

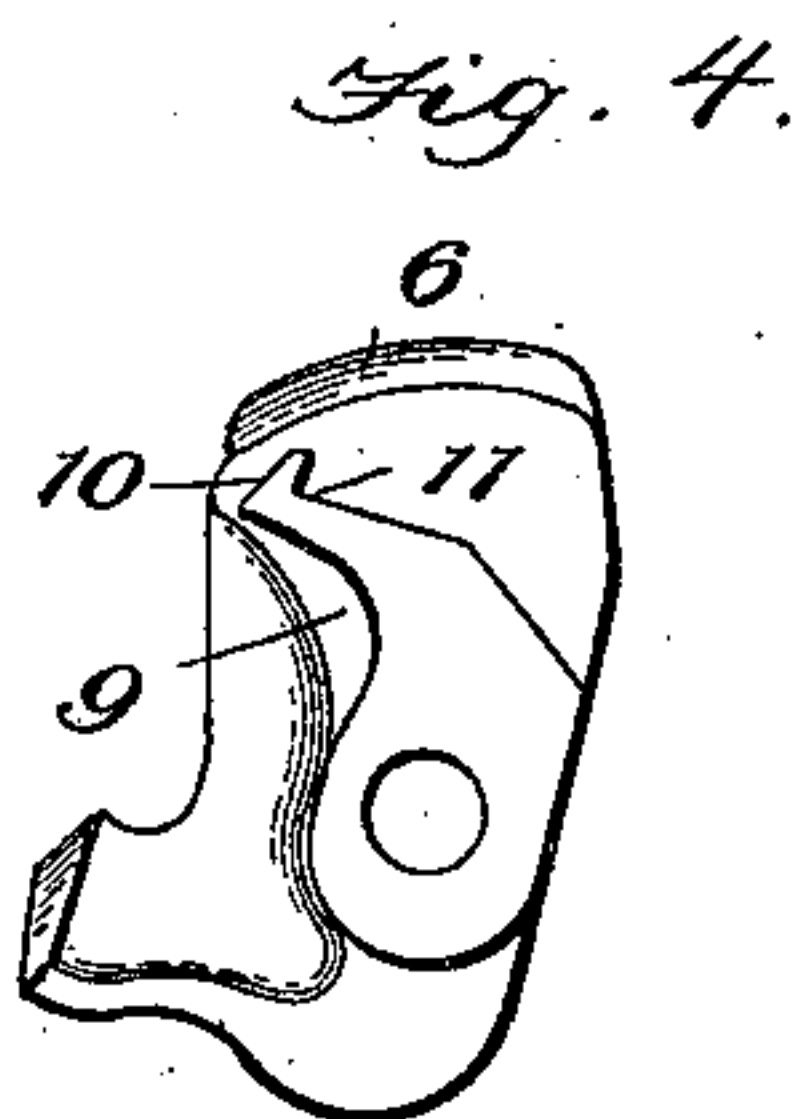
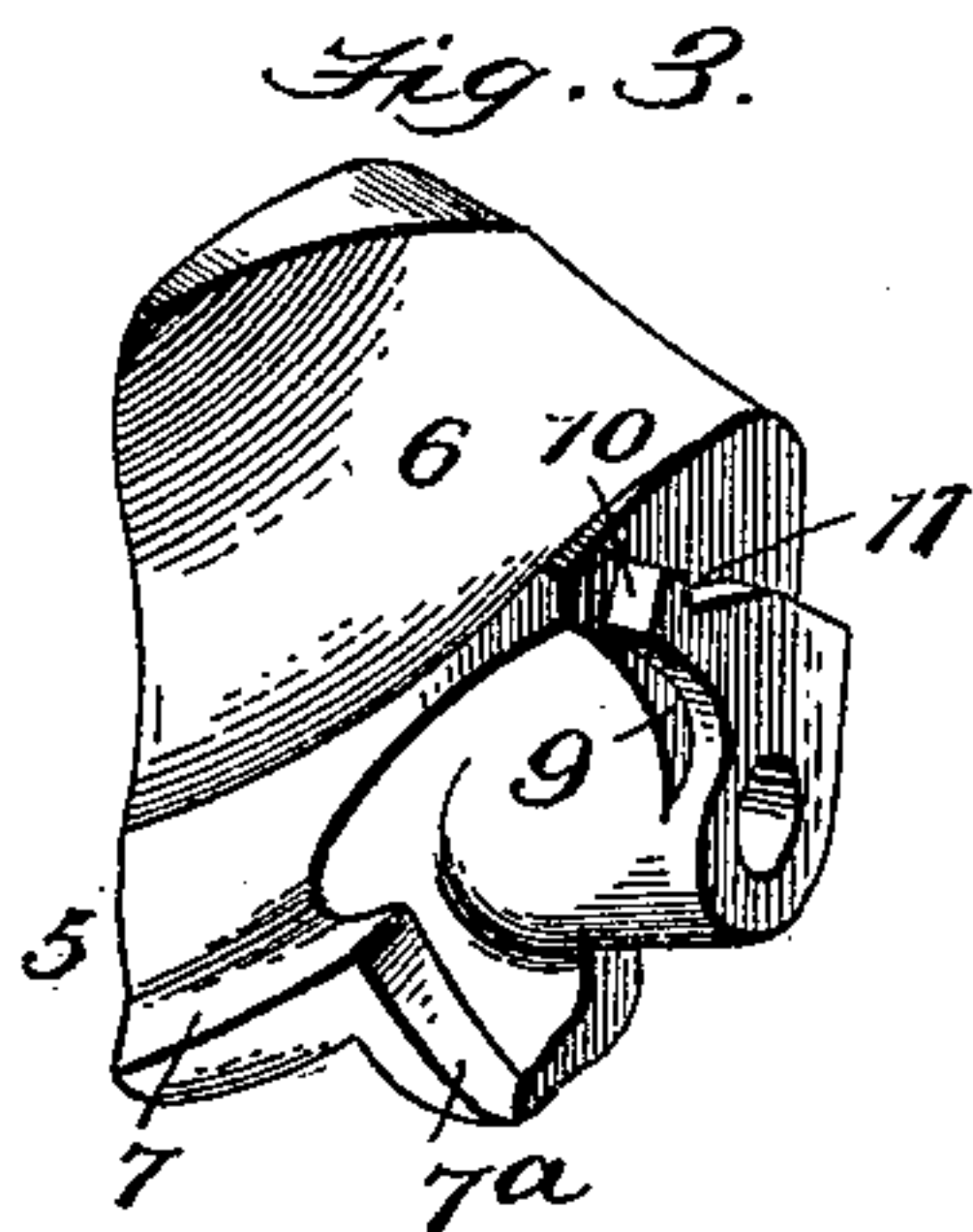
