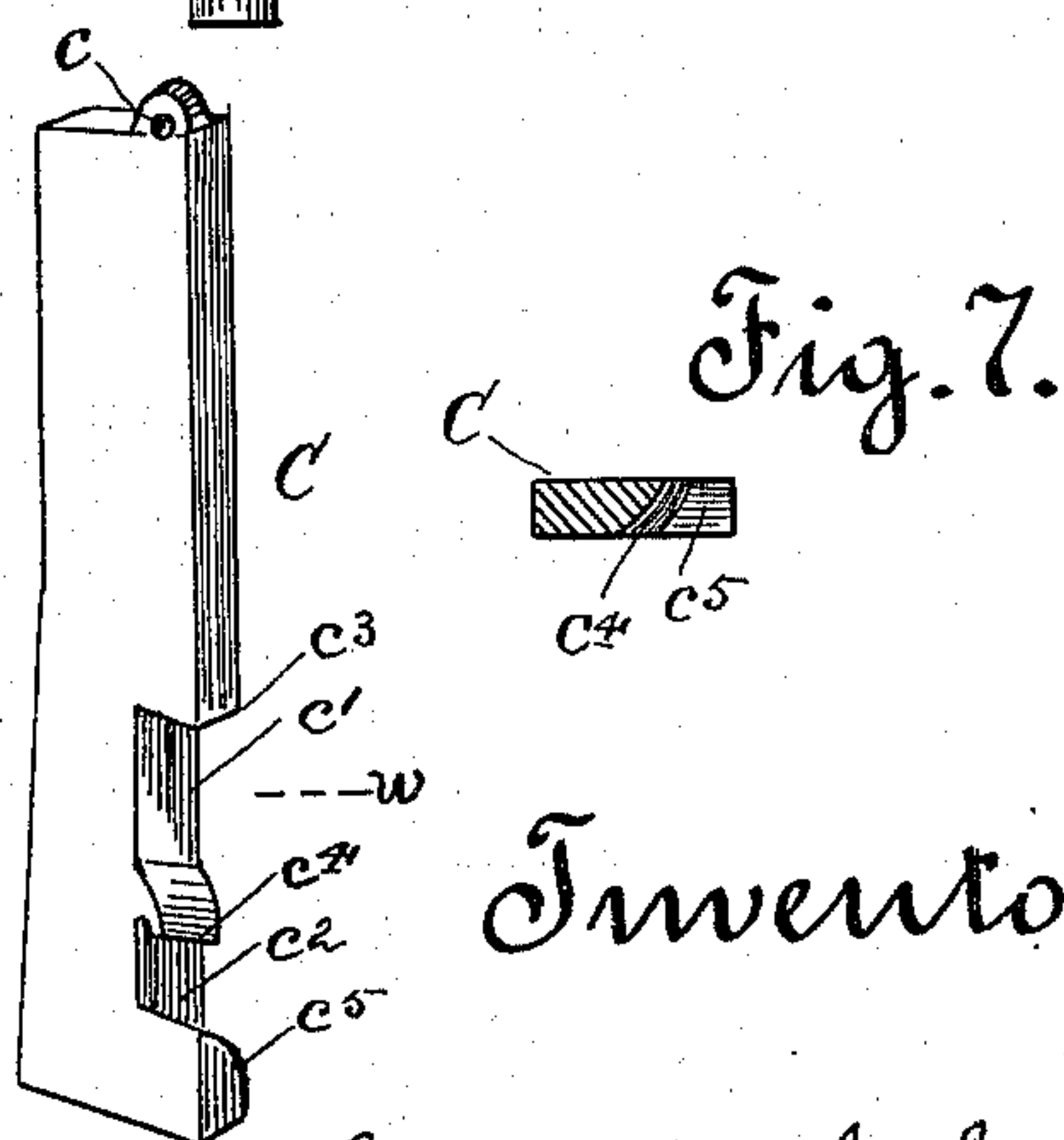
