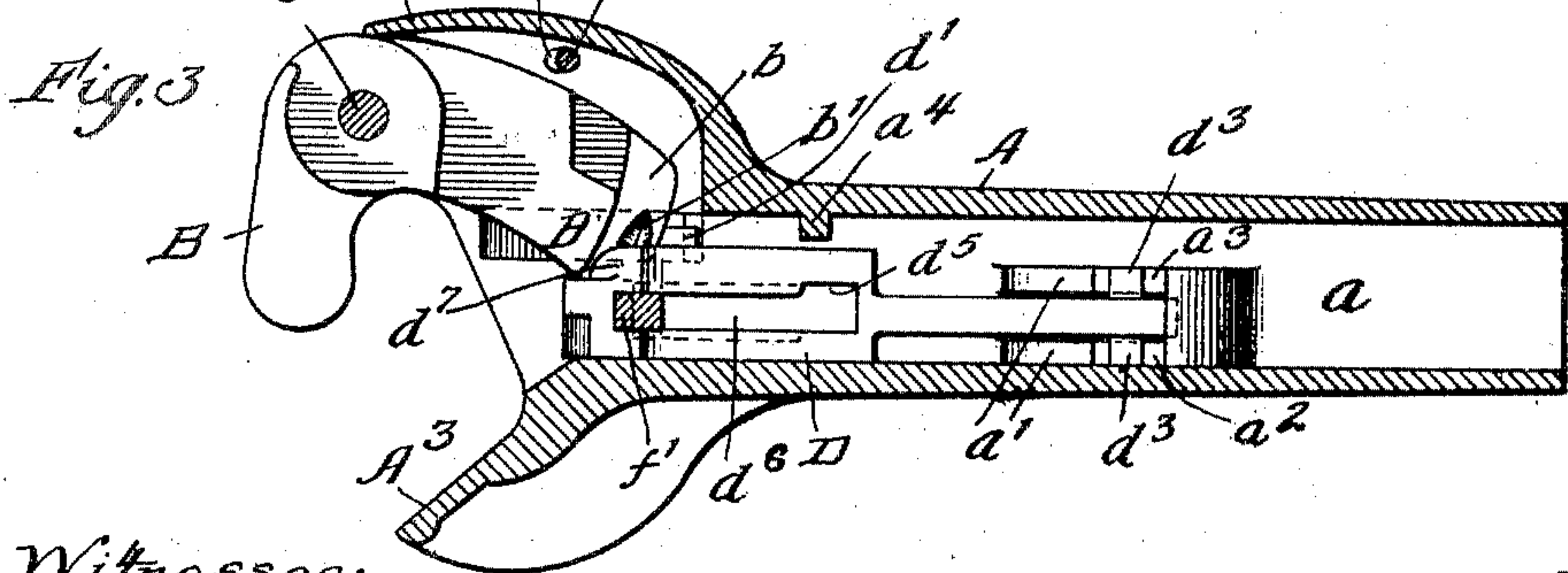
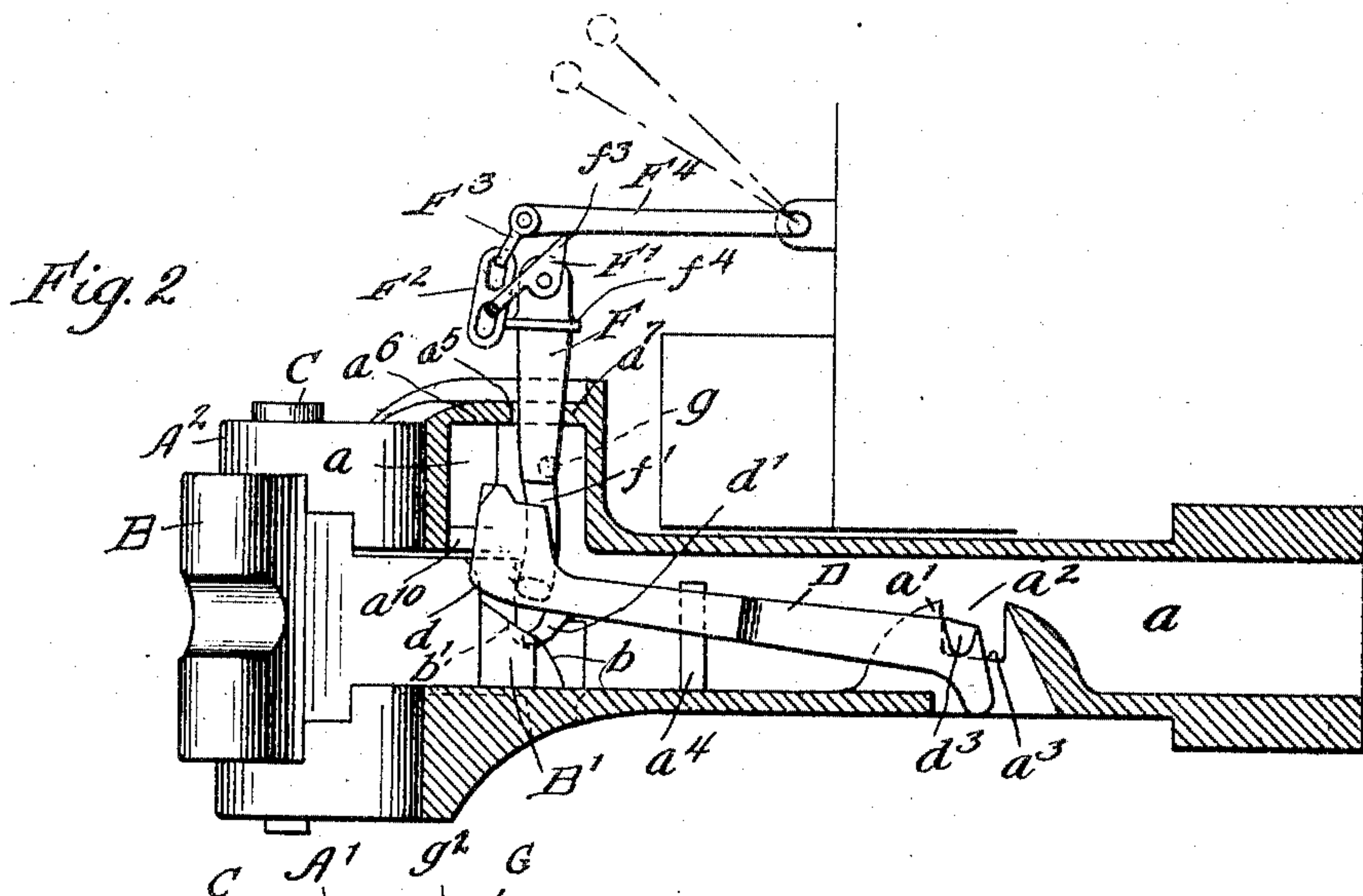
