

No. 731,415.

PATENTED JUNE 16, 1903.

C. F. SPRINGER.
CAR COUPLING.

APPLICATION FILED OCT. 22, 1900. RENEWED JAN. 26, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.

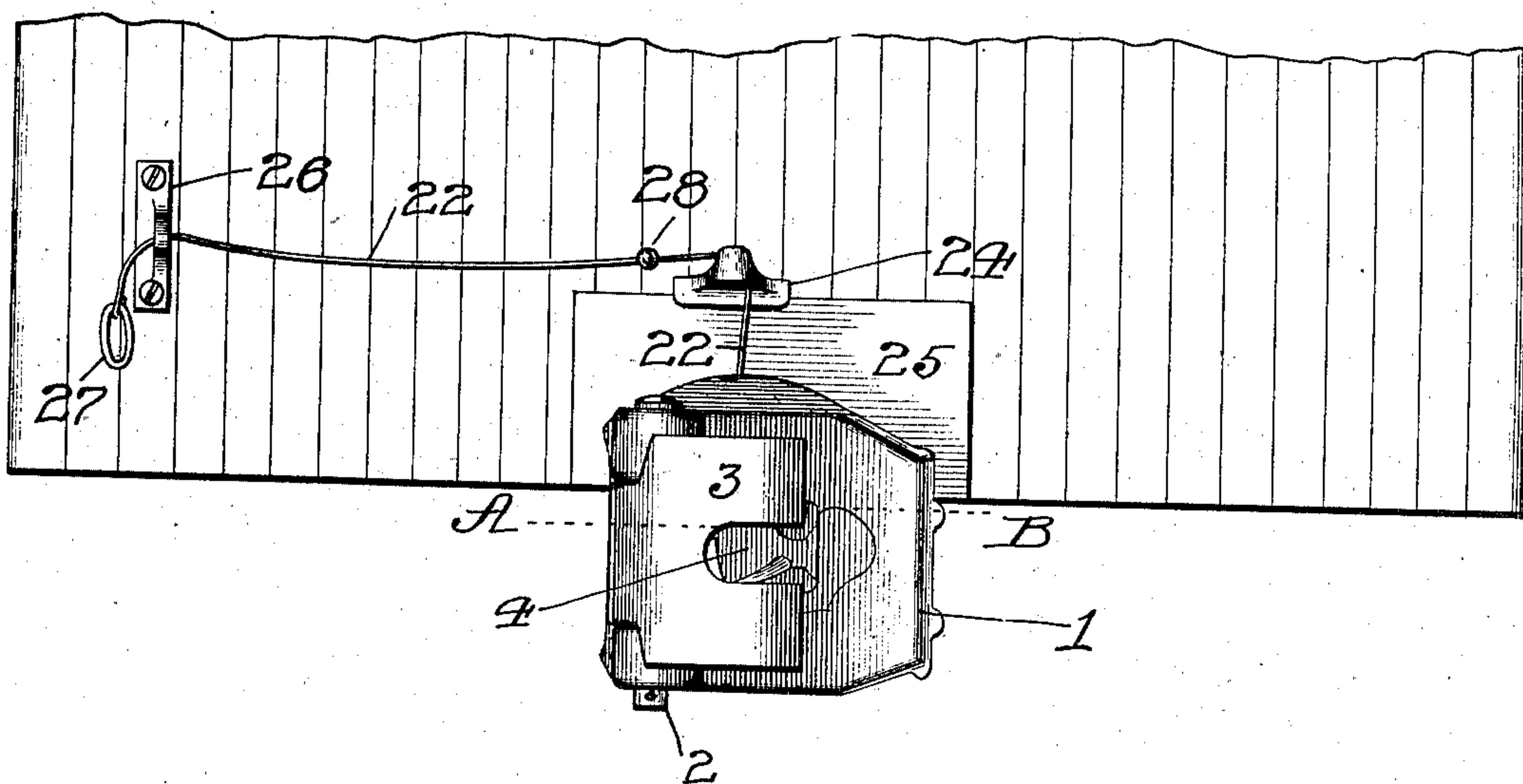


Fig. 2.

