

(No Model.)

2 Sheets—Sheet 1.

C. A. TOWER.
CAR COUPLING.

No. 601,847.

Patented Apr. 5, 1898.

Fig. 1.

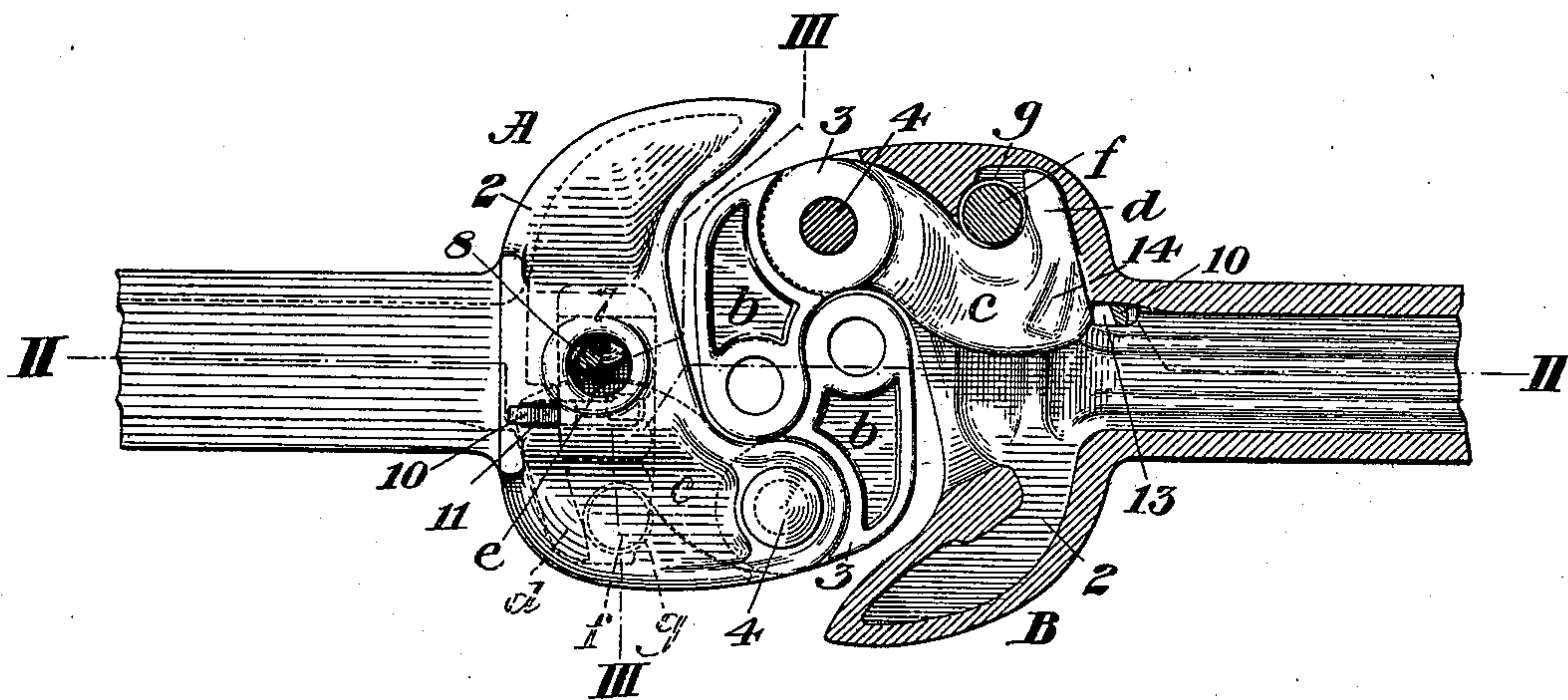


Fig. 2.

