

G. A. HERMANSON.  
AUTOMATIC CAR COUPLING.

(Application filed June 7, 1902.)

(No Model.)

2 Sheets—Sheet I.

Fig. 1.

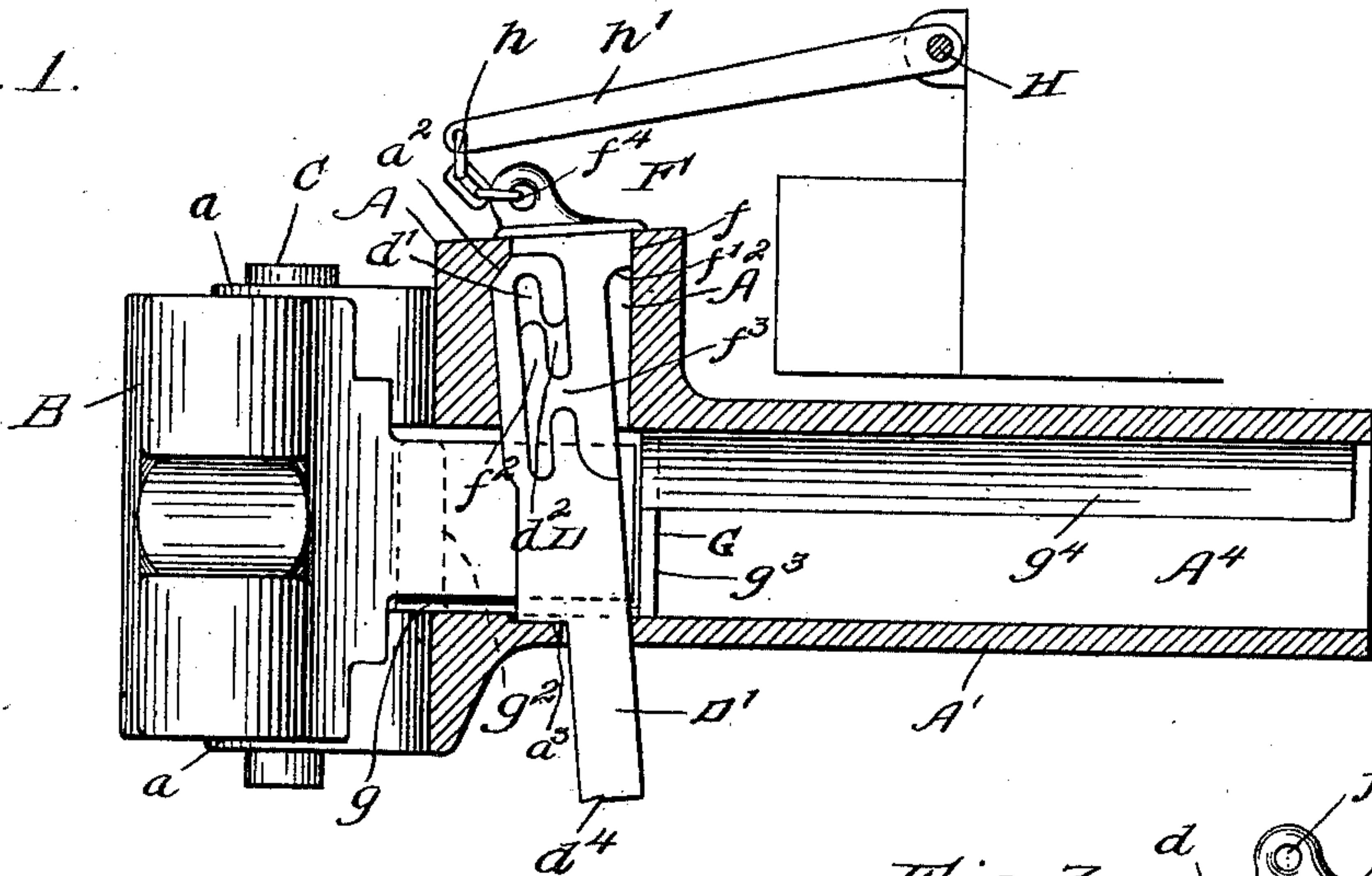


Fig. 3.