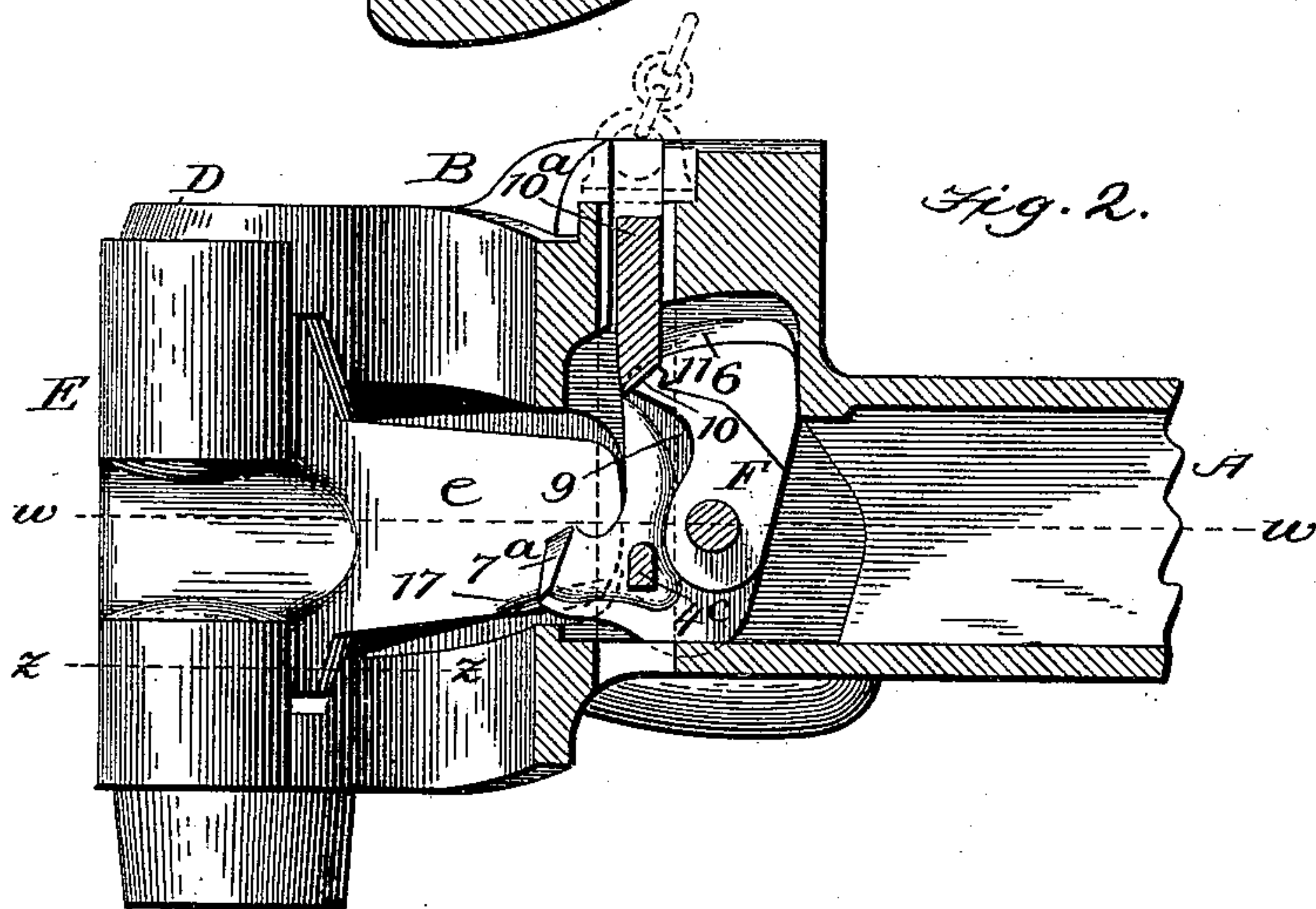
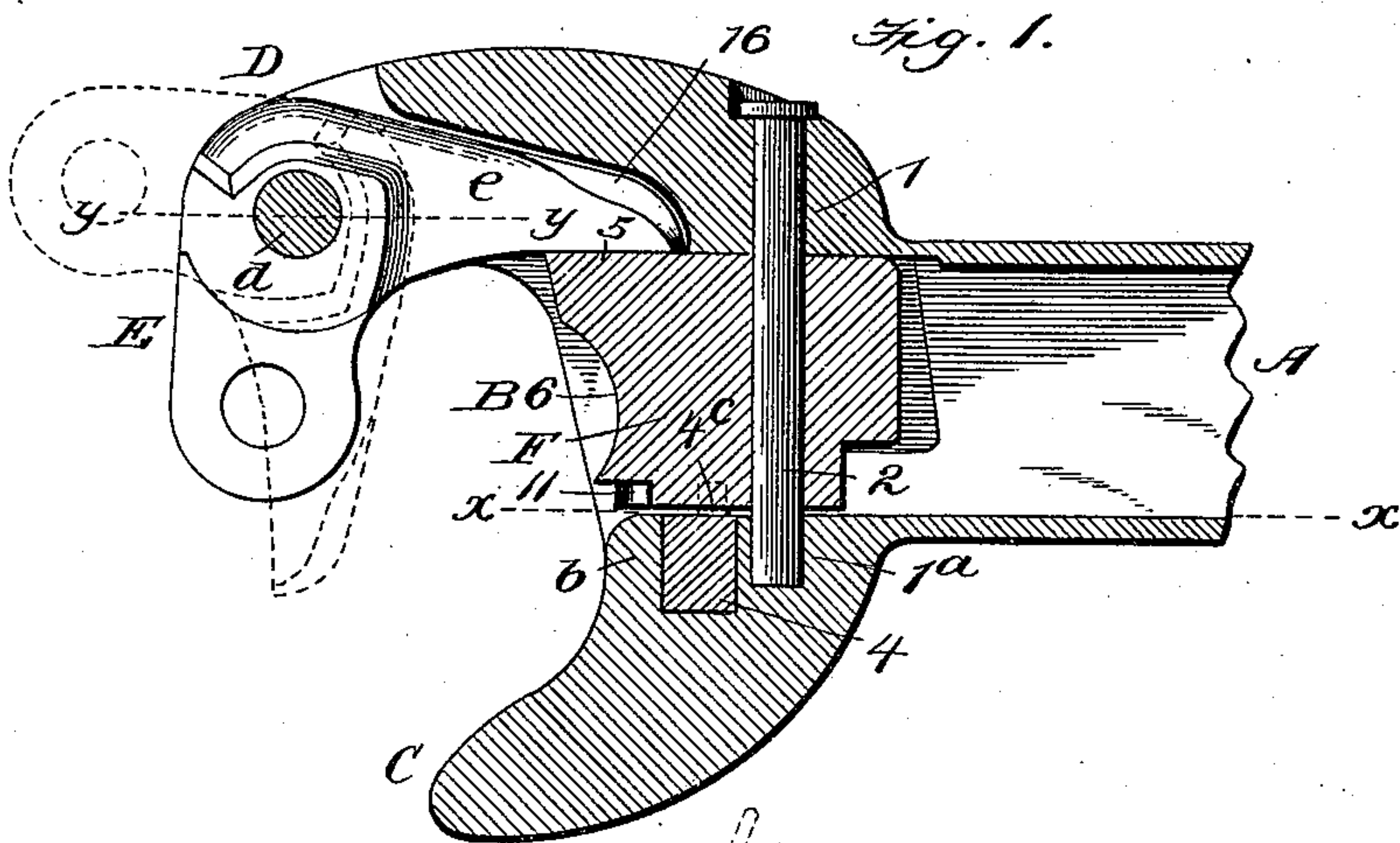
(No Model.)