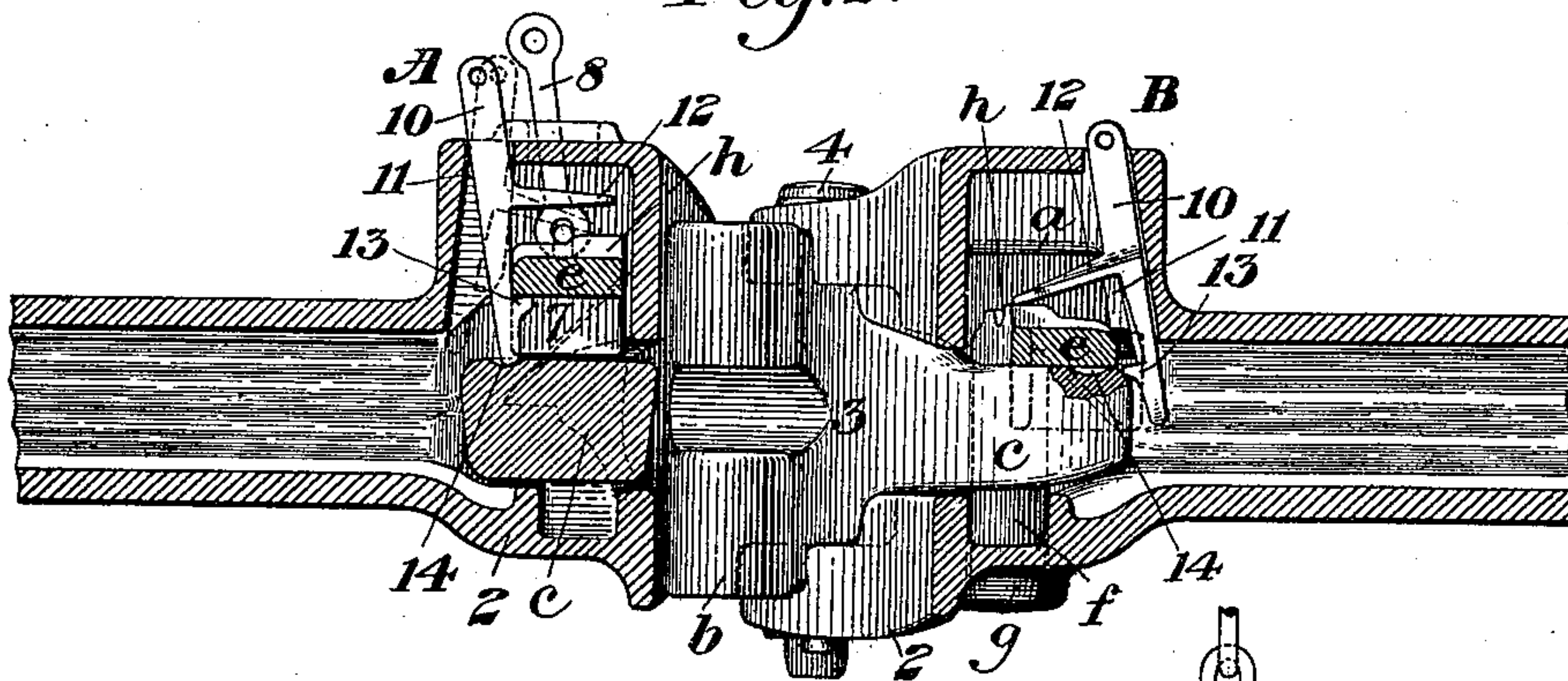
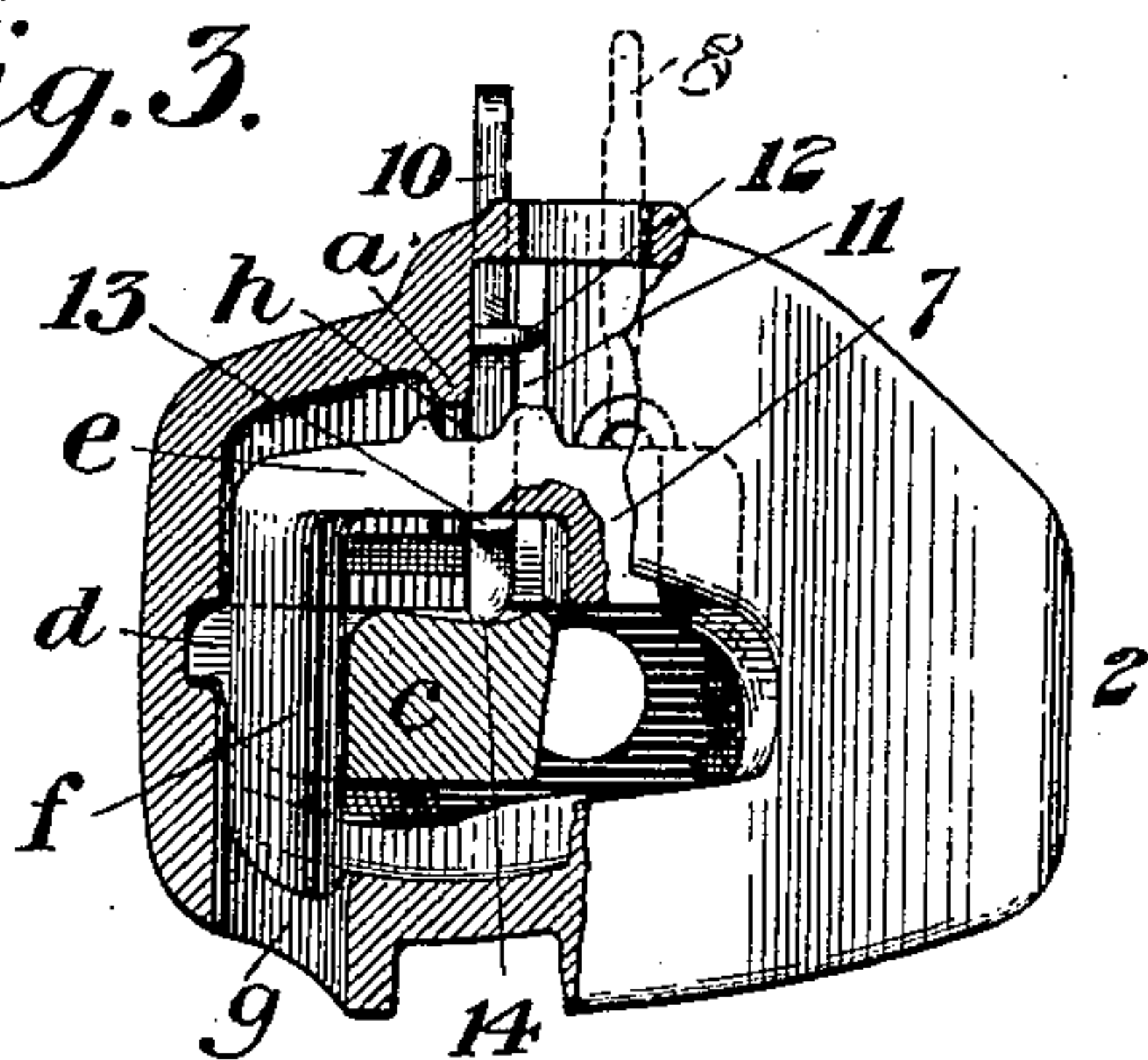