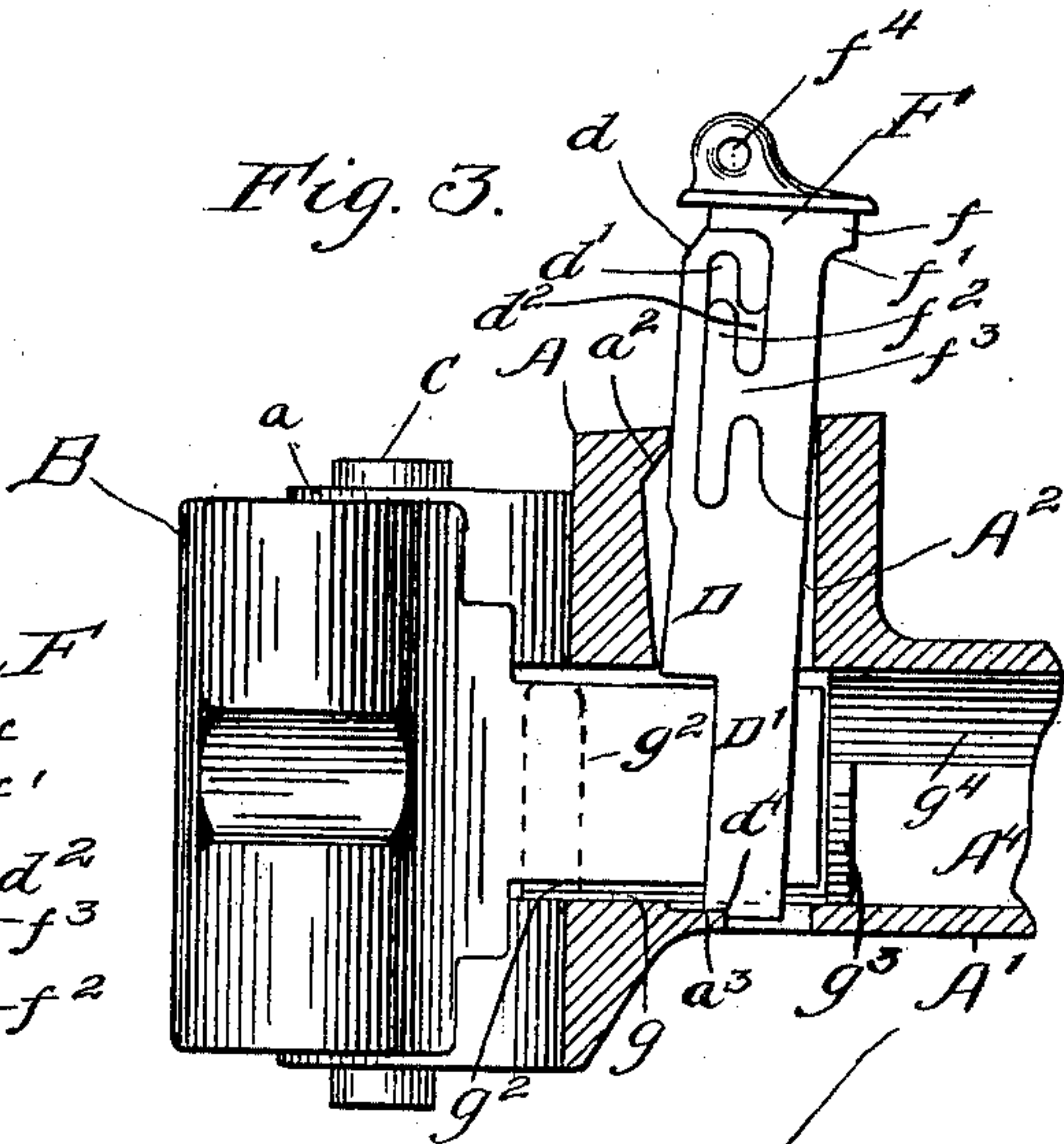
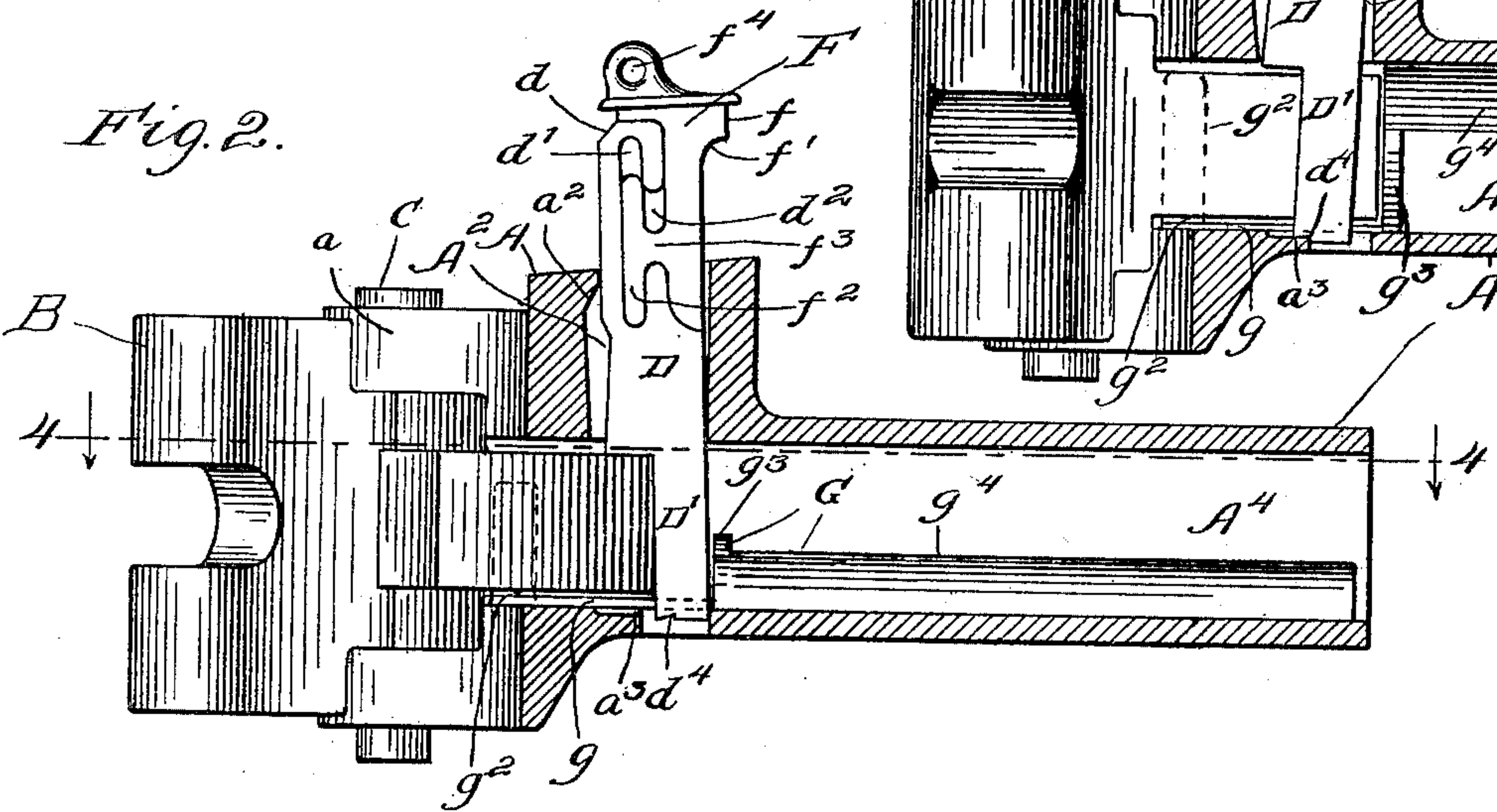


Fig. 2.