2 Sheets—Sheet 1.

P. HIEN.  
CAR COUPLING.

No. 487,926.

Patented Dec. 13, 1892.



Witnesses

Edmund L. Bradford  
G. P. Ritter

Inventor

Phillip Hien  
by F. W. Ritter Jr.  
Attorney

(No Model.)

2 Sheets—Sheet 2.

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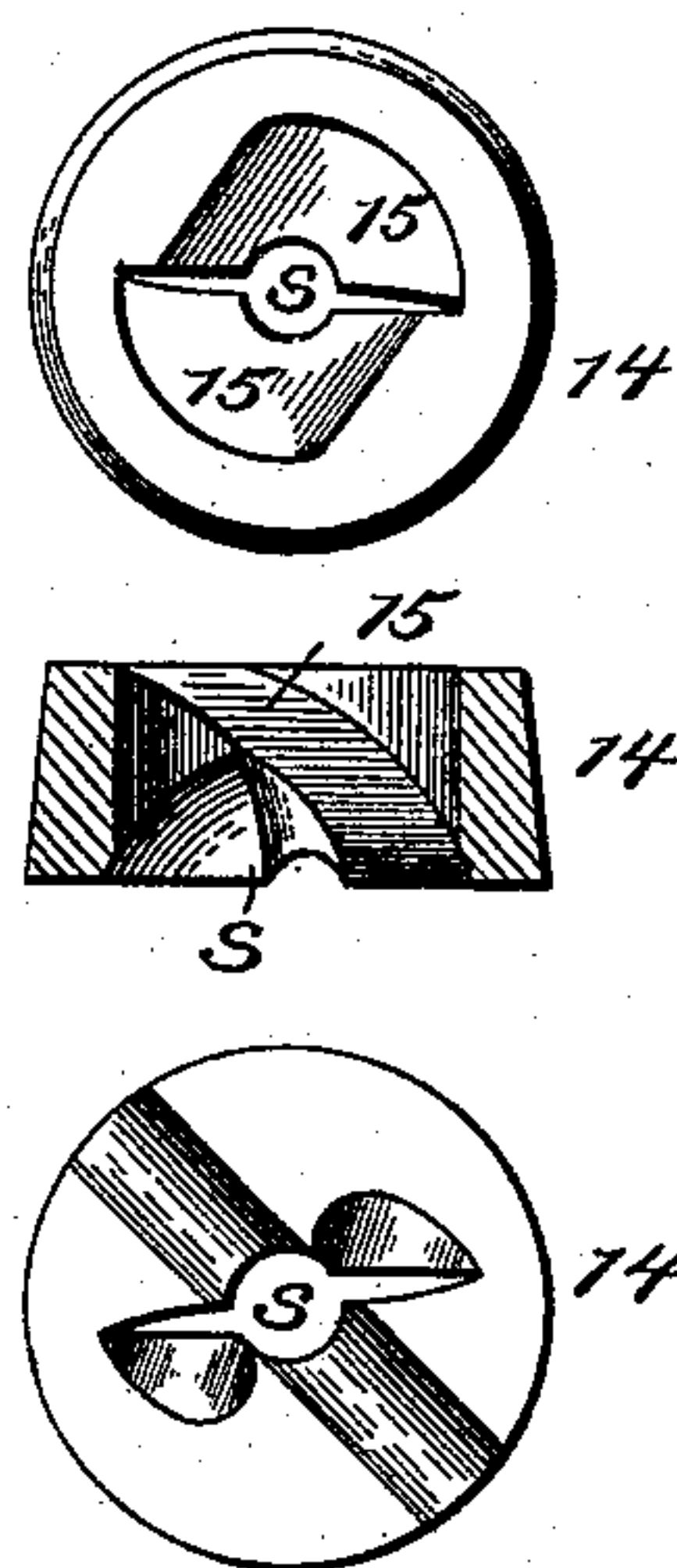
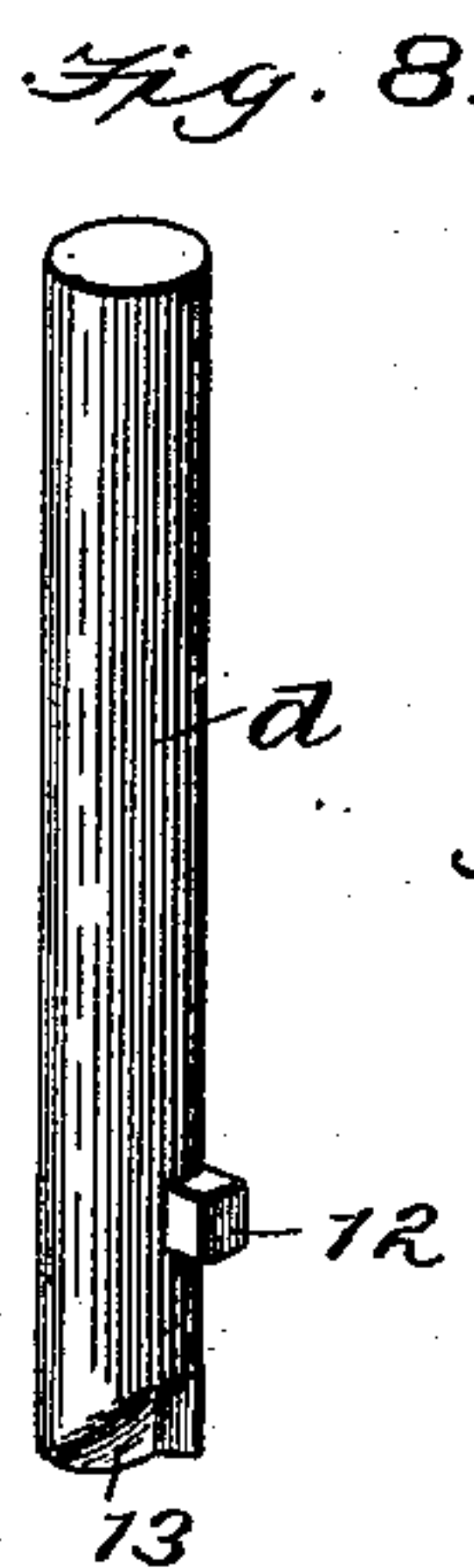
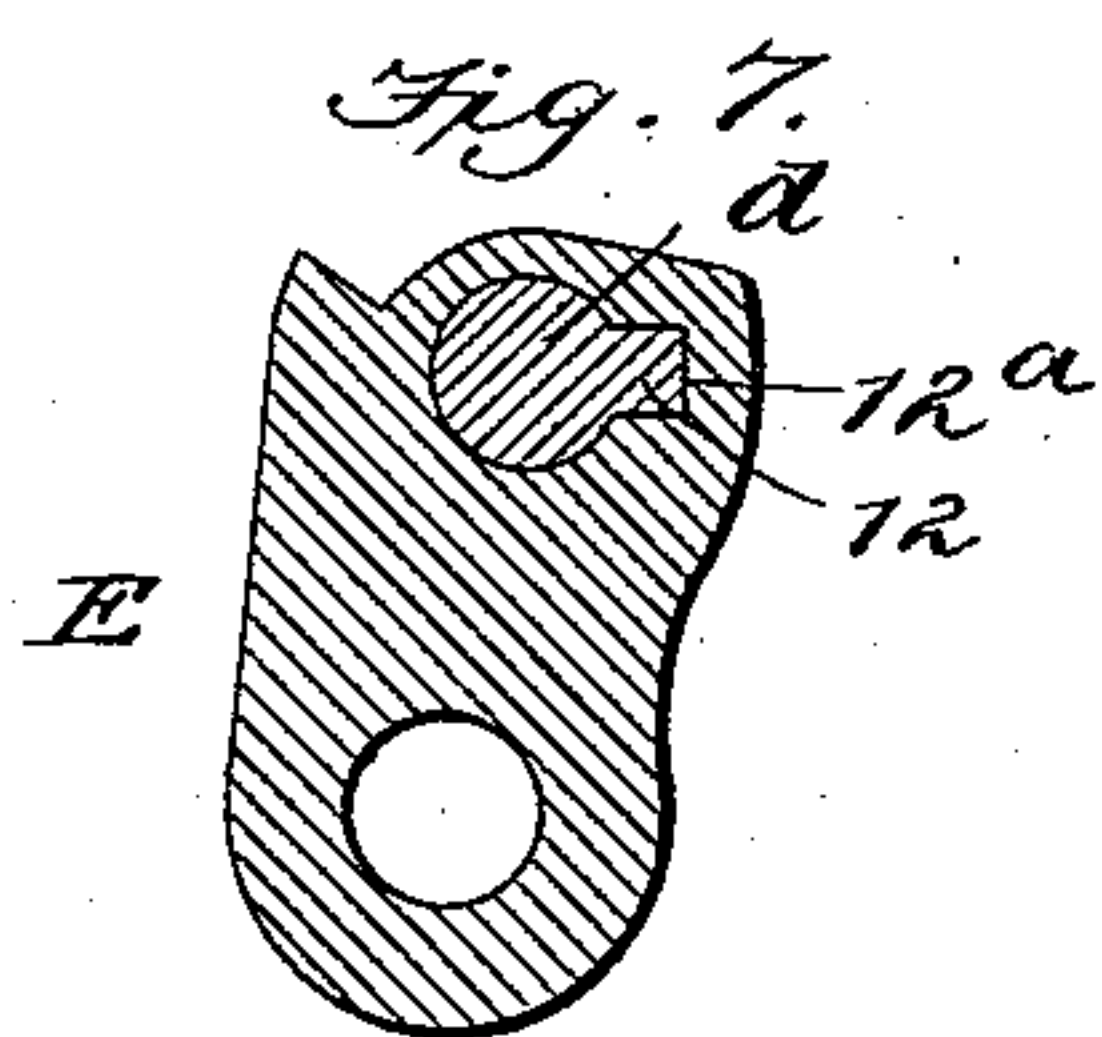