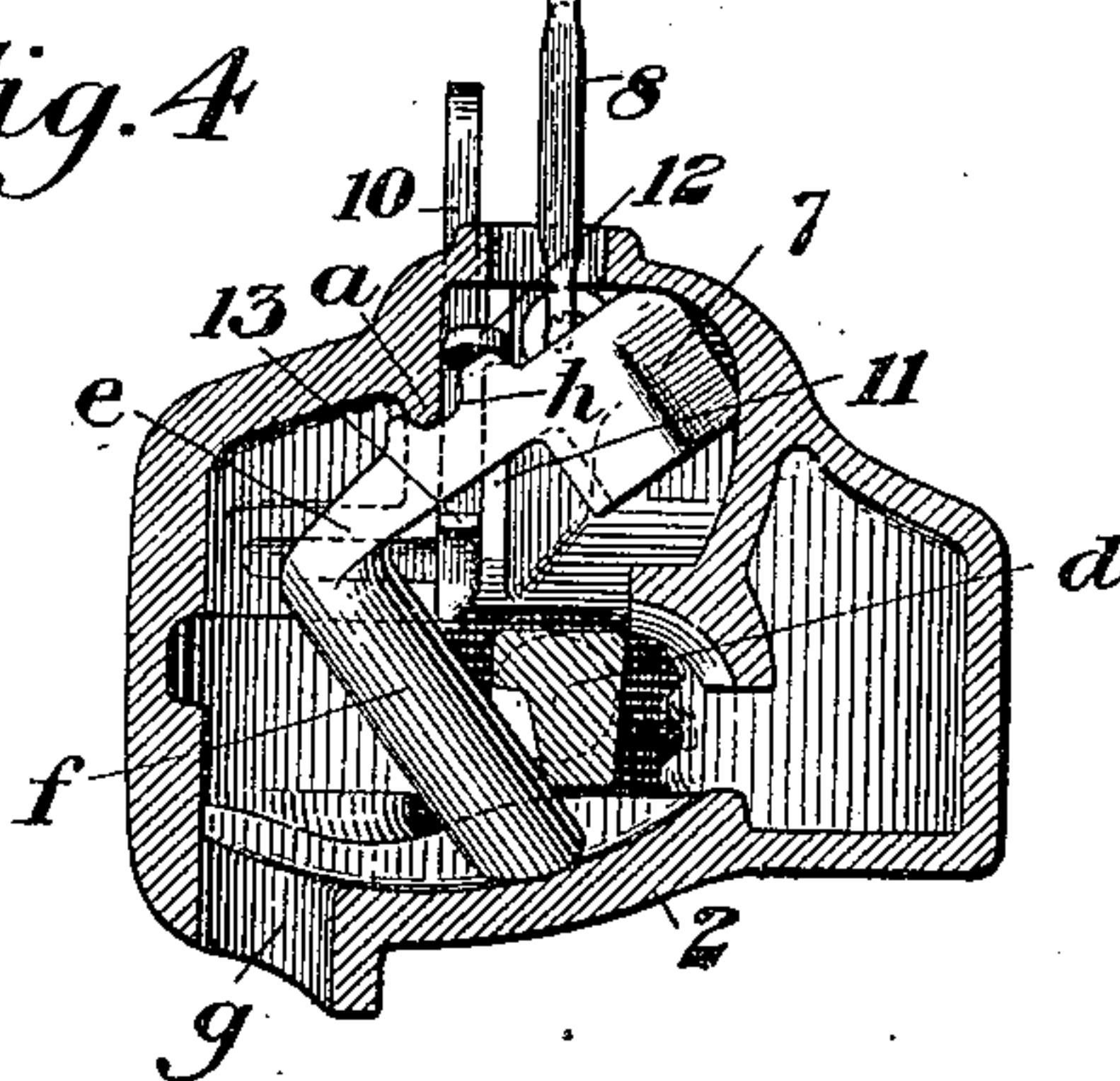
Fig. 3.



WITNESSES

L. A. Sommers
C. E. MacKown

Fig. 4.



INVENTOR

Clinton A. Tower
by Baxendell & Baxendell
his Attorneys.

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C. A. TOWER.
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Fig. 5.