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2 Sheets—Sheet 2.

Fig. 4.

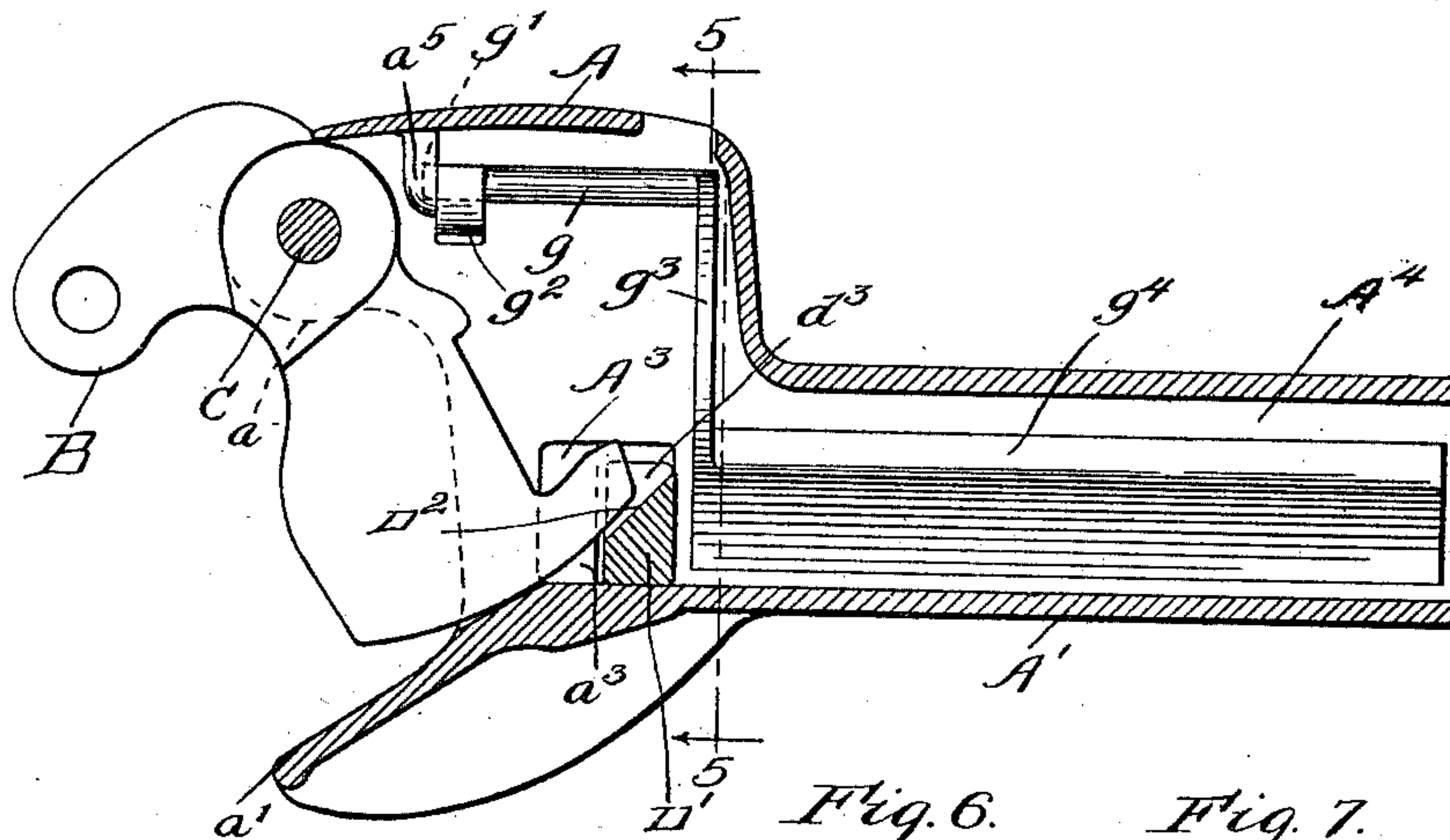


Fig. 6.

