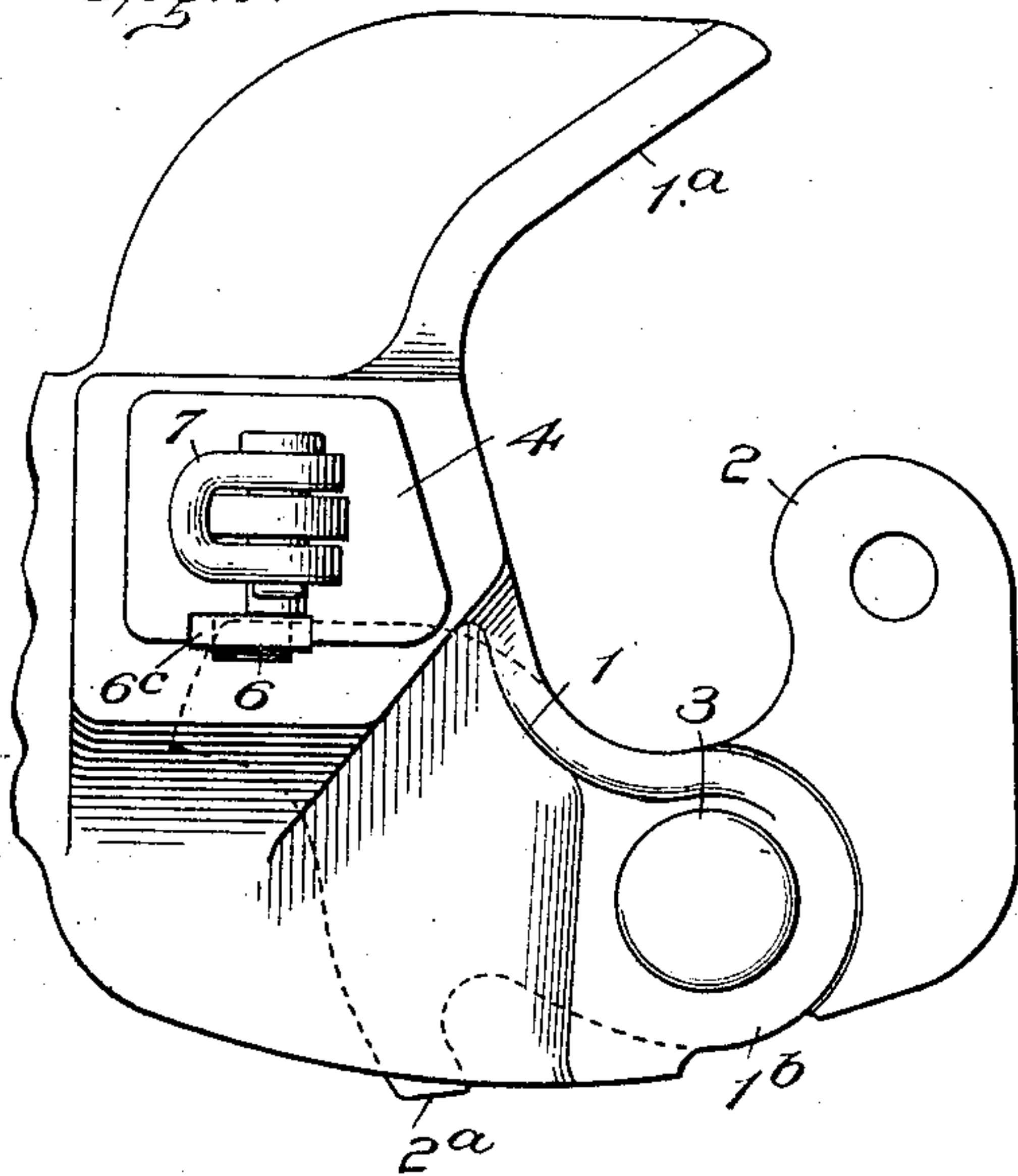


Fig. 2.