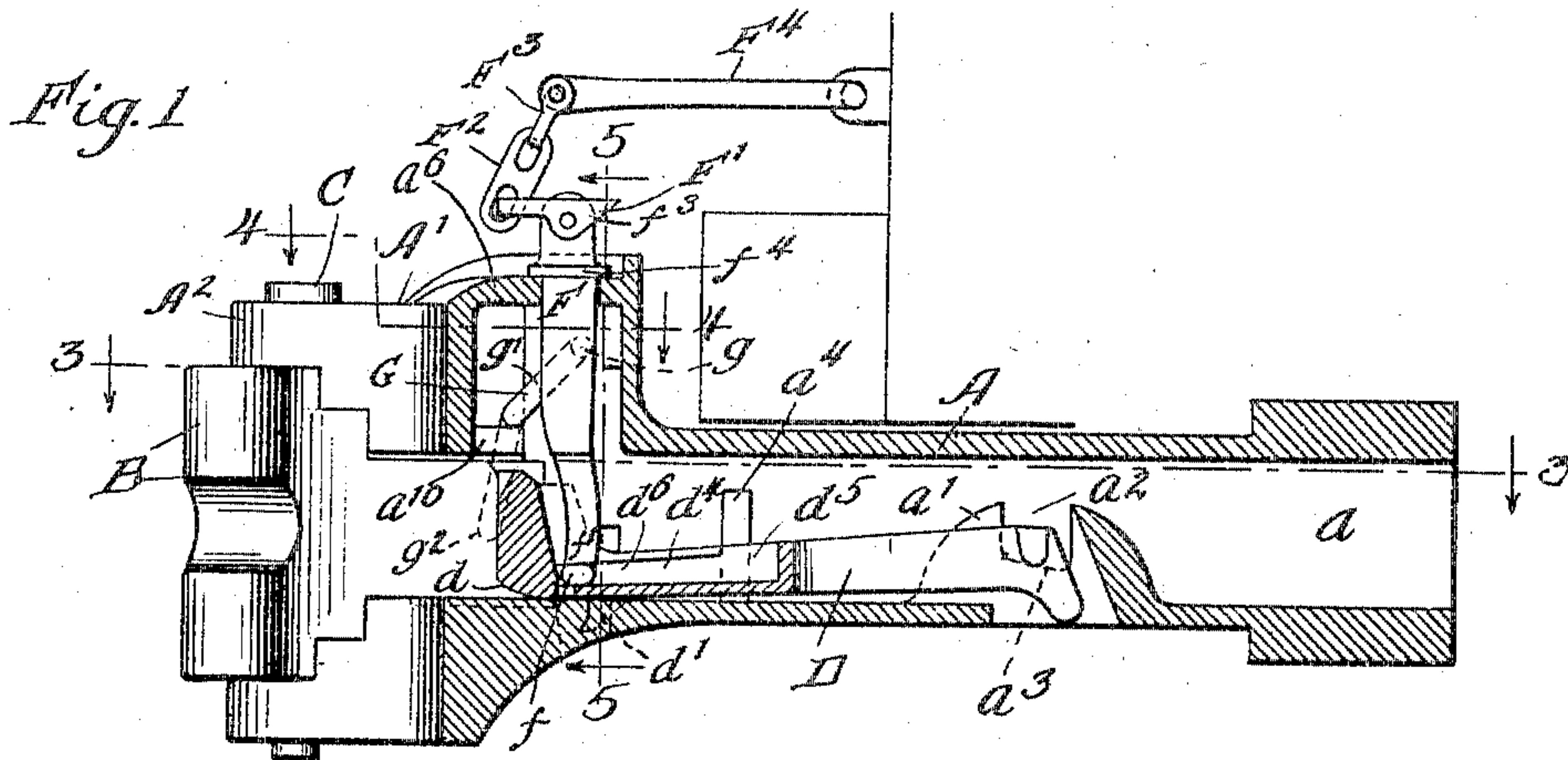