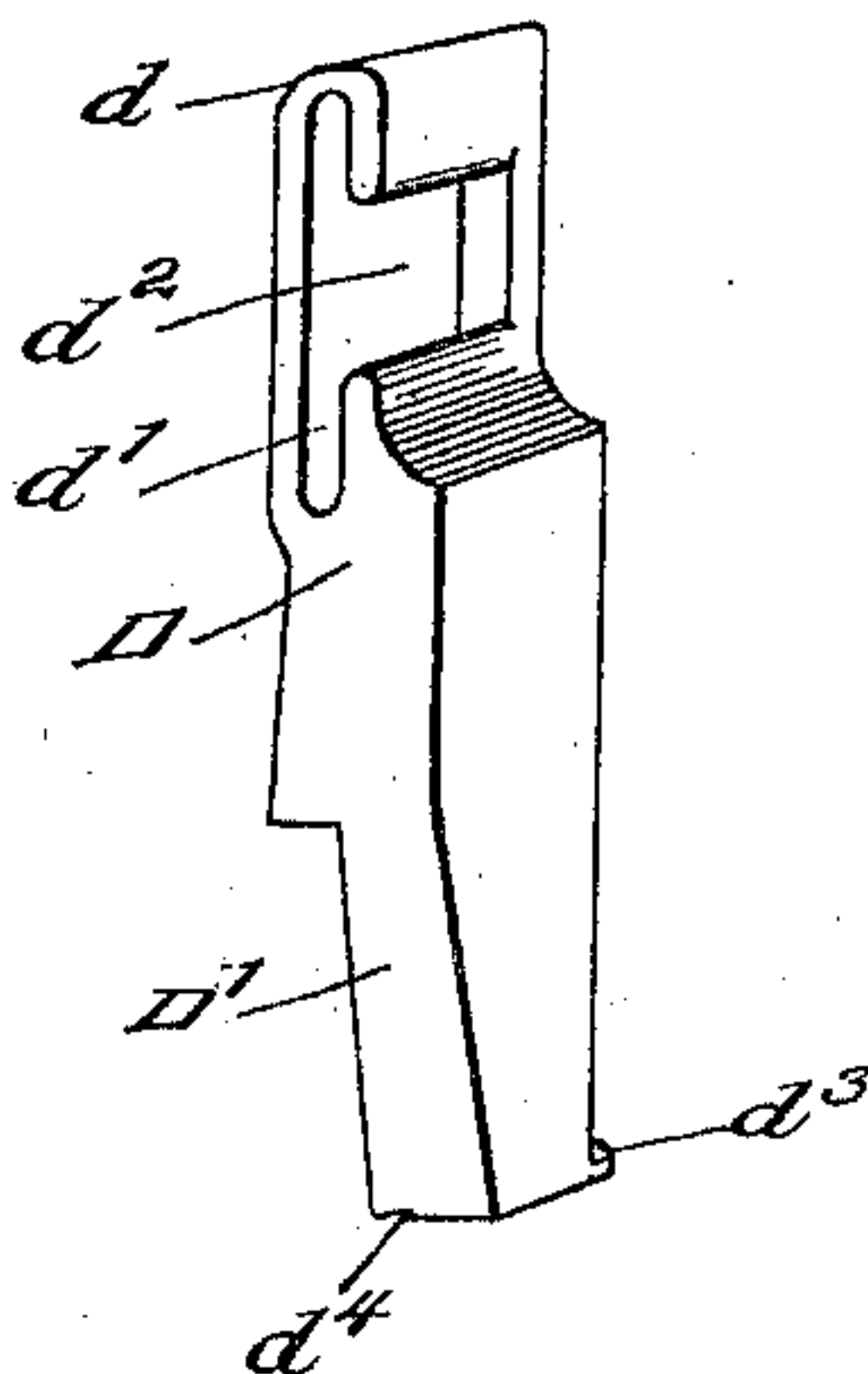


Fig. 7.

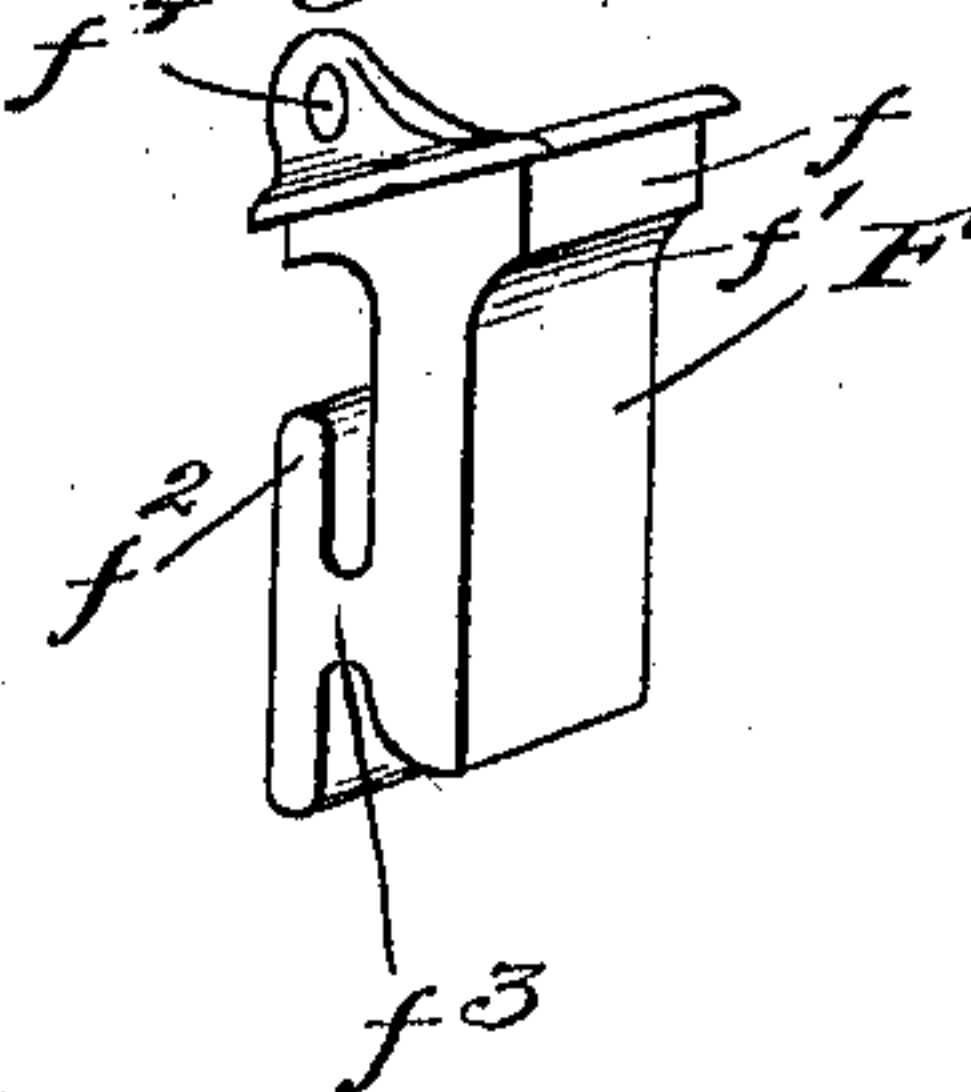


Fig. 5.