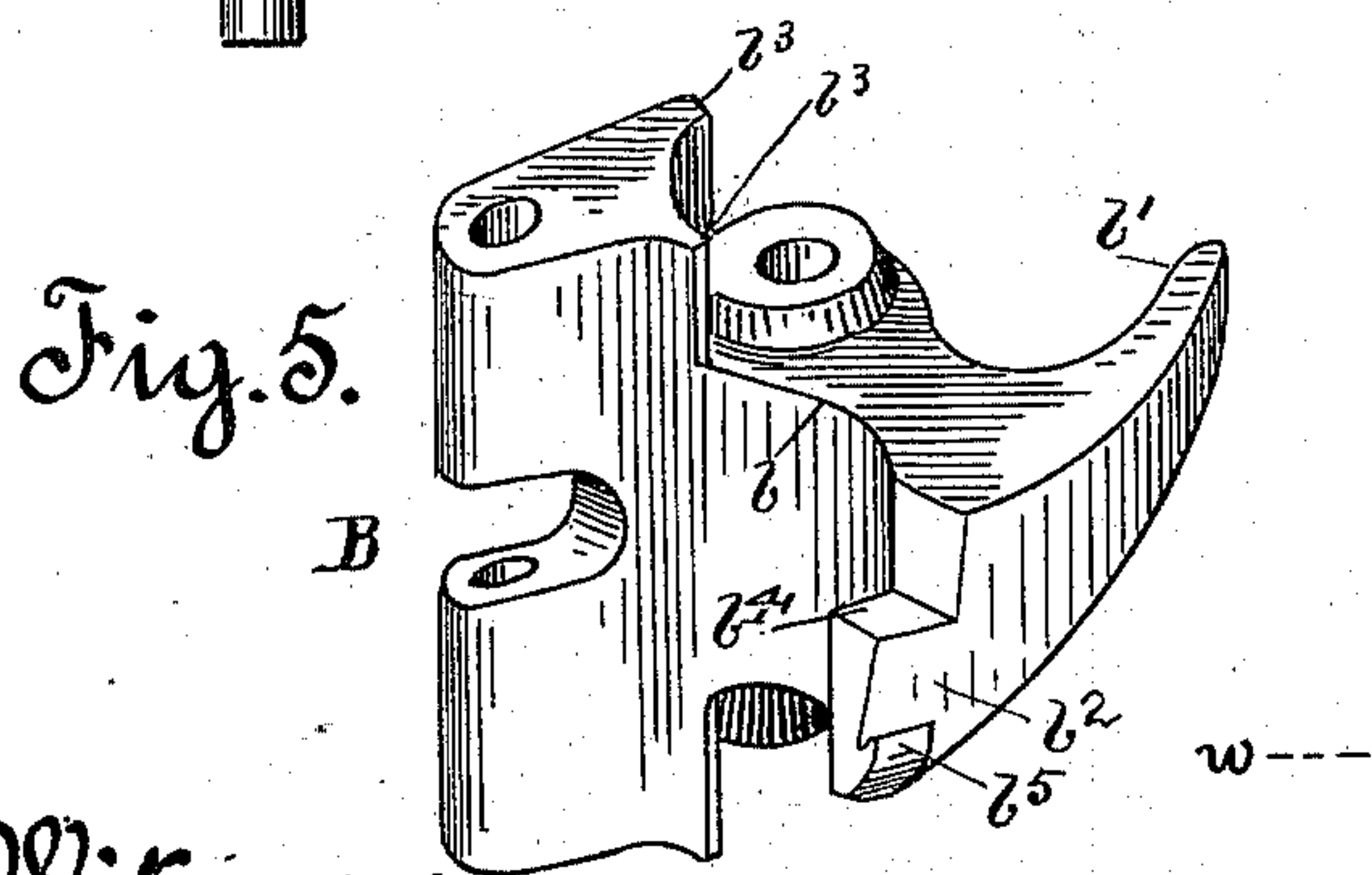