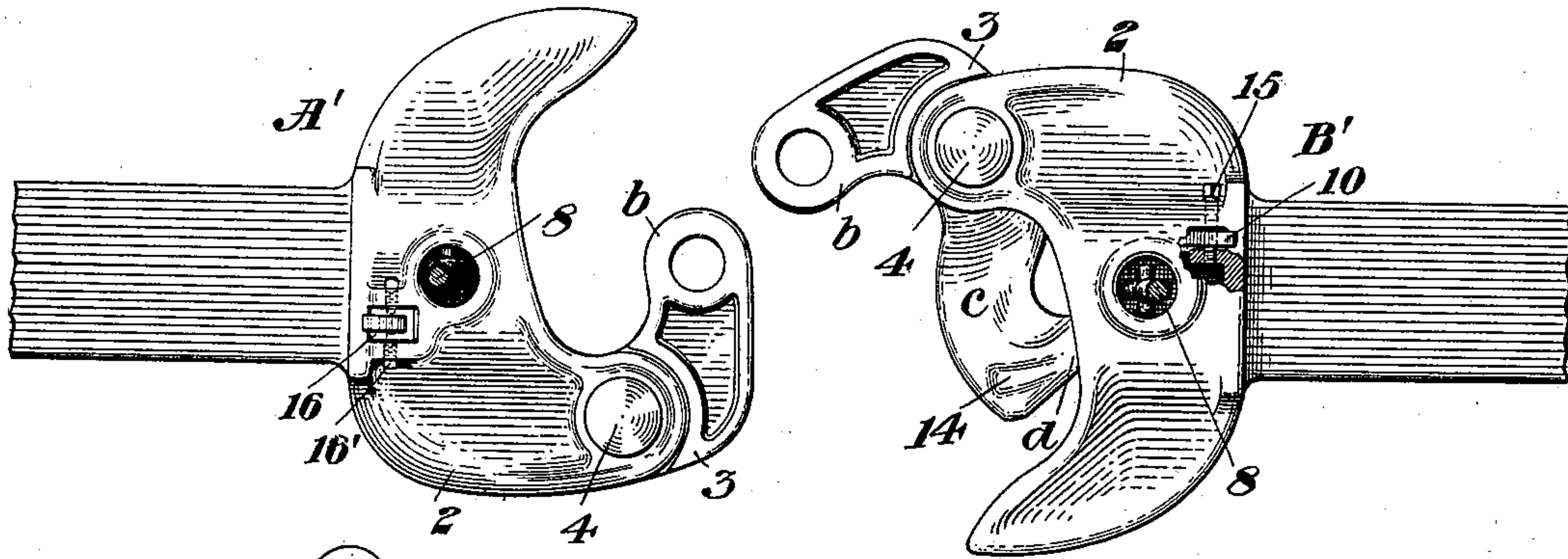


Fig. 6.

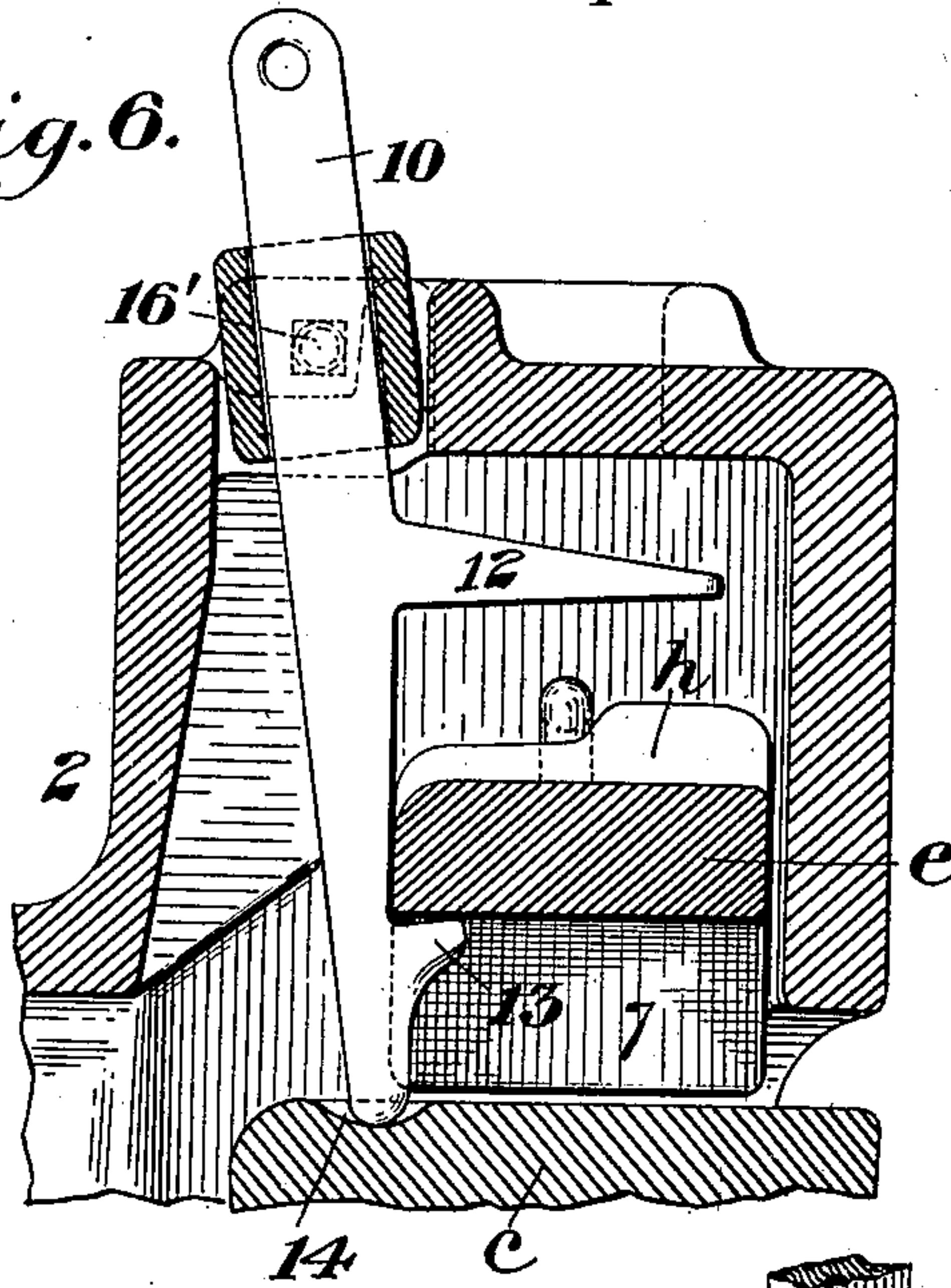


Fig. 7.

