

No. 606,999.

Patented July 5, 1898.

B. F. OLMSTED.
CAR COUPLING.

(No Model.)

(Application filed Apr. 12, 1897.)

3 Sheets—Sheet 1.

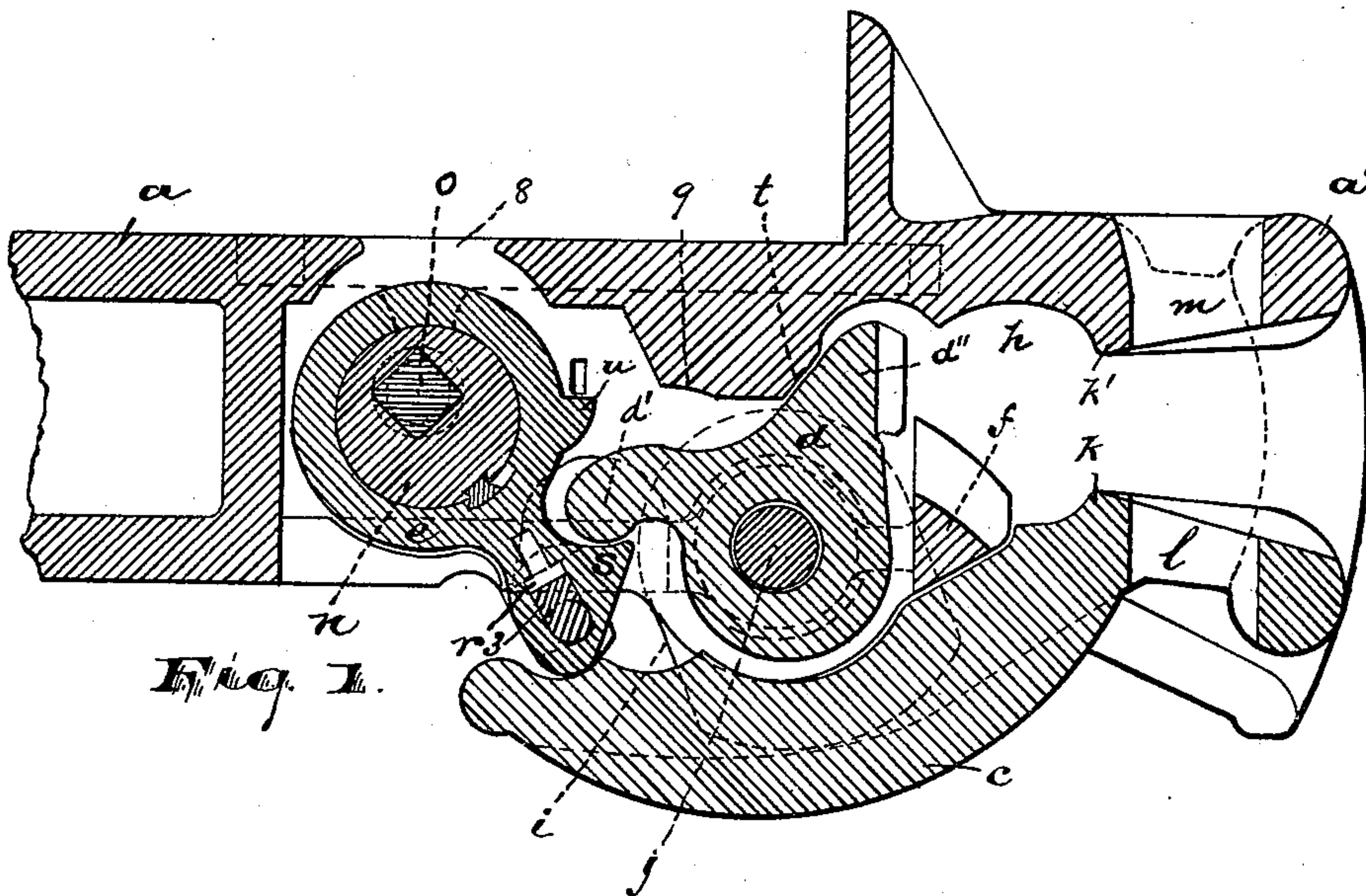


Fig. 1.