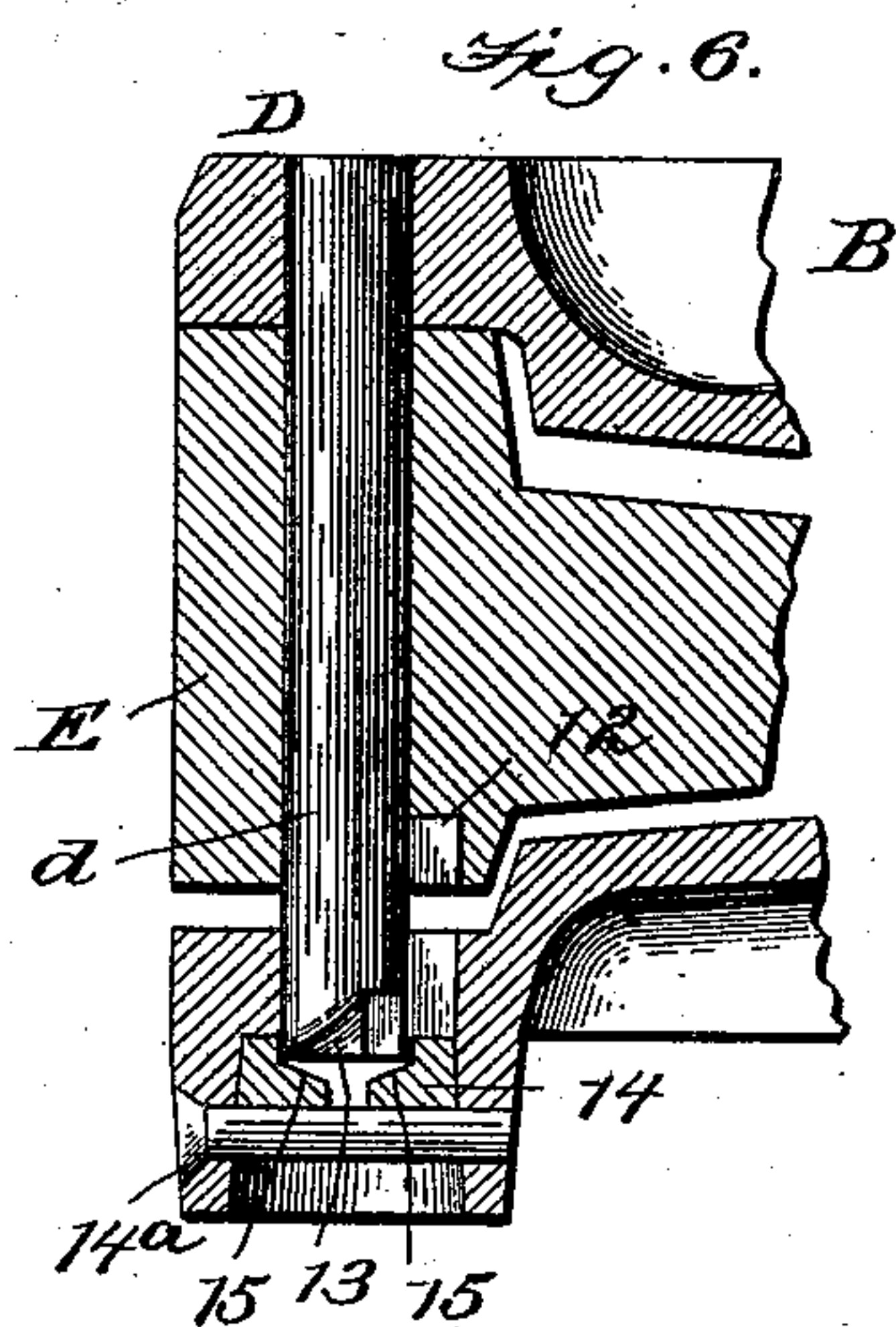
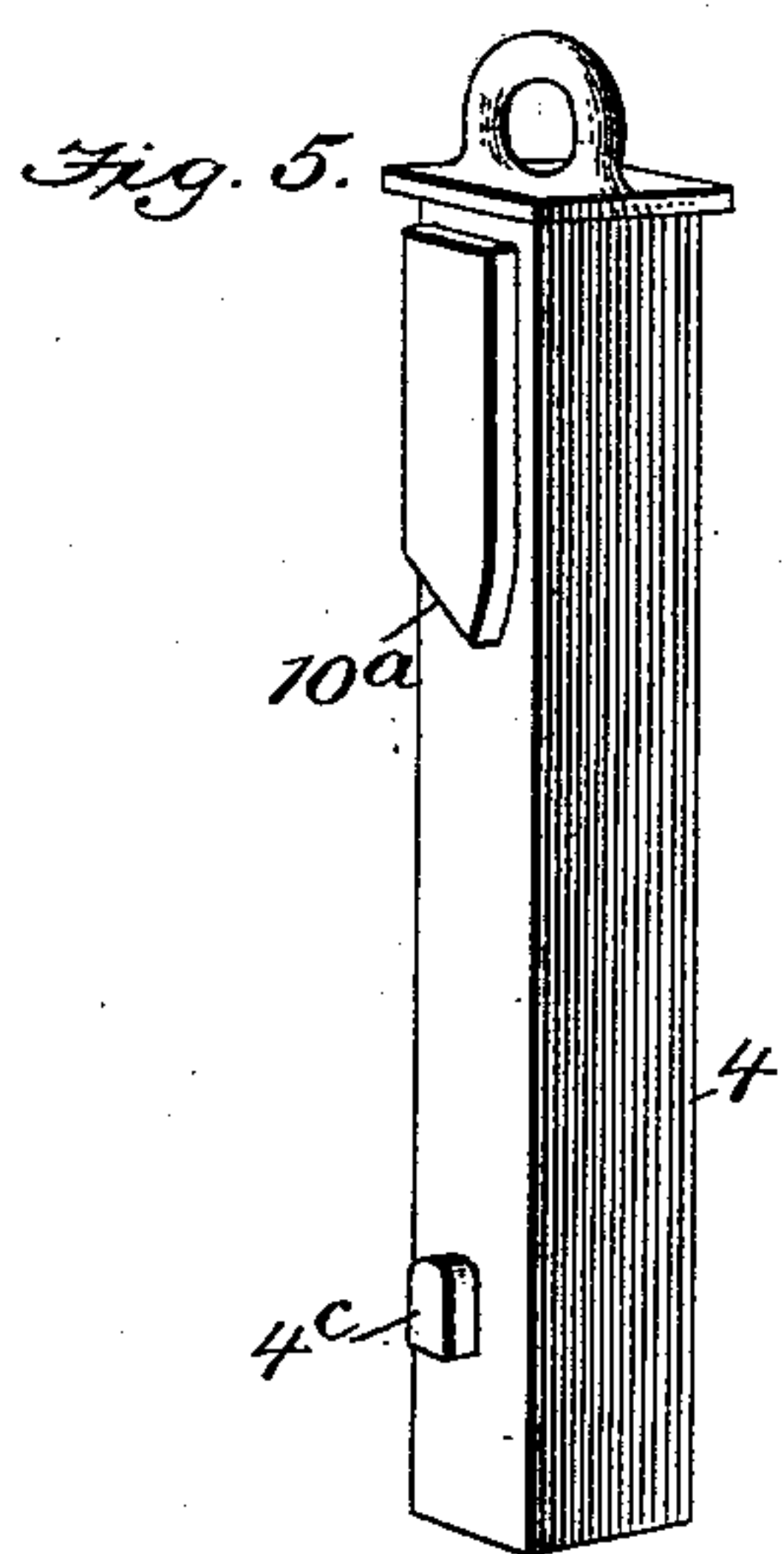
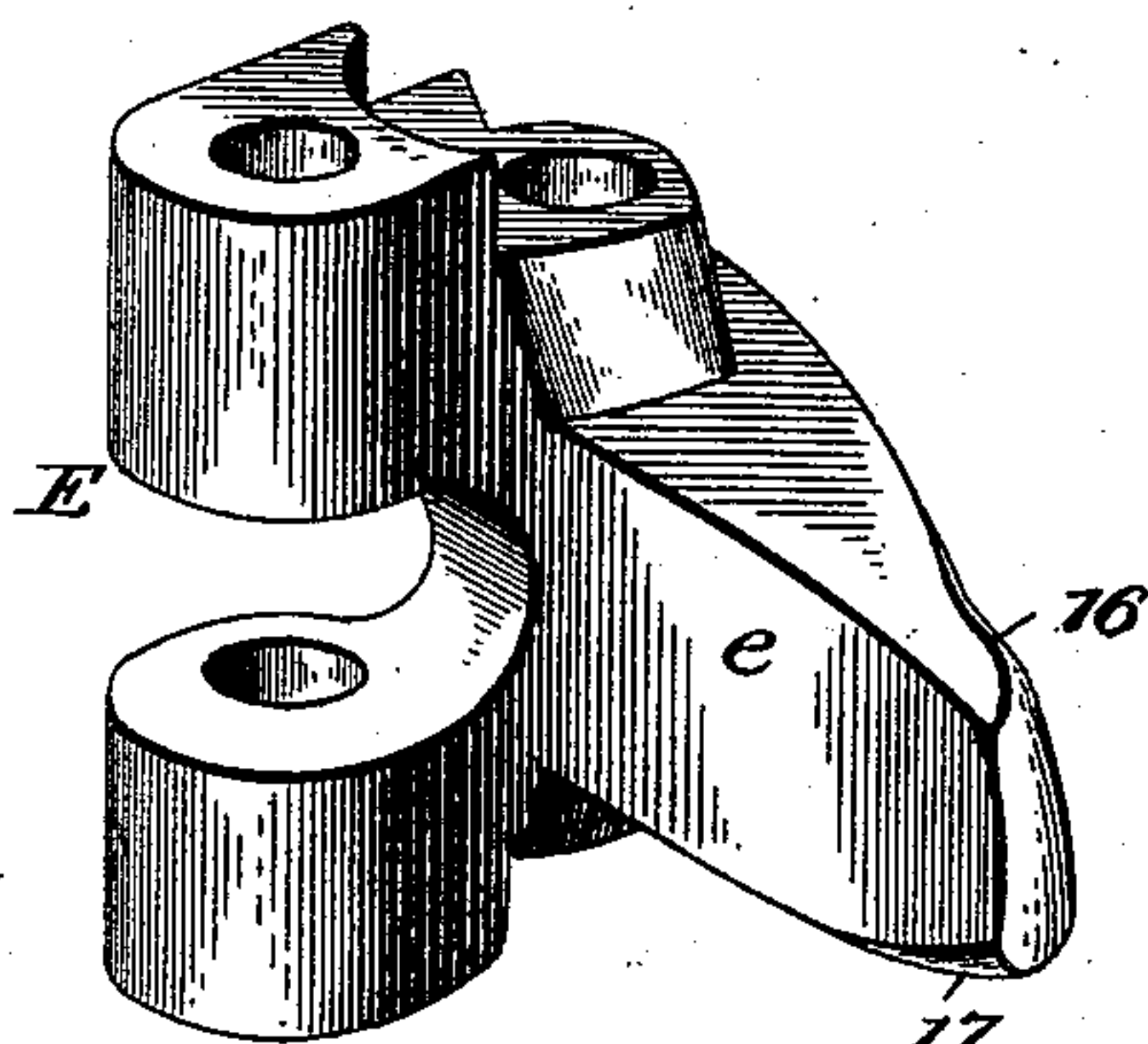