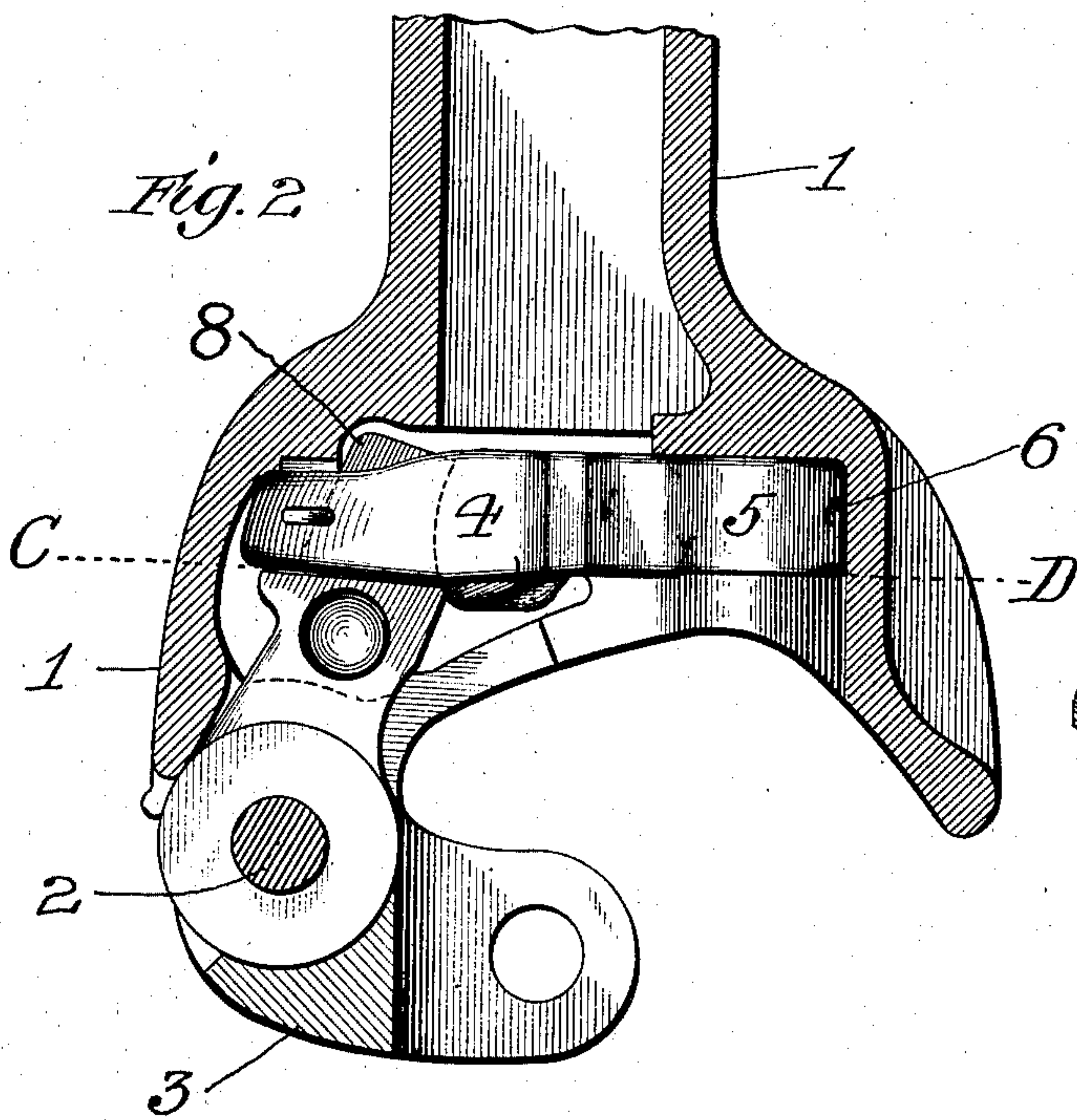
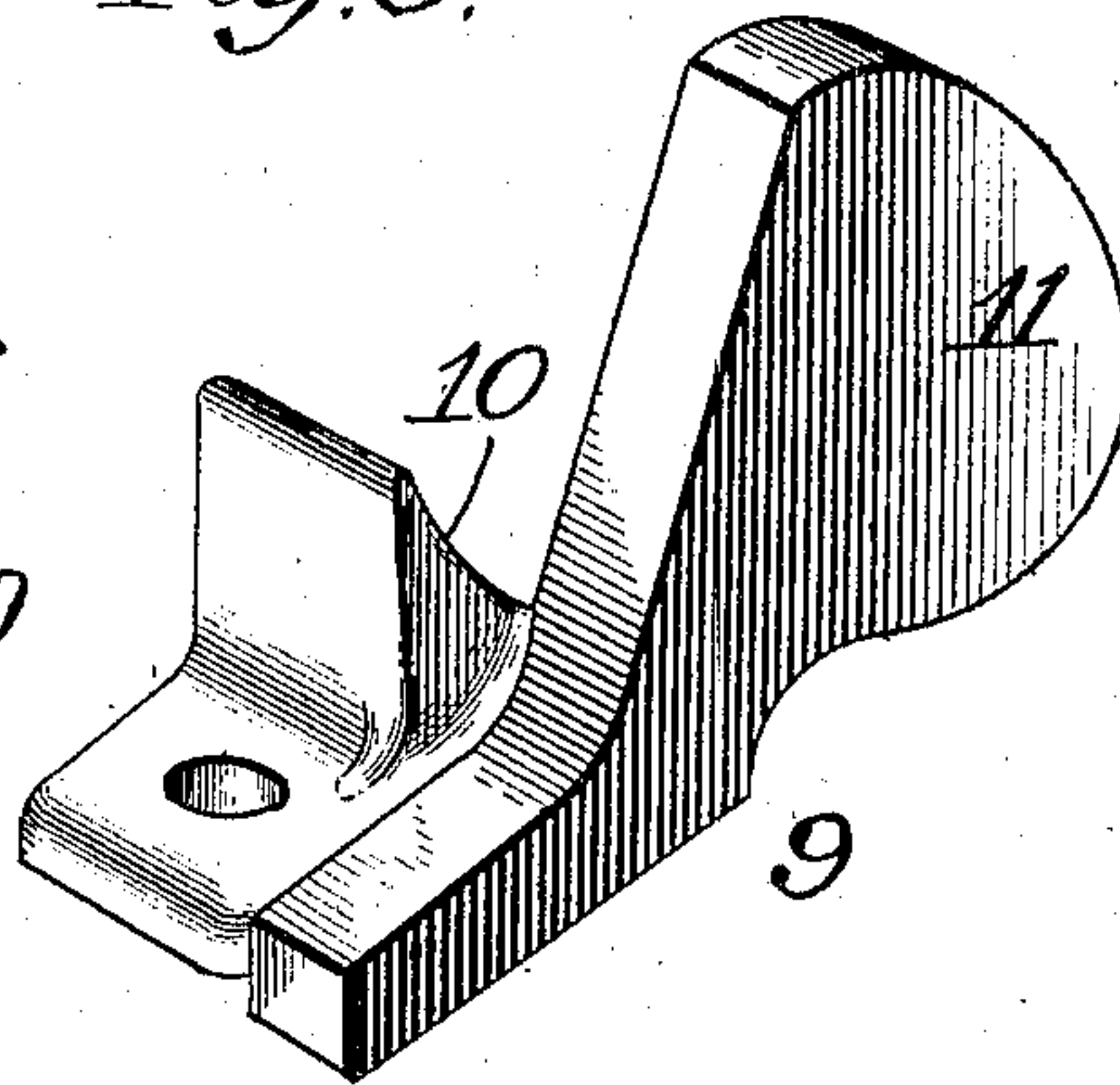


Fig. 3.