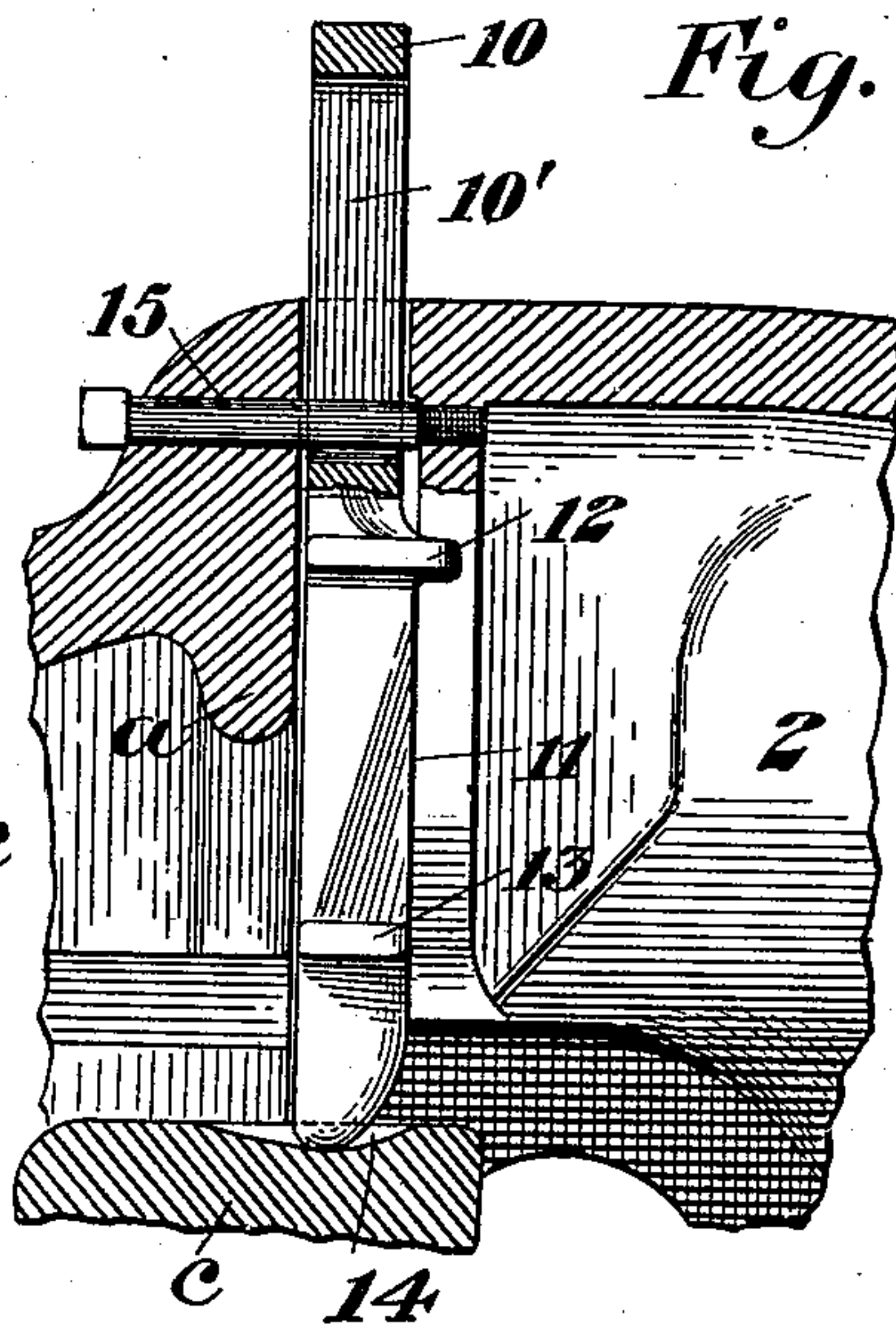
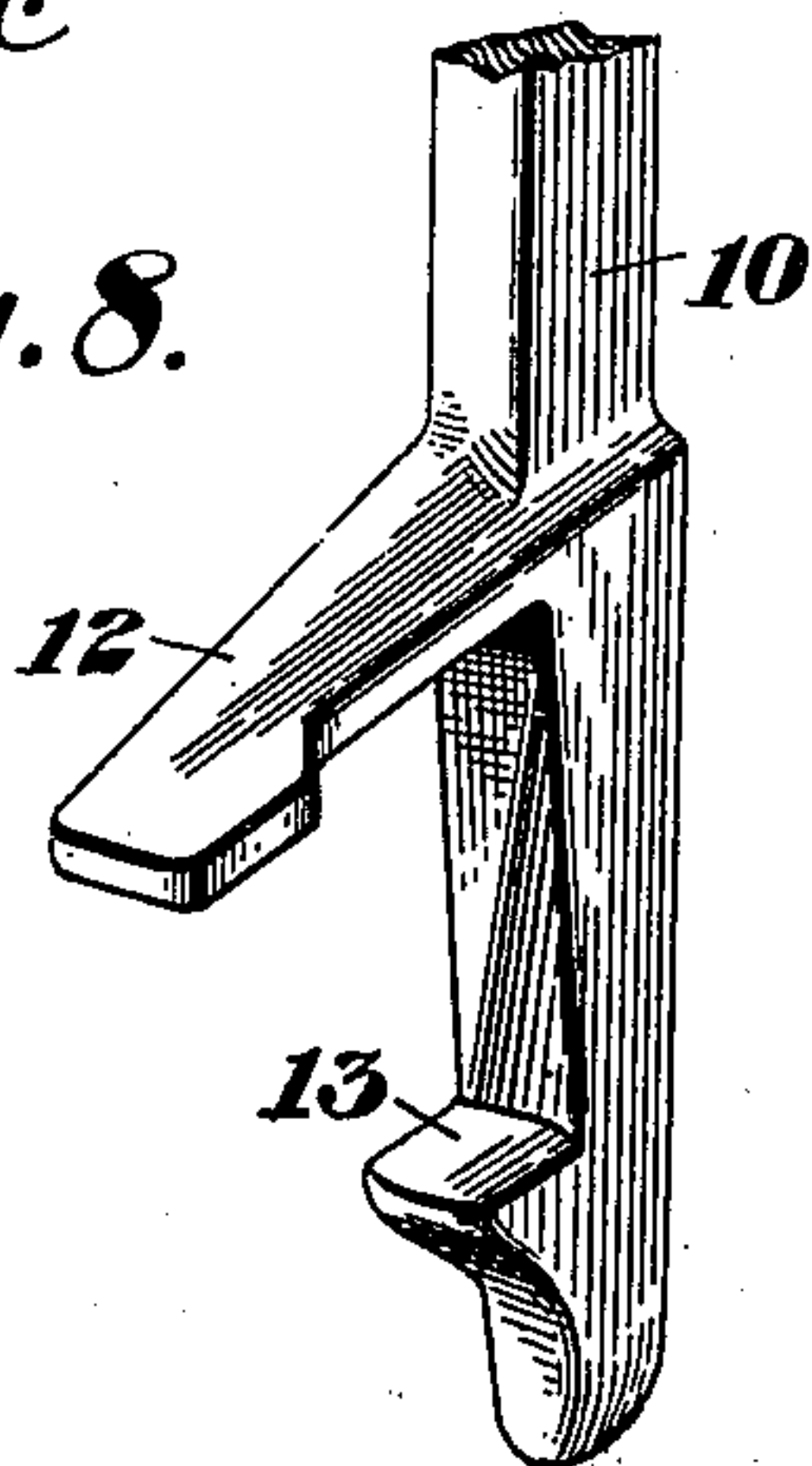