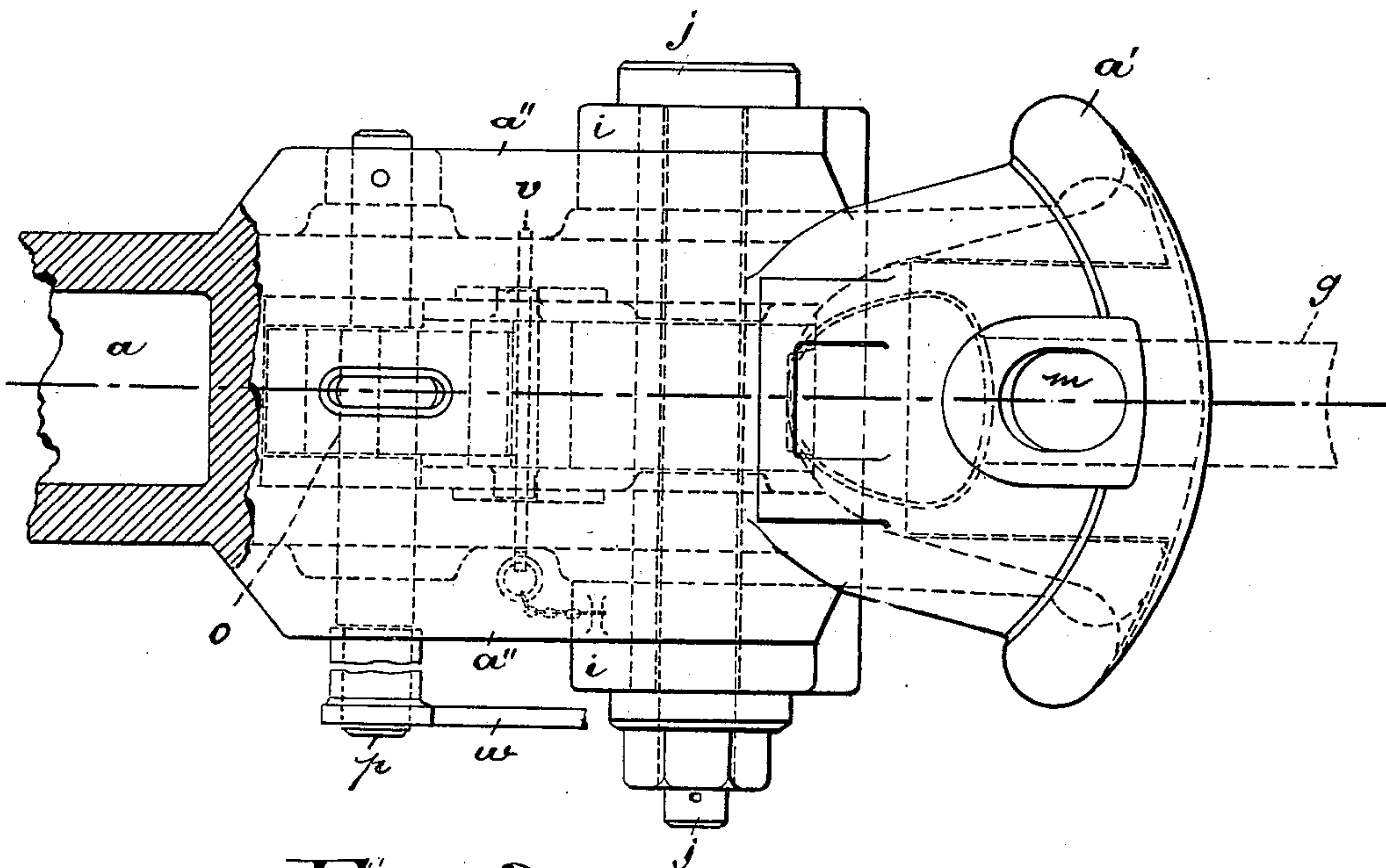


Fig. 2.

WITNESSES:

A. Housell.
C. S. P. Lacey.

Benjamin F. Olmsted, INVENTOR:

BY Drake

ATTORNEYS.

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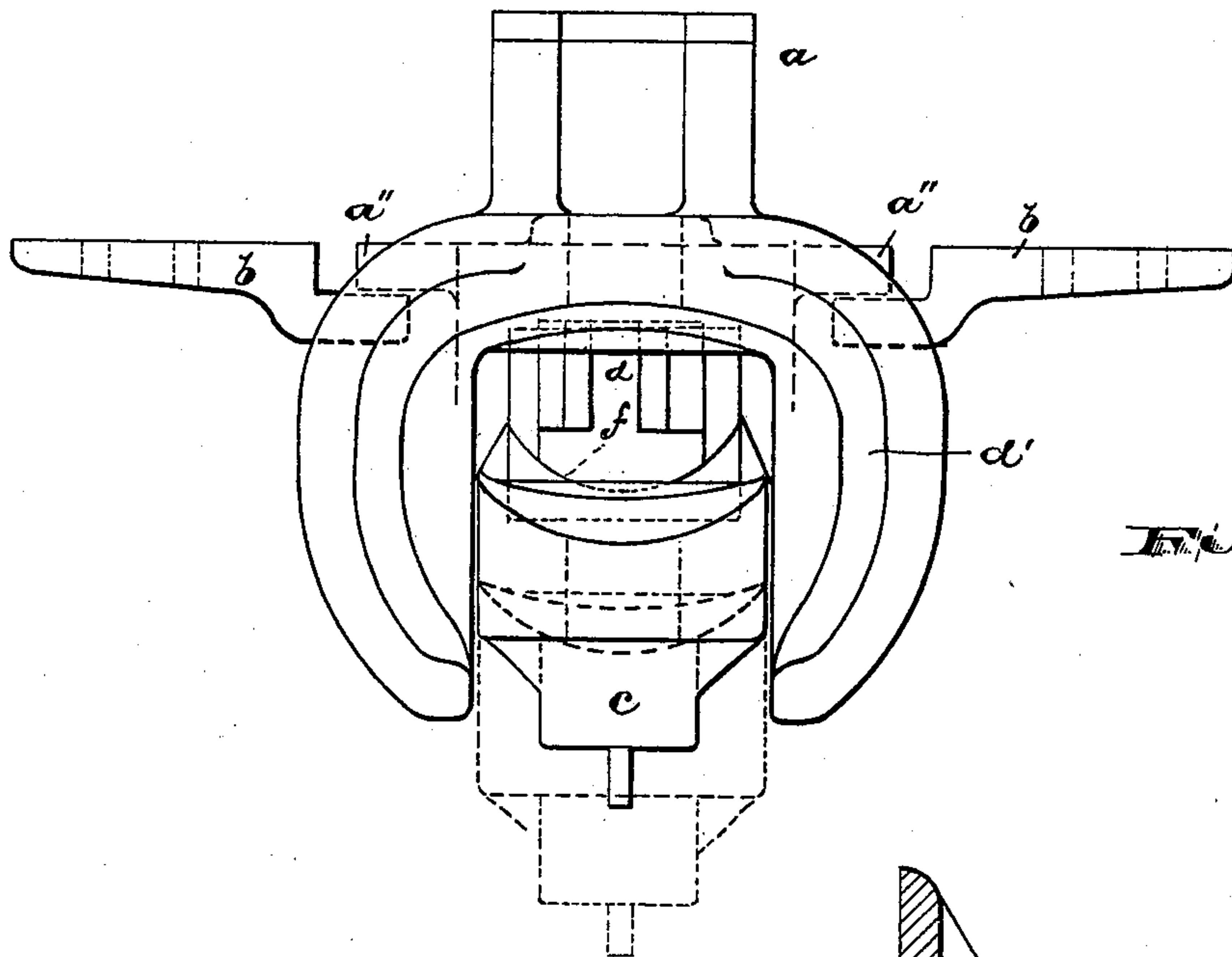