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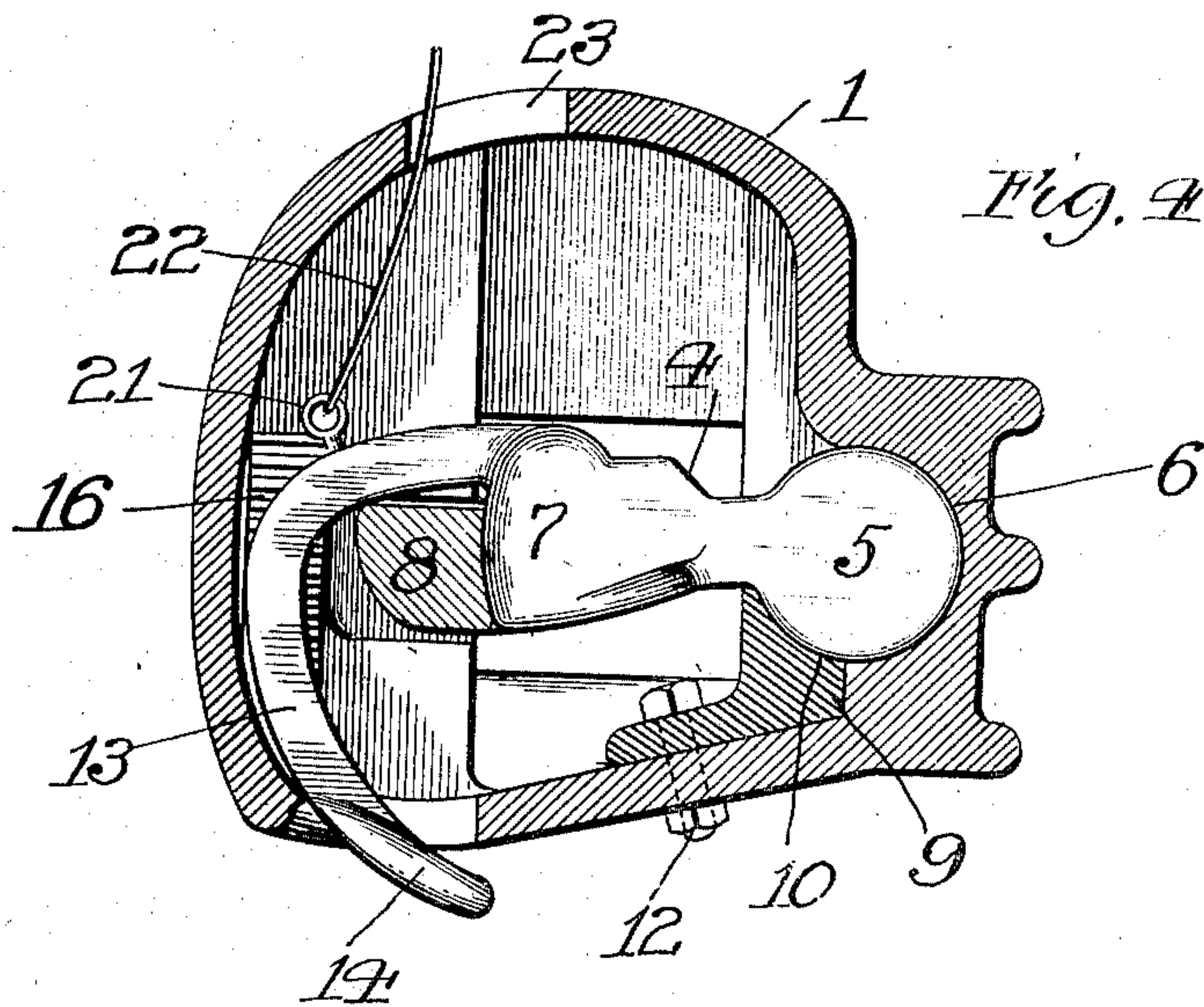