W. S. SCHROEDER & A. P. LINDHOLM.

CAR COUPLING.

APPLICATION FILED MAR. 9, 1904.

2 SHEETS—SHEET 1.



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No. 780,235.

PATENTED JAN. 17, 1905.

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CAR COUPLING.

APPLICATION FILED MAR. 9, 1904.

2 SHEETS—SHEET 2.

Fig. 4

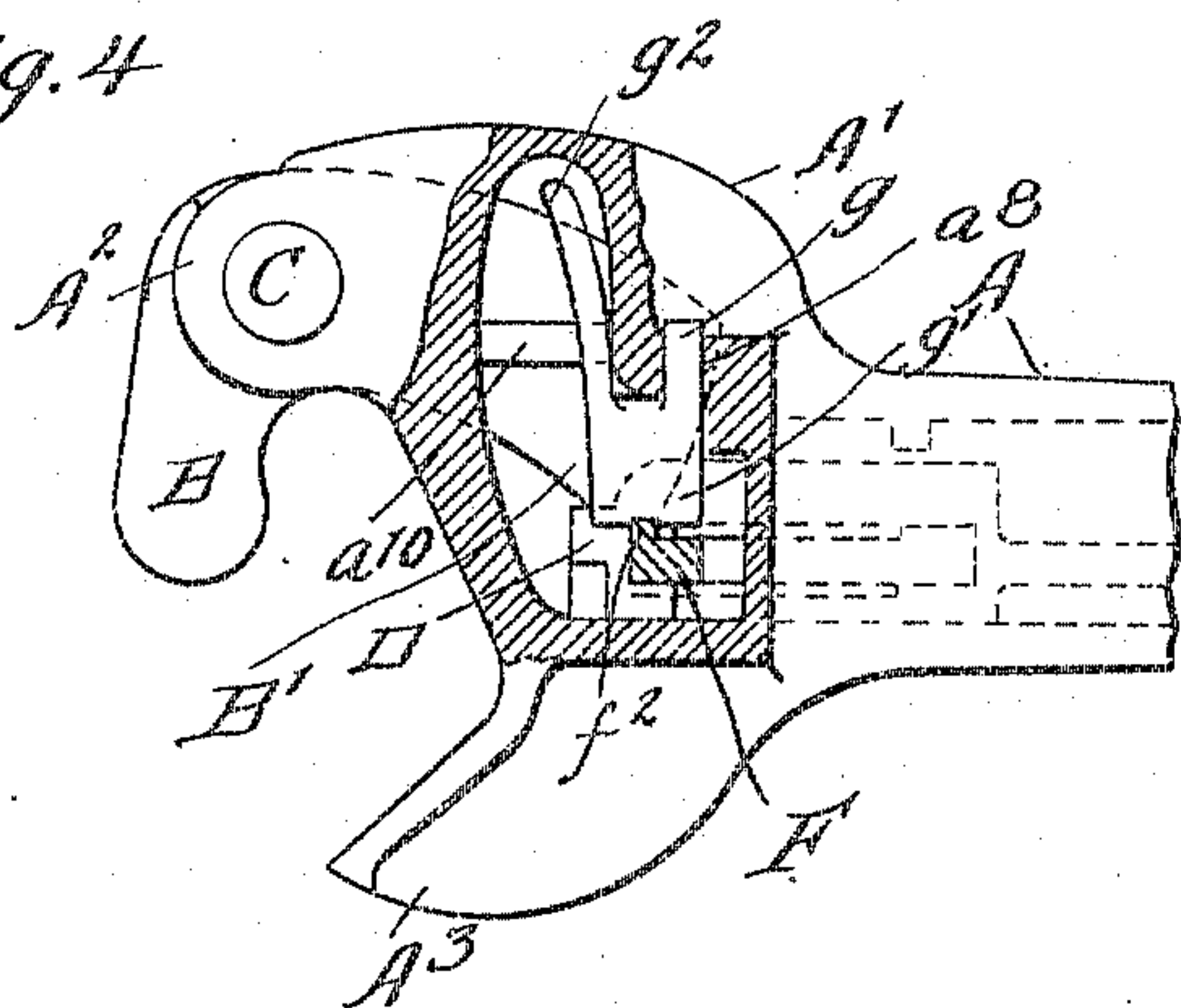


Fig. 6

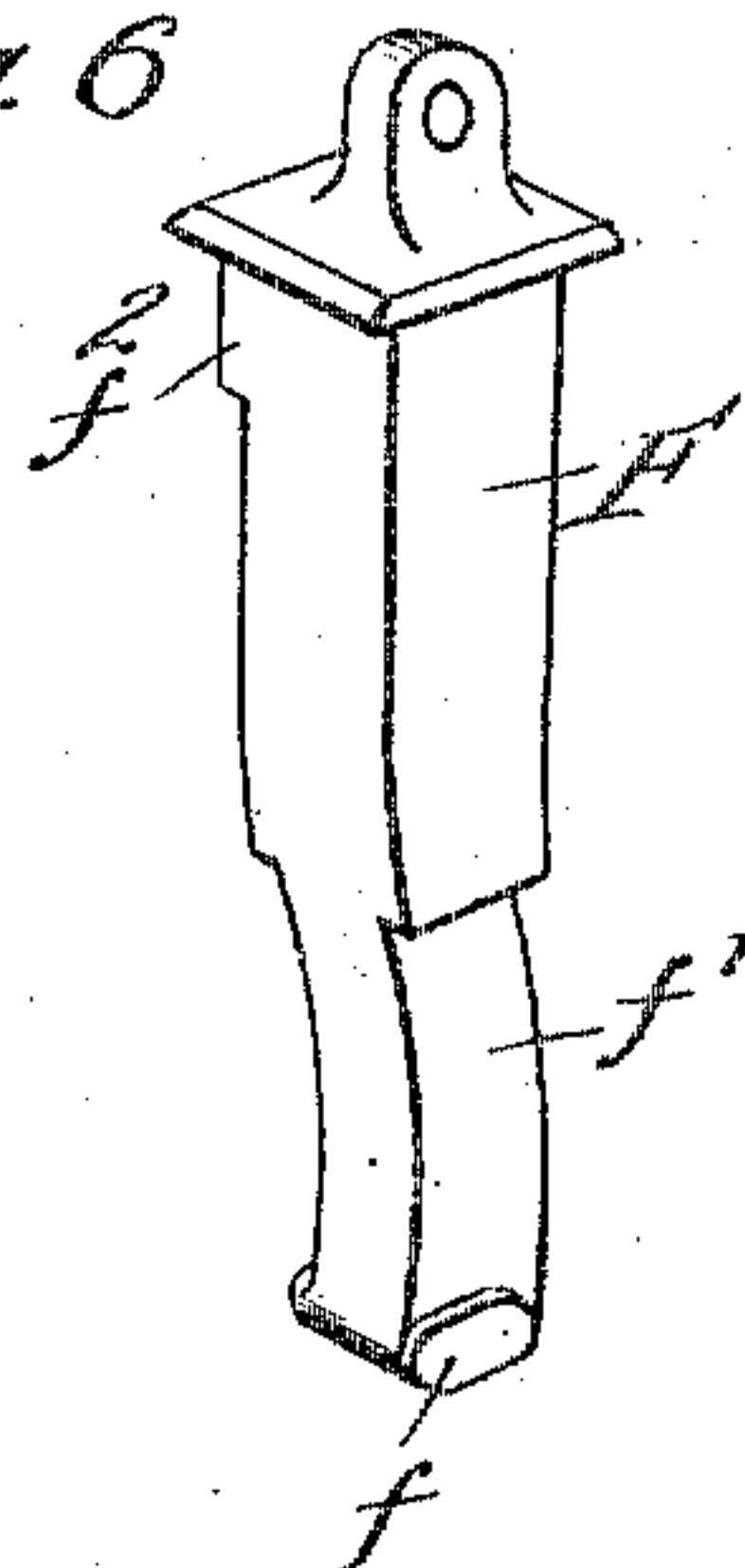


Fig. 5

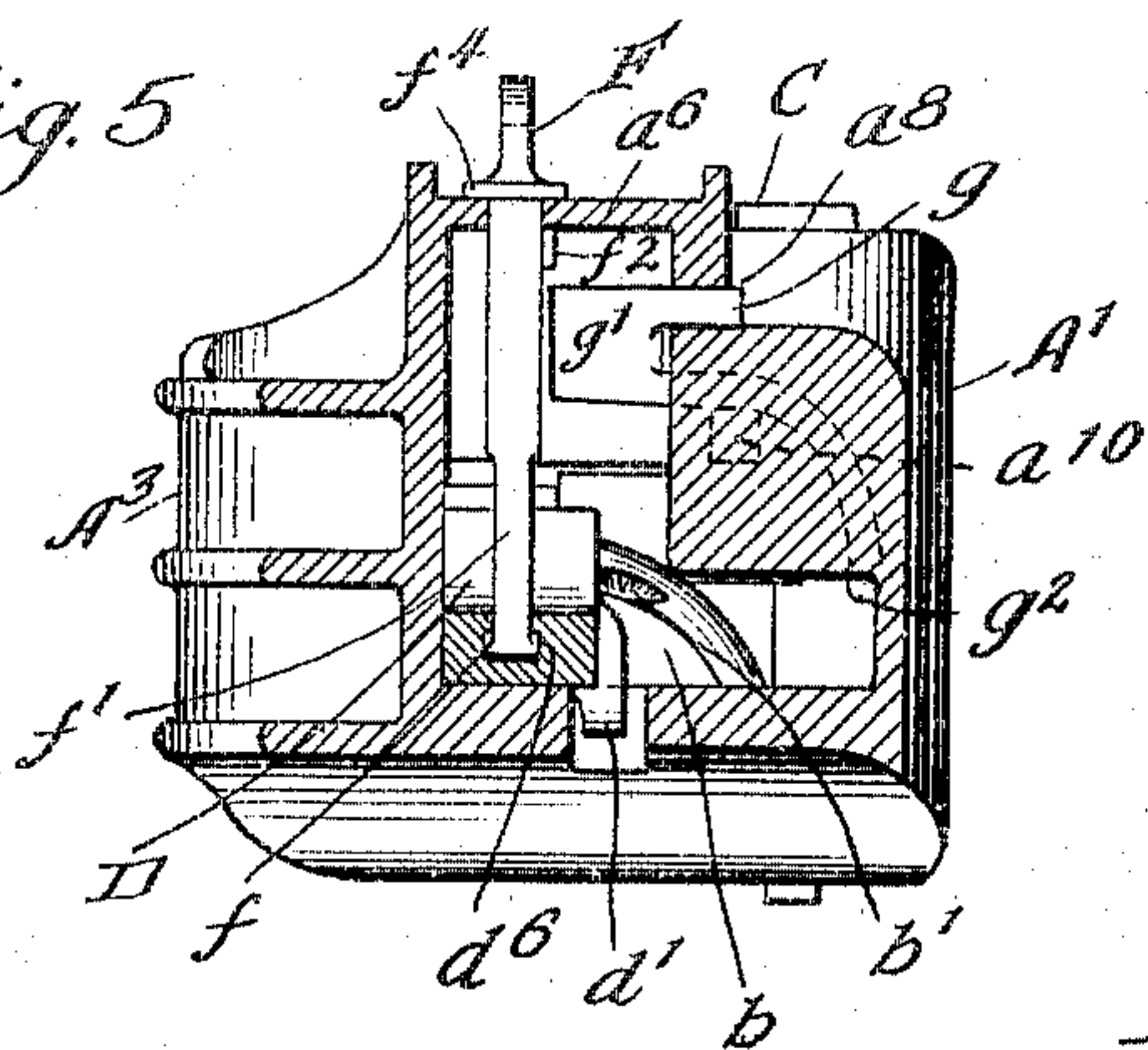