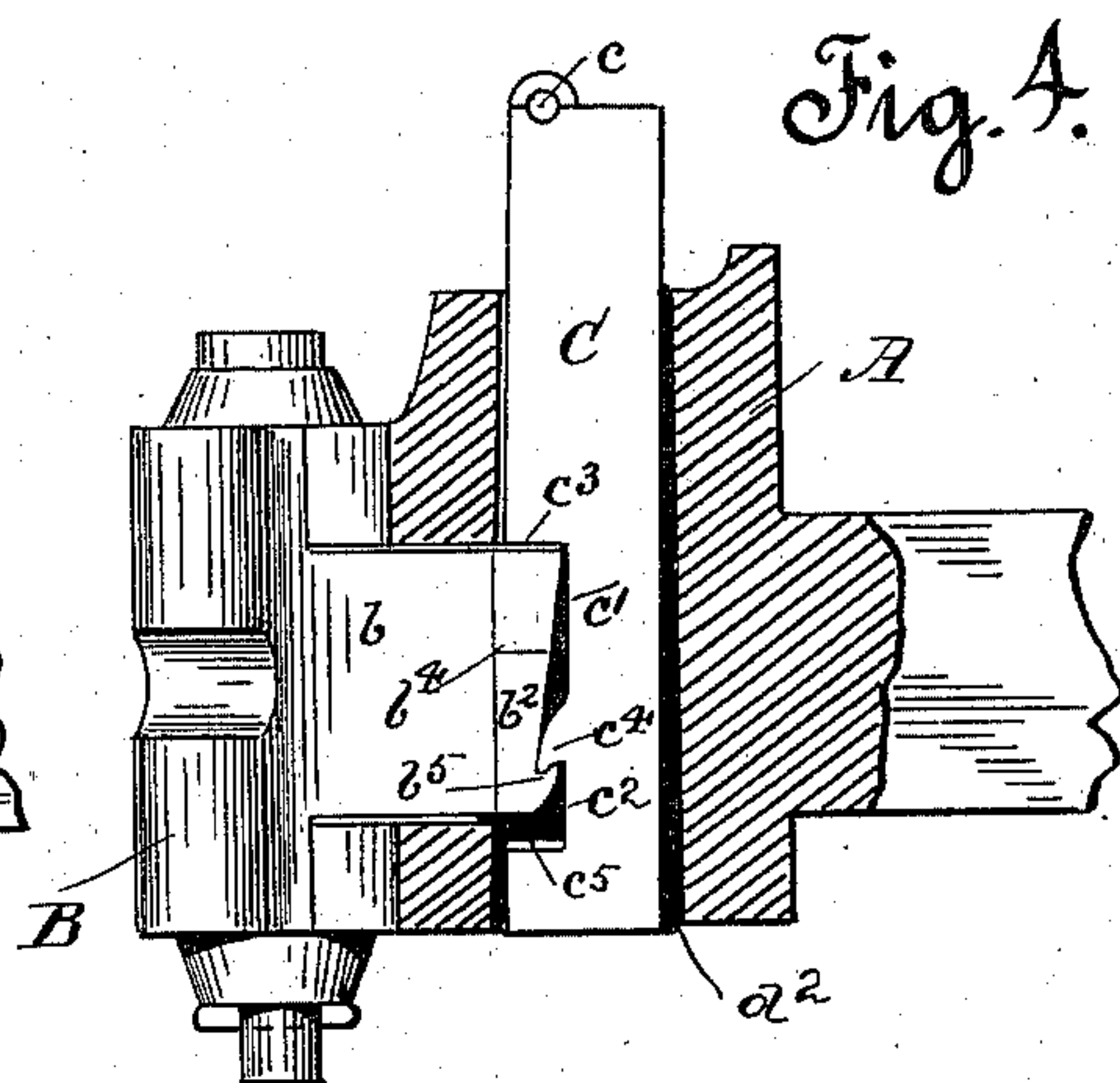