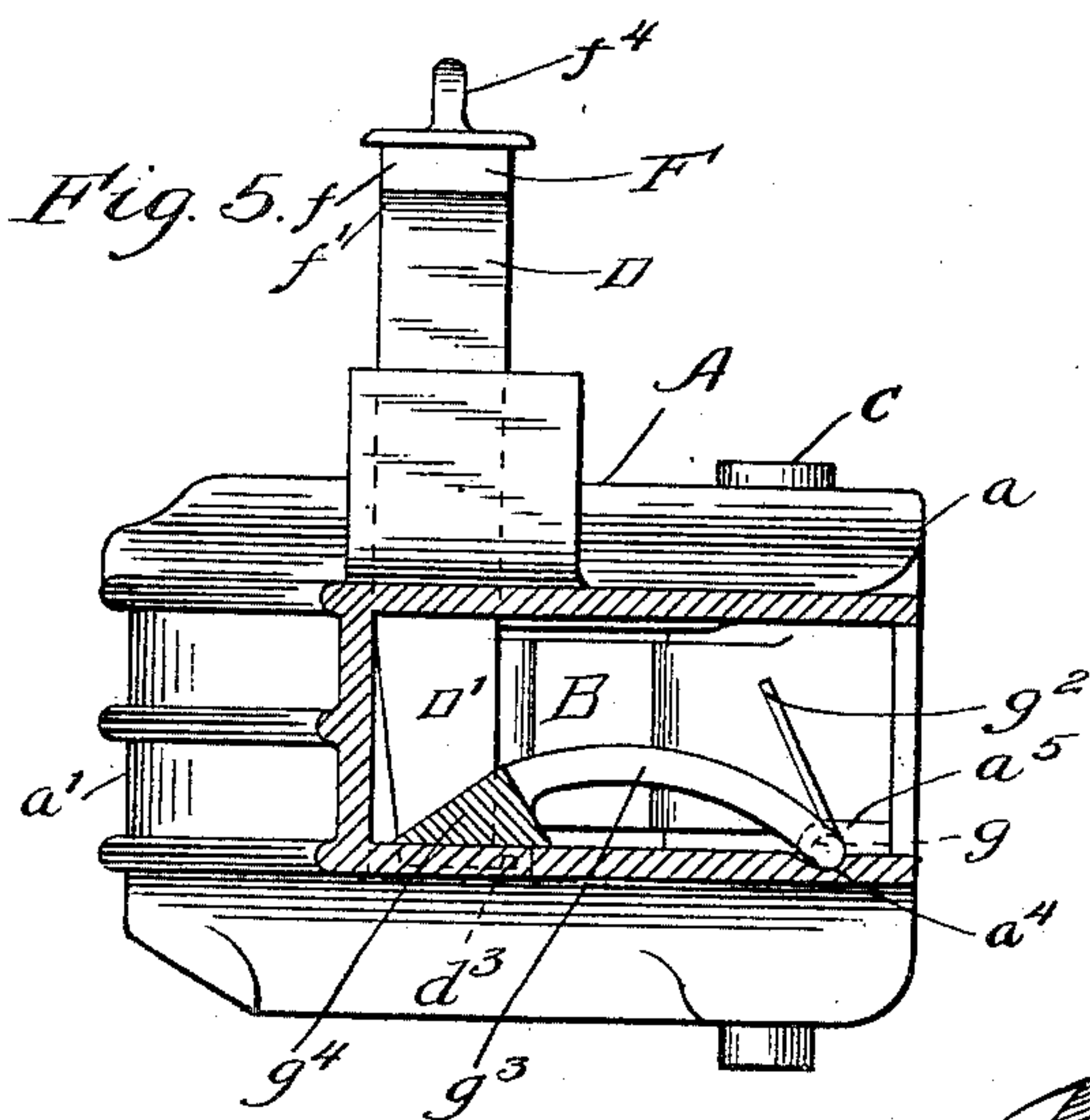


Fig. 8.