Fig. 4

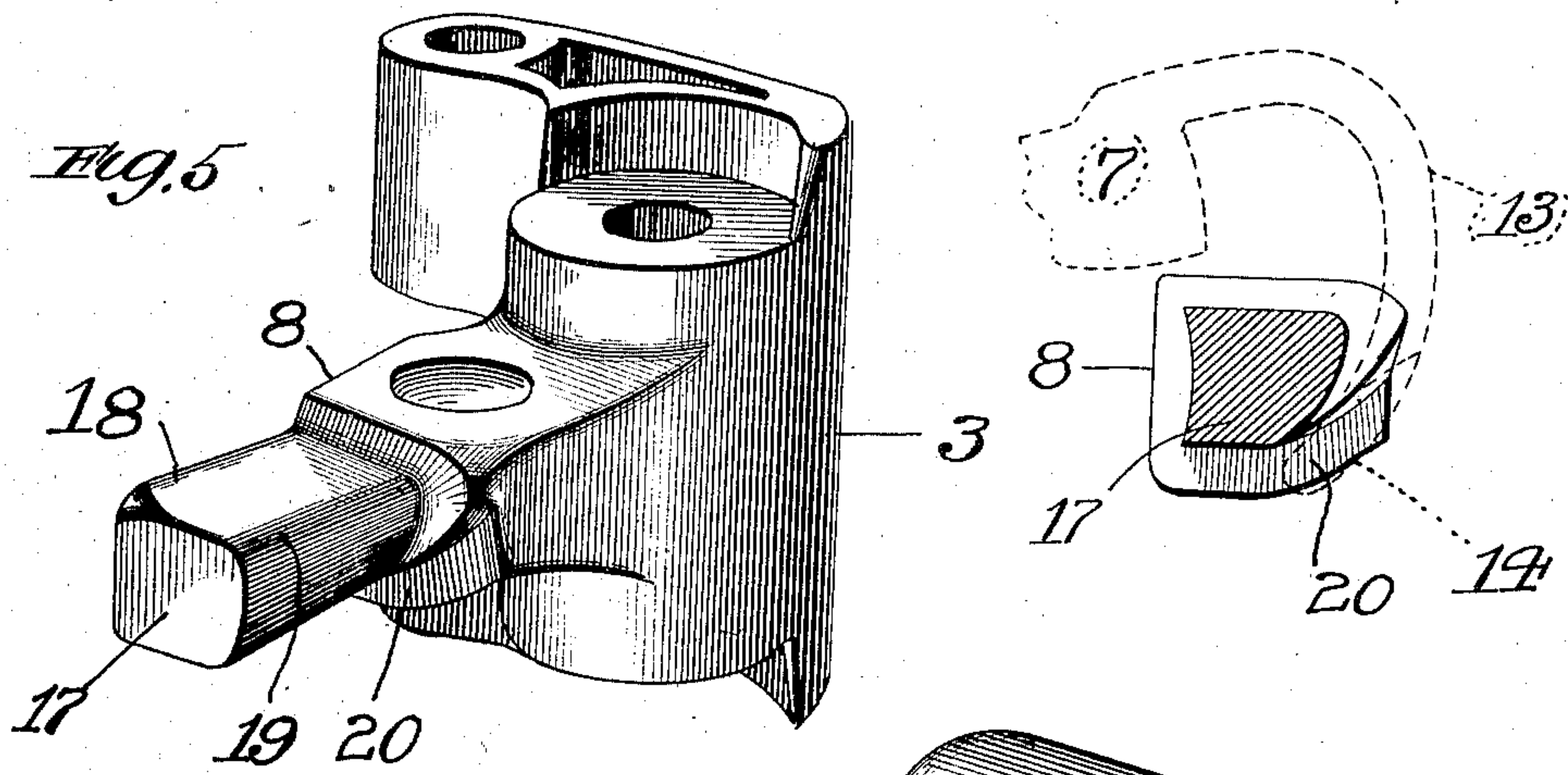


Fig. 5

Fig. 6

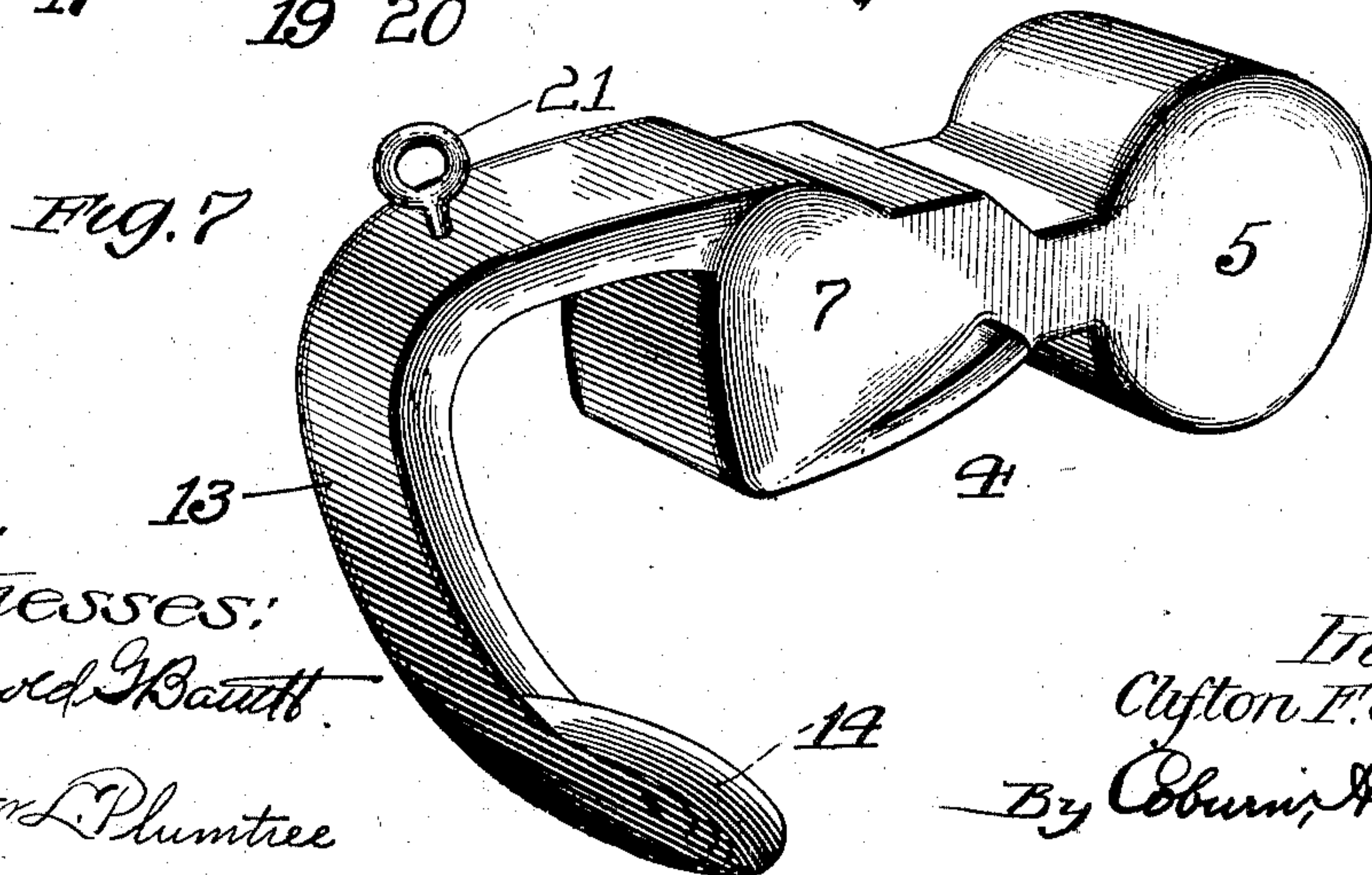


Fig. 7