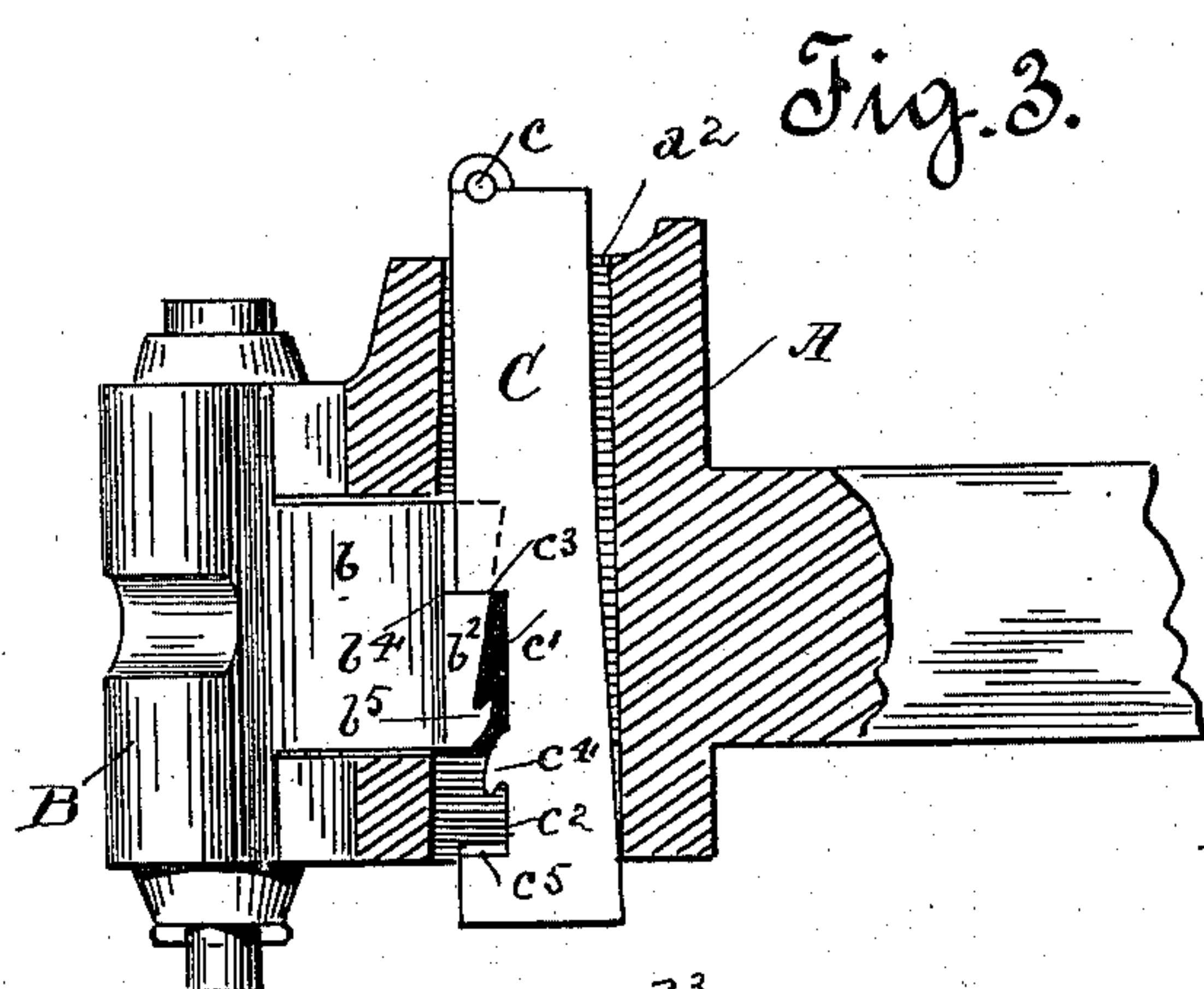