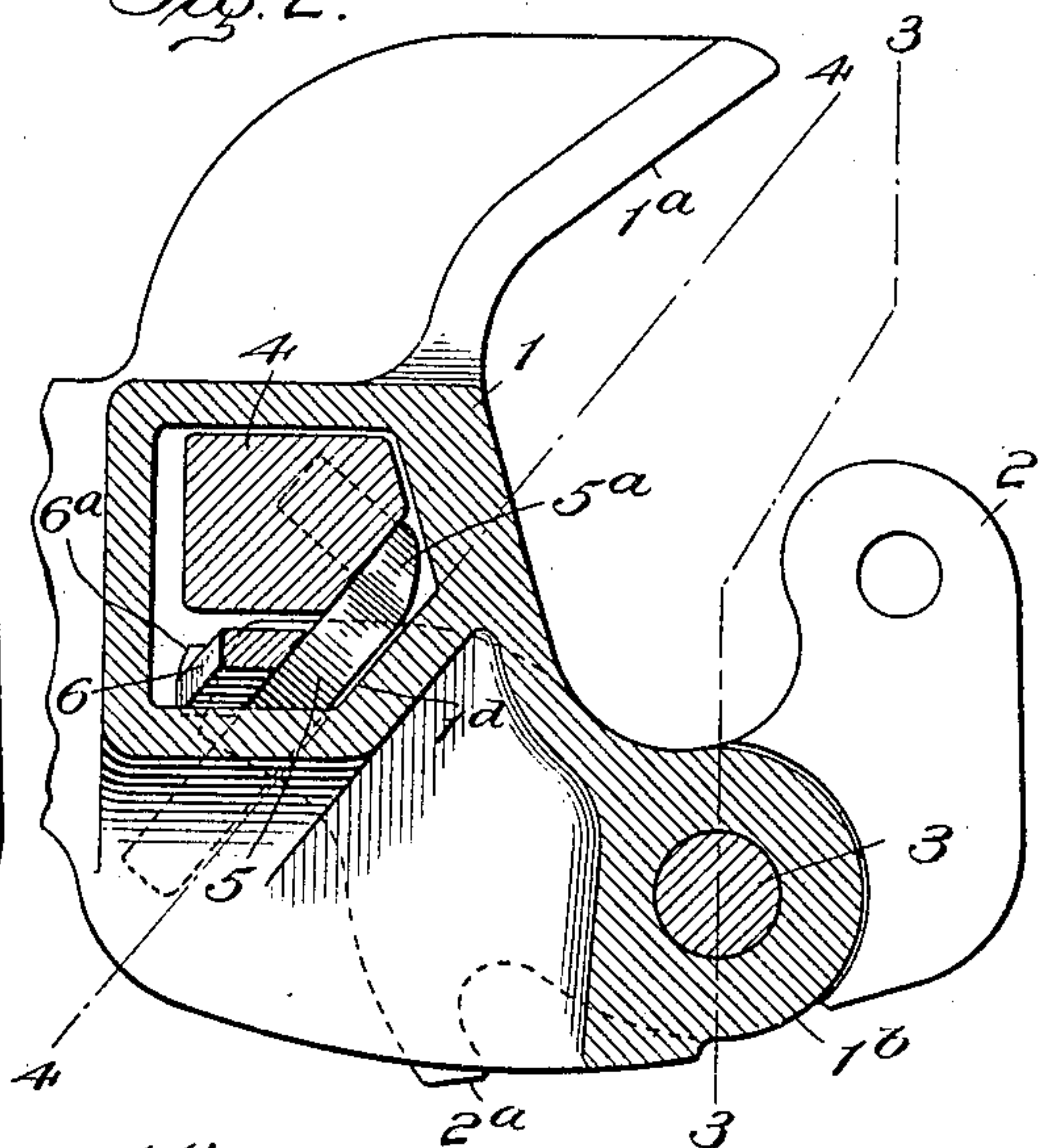


Fig. 10.