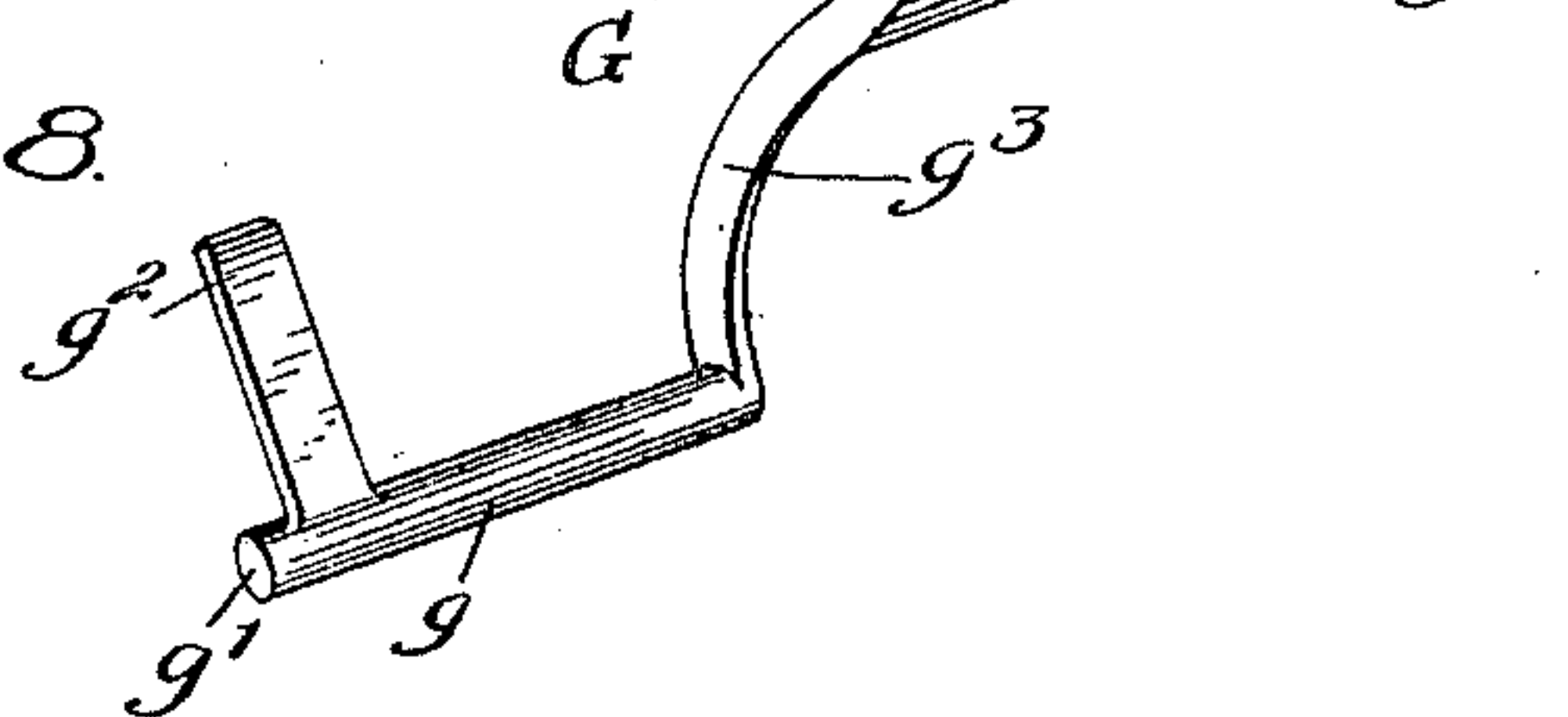
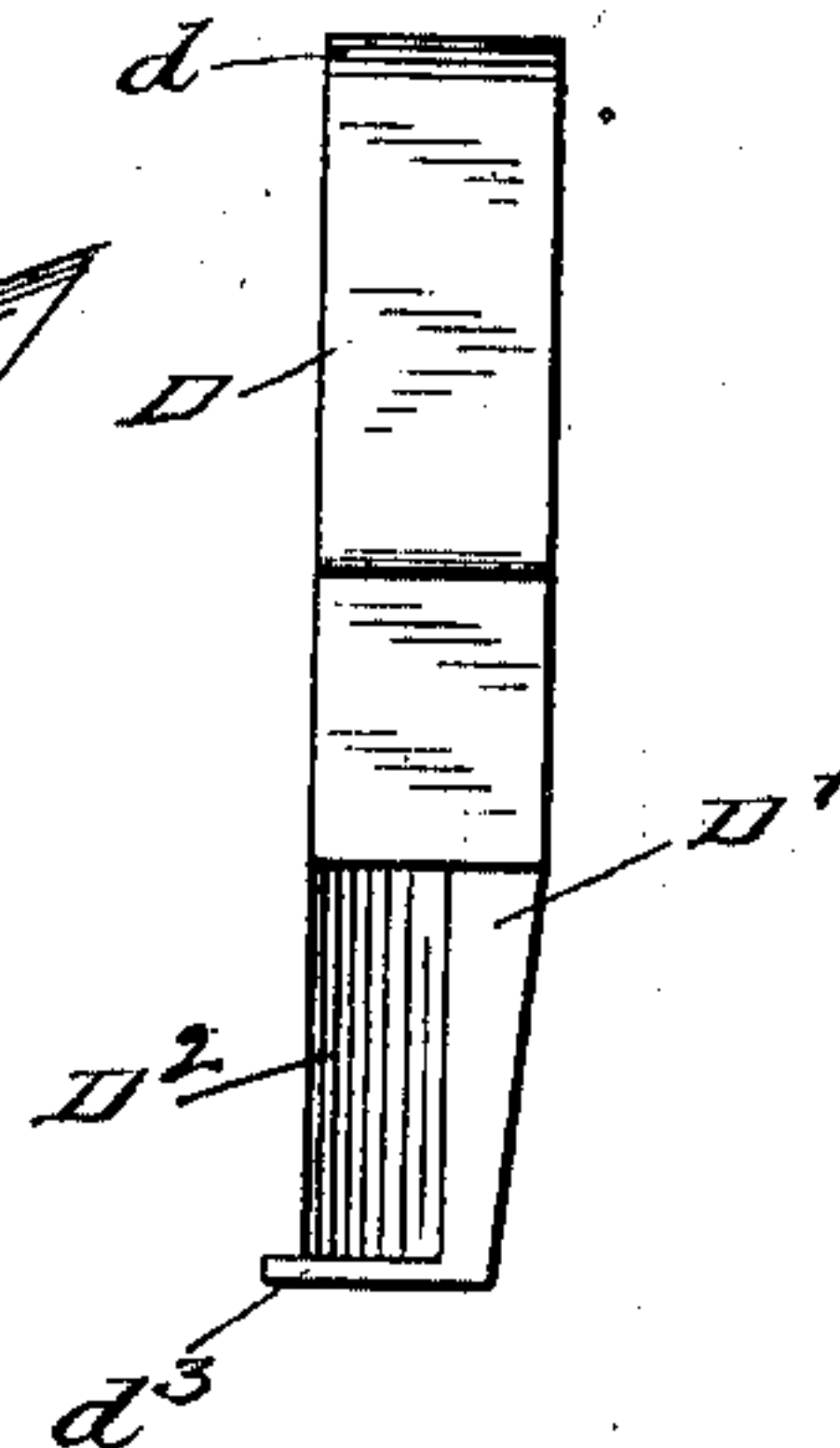


Fig. 9.



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# UNITED STATES PATENT OFFICE.

GUSTAF A. HERMANSON, OF CHICAGO, ILLINOIS, ASSIGNOR TO JAMES MUNTUN, OF MAYWOOD, ILLINOIS.