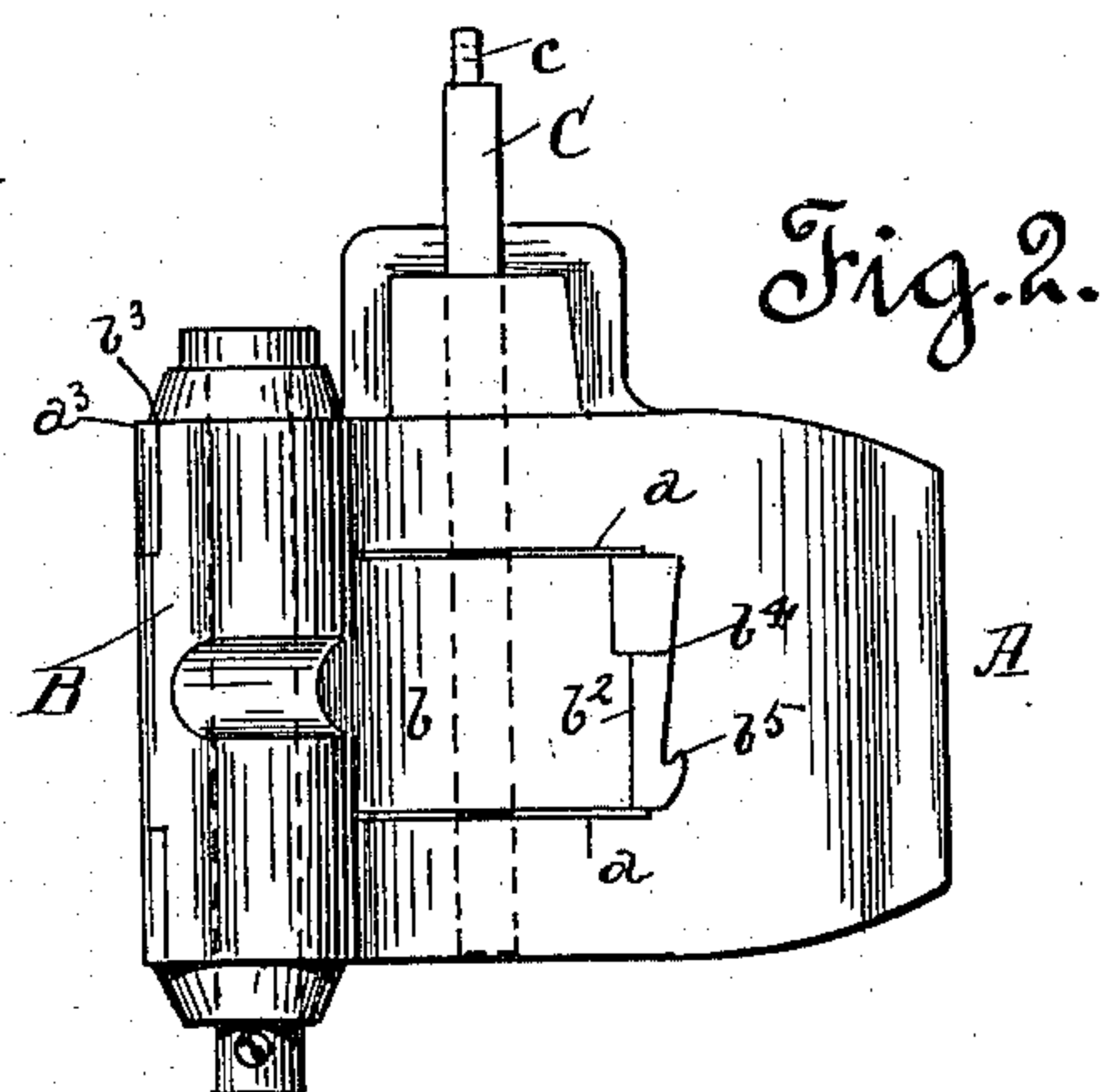