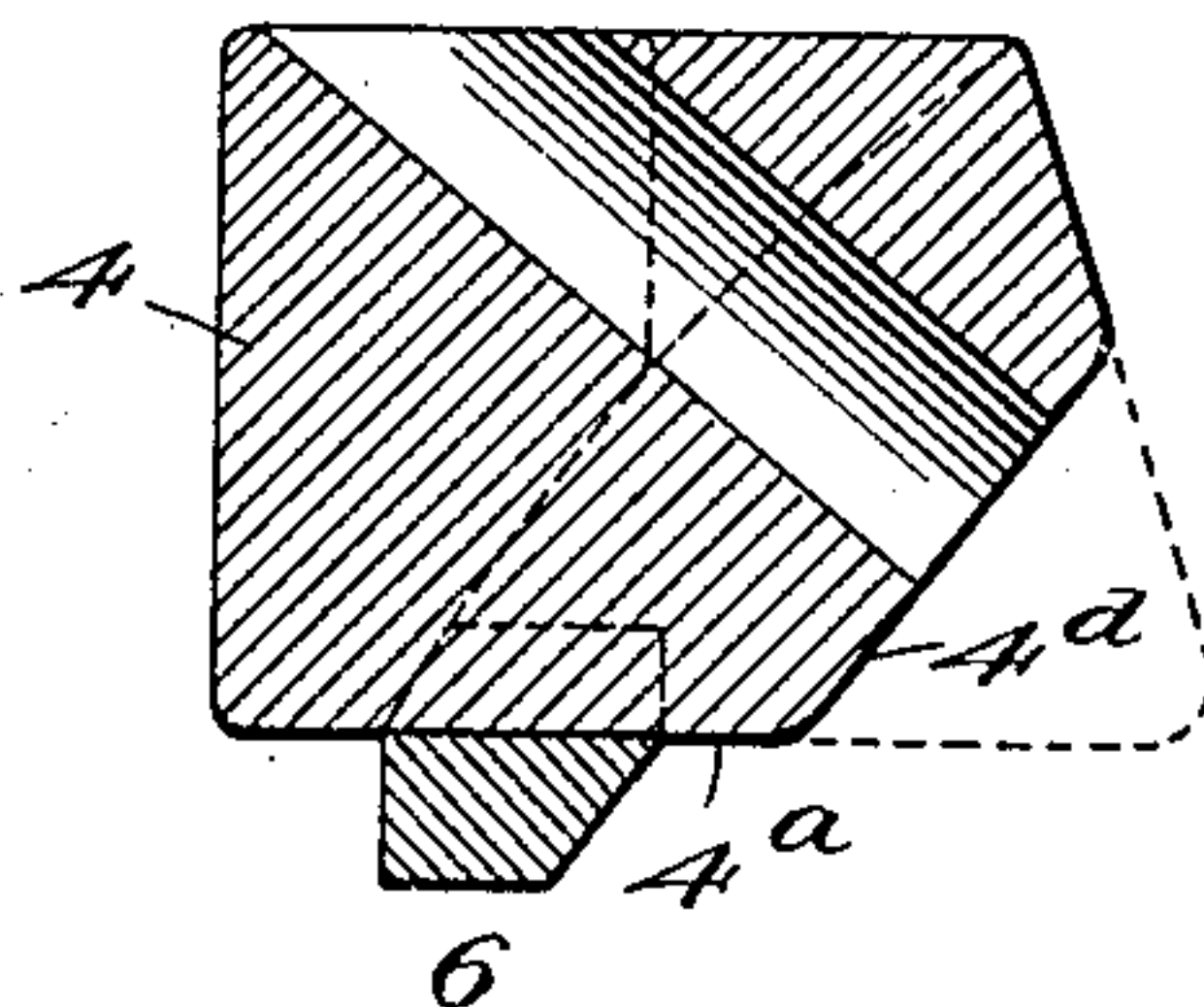


Fig. 3.