Fig. 7

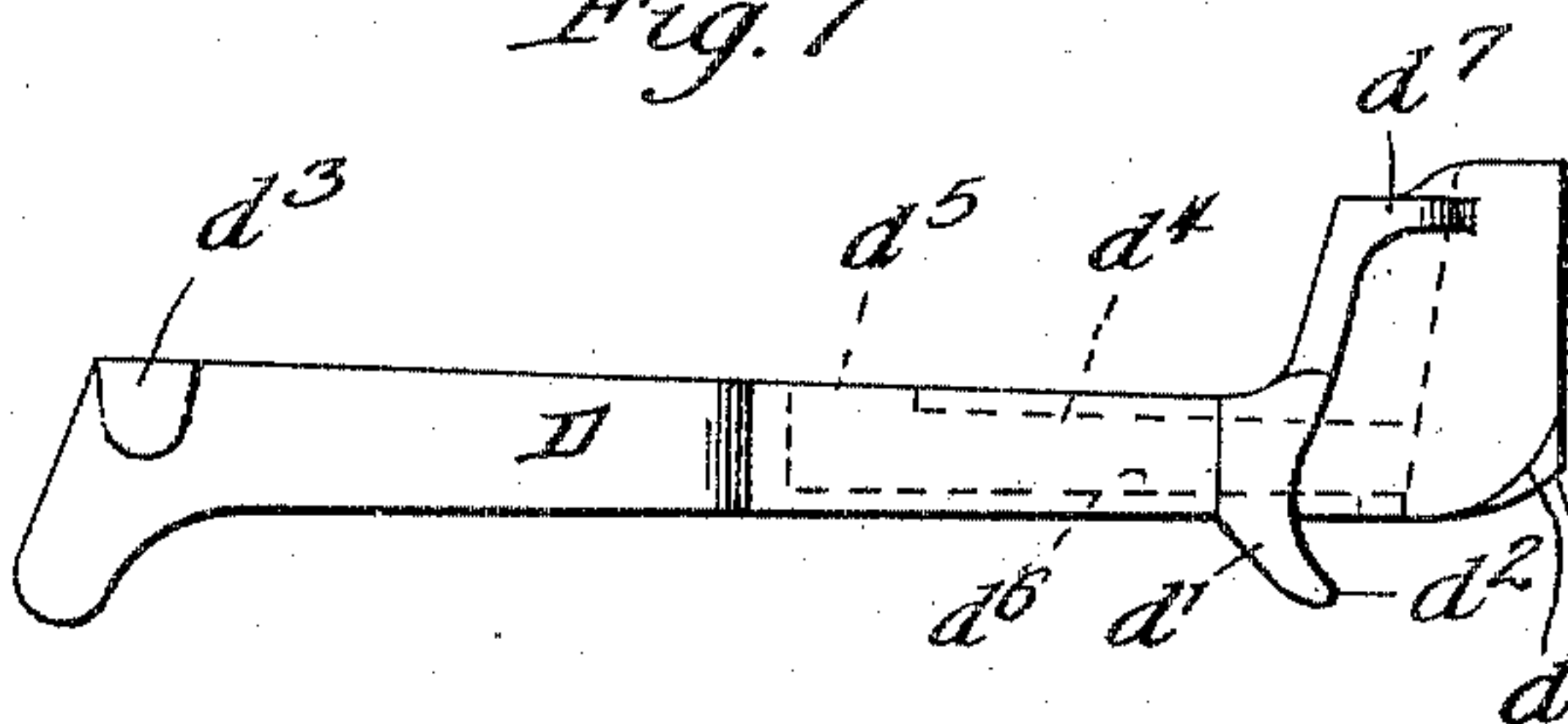


Fig. 8

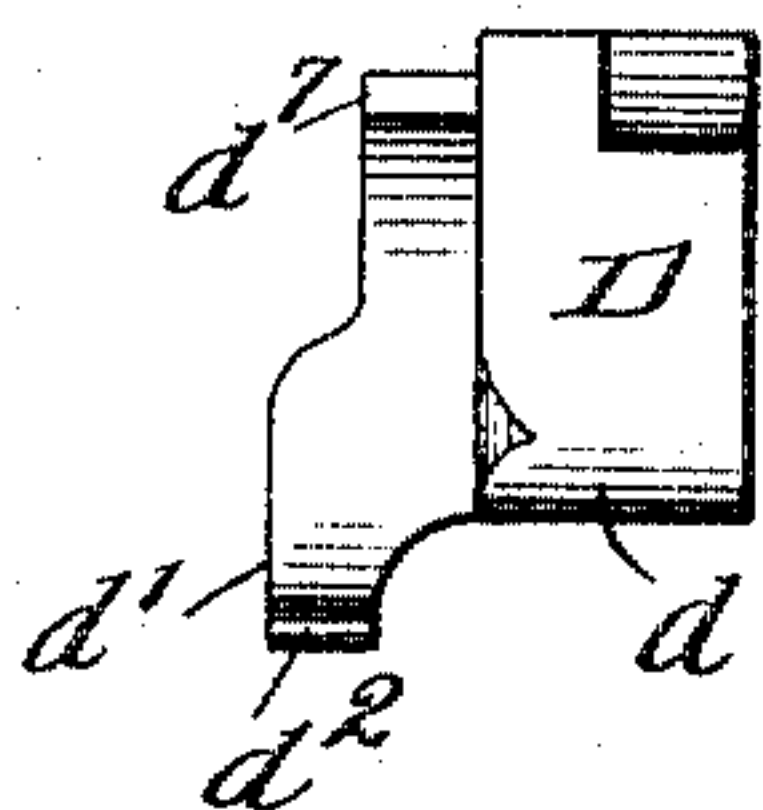


Fig. 9

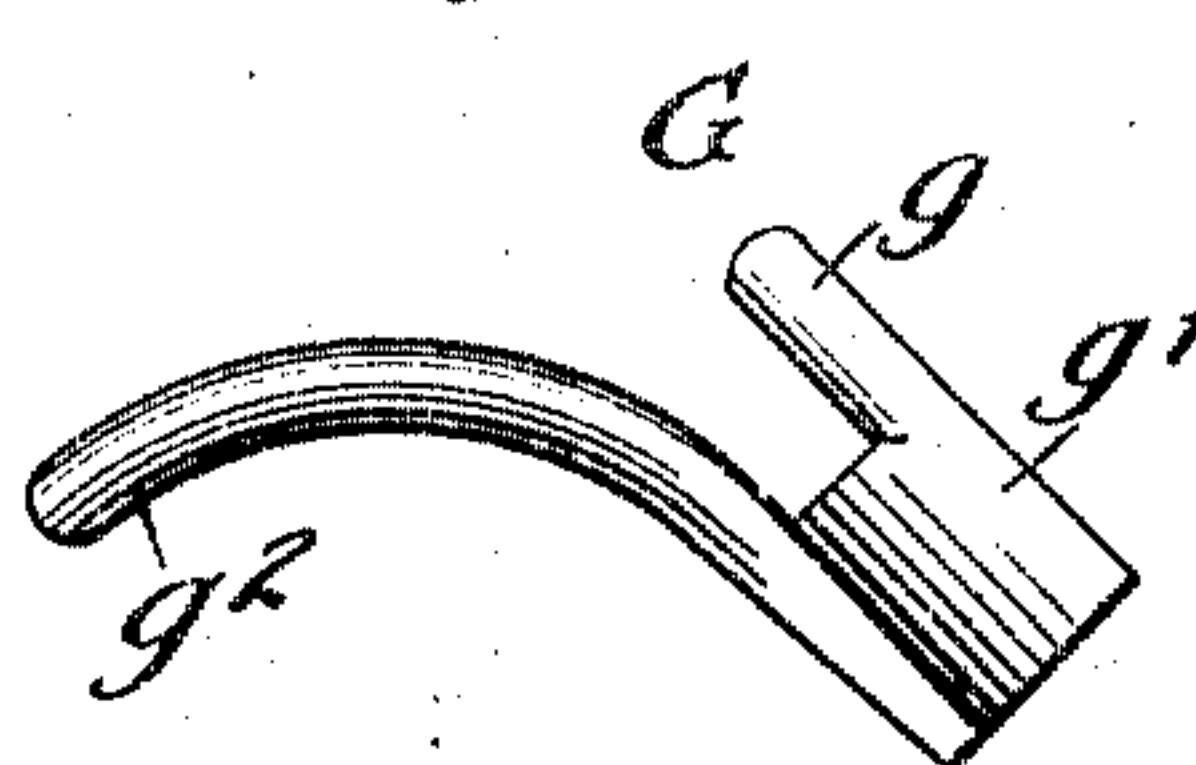


Fig. 11

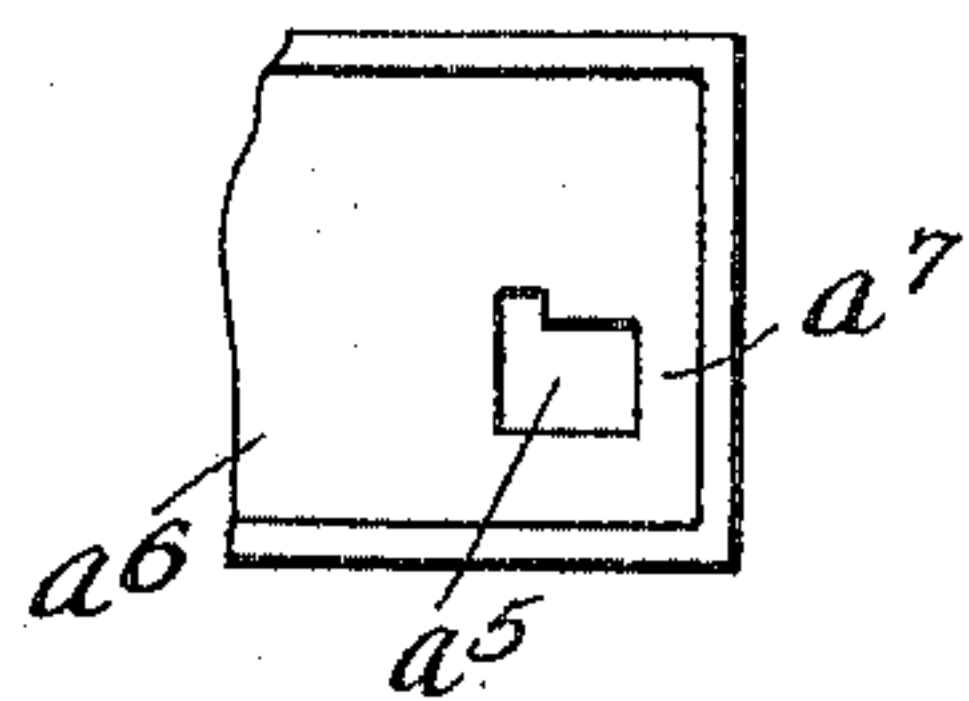


Fig. 12.

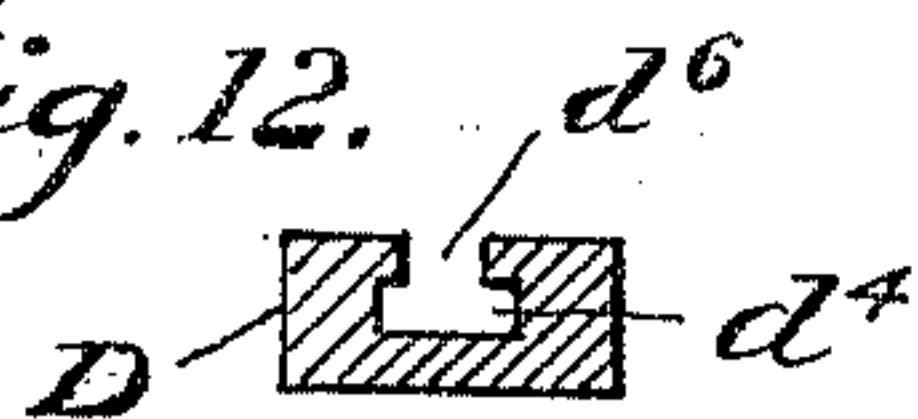
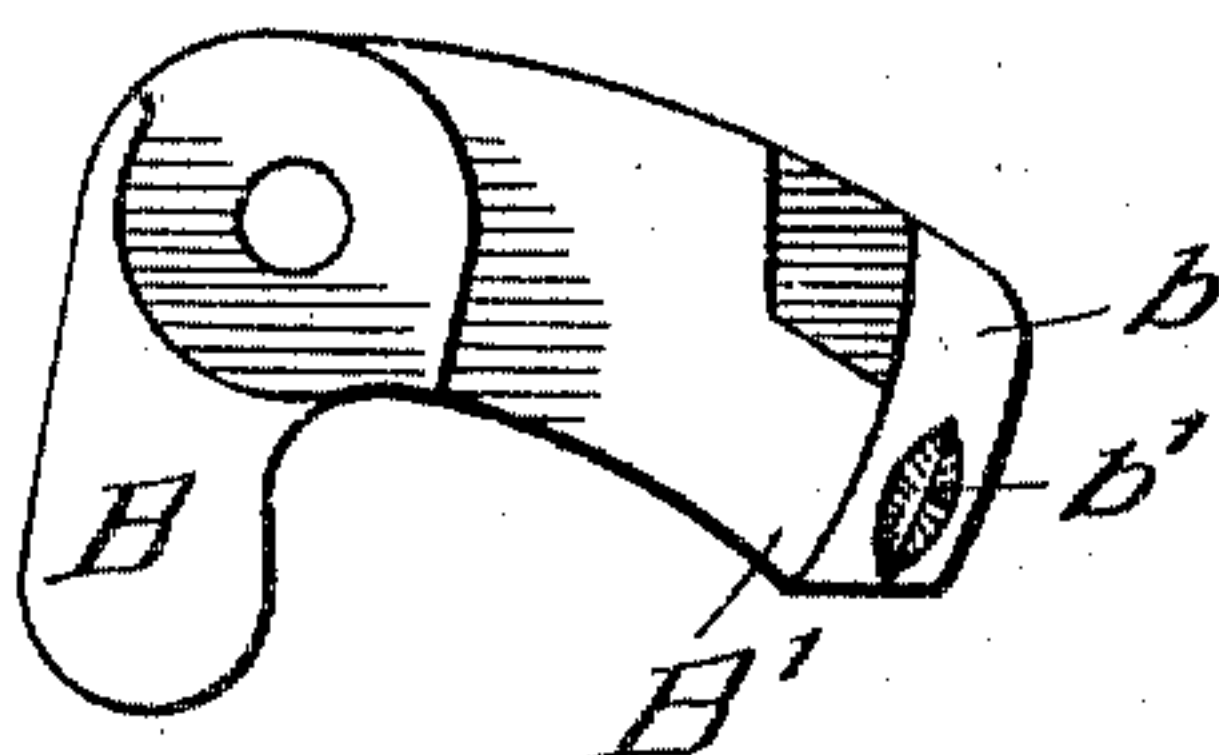


Fig. 10



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UNITED STATES PATENT OFFICE.

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CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 780,235, dated January 17, 1905.

Application filed March 9, 1904. Serial No. 197,282.

To all whom it may concern:

Be it known that we, WILLIAM S. SCHROEDER and ANDREW P. LINDHOLM, citizens of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Car-Couplers, of which the following is a specification.

Our invention relates to improvements in car couplers of the M. C. B. or Master Car-Builders' type having a forked draw-head, a pivotal knuckle, and a gravity-lock; and it relates more particularly to Master Car-Builders' couplers of the particular type having a gravity-lock consisting of a longitudinal pivotal locking-bar lying in the chamber of the draw-bar and having a pivotal connection therewith at its inner end and engaged near its outer end by a vertically-moving coupling-pin or lifting-pin which is connected in the usual manner by a chain with the lifting-lever.