Fig. 3.

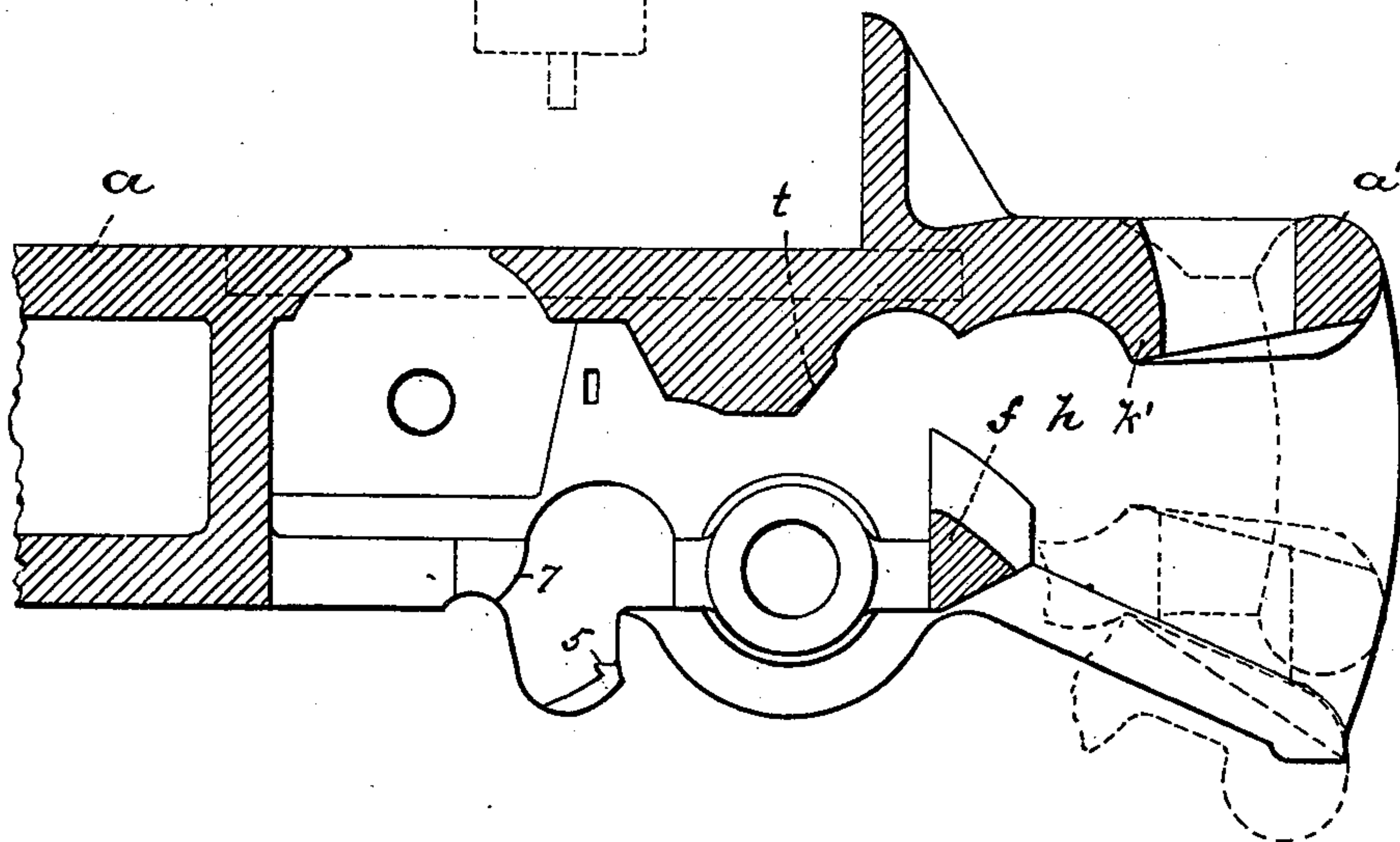


Fig. 4.

WITNESSES:

H. Krousse.
E. B. Filney.

Benjamin F. Olmsted, INVENTOR:

BY *Drake & Co.*

ATTORNEYS.

No. 606,999.