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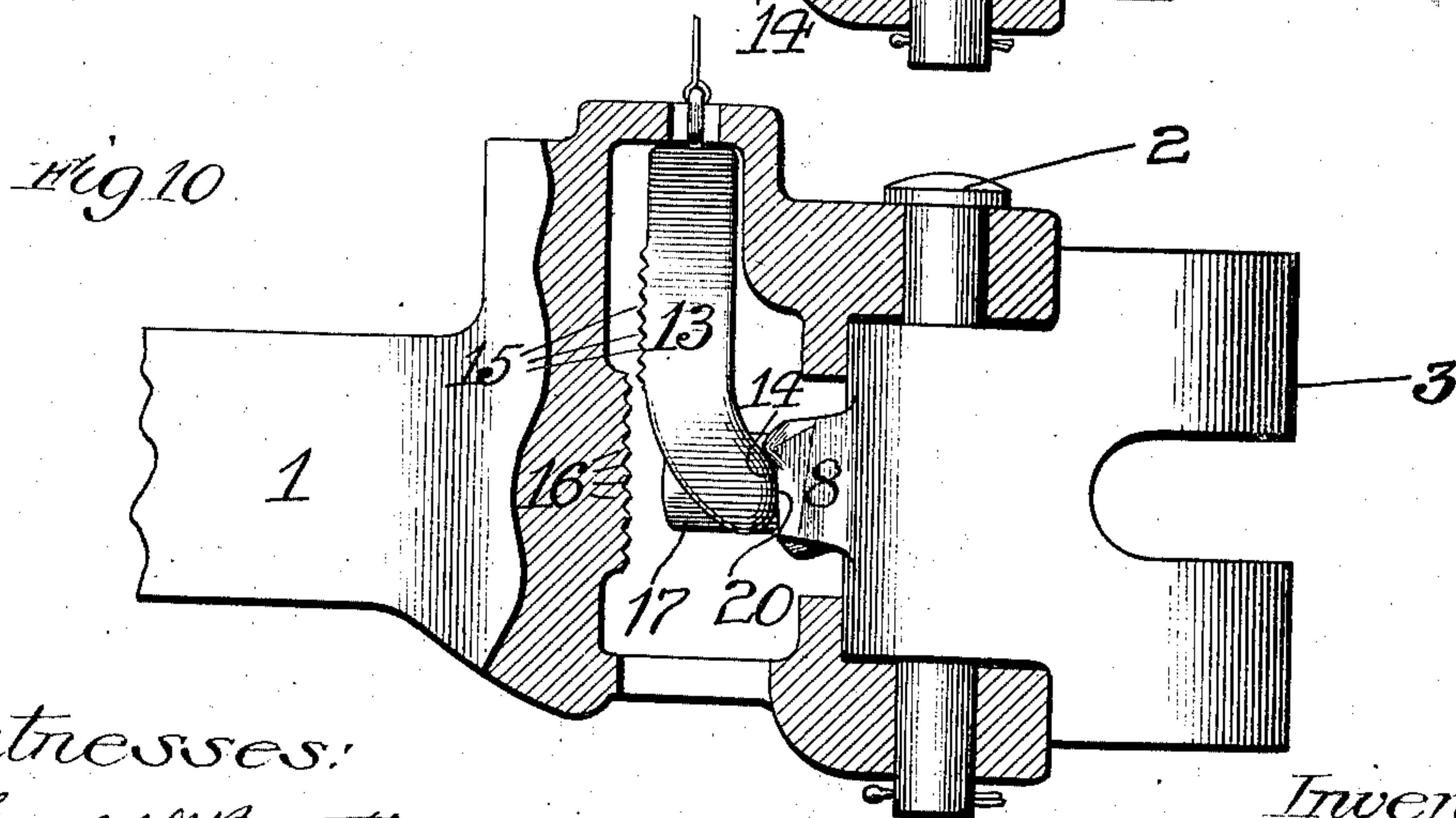
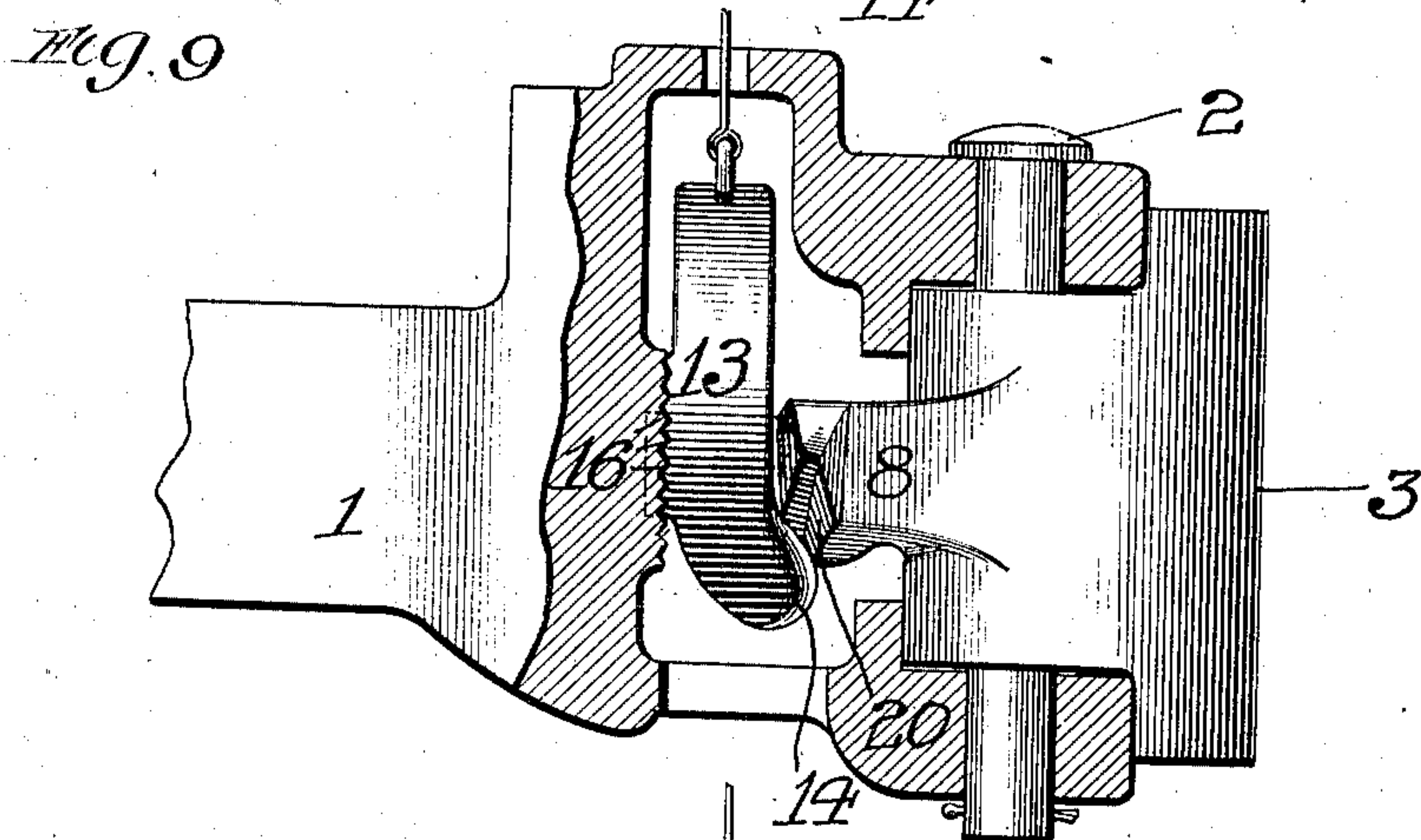