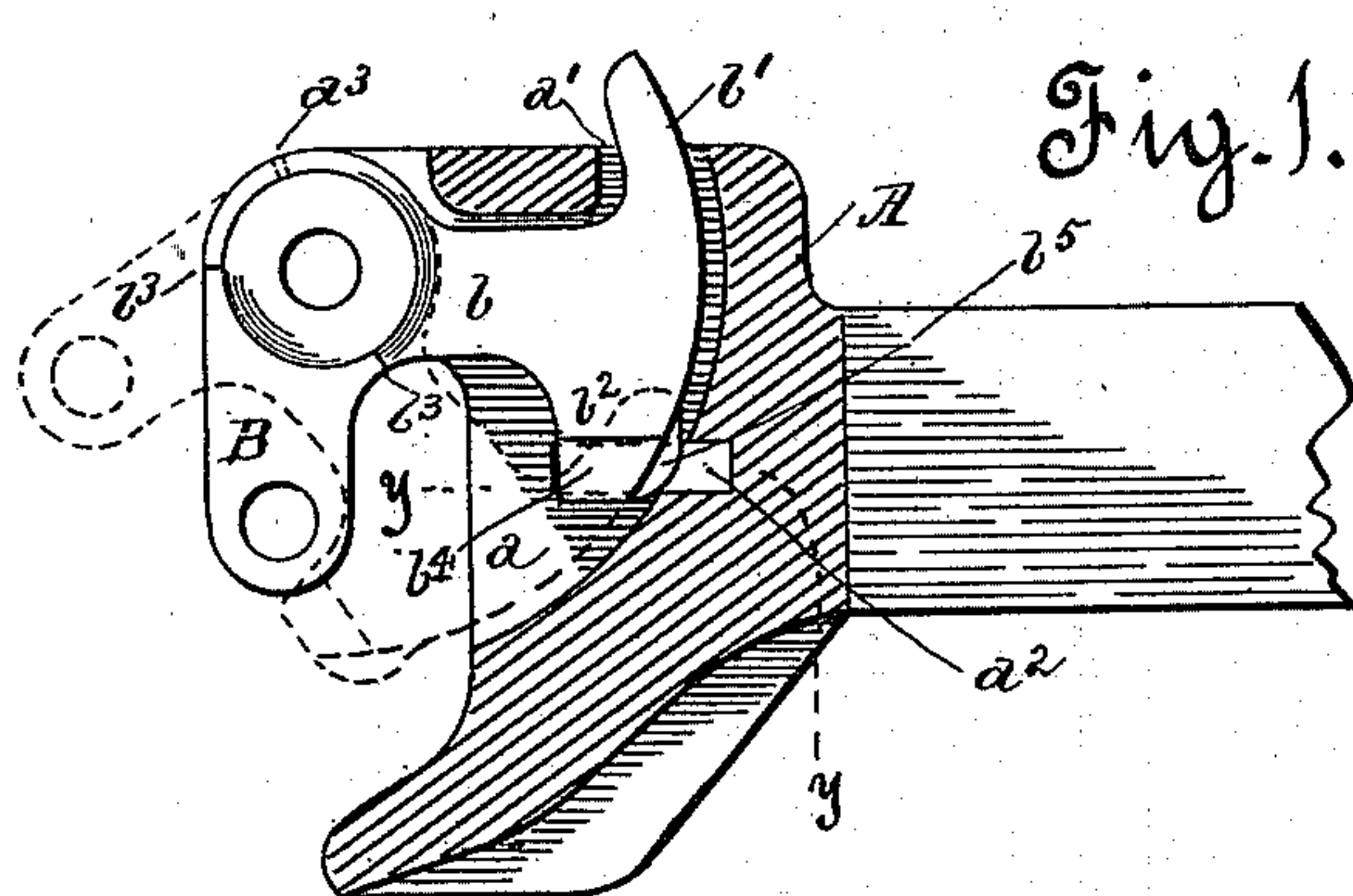