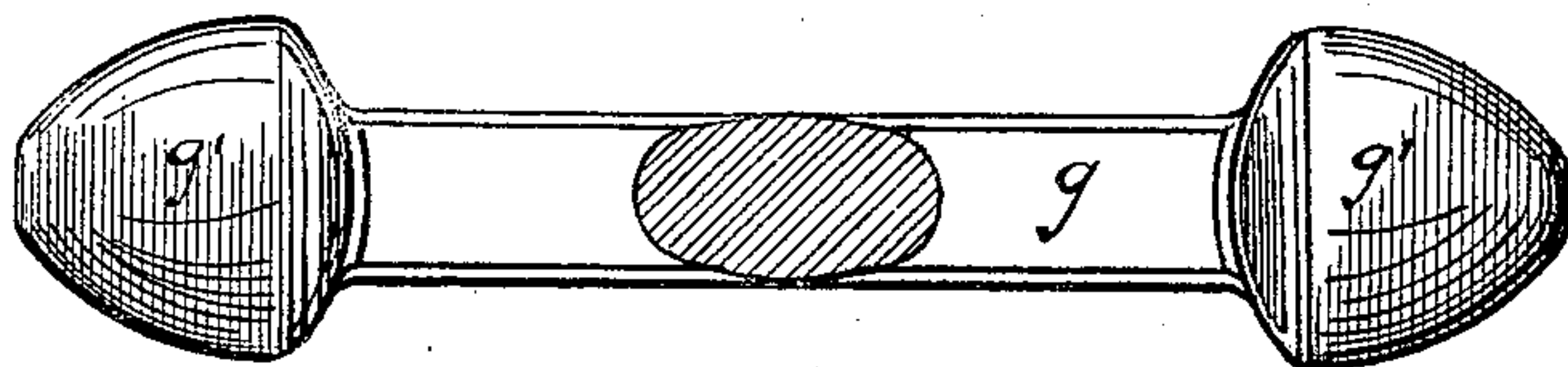
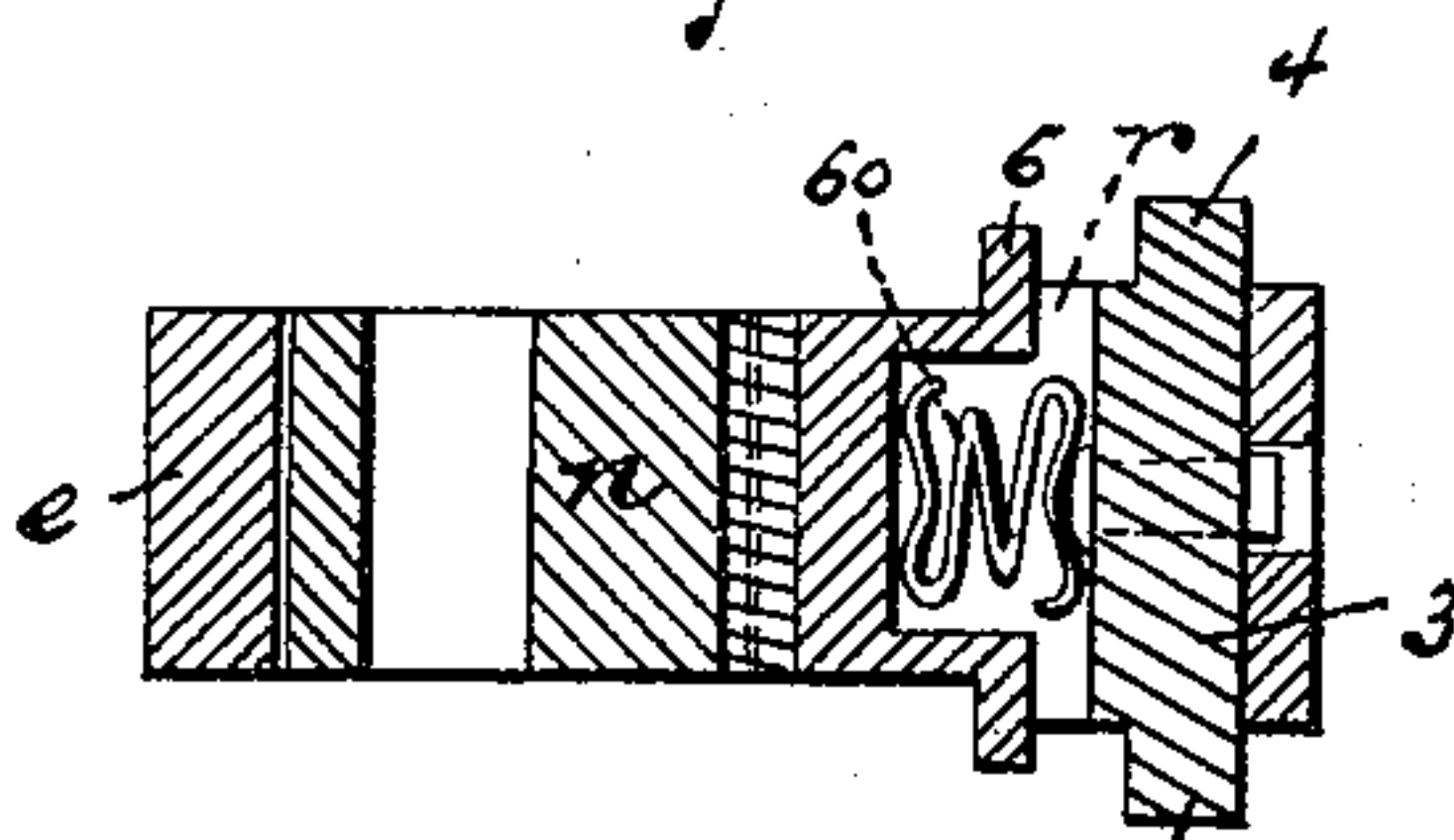
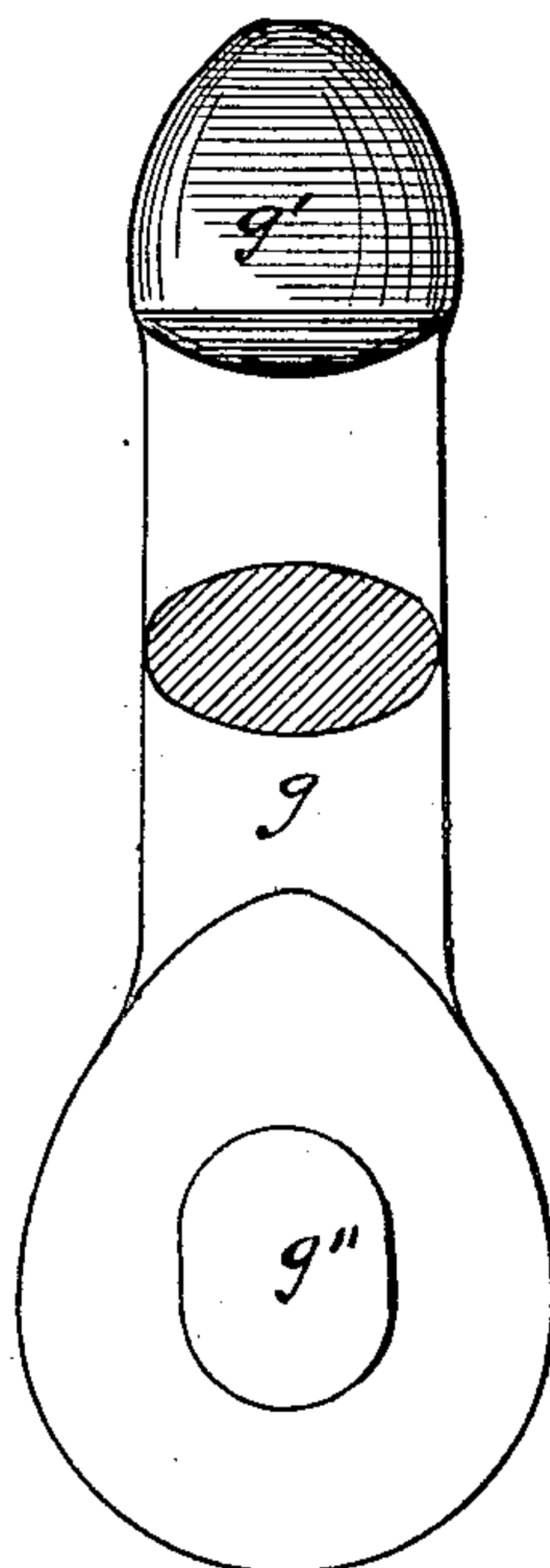