Fig. 8.



WITNESSES

J. A. Commey
C. E. MacKinnon

INVENTOR

Clinton A. Tower
by Banevell & Banevell
his Attorneys.

UNITED STATES PATENT OFFICE.

CLINTON A. TOWER, OF CLEVELAND, OHIO, ASSIGNOR TO THE NATIONAL MALLEABLE CASTINGS COMPANY, OF SAME PLACE.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 601,847, dated April 5, 1898.

Application filed November 29, 1897. Serial No. 660,038. (No model.)

To all whom it may concern:

Be it known that I, CLINTON A. TOWER, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Car-Couplers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

10 Figure 1 is a plan view of two opposing couplers constructed in accordance with my invention and interlocked with each other, one of the couplers being shown in horizontal section. Fig. 2 is a longitudinal vertical
15 section on the line II II of Fig. 1. Fig. 3 is a front elevation of the coupler, partly in section, on the line III III of Fig. 1, showing the knuckle locking and opening device raised but not tilted forwardly. Fig. 4 is a vertical
20 cross-section, also on the line III III of Fig. 1, showing the locking and opening device in the position which it occupies when it has been moved to throw the knuckle open. Fig. 5 is a plan view of two opposing couplers, one
25 of the couplers (marked A') showing the modification of my invention, which is illustrated in Fig. 6, and the coupler marked B' showing the modification which is illustrated in Fig. 7. Fig. 6 is a vertical section through
30 the coupler-head, showing a modification of my invention. Fig. 7 is a section taken on a sectional plane at right angles to that of Fig. 6, showing a second modification of the invention. Fig. 8 is a perspective view of the
35 stilt.

In the drawings I show my improved device applied to and combined with a car-coupler known as the "Tower" coupler, described in Letters Patent No. 541,446, granted to C. A.
40 Tower on June 18, 1895.

In the drawings, 2 represents the coupler-head, having a knuckle 3, pivoted on a pin 4, and having an outer arm *b* and an inner arm or tail *c*, the end of which has a rearwardly-
45 extending hook portion *d*. The locking device is constituted by an angled locking and opening piece having a member *e*, which extends transversely over the tail of the knuckle, a dependent locking block or head 7, and a
50 rear arm *f*, which extends downwardly at the rear of the the tail, and when the knuckle is

locked passes vertically through a guide-hole *g* in the floor of the coupler.