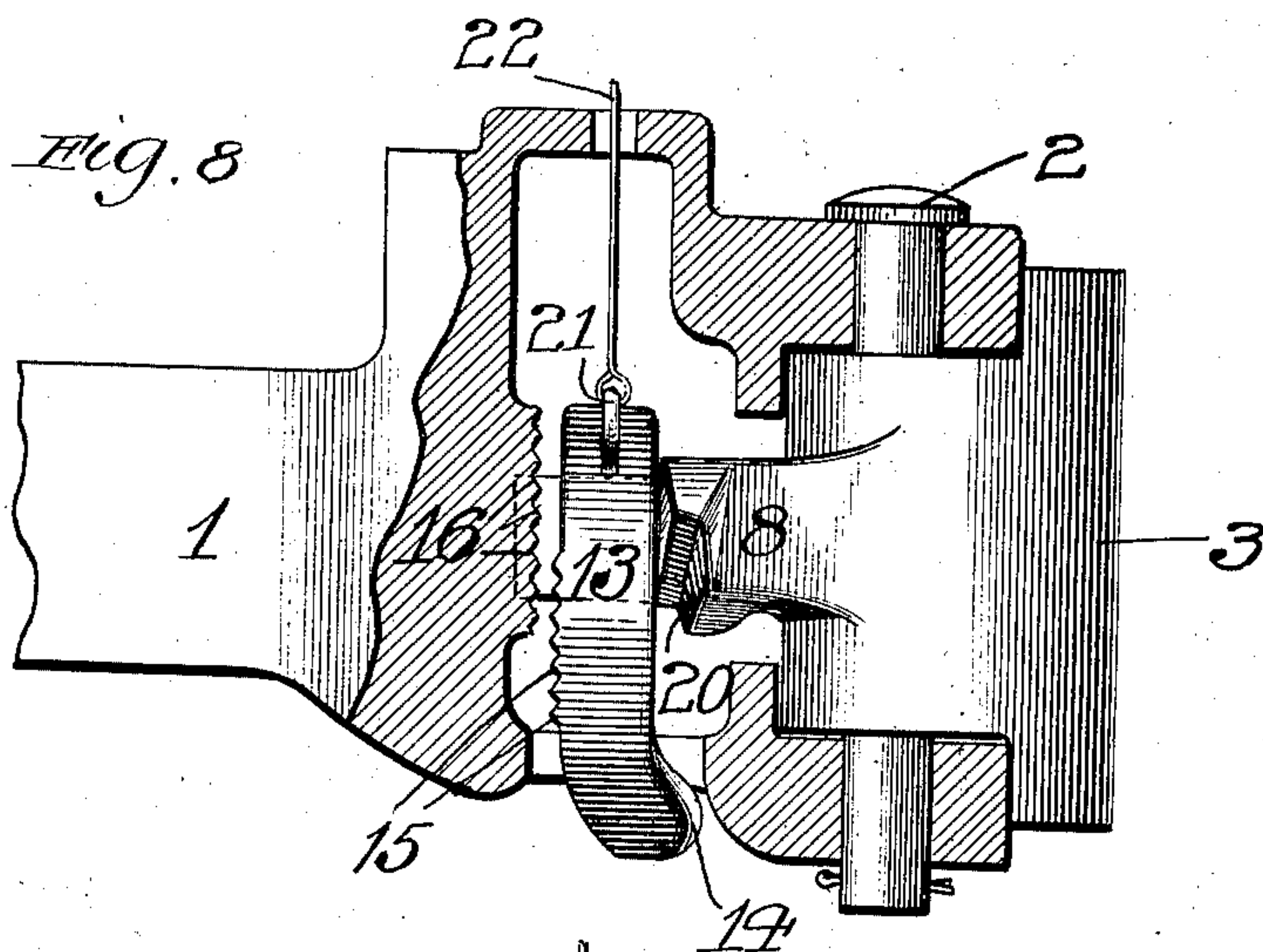
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