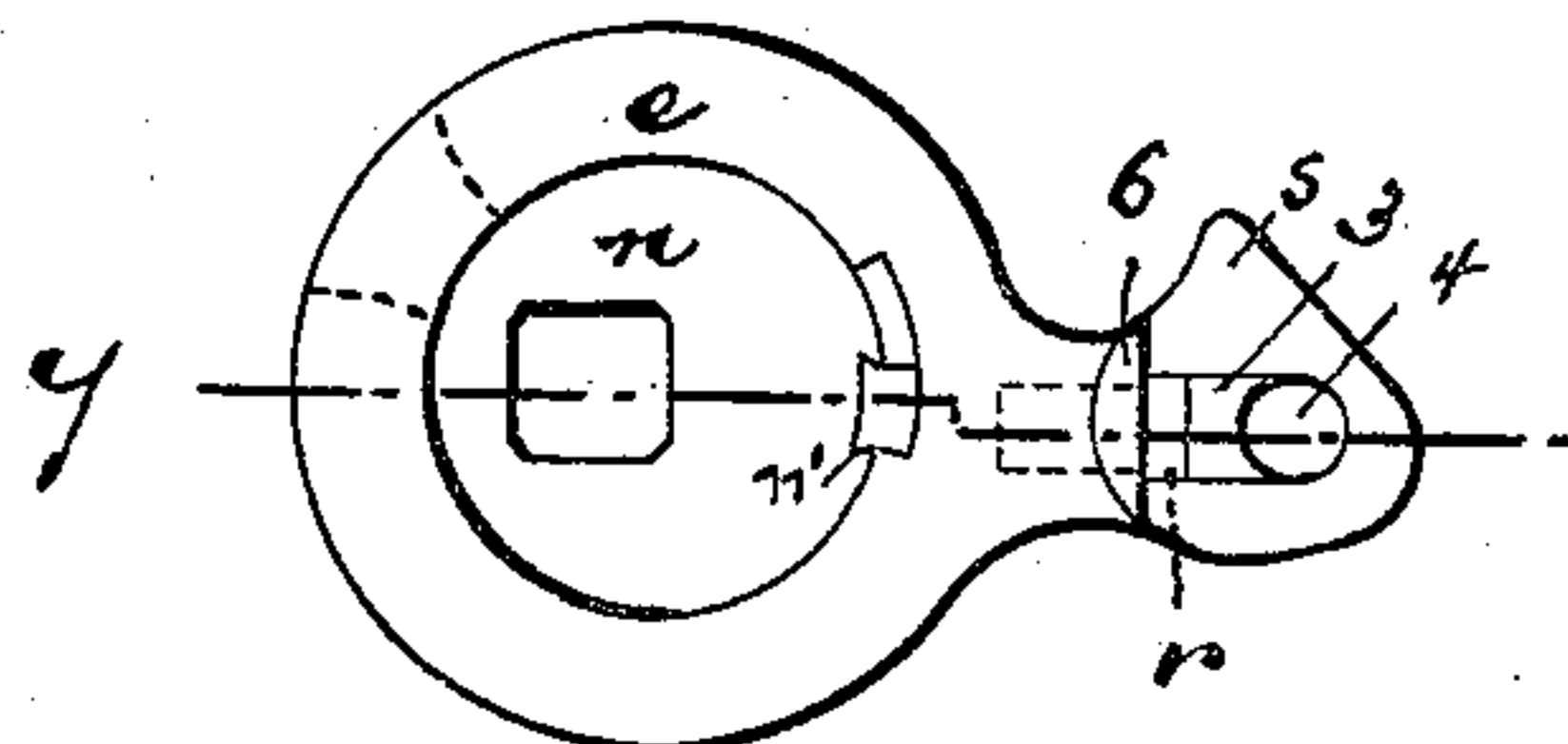
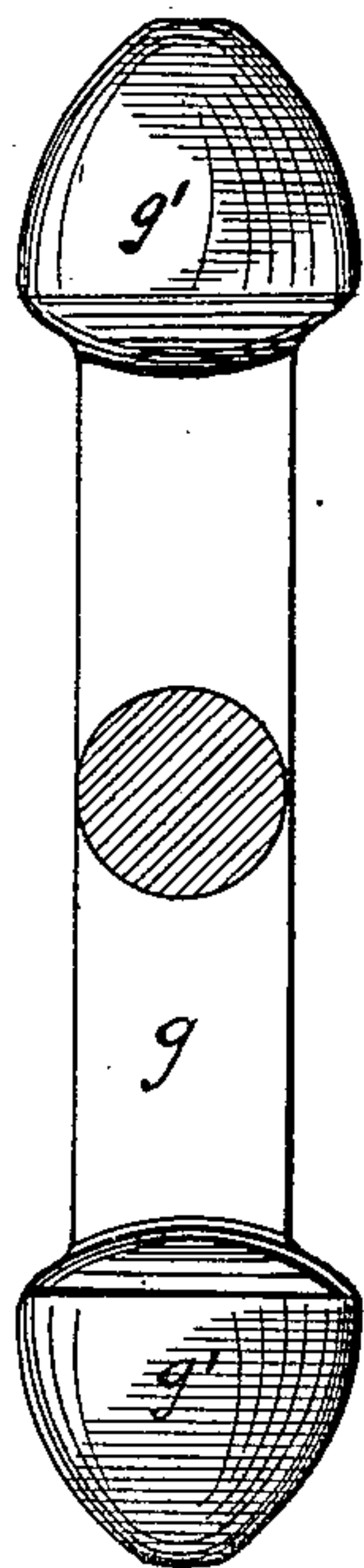
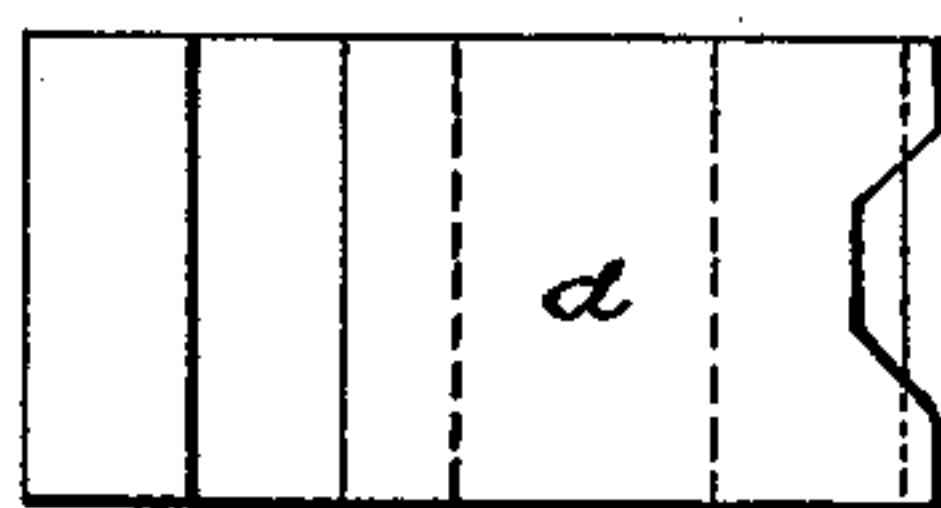