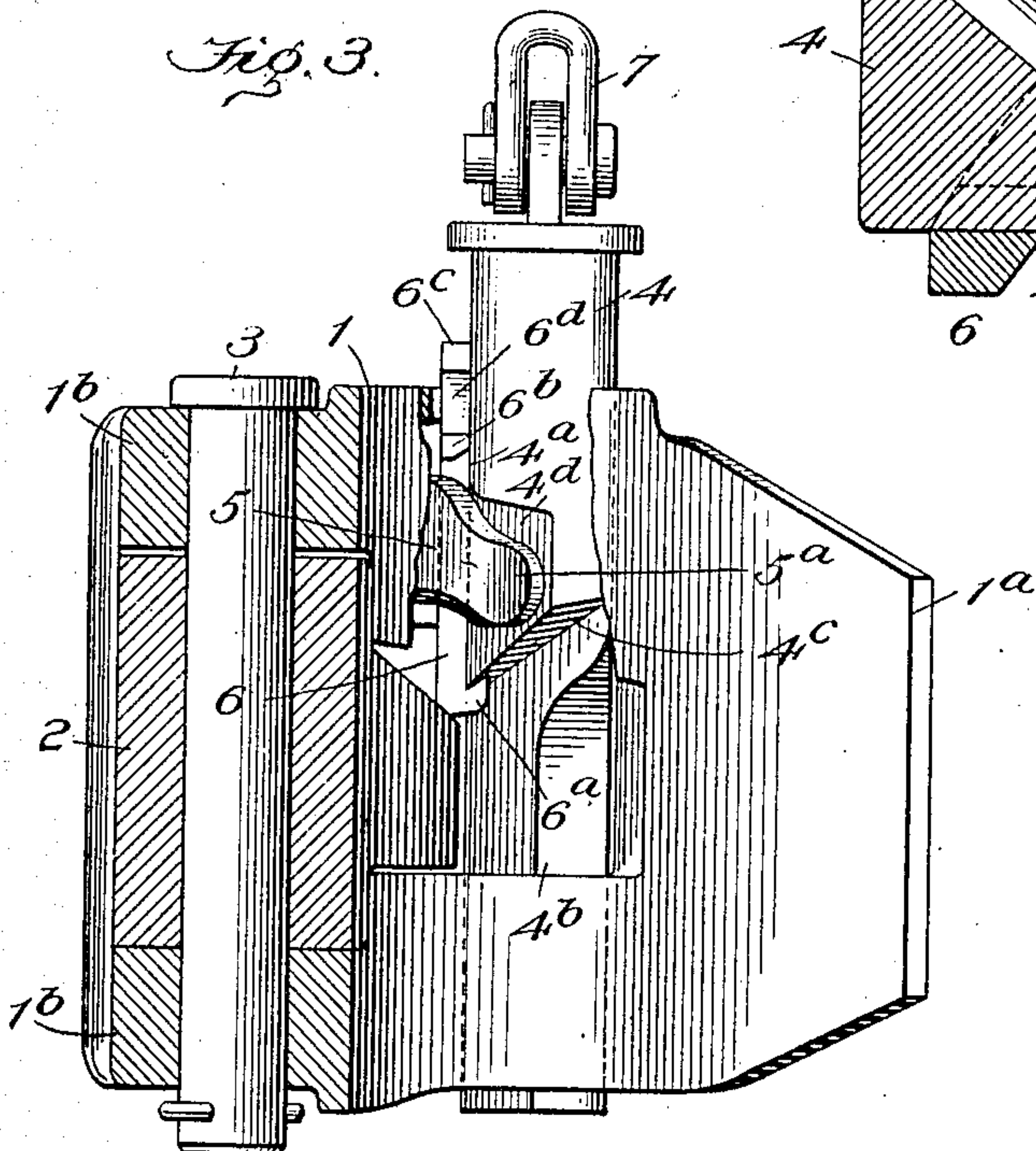
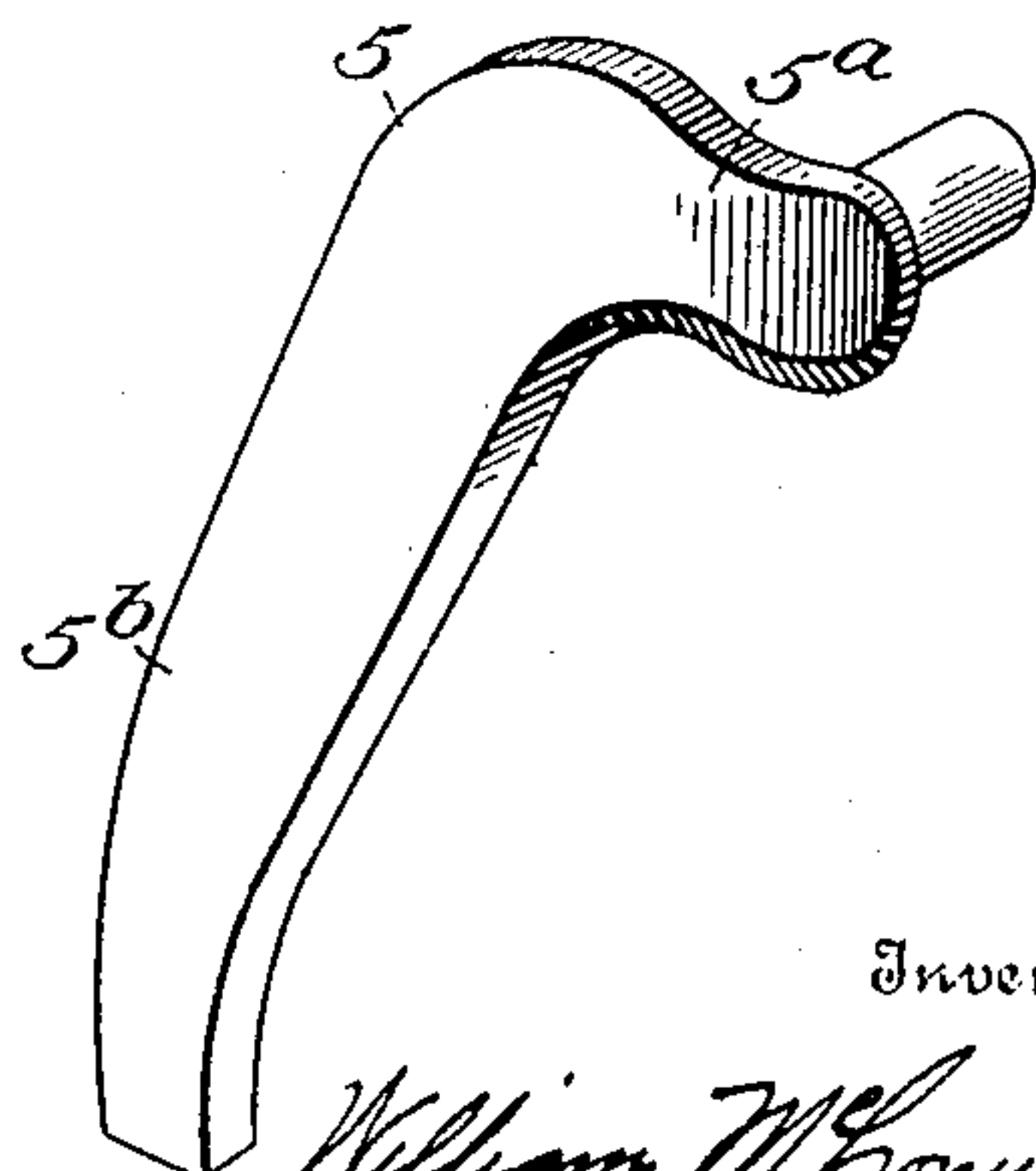