## AUTOMATIC CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 706,236, dated August 5, 1902.

Application filed June 7, 1902. Serial No. 110,563. (No model.)

*To all whom it may concern:*

Be it known that I, GUSTAF A. HERMANSON, a subject of the King of Sweden and Norway, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Automatic Car-Couplers, of which the following is a specification.

My invention relates to automatic couplers for railway-cars of the class commonly known as "Master Car-Builders' couplers" and having a forked draw-head, a pivoted knuckle, and a gravity-lock.

The object of my invention is to provide an automatic coupler of a simple, strong, efficient, and durable construction in which the gravity-lock shall be incapable of creeping or jumping upward while the train is in motion and in which at the same time the lock may be conveniently set to uncouple and in which the knuckle is automatically opened when the lock is raised and which will also be composed of few parts requiring no special fitting.

The car-coupler embodying my invention comprises, in coöperative combination, a forked draw-head having a shoulder, a passage-way for the vertically-moving gravity-lock, and a groove or bearing at the outer side of its pivot-arm to receive the shaft or pivot of a weighted crank-shaped knuckle-thrower, a pivoted knuckle adapted to be engaged by the crank-arm of the weighted knuckle-thrower to throw the knuckle open, a gravity-lock having a shoulder adapted to fit under the shoulder in the lock passage-way of the draw-head to prevent the lock from creeping, and a lifting-piece having a sliding connection with the lock and provided with a shoulder or enlargement to hold the shoulder on the lock under the shoulder on the draw-head when the coupler is locked.

My invention also consists in the novel construction of parts and devices and in the novel combinations of parts and devices herein shown or described.

In the accompanying drawings, which form a part of this specification, Figure 1 is a central vertical section of a car-coupler embodying my invention. Fig. 2 is a similar view showing the knuckle partially open and the lock resting thereon. Fig. 3 is a similar view

showing the knuckle closed and the lock set to uncouple when the cars are pulled apart. Fig. 4 is a horizontal section on line 4 4 of Fig. 2. Fig. 5 is a cross-section on line 5 5 of Fig. 4. Figs. 6, 7, and 8 are detail perspective views of the gravity-lock, sliding lifting-piece, and knuckle-thrower, respectively; and Fig. 9 is a detail view of the lock.

Like letters of reference indicate like parts in all the figures.

In the drawings, A is the forked draw-head, and A' the draw-bar integral therewith. The forked draw-head A has the customary pivot-arm *a* and guard-arm *a'*.

B is the knuckle; C, the pivot-pin; D, the gravity-lock; F, the sliding lifting-piece, and G the gravity crank-shaped knuckle-thrower.

The draw-head A has a vertical passage-way A<sup>2</sup> to receive the lock D, and it is provided on the front side of this passage-way, near the upper end thereof, with a shoulder or projection *a*<sup>2</sup>, against which a corresponding shoulder *d* on the lock D engages, thus holding the lock in its lowermost position and preventing its creeping or moving upward. Both these shoulders *a*<sup>2</sup> and *d* are preferably somewhat rounded or inclined.

The lifting-piece F has a sliding connection with the lock D, so that the lifting-piece may have a limited upward movement before it begins to lift the lock sufficient to disengage the shoulder or enlargement *f* on the lifting-piece from the passage-way of the draw-head, and thus permit the shoulder *d* on the lock to clear the shoulder *a*<sup>2</sup> on the draw-head and enable the lock to be freely lifted. The shoulder *f* on the sliding lifting-piece is rounded or inclined at *f'*, so that when the lifting-piece seats itself it will force the upper or shouldered end of the lock under the shoulder *a*<sup>2</sup> on the draw-head, and thus prevent any possibility of the lock creeping upward until the lifting-piece is first raised. The lifting-piece F and lock D may have any suitable sliding connection with each other capable of giving the necessary limited sliding movement of the lifting-piece in respect to the lock. The sliding connection which I prefer to use and which I have specially devised for use in this combination, as it requires no extra parts or



special fittings, consists in a head  $f^2$ , having a neck or web  $f^3$  integrally connecting it with the lifting-piece and which fits in a slot  $d'$  in the lock, having an opening  $d^2$  at one side to receive the neck or web  $f^3$  of the lifting-piece, the slot  $d'$  being longer than the head  $f^2$  to permit the limited sliding movement of the lifting-piece in respect to the lock.

The lock D is provided at its lower end with an extension  $D'$ , having a projecting foot or shelf  $d^3$ , adapted to rest on the horizontal web or floor  $A^3$  of the draw-head to serve as a lock-set for holding the lock in its elevated position or in position for uncoupling. The projecting foot  $d^3$  on the extension of the lock also by its engagement with the tail of the knuckle prevents the lock being lifted entirely out of the draw-head, and thus acts as a stop for retaining the lock and enables me to dispense with separate devices such as have heretofore been employed for this purpose. The lower face of the foot  $d^3$  is preferably slightly inclined at  $d^4$  to cause the lock to rest more securely on the recessed portion  $a^3$  of the web  $A^3$ , surrounding the lock passage-way therein.

The crank-shaped gravity knuckle-thrower G has a pivot or shaft portion  $g$ , which fits in a groove or bearing  $a^4$ , formed just inside the vertical web of the pivot-arm of the draw-head, the same having a socket portion  $a^5$  to receive the projecting end  $g'$  of the shaft or pivot  $g$ . The knuckle-thrower also has a knuckle-throwing arm  $g^2$ , which engages the tail of the knuckle to push the knuckle open, and a curved arm  $g^3$ , extending transversely from the rear end of the shaft  $g$  and connecting with the weight-bar  $g^4$ , which fits in the chamber  $A^4$  of the draw-bar and may preferably be triangular-shaped, so that its base will fit flat against the floor or bottom web of the hollow draw-bar. The weight  $g^4$ , curved transverse arm  $g^3$ , pivot or shaft portion  $g$ , and operating-arm  $g^2$  of the knuckle-thrower are all preferably cast integral in one piece. The lifting-piece F has an eye  $f^4$  to receive the link or chain  $h$ , which connects with the arm  $h'$  of the crank-shaft or bell-crank lifting-lever H, which extends across the end of the car, so that the coupler may be operated from either side without going between the cars.