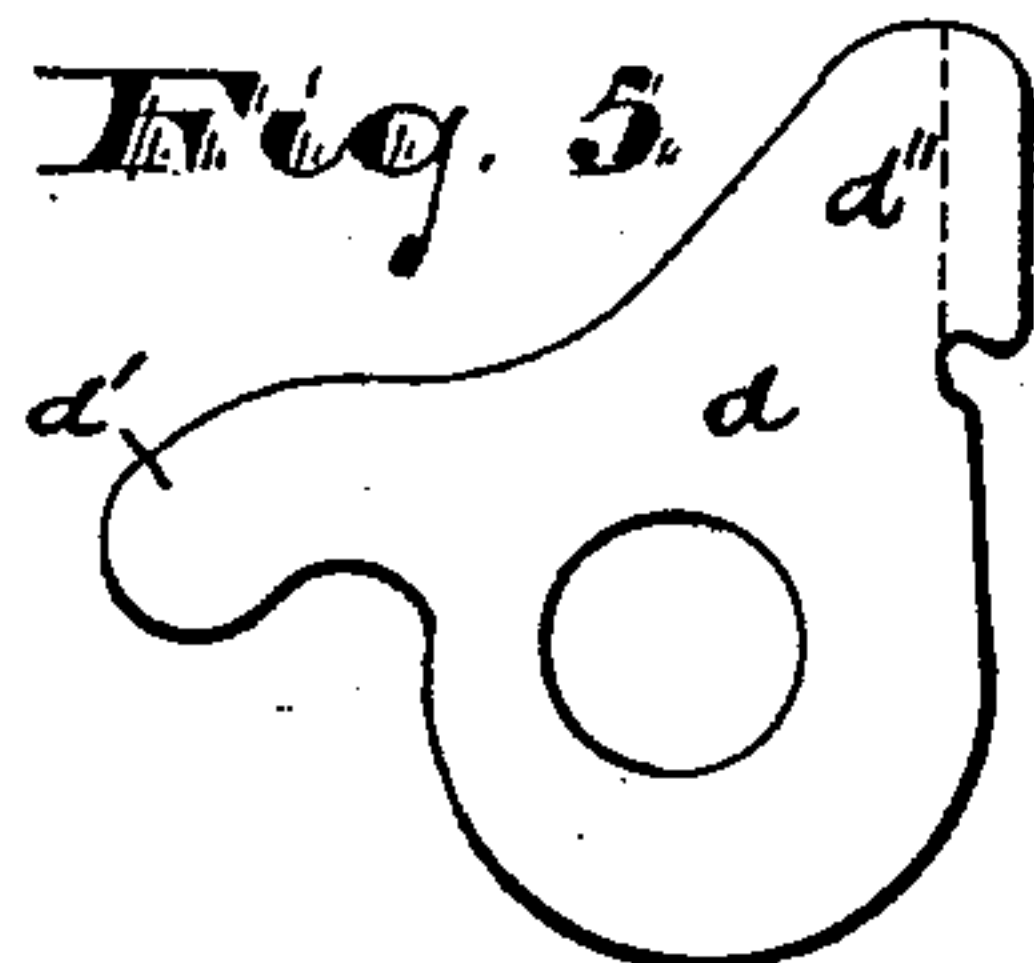
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(Application filed Apr. 12, 1897.)