The object of our invention is to provide a longitudinal pivotal locking-bar coupler of a strong, simple, efficient, durable, and safe construction in which the longitudinal pivotal locking-bar may be set in position for uncoupling by engaging the tail of the knuckle, in which the front or locking end of the longitudinal pivotal locking-bar may be prevented from jumping or accidental movement upward when the cars are coupled and the train is in motion, and in which the knuckle may be automatically thrown open.

Our invention consists in the means we employ to practically accomplish this object or result, as herein shown and described—that is to say, it consists in the novel construction of parts and devices and in the novel combinations of parts and devices herein shown and described, and specified in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is a central vertical section of a longitudinal pivotal locking-bar coupler embodying our invention. Fig. 2 is a similar view showing the locking-bar in its raised or lock-set position—that is to say, when the coupler is set for uncoupling. Fig. 3 is a horizontal section on line 3 3 of Fig. 1. Fig. 4 is a plan view, partly in

section, on line 4 4 of Fig. 1. Fig. 5 is a vertical cross-section on line 5 5 of Fig. 1. Fig. 6 is a detail perspective view of the locking or lifting pin. Fig. 7 is a side elevation of the longitudinal pivotal locking-bar. Fig. 8 is a front end view of the same. Fig. 9 is a detail view of the knuckle-throwing lever. Fig. 10 is a plan view of the knuckle, and Fig. 11 is a detail plan view showing the opening in the draw-head for the lifting-pin. Fig. 12 is a cross-section of the locking-bar.

In the drawings, A represents the draw-bar; A', the forked draw-head, having the customary pivot-arm A² and guard-arm A³.

B is the knuckle, pivoted to the draw-head by the pivot-pin C and having a tail B', which is engaged by the longitudinal pivotal locking-bar D, which fits and lies in the chamber *a* of the draw-bar. The tail B' of the knuckle has at its rear end a transversely-extending inclined face *b* to engage the curved or inclined face *d* of the locking-bar D, and thus automatically lift the locking-bar by the closing movement of the knuckle, the inclined face of the knuckle-tail thus passing under the locking-bar. The tail of the knuckle is also furnished with a recess or seat *b'* on its inclined face *b* to receive a lock-set leg or projection *d'*, which projects downwardly from the locking-bar D, near the front end thereof. The lock-set leg or projection *d'* of the locking-bar is made hook-shaped or furnished with a forwardly-projecting lip *d''*, which fits under the extreme rear end of the knuckle-tail, thus causing the knuckle-tail itself when the knuckle is closed to keep or lock the front end of the locking-bar from jumping or moving upward accidentally when the cars are coupled together and the train is in motion.

F is the coupling or lifting pin, by which the outer or free end of the longitudinally-extending pivotal locking-bar D is operated or lifted to unlock the coupler or permit the knuckle to swing open.

F' is a clevis pivotally connected to the upper end of the lifting-pin F and connected by a link F² and clevis F³ with the lifting-lever F⁴, and G is the knuckle-throwing lever.

The draw-bar is provided inside the cham-

ber a on its lower web or floor with integral saddles or ribs a' , having elongated pivot notches or recesses a^2 therein to receive the pivot-lugs d^3 at the rear end of the locking-bar D, the pivot notches or slots a^2 being long enough to permit the necessary longitudinal movement of the locking-bar to enable its lock-set leg or projection d' to engage the corresponding lock-set seat or recess b' on the tail of the knuckle. The elongated notch or recess a^2 has an inclined bottom a^3 , which aids in returning the locking-bar longitudinally to position when in its forward position, and thus also diminishing the inclination of the pivotal locking-bar when its front end is raised to its lock-set position on the knuckle-tail.

The locking-bar D is provided at its front end with a chamber d^4 , having an opening d^5 large enough to receive the head or shoulder f on the coupling or lifting pin F and provided with a slot d^6 to receive the web f' , which connects the head or shoulder f with the coupling-pin F.

The draw-bar A is provided with a guide-rib a^4 to engage the front or enlarged end of the locking-bar D to keep the same in position laterally, while permitting the locking-bar to be raised as required at its front end. The lifting-pin F fits in an opening a^5 in the top wall a^6 of the draw-head and is provided with an irregularity or rib f^2 , which prevents its being turned wrong when it is put in place. To cause the locking-bar D to be thrown or moved longitudinally forward as it is raised by the lifting-pin F, the draw-head is provided with a projection or fulcrum a^7 to cause the upper end of the lifting-pin to tilt backward and its lower end forward when the lifting-pin is acted upon by the lifting-lever F⁴. To further insure the proper backward tilting of the lifting-pin and the longitudinal forward movement of the locking-bar when the same is being raised, we provide the clevis F' with an arm f^3 , which engages a flange f^4 of the lifting-pin, and thus limits the pivotal movement of the clevis on the pin. The projecting arm on the clevis also prevents any possibility of the links of the lifting-chain becoming kinked or entangled.

To set the locking-bar in its position for permitting the cars to uncouple when the two adjacent cars are separated, the locking-bar is raised or lifted by the lifting-lever through the lifting-pin F, this operation simultaneously moving the locking-bar slightly longitudinally forward, so that its lock-set leg d' will engage and rest upon the lock-set seat b' on the tail of the knuckle, and thus hold the lock in its raised or lock-set position. When the coupled cars are now pulled apart, the tail of the knuckle rides under the lock and permits it to drop.