Fig. 11.



Witnesses
Edwin L. Bradford
[Signature]

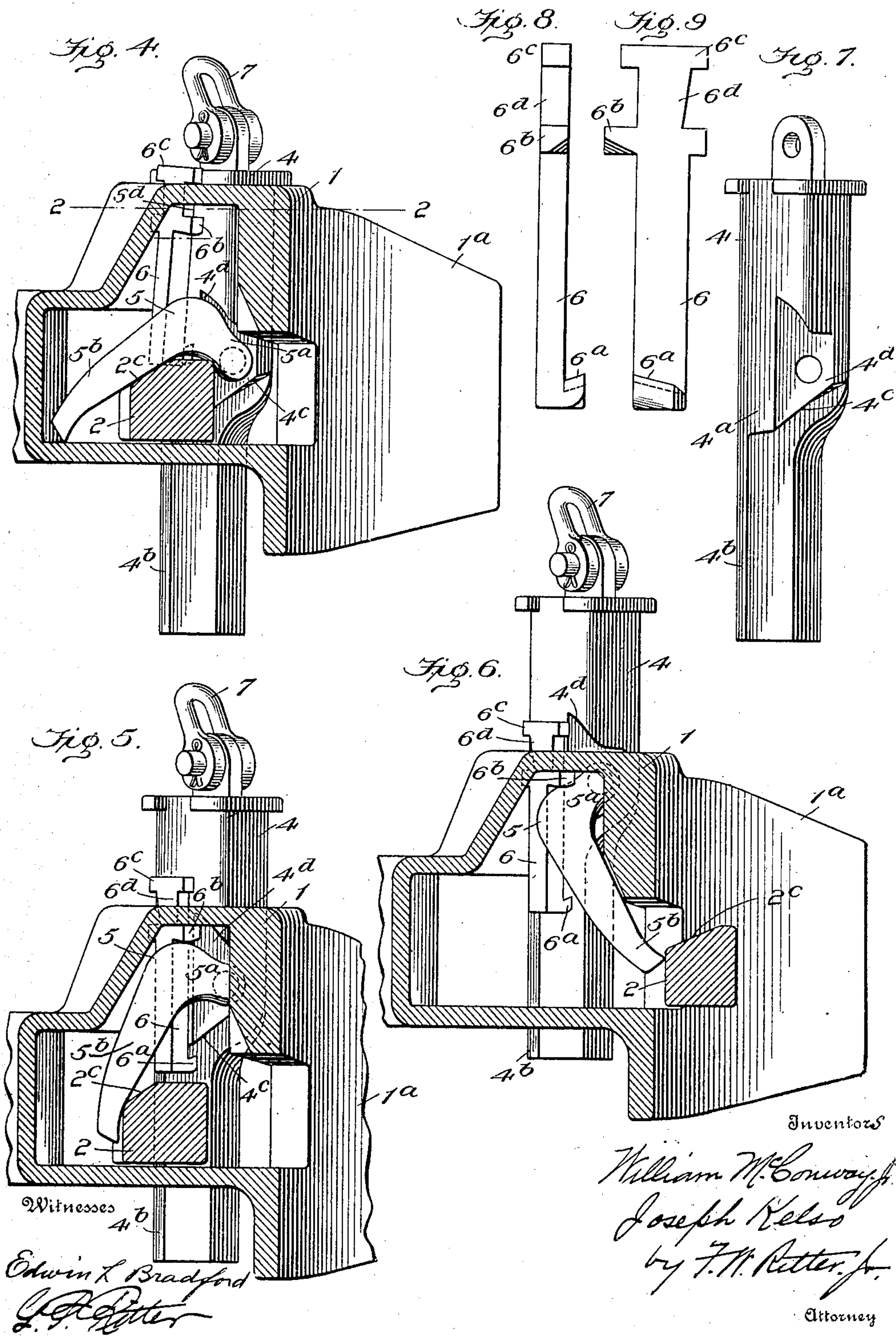
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