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3 Sheets—Sheet 3.



WITNESSES:

A. Throuse.

C. M. Tolan

Fig. 11.
Benjamin F. Olmsted, INVENTOR:

BY *Drake & Co.*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

BENJAMIN F. OLMSTED, OF NEWARK, NEW JERSEY, ASSIGNOR TO WILLIAM H. OLMSTED, OF SAME PLACE, AND JOHN H. OLMSTED, OF PLAINFIELD, NEW JERSEY.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 606,999, dated July 5, 1898.

Application filed April 12, 1897. Serial No. 631,869. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. OLMSTED, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Car-Couplings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters and numerals of reference marked thereon, which form a part of this specification.

The objects of this invention are to enable cars to be coupled and uncoupled with greater certainty, facility, safety, and effectiveness; to prevent the parts from becoming locked because of frictional contact; to reduce the cost of construction; to enable the coupling members held upon the car at different elevations to be brought into coupled relation; to allow the improved coupler to be employed in connection with an ordinary link, and to secure other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved car-coupling and in the arrangements and combinations of parts thereof, all substantially as will be hereinafter set forth, and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like letters and numerals of reference indicate corresponding parts in each of the several views, Figure 1 is a central, vertical, and longitudinal section of a draw-bar and its coupling devices. Fig. 2 is a plan of the same. Fig. 3 is a front elevation. Fig. 4 is a central, vertical, and longitudinal section of the body portion of the draw-bar, the movable parts being removed therefrom to show the construction of the interior walls of the said body portion more perfectly. Fig. 5 is a detail side view of a certain pivoted repression-piece adapted to be engaged by the end of the link and be pressed back to effect an operation of certain coupling parts. Fig. 6 is a plan of the same. Fig. 7 is a side elevation of a certain detent adapted to be engaged

by said repression-piece and to be turned thereby to a locking engagement with the coupling-jaw. Fig. 8 is a sectional view taken at line *y*, Fig. 7; and Figs. 9, 10, and 11 are detail views of the links employed in connection with the improved coupling. Fig. 9 shows the link of the round in transverse section. Fig. 10 shows said shank oval in section; and Fig. 11 shows the link provided with a head at one end and an eye to receive a coupling-pin of the older form of construction, so that said link may be employed where the double-headed form cannot.