8 is a link extending from the head or block 7 to the usual lifting-lever. 55

To unlock the knuckle, the operator manipulates the lever so as to lift the angled piece until the base of its head 7 clears and passes above the horizontal path of motion of the knuckle's tail, whereupon the knuckle
60 can be swung open either by separation of the cars or by continuing the lifting of the angled piece until a notch *h* on the upper side of the member *e* engages a shoulder *a* on the coupler-head, whereupon the angled
65 piece will tip radially in a vertical plane and by bringing its rearwardly-depending arm *f* into action upon the knuckle's tail will move the knuckle outwardly into position.

If when the unlocking of the coupler is effected it is engaged with the coupler of another car, the knuckle cannot be thrown open until the two couplers are disengaged; but it is often desirable when two couplers are in engagement and the cars stationary to unlock
75 one of them and to set the lock in unlocked position, so that when the cars are eventually separated the coupler will freely open. My improved device enables such function to be performed in a more efficient manner than
80 has been done heretofore. Back of the position which the rear end of the tail of the knuckle occupies when closed is a stilt-shaped piece 10, which I call a "lock-set" or "stilt," set in upright position in a guideway 11, in
85 which it is adapted to move upwardly, so that its upper end may project above the top of the draw-head. This lock-set or stilt has an arm 12, adapted to be engaged by the locking device in the upward motion of the latter,
90 and a supporting portion or step 13, adapted to fit under and uphold the locking device, as explained below. The distance between the foot of the stilt and the arm 12 is such that when the stilt is raised its foot may en-
95 gage and rest upon the tail of the knuckle. When the knuckle is locked, the stilt rests idly in upright position back of the end of the knuckle's tail and back of the lock, the arm 12 extending over and in the upward path of
100 the member *e* or other part of the lock and the step 13 being below the level of the base

of the lock or that portion thereof with which it is adapted to engage. The stilt is thus free from the lock—not tied or fastened thereto—and is in a sense a loose or "floating" piece.

5 Suppose now that the coupler containing the stilt is locked in engagement with the coupler of another car, that both cars are stationary on the track, and that it is desired to unlock the coupler and to set the lock in un-
 10 locked position. For this purpose the brakeman raises the locking-block by manipulation of the usual lifting-lever, and as the lock rises its member *e* will engage the arm 12 and will raise the stilt vertically in its guideway until
 15 its foot clears the knuckle. Throughout this upward motion the stilt at all altitudes maintains a sliding bearing against the metal at the rear of the aperture in the draw-head through which it passes. The result of such
 20 motion and sliding contact when the coupler is interlocked with the coupler of another car is (when the stilt reaches the position shown in dotted lines at A in Fig. 2 and has cleared the knuckle) to project the foot of the stilt
 25 forward, and when the lifting-lever of the lock is released by the brakeman the foot of the stilt will be seated in a transverse basin or groove 14, which is formed to receive it on the tail of the knuckle and which leads toward
 30 the margin of the knuckle. Thereupon the lock comes to rest upon the step 13, which supports the lock freely in unlocked position in the manner of a step or supporting-block, as shown in full lines at A in Fig. 2.
 35 When the lifting-lever is released, the stilt, as above stated, comes into supporting position in the basin or groove 14 and the staff or body of the stilt will tilt or tend to tilt forward away from the rear edge of the aperture
 40 at the end of its guideway; but when, as described below, the support for the stilt is removed by opening the knuckle or by tilting the stilt by hand, so as to free it from its retaining basin or groove and to drop the lock,
 45 in either event it drops to the points of contact shown at B in Fig. 2, and the bearing relations and positions of the stilt, as explained above, will be repeated at the next manipu-
 50 lation of the lock. The coupler being then held unlocked by the above-described operation of the lock-set the cars may be separated from each other. When this is done, the unlocked knuckle will be drawn open by the act of separation, and as the tail of the
 55 knuckle then moves outwardly the foot of the stilt will continue to rest in the groove or basin 14 and will be guided and retained thereby until it reaches the margin of the moving knuckle, whereupon the stilt will be unseated
 60 and will drop back of the knuckle's tail, thus releasing the lock, which (the knuckle then being partly opened) does not need any longer to be supported and will drop upon the knuckle's tail. When the knuckle is again
 65 closed, the lock, being unsupported by the lock-set or stilt, will drop into locking position in front of the tail, thus restoring the

parts into the position shown at B in Fig. 2. During the time when the lock-set or stilt is in supporting position the rear shoulder or
 70 rim of the basin 14 on the side next to the rear end of the knuckle, in which basin its foot fits, retains the stilt positively in a stable position quite independently of the action of gravity until the knuckle is opened far enough
 75 to unseat the foot of the stilt and to permit it to drop in the manner above explained. The rim or shoulder which forms the rear margin of the basin or groove has the important function of preventing displacement
 80 of the lock-set during motion of the car.

If after the lock-set has been set in supporting position and before the knuckle is opened it be desired to release the lock, this can easily be effected by raising somewhat
 85 and tipping forward the upper projecting end or staff of the stilt, whereupon its foot will be disengaged from the knuckle and it will drop behind the tail, releasing the lock and permitting it to drop into locked position. This
 90 is rendered feasible, because the stilt, as explained above, is a floating piece, not fastened to the lock, and because its end projects.