Fig. 10.



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# UNITED STATES PATENT OFFICE.

PHILLIP HIEN, OF CHICAGO, ILLINOIS.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 487,926, dated December 13, 1892.

Application filed July 1, 1892. Serial No. 438,678. (No model.)

*To all whom it may concern:*

Be it known that I, PHILLIP HIEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have

5 invented certain new and useful Improvements in Car-Couplers; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, wherein—

10 Figure 1 is a horizontal section of a coupler embodying my invention, taken on the line *ww*, Fig. 2, the parts being in the position they occupy when the cars are coupled up and the dotted line indicating the position when  
15 the cars are uncoupled. Fig. 2 is a vertical section on the line *xx*, Fig. 1, showing the position of the parts when the vibrating locking-block has been set for uncoupling, the unlocking-pin being shown in dotted lines to  
20 indicate its relation to the vibrating block whereby it prevents the accidental forward movement of the block. Fig. 3 is a front perspective view of the vibrating block in the position it occupies when set for uncoupling.  
25 Fig. 4 is an end view of the vibrating locking-block, showing the end which is next to and coacts with the unlocking-pin. Fig. 5 is a perspective view of the unlocking-pin, showing the side thereof next to and which coacts  
30 with the vibrating locking-block. Fig. 6 is a vertical section on the line *yy*, Fig. 1, showing the pivot-pin of the knuckle and the washer on which it rests formed with inclines which cause the knuckle to drop or  
35 swing open when the locking-block is raised. Fig. 7 is a horizontal section on the line *zz*, Fig. 2, showing the recess in the knuckle and the lug on the pivot-pin, whereby the parts are caused to move as one. Fig. 8 is a de-  
40 tached view of the pivot-pin of the knuckle, and Fig. 9 is a detached view of the washer or step which receives the lower end of the pivot-pin of the knuckle. Fig. 10 is a detached view of  
45 the knuckle, showing the preferred form of the tail-piece, whereby it is better adapted to coact with the several inclines on the vibrating locking-block.

Like symbols refer to like parts wherever they occur.

50 My invention relates to that class of car-couplers commonly termed "twin-jaw" couplers, wherein are combined a pivoted nose or

knuckle and a locking-block for securing the same when the cars are coupled up, and has for its several objects, first, to actuate and  
55 control the locking-block by the inward movement of the tail-piece of the knuckle when said locking-block is raised or in the position for uncoupling and the knuckle is open, as after uncoupling; second, to control the lock-  
60 ing-block by the unlocking-pin, so that the locking-block when once set for uncoupling cannot be accidentally displaced by the concussion of the cars or otherwise.

To accomplish the first object I have in  
65 view, I provide an incline on the lower part of the vibrating block, said incline adapted to engage the tail-piece of the knuckle on its inward movement and cause the locking-  
70 block to rock forward toward the effective end of the coupling and rest upon the tail-piece, and said construction or its equivalent for said purpose embraces the first feature of my invention.

To accomplish the second object I have in  
75 view, I provide an incline on the top of the locking-block adjacent to the unlocking-pin and a corresponding incline or lug on the side of the unlocking-pin adjacent to the locking-  
80 block, which parts coact to maintain the locking-block in a raised position when the locking-block is set for uncoupling, and said combination or its equivalent for said purpose embraces a second feature of my invention.

There are other minor features of invention,  
85 all as will hereinafter more fully appear.

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

In the drawings, A indicates the usual hol-  
90 low stem of the draw-bar, provided with the head B, having the guard-finger C and the journal D for the pivoted nose or knuckle E, said nose having a tail-piece *e*, which coacts with the locking-block F. Within the head,  
95 at opposite points, are suitable pierced abutments 1 1<sup>a</sup> for the reception of a journal-pin 2, on which vibrates a locking-block F, and the abutment 1<sup>a</sup>, adjacent to the guard-finger C, is also pierced vertically, as at *b*, for the re-  
100 ception of the unlocking-pin 4, or the pin by which the vibrating locking-block is raised and set for uncoupling.

F indicates the vibrating locking-block,



which may be of any irregular form which will afford the hereinafter-specified inclines to coact with the tail-piece *e* of the knuckle *E* and with the pin 4.

5 The general form of the vibrating locking-block, as chosen for purposes of illustration, may be said to be the segment of a worm-gear having a vertical face 5, which shall engage and hold the tail-piece *e* of the knuckle (see  
10 Fig. 1) when the coupling is made, and a somewhat spiral-shaped groove or forward incline 6, which permits the block to ride upon the tail-piece *e* when said tail-piece moves inward, as in making a coupling. Immediately below  
15 the spiral incline 6 and projecting forward thereof when the vibrating locking-block is raised, as shown in Fig. 3 is an incline 7, the lowest point of which is next to the face or end 5 of the locking-block, and said incline  
20 7 serves to engage the tail-piece *e* in its outward movement, (from the full line to the dotted line, Fig. 1,) and thus cause the raised locking-block to rock or vibrate downward and forward onto the tail-piece, or toward the  
25 effective end of the coupler, in the act of uncoupling. A third incline 7<sup>a</sup>, arranged in reverse direction to incline 7 and having its lowest point adjacent to the unlocking-pin, is provided, and said incline, when the vibrating  
30 locking-block is raised, as shown in Fig. 3, engages the tail-piece *e* of the knuckle *E* as said tail-piece moves inward in making a coupling and likewise causes the locking-block to rock forward and downward on the tail-piece,  
35 or toward the effective end of the coupling. It will also be noted that in viewing said vibrating locking-block in its raised position, as shown in Fig. 3, or when set for uncoupling, the incline 6 is substantially above the  
40 axis of the block *F*, while the reversely-arranged inclines 7 and 7<sup>a</sup> are below the axis thereof. It will thus be seen that by means of said three inclines coacting at different times with the tail-piece *e* of the knuckle pro-  
45 vision is made for controlling the locking-block from the tail-piece in making a coupling, no matter whether the vibrating locking-block be raised or lowered.

By means of the forward or spiral incline 6  
50 the locking-block is lifted by the inward movement of tail-piece *e*, if said block is down, and when the tail-piece has passed the block will fall and make the coupling, as shown in Fig. 1.

If the locking-block is raised and not in position to make a coupling, the tail-piece *e* in  
55 its inward movement will strike incline 7<sup>a</sup> and rock the locking-block forward until it rests on the tail-piece—that is to say, will rock the locking-block toward the effective end of  
60 the coupling; and, again, when the locking-block *F* is raised for uncoupling the tail-piece *e* as it swings out strikes the incline 7, and thus in the act of uncoupling rocks the locking-block forward toward the effective end of  
65 the coupling, so as to set the block for the subsequent act of coupling. In order to obtain the best results, it is desirable to shape the

end of tail-piece *e* so as to adapt it to engage smoothly with said inclines 6 7, and I therefore prefer to bevel the forward under end of  
70 the tail-piece *e*, as at 17, to engage the incline 7 and the upper rear surface of the tail-piece *e*, as at 16, to engage the spiral forward incline 6.