The knuckle-throwing lever G has a pivot arm or projection g , which fits in a suitable notch or recess a^8 in the draw-head, and an

actuating web or arm g' , which fits over the front end of the locking-bar D and is engaged thereby when the front end of the locking-bar is sufficiently lifted. The knuckle-throwing lever G also has a curved or horn-shaped arm g^2 , which engages and follows the tail of the knuckle to throw the same open. The knuckle-throwing lever has both a rocking or rotary movement about its pivot-arm g as an axis and also a swinging or tilting movement about the extreme end of its pivot-arm g as a fulcrum, thus giving the curved or horn-shaped operating-arm g^2 , which engages the knuckle, a combined or compound movement that causes it to properly follow the path of the tail of the knuckle in pushing or throwing the knuckle open. When the flat arm g' of the knuckle-throwing lever G is engaged by the front end of the locking-bar D as it moves upward, it tends to tilt or swing the knuckle-throwing lever about the end of its pivot-arm g as a fulcrum for the lever and at the same time to rock or rotate the knuckle-throwing lever about its arm g as an axis, thus giving its curved or horn-shaped operating-arm g^2 a compound movement, the resultant of these two motions of the lever which causes the knuckle-throwing lever, though mounted above the knuckle, to keep its curved arm g^2 in proper engagement with the tail of the knuckle as it swings open in its horizontal circular path. To cause the flat or web arm g' of the knuckle-throwing lever G to be properly engaged by the locking-bar D, the locking-bar is provided at its front end with a wing or projection d^7 , that engages the web or flat arm of the knuckle-throwing-lever after the front end of the locking-bar is raised sufficiently to permit the tail of the knuckle to move under the same. The chamber a in the draw-head for the arm g^2 of the knuckle-throwing lever G has a rib a^{10} extending across it to serve as a guide, rest, and support for the knuckle-throwing lever.

We claim—

1. In a car-coupler, the combination with a pivoted knuckle, a forked draw-head and a draw-bar having a chamber to receive a longitudinal pivotal locking-bar, of a pivotal and longitudinally-movable locking-bar lying lengthwise in the chamber of the draw-bar, and provided at its front end with a lock-set leg or projection, and a coupling or lifting pin connected with the front or free end of the locking-bar, said knuckle having on its tail a lock-set seat or recess to engage the lock-set leg or projection on the locking-bar when the same is raised and moved longitudinally forward by the lifting-pin, substantially as specified.

2. In a car-coupler, the combination with a pivoted knuckle, a forked draw-head and a draw-bar having a chamber to receive a longitudinal pivotal locking-bar, of a pivotal and longitudinally-movable locking-bar lying lengthwise in the chamber of the draw-bar,

and provided at its front end with a lock-set leg or projection, a coupling or lifting pin connected with the front or free end of the locking-bar, said knuckle having on its tail a lock-set seat or recess to engage the lock-set leg or projection on the locking-bar when the same is raised and moved longitudinally forward by the lifting-pin, and a knuckle-throwing lever having a pivot-arm engaging a recess in the draw-head, an arm adapted to engage the front end of the locking-bar when the same is raised, and an operating-arm engaging the tail of the knuckle to throw the knuckle open, substantially as specified.

3. In a car-coupler, the combination with a pivoted knuckle, a forked draw-head and a draw-bar having a chamber to receive a longitudinal pivotal locking-bar, of a pivotal and longitudinally-movable locking-bar lying lengthwise in the chamber of the draw-bar, and provided at its front end with a lock-set leg or projection, and a coupling or lifting pin connected with the front or free end of the locking-bar, said knuckle having on its tail a lock-set seat or recess to engage the lock-set leg or projection on the locking-bar when the same is raised and moved longitudinally forward by the lifting-pin, said lock-set leg or projection on the locking-bar having a forwardly-projecting lip engaging the tail of the knuckle to prevent the front end of the locking-bar from jumping or moving upward accidentally, substantially as specified.

4. In a car-coupler, the combination with a pivoted knuckle, a forked draw-head and a draw-bar having a chamber to receive a longitudinal pivotal locking-bar, of a pivotal and longitudinally-movable locking-bar lying lengthwise in the chamber of the draw-bar, and provided at its front end with a lock-set leg or projection, a coupling or lifting pin connected with the front or free end of the locking-bar, said knuckle having on its tail a lock-set seat or recess to engage the lock-set leg or projection on the locking-bar when the same is raised and moved longitudinally forward by the lifting-pin, and a knuckle-throwing lever having a pivot-arm engaging a recess in the draw-head, an arm adapted to engage the front end of the locking-bar when the same is raised, and an operating-arm engaging the tail of the knuckle to throw the knuckle open, said knuckle-throwing lever having a rocking movement about its pivot-arm as an axis, and a swinging or tilting movement about the end of its pivot-arm as a fulcrum, substantially as specified.

5. In a car-coupler, the combination with a forked draw-head, and draw-bar, of a pivoted knuckle and a pivotal locking-bar lying lengthwise in the chamber of the draw-bar, and a lifting-pin, said locking-bar and the tail of the

knuckle being furnished with interengaging lock-set devices, substantially as specified.

6. In a car-coupler, the combination with a forked draw-head and draw-bar, of a pivoted knuckle and a pivotal locking-bar lying lengthwise in the chamber of the draw-bar, and a lifting-pin, said locking-bar and the tail of the knuckle being furnished with interengaging lock-set devices, said lifting-pin having a pivotal clevis provided with an arm or projection engaging the lifting-pin to limit the pivotal movement of the clevis in respect to the lifting-pin, substantially as specified.

7. In a car-coupler, the combination with a forked draw-head and a draw-bar, of a pivoted knuckle and a pivotal locking-bar lying lengthwise in the chamber of the draw-bar, and a lifting-pin, said locking-bar and the tail of the knuckle being furnished with interengaging lock-set devices, a pivotal clevis provided with an arm or projection engaging the lifting-pin to limit the pivotal movement of the clevis in respect to the lifting-pin, said lifting-pin having a fulcrum-like bearing on the draw-head to cause the locking-bar to move slightly longitudinally forward as it is raised, substantially as specified.

8. In a car-coupler, the combination with a forked draw-head and draw-bar, of a pivoted knuckle and a pivotal longitudinally-movable locking-bar lying lengthwise in the chamber of the draw-bar, and provided with a lock-set leg or projection, and a lifting-pin, said knuckle being provided with a lock-set seat or recess, substantially as specified.

9. In a car-coupler, the combination with a forked draw-head and draw-bar, of a pivoted knuckle and a pivotal longitudinally-movable locking-bar lying lengthwise in the chamber of the draw-bar, and provided with a lock-set leg or projection, and a lifting-pin, said knuckle being provided with a lock-set seat or recess, said lock-set leg on the locking-bar having a lip engaging the tail of the knuckle to prevent the front end of the locking-bar jumping or moving upward accidentally, substantially as specified.

10. In a car-coupler, the combination with a forked draw-head and draw-bar, of a pivoted knuckle and a pivotal locking-bar lying lengthwise in the chamber of the draw-bar, and provided with a lip at its front end engaging the tail of the knuckle to prevent the front end of the locking-bar from jumping or moving upward accidentally, and a lifting-pin connected to the locking-bar, substantially as specified.

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