G. AABEL.  
CAR COUPLING.

Patented Dec. 15, 1896.



Witnesses.

*F. Monteverde.*

George O'Byrne

Fig. 6.

Inventor.

George Aabel  
by A. H. Ste Marie  
att'y



# UNITED STATES PATENT OFFICE.

GEORGE AABEL, OF SAN FRANCISCO, CALIFORNIA.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 573,253, dated December 15, 1896.

Application filed September 8, 1896. Serial No. 605,187. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE AABEL, a citizen of the United States, and a resident of the city and county of San Francisco, in the State of California, have invented a certain new and useful Improvement in Car-Couplings, of which the following is a specification.

My invention relates to a knuckle car-coupler; and the object thereof is to produce a device of this class having a perfect gravity-lock and entirely void of springs and such parts as are hard to fit or apt to get out of order.

Referring to the accompanying drawings for a detailed description of said improvement, Figure 1 is a sectional plan of one member of the coupling, the knuckle being closed and the lock removed. Fig. 2 is a front elevation of the same with the knuckle open and the lock in a raised position. Fig. 3 is a side elevation with the draw-head broken off on the line  $y\ y$  of Fig. 1, the knuckle appearing as closed and locked. Fig. 4 is a view similar to the preceding, but showing the lock partly raised, so the knuckle may be opened. Fig. 5 is a perspective view of the knuckle. Fig. 6 is a like view of the lock; and Fig. 7 is a cross-section on the line  $w\ w$  of said Fig. 6, looking downward.

Like letters refer to like parts throughout the various figures.

The letter A represents a draw-head cored out at  $a$  to form a cavity or hollow adapted to receive the rear part of a knuckle B, which is pivoted in a vertical position to one side of the draw-head, as shown. The said knuckle B is of peculiar construction. (Illustrated in detail at Fig. 5.) As seen in the figure last named, it is provided with a rearwardly-extending portion  $b$ , which is spread out at the end, on each side, so as to form two oppositely-running points or branches  $b'\ b^2$ . These two branches are of such length that when the knuckle is swung in on its pivot and closed, as represented by full lines in Fig. 1, the outer branch  $b'$  will project through an aperture  $a'$  in the left wall of the draw-head, while the inner branch  $b^2$  will reach inside the draw-head to a point beyond the center of the cavity therein. On the other hand, when the knuckle is swung out and open, as indicated by dotted lines in the same Fig. 1, the branch  $b^2$  will come clear out of the cavity, but the

branch  $b'$  will remain in it also at a point past the center of the draw-head on the opposite side. To bring about this result, the knuckle is arranged so as to be limited in its movements on its pivot both ways—first, by the margin  $a'$  of the aperture  $a$ , which acts as a side stop, and, secondly, by shoulders  $a^3\ b^3$ , that are formed, respectively, on the cylindrical bearing portion of the knuckle and on the lugs between which it is fitted. Thus the knuckle is prevented either from being pushed too far in or from being drawn too far out. The upper surface of the knuckle is flat and arranged to move in a plane parallel with that of the roof of the draw-head's cavity, but its undersurface is beveled or inclined downward from the upper corner of the branch  $b'$  to the lower corner of the branch  $b^2$ . The latter-named branch ( $b^2$ ) is cut away in two places, as shown, to form a step  $b^4$  and an upwardly-projected hook  $b^5$ , for purposes hereinafter set forth.

C is a lock, preferably made in the shape of a pin, adapted to work in conjunction with the knuckle above described. This lock-pin is of quadrangular section for the greater part of its length and somewhat wider at the bottom than at the top. It fits loosely in a correspondingly-shaped upwardly-tapering slot  $a^2$ , formed in about the middle of the draw-head and communicating with the main core or cavity therein, the pin entering the slot from the bottom side of the draw-head, through which it is passed before the knuckle is inserted and secured in place. At the top it is provided with an eye  $c$  for engagement, by means of a suitable chain or links, with an operating lever or crank. (Not shown.) This eye is located forward, so that when it is pulled up the lower part of the lock will naturally swing forward by force of gravitation. The lock is notched or cut away in its lower portion, as at  $c'\ c^2$ , to allow the rear end of the knuckle to project into it when inserted in the draw-head. These notches or cuts  $c'\ c^2$  form on the lock, besides, a shoulder  $c^3$ , an inverted hook  $c^4$ , and a cam  $c^5$ , each of which has its distinct function. The shoulder  $c^3$ , that part lying above the notch  $c'$ , allows the lock to project over and rest upon the step  $b^4$  above referred to as being provided in the inner branch of the knuckle, and thereby en-