WILLIAM McCONWAY, JR., AND JOSEPH KELSO, OF PITTSBURG, PENNSYLVANIA, ASSIGNORS
TO THE McCONWAY & TORLEY COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

CAR-COUPLING.

No. 913,230.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed March 1, 1907. Serial No. 360,030.

To all whom it may concern:

Be it known that we, WILLIAM McCONWAY, JR., and JOSEPH KELSO, citizens of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Car-Couplings; and we 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.

This invention relates to the construction of car couplers of the vertical-plane or Master Car Builders' type, wherein are combined with a coupler-head a knuckle pivoted thereon and a lock for the pivoted knuckle, and is especially directed to certain features whereby the lock may be set and retained in a position for uncoupling without operating the knuckle, and whereby the knuckle may be subsequently opened by the operation of the lock.

The objects of the present invention are not only to simplify the lock-set member and render it positive in its operation, but also to so position the knuckle opening member that its path of travel may be at such an angle to the longitudinal axis of the coupler that force is applied to the knuckle in a direction substantially tangent to the arc of travel of the latter, whereby a substantially uniform leverage on the tail of the knuckle is obtained, friction is minimized and effective power for opening the knuckle is conserved.

To these ends the main feature of our invention embraces the combination with the coupler head and pivoted knuckle, of a locking member having a vertical movement, and a knuckle opening member pivoted on the locking member so as to move in a plane tangential to the arc described by the tail of the knuckle and to intersect the longitudinal axis of the coupler at an angle of less than ninety degrees.

A secondary feature of our invention embraces a swinging lock-set member so arranged as to be operative by gravity as well as by the direct engagement of the knuckle

opening member therewith, whereby the proper operation of the lock-set is at all times insured and a fulcrum for the knuckle opening member is also obtained.

There are other, minor, features of invention, involving elemental combinations, as well as particular features of elemental construction, all as will hereinafter more fully appear.

In the drawings chosen for the purpose of illustrating our invention, the scope whereof is pointed out in the claims, Figure 1 is a top plan view of one form of coupler embodying our invention, the parts being shown in a locked position; Fig. 2 is a horizontal section taken in the plane indicated by the line 2—2, Fig. 4; Fig. 3 is a vertical section taken in the plane indicated by the line 3—3, Fig. 2, the locking member being elevated and supported by the lock-set member, as when set for uncoupling; Fig. 4 is a vertical section taken in the plane indicated by the line 4—4, Fig. 2, the parts being shown in the locked position; Fig. 5 is a vertical section taken in the plane of the line 4—4, Fig. 2, the parts being in the position which they occupy when the lock is raised into position for causing the lock-set member to engage the locking member; Fig. 6 is a vertical section taken in the plane of the line 4—4, Fig. 2, the parts occupying the position they assume at the end of a knuckle opening operation; Fig. 7 is a detached view of the locking member; Fig. 8 is an edge view of the lock-set member; Fig. 9 is a side or face view of the lock-set member; Fig. 10 is an enlarged cross section of the lock-set, and of the locking member at the point of pivotal attachment of the knuckle opener; and Fig. 11 is an enlarged perspective view of the knuckle opening member.

Like symbols refer to like parts wherever they occur.

We will now proceed to describe our invention more fully, so that others skilled in the art to which it appertains may apply the same.

In the drawings, 1 indicates the coupler head which is provided with the usual guard arm 1^a and lugs or ears 1^b on which the knuckle

2 is pivoted in the usual or any approved manner. Said coupler head is provided in the present instance with suitable openings in its top and bottom walls for the passage of the vertically movable locking member 4, and also with an opening for the passage of the suspended lock-set member 6. It will be noted that the opening in the top wall of the coupler head through which the locking member passes has at the side adjacent to the knuckle a vertical wall 1^a arranged in a plane oblique to the longitudinal axis of the coupler, and the corresponding opening in the bottom wall of the coupler may be of like formation, for reasons which will hereinafter appear.