In addition to the three inclines 6, 7, and 7<sup>a</sup>  
75 on the face of vibrating locking-block *F*, I provide the end thereof next to the locking-pin 4 with an incline 10 (the object of which will hereinafter appear) and with a recess or open seat 9 for the reception of a lug, offset 4°, or its equivalent on one side of the unlocking-  
80 pin 4.

4 indicates the unlocking-pin, arranged in the vertical pin-slot *b* adjacent to the guard-finger *C*, and it is provided with a lug or offset 4°, adapted to engage the locking-block in  
85 the recess 9 and lift the same when the unlocking-pin is raised by its lever, (not shown,) to which it is connected by the usual chain, as indicated in dotted lines, Fig. 2. It will  
90 be noted that this construction and arrangement of unlocking-pin and with lug 4° entering open recess 9 allows the unlocking-pin 4 to return to its first position after the vibrating  
95 locking-block *F* has been raised or set for uncoupling and also permits the locking-block to be raised without disturbing the unlocking-pin 4.

In order to prevent the accidental fall of the vibrating locking-block *F* after it has been raised and set by the unlocking-pin 4, I provide an  
100 incline or beveled offset 10<sup>a</sup> on the side of the pin at its upper part, (see Fig. 5,) which incline 10<sup>a</sup> when the pin 4 is allowed to drop to its first position (see dotted lines, Fig. 2) rests  
105 in front of incline 10 on the end of the vibrating locking-block *F* and prevents its accidental forward displacement. Owing, however, to the construction, (viz., inclines,) when  
110 force is directly applied to the locking-block *F* by the tail-piece *e* striking either of the inclines 7 or 7<sup>a</sup> the pin 4 will lift and release the vibrating locking-block and permit it to fall forward toward the effective end of the coupling. In order to prevent the accidental arrest  
115 of the locking-block *F* in the raised position when said locking-block is lifted by the tail-piece *e*, a recess 11 is formed just back of the incline 10 on the end of the locking-block, so that when the lug or incline 10<sup>a</sup> on the un-  
120 locking-pin 4 has once passed back of the incline 10 and entered recess 11 the vibrating locking-block *F* is prevented from moving farther back, (or away from the effective end of the coupling,) but must fall forward on the tail-piece *e* and drop thence into the coupling position.  
125

In order to cause the knuckle *E* to automatically open, as shown in dotted lines, Fig. 1, when the locking-block is raised and with the greatest certainty and least degree of friction, I provide the pivot-pin *d* of the knuckle  
130 with a lug 12, adapted to engage in a recess 12<sup>a</sup>, so that pin and knuckle move together, and the lower end of said pin I provide with



an incline or inclines 13, stepping the same on a step or washer 14, having inclined faces 15, the whole arranged so that the weight of the knuckle E shall cause it to swing outward when released. The pivot-pin *d* of the knuckle is usually introduced from below, and the step, seat, or washer 14 may be removably held by a pin 14<sup>a</sup> or other suitable means and is usually slotted, as at *s*, to prevent the accumulation of cinder, sand, or dust, which would interfere with the free motion of the parts.

The operation of the hereinbefore-described coupler, except where the same has been indicated when describing the construction, is similar to all couplers of the twin-jaw type, and therefore need not be specifically set forth.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a car-coupling, the combination, with a pivoted knuckle or nose, of a vibrating locking-block having an incline arranged below the axis of said block when the block is raised and adapted to engage the tail-piece of the knuckle on the inward movement thereof, whereby the locking-block is caused to revolve toward the effective end of the coupling, substantially as and for the purposes specified.

2. In a car-coupling, the combination, with a pivoted knuckle or nose, of a vibrating locking-block having two inclines, one above and the other below the axis of the block, said inclines adapted to engage the tail-piece of the knuckle on its inward movement, substantially as and for the purposes specified.

3. In a car-coupling, the combination, with a pivoted knuckle or nose, of a vibrating locking-block having two reverse inclines arranged below the axis of the block, one of said inclines adapted to engage the tail-piece of the knuckle on its inward movement and the other on its outward movement, substantially as and for the purposes specified.

4. In a car-coupling, the combination, with a pivoted knuckle or nose, of a vibrating locking-block having three inclines, one of said inclines adapted to engage the tail-piece of the knuckle on its outward movement and two adapted to engage said tail-piece on its inward movement, substantially as and for the purposes specified.

5. In a car-coupling, the combination, with a pivoted knuckle or nose having a tail-piece adapted to move the locking-block, of a vibrating locking-block and an unlocking-pin

adapted to retain the vibrating block in a raised position until said block is struck by the tail-piece, substantially as and for the purposes specified.

6. In a car-coupling, the combination, with a pivoted knuckle or nose having a tail-piece adapted to actuate the locking-block, of a vibrating locking-block having an incline on the end next the unlocking-pin and an unlocking-pin having a lug or incline on its upper part and adjacent to the vibrating locking-block to coact with the aforesaid incline on said block, substantially as and for the purposes specified.

7. In a car-coupling, the combination, with a pivoted knuckle or nose having a tail-piece adapted to actuate a locking-block, of a vibrating locking-block having an incline and a recess in rear thereof, both on that part of the block adjacent to the unlocking-pin, and an unlocking-pin having an inclined projection or lug on its upper part adjacent to the said incline and recess of the vibrating locking-block and adapted to coact therewith, substantially as and for the purposes specified.

8. In a car-coupling, the combination, with a pivoted knuckle or nose having a tail-piece adapted to actuate a locking-block, of a vibrating locking-block having two reverse inclines arranged below its axis and an incline on its end next the unlocking-pin and an unlocking-pin having an incline adapted to engage the incline on the end of the vibrating locking-block, substantially as and for the purposes specified.

9. In a car-coupling, the combination, with the knuckle or nose, of a pivot-pin having inclines on its lower end and an inclined step for the pivot-pin, said step having an opening for the escape of cinder, sand, &c., substantially as and for the purposes specified.

10. In a car-coupling, the combination, with the knuckle or nose, of a detachable pivot-pin having inclines on its lower end, said parts being constructed to move together, a head having a washer or step seat, and a removable washer or step having inclines for the foot of the pivot-pin, substantially as and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 29th day of June, 1892.

PHILLIP HIEN.

Witnesses:

DANIEL B. MASON,  
ROBERT C. JANNEY.