ables it to keep the knuckle closed, or in the position shown in Figs. 1 and 3, as the lock is then wedged in between the right wall of the draw-head's cavity and the knuckle, preventing the latter from being swung open. The lock in that case is in its lowest position. The same shoulder  $c^3$  enables the lock, when raised, to rest and ride upon the upper flat surface of the knuckle when the latter is opened, the lock and knuckle being then in the position represented in Fig. 2. In that position the knuckle keeps the lock from dropping down. The hook  $c^4$  serves to keep the shoulder of the lock disengaged from the step  $b^4$  and out of contact with the top surface of the knuckle, said hook being adapted for that purpose to engage with the mating hook  $b^5$ , provided at the lower inner edge of the knuckle, as illustrated in Fig. 4. The cam  $c^5$  operates to throw open the knuckle upon the lock being raised, that is, when the knuckle is otherwise free to open or disengaged from a mating knuckle. It is beveled, as shown, to correspond and engage with the under beveled surface of the knuckle, under which it will slide, so that, the lock-pin being pulled up, the knuckle will be forced to swing about its pivot into the position represented at Fig. 2, ready for engagement with a mating knuckle of a similar coupling member. The hook  $c^4$  and the vertical edges of the notches  $c'$   $c^2$  are also beveled, but in an opposite direction, in order that they may not catch under the knuckle, but will allow it to swing in and out readily.

The operation is as follows: First, if it be desired to couple two cars that are apart, the lock of either member of the coupler is raised, so that the cam  $c^5$  may engage with the under surface of the knuckle above it and force the knuckle out, as shown by dotted lines in Fig. 1 and by full lines in Fig. 2. The lock is then released and allowed to fall upon and rest on the top surface of the knuckle. The cars being brought together and the two members of the coupling caused to meet, the open knuckle is driven in by impact and closed, as illustrated by full lines in Fig. 1 and also in Fig. 3, when the lock drops down, so that its shoulder  $c^3$  will engage the seat  $b^4$ . If the knuckles of both members of the coupling were open, they would be closed the same way. The cars are then securely coupled together. To uncouple, one of the locks is first partly lifted,

so that its hook  $c^4$  will rest temporarily on the mating hook  $b^5$  of the knuckle and its shoulder  $c^3$  be completely raised and disengaged from the seat  $b^4$ . The cars being afterward pulled apart, the unlocked knuckle is forced open, the hook  $b^5$  is drawn away from the hook  $c^4$ , and the lock-pin drops upon and becomes seated on the upper surface of the knuckle, as before. The open knuckle is then again in position for recoupling.

Having now described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a car-coupling, the combination of a hollow draw-head and a knuckle having a rear hook projected into the core thereof, with a lock adapted to keep the knuckle closed in its downward position and also having a hook mating with that of the knuckle, whereby the lock may be kept in a raised position and the knuckle allowed to open, substantially as described.

2. In a car-coupling, the combination of a draw-head, a knuckle arranged to protrude and swing therein, the protruding portion of the knuckle having its upper surface partly cut away to form a seat and its rear end provided with a hook below the same, and a lock having a shoulder adapted to engage said seat and a hook thereunder mating with that of the knuckle whereby the lock may be partly raised to unlock the knuckle and its shoulder shifted from its seat to the upper surface of the knuckle upon the opening of the latter, substantially as described.

3. In a car-coupling, the combination of a hollow draw-head having a slot communicating with the core thereof, a knuckle projecting into the core of the draw-head and having a hook arranged to lie within the plane of its slot, and a lock loosely fitted within said slot, said lock having a hook mating with that of the knuckle and a forwardly-located eye whereby it may be pulled up and its lower end caused to swing forward so that its hook will engage the knuckle-hook, substantially as described.

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

GEORGE AABEL.

Witnesses:

A. H. STE. MARIE,  
HENRY P. TRICOU.