2 indicates the knuckle which is pivotally mounted on the coupler head by means of the knuckle pin 3 or in any other suitable manner. The tail of said knuckle may be provided on its rear lateral face with a hook 2^a which is adapted to enter a slot or recess in the side wall of the coupler head, or equivalent means may be provided to insure against the separation of the knuckle 2 from the coupler head in case of the fracture or displacement of the knuckle pin 3. The upper face of the tail of the knuckle 2 at its inner end may also be provided with a bevel or incline 2^c adapted to engage a correspondingly inclined shoulder 4^c on the locking member 4, thus insuring the vertical lifting of the pin upon the closing of the knuckle.

4 indicates the vertically movable locking member which preferably passes through and is guided by the top and bottom walls of the coupler head, and which is preferably located in or adjacent to the longitudinal axis of the coupler in such position as to intersect the path of the tail of the knuckle 2. This locking member 4 has a locking face or portion 4^a which engages the tail of the knuckle when the parts are in a locked position, and below the same the cross section of the member 4 is reduced so as to form an extension or guide portion 4^b which projects through the guide opening in the bottom wall of the coupler head. At a point adjacent to the locking face 4^a, and on the front side of the said lock-member, is an inclined shoulder 4^c which coacts with the bevel or incline 2^c on the tail of the knuckle to insure an automatic locking operation of the lock member when the tail of the knuckle swings inward in coupling.

Contiguous to the locking face 4^a of the locking member and directly above the inclined shoulder 4^c thereof, said locking member is provided with a pivot face 4^d for the knuckle opening member 5, which face, when the parts are assembled, lies in a plane oblique to the longitudinal axis of the coupler head and approximately tangential to the arc described by the tail of the knuckle.

The said face 4^d of the member 4 is pierced by a hole for the reception of the pivot pin of the knuckle opening member and is also extended above the pivotal opening therein so as to permit a free pivotal movement of the knuckle opening member 5. The face 4^d of the locking member and the wall 1^a of the coupler head insure the travel of the knuckle opening member 5 in a plane oblique to the longitudinal axis of the coupler-head and approximately tangential to the arc described by the tail of the knuckle.

5 indicates the knuckle opening member which is preferably formed as a bell crank lever the short or upper arm 5^a of which is pivotally connected to the locking member 4 in the plane of the face 4^d of the latter, while the long or lower arm 5^b extends downwardly back of the tail of the knuckle 2 and stands between the latter and the side wall of the coupler head when the parts are in a locked position.

Suspended from the coupler head beside the locking face 4^a of the locking member 4 is the lock-set member 6. This suspended lock set member 6 is provided at its lower end with an inclined projection or hook 6^a adapted to engage the shoulder formed by the intersection of the inclined shoulder 4^c of the locking member and the locking face 4^a. The upper end of said lock set member is provided with a lateral projection 6^b which is beveled on its under surface and with which the upper or short arm 5^a of the knuckle opening member 5 is adapted to engage when the locking member 4 is raised vertically. To support this lock-set member 6 on the coupler head adjacent to the locking member, and to permit it to vibrate freely into and out of engagement with the shoulder of the lock member, the said lock-set is provided with a head 6^c, between which and the projection 6^b is a tapering neck 6^d which rests in a suitable slot or recess formed in the top of the coupler head. The lock-member 4 is provided at its upper end with the usual clevis 7 for connecting it with the uncoupling lever.

The construction of the devices being substantially such as hereinbefore pointed out, their operation will be as follows: The several parts being in the locked position, as indicated in Figs. 1, 2 and 4 of the drawings, and it being desired to set the locking member for uncoupling, the said locking member 4 is moved vertically to cause the knuckle-opening member 5 to engage the beveled arm 6^b of the lock-set member 6 and lift the latter so that the hook 6^a thereof may swing clear of the tail of the knuckle 2 and assume a position under the shoulder at the lower end of the locking face 4^a, as illustrated in Fig. 5. Thereafter, when the upward pull upon the locking member 4 is released, the parts assume the position shown in Fig. 3, the

hook portion 6^a of the lock-set 6 resting upon the tail of the knuckle and supporting the said locking member 4.