CLIFTON F. SPRINGER, OF CHICAGO, ILLINOIS.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 731,415, dated June 16, 1903.

Application filed October 22, 1900. Renewed January 26, 1903. Serial No. 140,674. (No model.)

To all whom it may concern:

Be it known that I, CLIFTON F. SPRINGER, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Couplings, of which the following is a specification.

My invention relates to car-couplings of the vertical-plane type; and the object thereof is to provide a novel and efficient coupler capable of a locked position, a set position ready for uncoupling, and an open position ready for coupling. My invention also provides novel means whereby the brakeman is enabled from a position at the side of the car to so set or open the coupler.

In the drawings, Figure 1 is an end elevation of a car, showing my coupler with its operating cord or chain; Fig. 2, a section on line A B, but on an enlarged scale; Fig. 3, a perspective of the retaining-block for the lock; Fig. 4, a section on line C D of Fig. 2; Fig. 5, a perspective of the knuckle; Fig. 6, a section on line E F of Fig. 5, showing the hook of the lock in dotted lines; Fig. 7, a perspective of the lock; Fig. 8, an elevation of the coupler with its side cut away and showing the parts in normal or closed position as when coupled; and Figs. 9 and 10 similar views, but with the parts in set and open position, respectively.

The draw-head 1 is made in the usual manner, and upon it by means of the pin 2 is pivoted the knuckle 3, which is of the ordinary construction, except as to the tail portion thereof.

The lock 4 is curved at both ends, and is, in fact, substantially dumb-bell shaped in cross-section. The cylindrical end or ball 5 fits in a socket 6 in the draw-head, while the other ball 7, which forms the lock proper, is received by a concavity in the tail 8 of the knuckle. For retaining the lock in place a block 9 is bolted or otherwise secured to the draw-head in front of the lock. This block has a curved surface 10, fitting under the ball 5 and forming a continuation of socket 6. The block also has a side extension 11, bearing against the ball or cylinder 5. A bolt 12 serves to hold the block to the draw-head. The lock has a hook 13, which extends forwardly, then downwardly, and finally in-

wardly beneath the tail of the knuckle. The extreme end or tip 14 of this hook is slightly turned laterally for a purpose hereinafter referred to. The inner side of this hook is roughened or provided with corrugations 15 or the like to engage in certain positions, with corresponding corrugations 16 in an interior wall of the draw-head. The tail of the knuckle has a reduced end 17, which is rectangular in general outline, with its edge 18 somewhat higher than the edge 19. The tail has an inclined surface or cam 20 on its under side, as shown in Fig. 5. This inclined surface extends upwardly on the surface or face of the inner side of the tail which lies adjacent to the draw-head.

The hook 13 is provided on its top with an eye 21 or other suitable device for securing thereto a means for operating the lock, which means may be a cord, chain, or a cable 22, which passes through the opening 23 in the top of the draw-head. This cable passes through a bracket 24, mounted on the car in any suitable place and manner—as on the dead-block 25, for instance—and extends to near the side of the car, where it is supported by a bracket 26. The end of the cable may have suitable arrangements, such as the ring 27, whereby the cable may be easily grasped and pulled by the brakeman. A button 28 may be provided on the cable to limit its movement toward the coupler. Assuming that the coupler is closed and connected with an adjoining coupler and that it is desirable to uncouple at this point, the brakeman pulls slightly on the cable, thereby raising the lock sufficiently so that the lock will clear the tail of the knuckle. At this time the tip of the hook 13 rides upon the lower end of the inclined surface or cam 20, thereby throwing the lock slightly to the left, (see Fig. 9,) so as to cause its roughened surface 15 to engage the similarly-roughened surface 16 in the draw-head. On account of this engagement of parts the lock will be maintained in this raised position, even though the brakeman has released his hold of the cable. This position is the set position, and the train can part at this point, inasmuch as the knuckles are free to open. It is evident that it is unnecessary for the brakeman to wait and hold

the lock in released position, but that he may set the lock in that position and then leave it with the assurance that the couplers will uncouple when the cars are separated. The
 5 hook 13 on the lock also serves to throw the knuckle open, so as to be ready in position for coupling. When the cable is pulled as far as possible, the tip of the hook rides high up on the inclined surface 20, the effect of
 10 which is to throw the tail of the knuckle outwardly, as shown in Fig. 10, which represents the open position of the coupler. The inclined surface 20 is located on the tail of knuckle intermediate of the end of such tail
 15 and the pivot of the knuckle, it being understood that the tail of the knuckle comprises all that portion rearward of the pivot. This inclined surface is located as close to such pivot as found practicable rather than at or
 20 near the end of the tail, so that a comparatively slight movement of the lock will serve to open the knuckle.