When the angled locking and opening piece is raised and tipped for the purpose of swing-
 95 ing the knuckle open, it engages and raises the lock-set or stilt, throwing its lower end forward, as above explained, and then as the angled piece engages the top of the draw-head the angled piece itself tips, throws the
 100 knuckle open, and when it reaches the limit of its throw it supports the stilt until the knuckle is again closed, whereupon the angled piece is pushed back by the knuckle to the wall of the coupler-head and it, together with
 105 the stilt, will drop into their original positions.

The function of the parts of the lock-set or stilt 10 will be readily understood from the foregoing description. The step 13 serves
 110 merely as a block to support the lock, and the lifting-arm 12 enables the lock-set to be raised, but takes no part in the supporting of the lock.

Figs. 5, 6, and 7 show modifications of my improvement which operate in the same man-
 115 ner as the forms of the invention above described and which illustrate very clearly its principle of operation. In Fig. 7 and in the part B' of Fig. 5, which show that form of my invention which I first devised, the staff of
 120 the stilt is formed with a vertical slot 10, through which passes a pin 15, mounted in the draw-head. The slot permits the stilt to be raised vertically on the pin, and the pin permits to it the forward motion necessary
 125 to bring it into supporting position on the knuckle, as shown in Fig. 7, when it has been lifted to the plane of the surface of the knuckle by engagement of the lock with its arm 12 in the act of lifting the lock.

In Fig. 6 and at A' in Fig. 5 the staff of the stilt passes freely through a sleeve 16, which is mounted on trunnions 16' in the top of the draw-head. The staff of the stilt can move
 130

upwardly in the sleeve and the sleeve is adapted to turn on its trunnions when the stilt is moved forward into the supporting position illustrated in Fig. 6.

5 I am the first to combine a lock-set or lock-holding device with a knuckle-locking and knuckle-opening mechanism in such manner that the lock-set or holder will be engaged and moved into supporting position by the
10 act of unlocking the knuckle and will be supported by the action of the parts in throwing the knuckle open. I intend to claim such combination broadly whether the locking and opening piece is constructed as shown in the
15 drawings or is modified.

My improvement renders unnecessary the supporting-lugs commonly applied to the chain-lifting levers of car-couplers, which, although they support the lock, require to be
20 disengaged by hand before the coupler will again lock, and this result is accomplished in my improvement with more security than has been afforded by prior lock-setting devices and with less complication of parts. Further-
25 more, the capability of tripping the lock-set or stilt with facility is of importance, and as the stilt is made in a separate or floating piece if it be removed or broken the action of the other parts of the coupler will not be im-
30 paired and it can be replaced or renewed with ease.

Those skilled in the art will be able to modify the construction of the parts of my improvement without departure from the principle
35 of the invention as defined in the following claims. In one of said claims I intend to cover the knuckle as an article of manufacture, having at the surface of the end of the tail a retaining and guiding basin or groove.

40 I claim—

1. A coupler having a knuckle, a movable lock, a floating lock-set unattached to the lock and having a portion extending into the path of its motion so as to be engaged, raised and
45 moved laterally thereby into supporting position; substantially as described.

2. A coupler having a knuckle, an upwardly-movable lock, a floating lock-set unattached to the lock and having a portion ex-
50 tending into the path of its motion so as to be engaged and raised thereby, and having a bearing at the draw-head whereby it may be moved into the supporting engagement with the tail of the knuckle; substantially as de-
55 scribed.

3. A coupler having a knuckle, an upwardly-moving lock, a floating stilt-like lock-set unattached to the lock, but having a lock-supporting step, and an arm extending into the path of the lock's motion and adapted to
60 be successively engaged, raised and moved laterally thereby into supporting position on the knuckle's tail; substantially as described.

4. A coupler having a knuckle, a movable lock, and a stilt-like lock-set consisting of an
65 upright bar having projecting portions between which the lock operates to move the lock-set; substantially as described.

5. A coupler having a knuckle, a locking and knuckle-opening piece movable to open
70 the knuckle, and a lock-set adapted to be raised into supporting position by the locking and opening piece when the motion of the latter is restrained by the interlocking of a com-
75 panion knuckle and to be supported by the locking and opening piece when the latter is moved to the limit of its motion in opening the knuckle; substantially as described.

6. A coupler-knuckle having on the upper surface of its tail a basin or groove adapted to
80 support and retain the foot of a lock-set, said basin or groove having a retaining-rim on the side next to the end of the tail; substantially as described.

7. A coupler-knuckle having on the surface
85 of the end portion of its tail a basin or groove leading toward the margin of the knuckle and adapted to support and retain the foot of a lock-set, and a lock-set or stilt whose foot is adapted to fit in said groove and which ex-
90 tends upwardly through the draw-bar; substantially as described.

8. A stilt-shaped lock-set having a lock-supporting step portion, and a lifting-arm, said parts providing an intermediate space
95 adapted to receive a lock by which the lock-set is operated; substantially as described.

9. A stilt-shaped lock-set having a lock-supporting step portion, and a lifting-arm, said parts providing an intermediate space
100 adapted to receive a lock by which the lock-set is operated, said lock-set extending through the draw-head to the exterior thereof; substantially as described.

In testimony whereof I have hereunto set
105 my hand.

CLINTON A. TOWER.

Witnesses:

O. K. BROOKS,
D. W. CALL.