It will be noted that the lock-set member 6 is so positioned in the coupler head that it normally tends to gravitate towards the locking-member 4, but is restrained from so doing by the tail of the knuckle 2. When, however, the said lock-set member is elevated by means of the knuckle-opening member 5, such lock-set member moves into engagement with the locking member 4, not only under the influence of gravity, but also positively through the coöperation of the knuckle opening member with the beveled projection 6^b of said lock-set.

If it is desired to relock the coupler without opening the knuckle this may be accomplished by a proper manipulation of the locking member 4 and the head 6^c of the lock-set, but if it is desired to open the knuckle the upward movement of the locking-member is continued, whereupon the projection 6^b will form a fulcrum for the knuckle opening member 5 with which the latter will have a rolling contact. The lower or long arm 5^b of the knuckle opening member will simultaneously move obliquely across the coupler head in a path approximately tangential to the arc described by the tail of the knuckle, thereby causing the latter to open outwardly to its full extent under a leverage substantially uniform throughout the entire opening movement, with but slight loss of power due to friction between the knuckle opening member and the tail of the knuckle. During the operation of the knuckle opening member the parts will pass successively from the position illustrated in Fig. 4 to that illustrated in Fig. 5, and finally to that illustrated in Fig. 6, after which, when the upward pull upon the locking member 4 is relaxed the lower end of the knuckle-opening member 5 will rest upon the bottom wall of the coupler head and thus support the locking-member 4 in a position for automatic coupling.

In coupling from the open position of the knuckle, the tail of the knuckle first forces back the knuckle opening member 5 until the locking member 4 is permitted to fall upon the tail of the knuckle, whereupon the incline 2^c of the tail piece of the knuckle engages the inclined shoulder 4^c of the locking member and lifts said locking member slightly to permit the inward passage of the tail of the knuckle. The coupling movement of the tail of the knuckle forces the lock set member 6 out of engagement with the locking member 4 and moves it backward so that it is again in position for setting the lock when desired.

Having thus described our invention what we claim and desire to secure by Letters Patent is:

1. In a car coupler, the combination with a coupler head, of a knuckle pivotally mounted thereon, a locking member for said knuckle, a lock-set member movable independently of said locking member, and a knuckle opening member actuated by the locking-member and arranged to move into engagement with the lock-set member, said knuckle-opening member and said locking-member being relatively movable.

2. In a car coupler, the combination with a coupler head, of a knuckle pivotally mounted thereon, a vertically movable locking member for the knuckle, a knuckle opening member pivotally mounted on the locking member, and a lock-set member which forms a fulcrum for the knuckle opening member.

3. In a car coupler, the combination with a coupler head having an opening for the passage of the locking-member one wall of which opening is in a plane oblique to the longitudinal axis of the coupler, a vertically movable locking member one of whose faces is in a plane oblique to the longitudinal axis of the coupler, and a knuckle opening member pivotally mounted on said oblique face of the locking member.

4. In a car coupler, the combination with a coupler head, of a knuckle pivotally mounted thereon, a locking member for said knuckle, a lock-set member having a head and a neck beneath the head whereby it is loosely suspended on the coupler head, said lock-set member also having a projection below said neck with which the knuckle opening member engages, and a knuckle opening member pivotally mounted on the locking member.

5. In a car coupler, the combination with a coupler head, of a knuckle pivotally mounted thereon, a locking member for said knuckle, a knuckle opening member pivotally mounted on the locking member, and a lock-set member which is positively actuated by said knuckle opening member.

6. In a car coupler, the combination with a coupler head, of a knuckle pivotally mounted thereon, a locking member for said knuckle, a knuckle opening member, and a lock-set member forming a fulcrum for the knuckle opening member and with which said knuckle opening member is adapted to have rolling contact, when the latter is operating to throw the knuckle to open position.

7. In a car coupler, the combination with a coupler head, of a knuckle pivotally mounted thereon, means for locking said knuckle, means for retaining the locking member in position to permit an opening rotation of the knuckle, and means actuated by said locking member for opening said knuckle, said last named means during its knuckle opening operation fulcruming upon the said means for retaining the locking member in position.

8. In a car coupler, the combination with a coupler head, of a knuckle pivotally mounted

thereon, a locking member for said knuckle, said locking member having a pivot face lying in a plane oblique to the longitudinal axis of the coupler head, and a knuckle-
5 opening member which is mounted on said locking member on a fixed pivot and is adapted to operate in a plane oblique to the longitudinal axis of the coupler head.

In testimony whereof we affix our signatures, in presence of two subscribing witnesses.

WM. McCONWAY, JR.
JOSEPH KELSO.

Witnesses:

E. J. SHANAHAN,
GEO. W. McCANDLESS.