In many of the automatic couplers now in use a chain operated by a bell-crank lever
 25 extending to the side of the car is employed to lift the lock; but a chain is objectionable, as it is frequently broken. After continued use the springs of the draft-rigging become weak, permitting greater longitudinal move-
 30 ment of the draw-head. When this movement is considerable, it breaks the chain. If the chain should be lengthened to accommodate such movement, the lever cannot lift the lock. In my coupler this objection is
 35 avoided, inasmuch as the cable is made of sufficient length to follow the outward movement of the coupler and at the same time be capable of unlocking the coupler.

In case one of my draw-bars on a car should
 40 pull out the cable would lift the lock and open the coupler to uncouple that car from the next one and the draw-head and coupler would be suspended and carried by the cable instead of being allowed to fall upon the track.
 45 The button limits the movement of the cable, and thereby permits the suspension of the draw-head and coupler from the end of the cable.

After the lock has been raised to its set po-
 50 sition the higher edge 18 on the tail of the knuckle as it moves outward serves the purpose of moving the hook of lock laterally to disengage the same from the corrugations 16 of the draw-head, so that such lock will be
 55 ready to fall just as soon as the tail of the knuckle has moved out.

While the use of corrugations is preferred, yet my invention is not to be limited thereto except where the same are expressly claimed;
 60 but my invention contemplates any construction or arrangement whereby the lock is held raised for the set position.

It is to be understood that the use of the cable is not essential to the operation of my
 65 novel construction of coupler proper, but that the ordinary chain and lever now in com-

mon use might be employed, and, furthermore, my cable may be used in connection with other kinds of couplers.

I claim—

1. In a car-coupler, the combination of a draw-head, a knuckle having an inclined surface on the face or surface of the inner side of its tail, and a lock having a hook extending between the tail of the knuckle and the draw-head and whose tip when raised engages such inclined surface and moves the lock laterally to cause it to remain in raised position.

2. In a car-coupler, a draw-head, a knuckle, a lock therefor, and means arranged on the draw-head for holding the lock in set or open position, such knuckle having means for moving the lock laterally after being raised to clear the knuckle and thereby bringing the lock in engagement with said holding means.

3. In a car-coupler, the combination of a draw-head, a knuckle, a lock having a hook provided with a roughened surface on a side adjacent to the draw-head and means for moving the hook to cause its said surface to engage the draw-head when the lock is raised sufficiently to unlock the knuckle.

4. In a car-coupler, the combination of a draw-head, a knuckle, and a lock located within the draw-head and having a hook provided on one side with a roughened surface, the wall of the draw-head adjacent to said surface being also roughened, and means for moving the hook to cause such surfaces to engage after a partial movement of the lock sufficient to release the knuckle.

5. In a car-coupler, the combination of a draw-head, a knuckle, and a lock having a hook extending between the tail of the knuckle and the draw-head, the tail of the knuckle having an inclined surface engaged by such hook which is thereby moved laterally to hold the lock when such lock is raised just to release the knuckle and which by engagement with said inclined surface throws the knuckle open upon a further movement of the lock.

6. In a car-coupler, the combination of a draw-head, a knuckle, a lock having a hook, means on the knuckle to move the hook laterally when the lock is raised, means on the hook for holding the lock raised in set position and means for releasing the lock from said position after the tail of the knuckle has moved outward.

7. In a car-coupler, the combination of a draw-head having an interior roughened surface 16, a knuckle, a lock having a hook provided with a roughened side surface adjacent to said surface 16, and means on the tail of the knuckle for moving the hook laterally to cause engagement between such surfaces when the lock is raised, the tail of the knuckle having a raised surface 18 which, as the tail moves outwardly, contacts and moves the
 13 hook laterally to release such engagement.

8. In a car-coupler, the combination of a

draw-head, a knuckle, a lock pivoted at one end in the draw-head and having at its other end a substantially vertically movable hook engaging behind the knuckle to throw the same open when the lock is raised.

9. In a car-coupler, the combination of a draw-head, a knuckle having an inclined surface on its tail, a lock pivoted at one end in the draw-head and having at its other end a hook which is substantially vertically movable and which coöperates with said surface to throw the knuckle open when the lock is raised.

10. In a car-coupler, the combination of a draw-head, a knuckle, a lock, means on the knuckle for moving the lock laterally when raised to clear the knuckle, thereby setting the lock, and means for causing a binding between the lock and the draw-head to maintain such set position.

11. In a car-coupler, the combination of a draw-head, a knuckle, a lock, means on the knuckle for moving the lock laterally when raised to clear the knuckle and thereby set the lock, and means for holding the lock in such set position.

12. In a car-coupler, the combination of a

draw-head, a knuckle having a tail provided with an inclined surface 20 and a lock having a projecting hook whose tip 14 is laterally extended or curved so as to contact such surface when the lock is raised.

13. In a car-coupler, the combination of a draw-head having an interior socket, a knuckle, a lock having a curved end pivoted to such socket and a retaining-block secured to the draw-head, such block having a curved portion 10 forming part of the socket and an extension 11 in front of said end of the lock.

14. In a car-coupler, the combination of a draw-head, a knuckle pivoted therein and having an inclined surface on its tail intermediate of the end of such tail and the pivot of the knuckle and a lock pivoted at one end in the draw-head and having at its other end a substantially vertically movable hook normally positioned between the tail of the knuckle and an inner wall of the draw-head and adapted to contact such inclined surface.

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Witnesses:

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