The extension  $D'$  is at the rear half or side of the lock and is beveled off at  $D^2$ , so as not to interfere with the opening movement of the knuckle.

In case the draft-rigging should give way, permitting the draw-bar to pull out of the car, the lifting-piece will lift the lock and permit the knuckle to open, thus uncoupling the cars, and as the knuckle prevents the lock from being entirely withdrawn from the draw-head the chain connection of the lock with the car may thus support the forward end of the draw-head and prevent the coupler dropping on the track, and thus wrecking or endangering the train.

The gravity knuckle-thrower G not only

operates to swing the knuckle into its open position, but also to hold it open, and to again automatically open it if it should be partially closed, so that the knuckle is always ready to receive the coupler of the adjacent or incoming car.

I claim—

1. In an automatic car-coupler, the combination of a forked draw-head having a shouldered passage for a lock, and a groove or bearing in its pivot-arm for a knuckle-thrower, a gravity-lock having a shoulder fitting under the shoulder on the draw-head to prevent the lock from creeping, a lifting-piece having a sliding connection with the lock and provided with a shoulder or enlargement to hold the shoulder on the locking-pin under the shoulder on the draw-head when the coupler is locked, and a weighted or gravity-acting crank-shaped knuckle-thrower having an operating-arm engaging the tail of the knuckle, a weight fitting in the chamber of the draw-bar, and an arm connecting the weight with the pivot or shaft portion of the knuckle-thrower, substantially as specified.

2. In a car-coupler, the combination with a forked draw-head and pivoted knuckle, of a crank-shaped gravity knuckle-thrower, substantially as specified.

3. In a car-coupler, the combination with a forked draw-head and pivoted knuckle, of a knuckle-thrower having a weight fitting in the chamber of the draw-bar, a pivot or shaft portion and an operating-arm engaging the tail of the knuckle to throw the same open, substantially as specified.

4. The combination in a car-coupler, with a draw-head having a groove or bearing for a knuckle-thrower in its pivot-arm, of a knuckle, and a gravity knuckle-thrower having a shaft or pivot portion  $g$ , an operating-arm  $g^2$ , a curved arm  $g^3$  and a weight-bar  $g^4$  fitting in the chamber of the draw-bar, substantially as specified.

5. In a car-coupler, the combination with the forked draw-head, of a knuckle, a gravity-lock having a shoulder, a shoulder on the draw-head engaging the shoulder on the lock, and a sliding lifting-piece having a shoulder or enlargement, substantially as specified.

6. In a car-coupler, the combination with the forked draw-head, of a knuckle, a gravity-lock having a shoulder, a shoulder on the draw-head engaging the shoulder on the lock, and a sliding lifting-piece having a shoulder or enlargement, said lifting-piece and lock having a sliding head and slot connection with each other, substantially as specified.

7. In a car-coupler, the combination with a draw-head having a shoulder, of a knuckle, a lock D having a shoulder  $d$  engaging the shoulder on the draw-head and provided with a slot  $d'$ , having an opening  $d^2$  at one side, and a sliding lifting-piece F, having a shoulder or enlargement  $f$  and an integral head  $f^2$  and connecting web or neck  $f^3$ , substantially as specified.



8. In a car-coupler, the combination with a knuckle, of a forked draw-head having a shouldered passage-way for a lock, of a gravity-lock having a shoulder engaging the shoulder on the draw-head, a lifting-piece having a sliding connection with the lock, and a shoulder or enlargement to hold the shoulder on the lock under the shoulder on the draw-head, said lock being provided with an extension D' at its lower end having a projecting foot to serve as a lock-set, substantially as specified.

9. In a car-coupler, the combination with a knuckle, of a forked draw-head having a shouldered passage-way for a lock, of a gravity-lock having a shoulder engaging the shoulder on the draw-head, a lifting-piece having a sliding connection with the lock, a shoulder or enlargement to hold the shoulder on the lock under the shoulder on the draw-head, said lock being provided with an extension D' at its lower end having a projecting foot to serve as a lock-set, said projecting foot also engaging the tail of the knuckle to prevent the lock being separated from the draw-head, substantially as specified.

10. In a car-coupler, the combination with a forked draw-head, of a knuckle and a gravity-lock D, having an extension D' at its lower end provided with a projecting foot  $d^3$  to serve as a lock-set and prevent removal of the lock

from the draw-head by engagement with the tail of the knuckle, substantially as specified.

11. In a car-coupler, the combination with the forked draw-head, of a knuckle, a gravity-lock having a shoulder, a shoulder on the draw-head engaging the shoulder on the lock, a sliding lifting-piece having a shoulder or enlargement, and a crank-shaped gravity knuckle-thrower having a weight-bar fitting in the hollow chamber of the draw-bar, a curved arm extending behind the tail of the knuckle, a pivot or shaft fitting in a groove in the pivot-arm of the knuckle, and an operating-arm, substantially as specified.

12. In an automatic car-coupler, the combination with a pivoted knuckle, of a forked draw-head having a shouldered passage for the locking-pin, of a gravity-lock having a shoulder adapted to fit under the shoulder in the passage-way of the draw-head to prevent the lock from creeping, and a lifting-piece having a sliding connection with the lock and provided with a shoulder or enlargement at its upper end to force the shoulder on the locking-pin under the shoulder on the passage-way of the draw-head when the coupler is locked, substantially as specified.

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Witnesses:

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