In said drawings, *a* indicates a draw-bar which is provided at its forward end with the bell or flaring portion *a'*, adapted to guide the link to a socket within the draw-bar, where it is locked in a manner hereinafter specified. Said body portion is preferably of cast steel or iron and is cored interiorly to receive the working parts, the interior construction being shown particularly in Fig. 4. Along the upper opposite sides of the said draw-bar body at the top are formed flanges *a''*, adapted to be seated upon brackets *b*, bolted to the under side of the car-body, said flanges being directly upon the draw-bar, as distinguished from a casing or inclosure therearound, and the relation of the draw-bar to said brackets is such as to permit a lateral play of said draw-bar and when the rear end of the draw-bar is detached to permit said draw-bar to be drawn out longitudinally from its bearings with ease and convenience when renewing the springs at the back of the draw-bar without changing the draw-bar brackets in any manner. At the rear end said draw-bar may be of any suitable construction common in railway-car construction. The flanges are in line with the bell end of the draw-bar, so that a direct blow given by the cooperating coupling on said bell end of the draw-bar will not tend to tilt the rearward straight part of said draw-bar in its bearings or wrench the slideway-brackets, as it would were the bell arranged on an upward extension or arm of the draw-bar considerably above the line of the slideway. In my construction the force of impact is directly in the line of the rearward-sliding straight extension of the draw-bar, and there is sub-

stantially no vertical strain on the flanges or slideway-brackets except that due to the weight of the draw-bar.

The forward end of the body portion where made somewhat bell-shaped and a little back therefrom is on the under side open to receive and allow the operation of a coupling-jaw *c*, the repression-piece *d*, and a detent *e*.

The interior walls of the hollow draw-bar provide bearings hereinafter particularized, which serve in limiting the movements of the said coupling-jaw *c*, repression-piece *d*, and detent *e*. Bearings for the pivotal pins or shafts are also formed in the walls, and the said walls are recessed to receive said parts.

The lower opening of the hollow draw-bar is bridged by a downwardly-curved integral portion *f*, the upper side of which is forwardly inclined or beveled to cause the link *g* as it enters the mouth or bell of the draw-bar to rise as it moves inward and enter a socket *h*, formed in the bell end of the draw-bar, between it and the coupling-jaw. The coupling-jaw holds the link within the said socket, as will be hereinafter more fully described. The said curved bridge or connection *f*, having the inclined or beveled upper surface, is preferably integral with the draw-bar, as above indicated. The said coupling-jaw *c* at its forward extremity flares more or less in correspondence with the bell end of the draw-bar, and back of said flaring part a recess *h'* is formed, which is concavous in correspondence with the recess *h* of the draw-bar, forming with said recess *h* a socket which fits the ball-like base of the head of the coupling-link. Said socket permits of a ball-and-socket action of the link when in coupling relation. About midway of its length said coupling-jaw *a* is provided at its opposite sides with lateral extensions, which are cast integral therewith, and at their outward extremities turn upward to form pivotal ears *i i* at the opposite sides of the draw-bar and are held to said draw-bar by the bolt or shaft *j*, the said draw-bar at its sides being perforated and provided with journal-bearings which receive said bolt. The said coupling-jaw has a pivotal action on the said bolt and is at its forward end adapted to rise into engagement with the link, so as to bite said link and hold it within its socket or lower it to release said link and allow its withdrawal. The forward extremity of the said coupling-jaw *c* is made at its upper side concavous, so as to form the segment of a bell and more or less closely correspond with the curves on the flaring end of the draw-bar to receive and guide the link as it enters the draw-bar. Back of the concavous extremity the said biting-jaw is raised to form a shoulder *k*, which engages the shoulder at the back of the head of the link to hold said link in place. The said shoulder *k* serves as a part of the forward wall of the socketed recess *h* and supplements the bearing *k'* of the adjacent recess of the draw-bar to form said socket, which latter is

of a size more or less closely corresponding with the head *g'* of the link, so that when said link-head is in said socket it will be firmly held, but will be allowed a certain amount of pivotal action in all directions, the said link having an action similar to an ordinary ball-and-socket joint. The said coupling-jaw at its forward end is also vertically perforated, as at *l*, to receive an ordinary coupling-pin, the upper forward portion of the draw-bar being correspondingly perforated at *m* to receive said pin, the two perforations being in vertical alinement. Thus an ordinary link may be entered into the mouth of the draw-bar and be held in place by the usual coupling-pin.

The coupling is thus adapted to be employed with an ordinary link-and-pin-coupler. The action of the ordinary link, in connection with my improved coupling, is such that as it enters the draw-bar it engages the inclined bridge and rises with the jaw *c*, as in the case of the improved link more particularly referred to hereinafter.

At the rear end of the coupling-jaw *c*, back of the fulcrumal ears *i*, the said jaw is adapted to be locked in its closed or coupling position by means of the detent *e* engaging the free rear end of the lever-like jaw, the said detent holding said rear end downward and the opposite forward end up into its biting or dog-like engagement. The detent *e* preferably consists of an arm pivotally arranged upon an eccentric *n*, the center of action of the detent-arm being concentric with the center of that portion of the eccentric *n* upon which the said crank-like part is arranged. The eccentric *n* is provided with a dovetailed groove in its periphery, in which is seated a feather *n'*, and the detent *e*, where it engages said eccentric, is provided with a groove wider than said feather, into which said feather extends and is allowed a limited play, so that the eccentric and detent have certain limited independence of movement.

The eccentric is carried by an angular portion *o* of a hand-shaft *p*, having bearings upon the draw-bar at opposite sides of the central chamber. Said hand-shaft *p* is provided with a hand lever or crank *w* or other suitable means, whereby the said shaft may be turned with the eccentric thereon and the detent adapted to be retired slightly from the rear end of the coupling-jaw, so that the latter is unlocked and allowed to gravitate at its heavier forward end. The retirement of the detent, due to the turning of the eccentric a limited distance, enables the jaw to drop to its open position automatically.

The arm of the detent is somewhat hook-shaped and is cored out or slotted, as at *r*, the hook serving as a tooth or gear bearing to receive the arm *d'* of the repression-piece *d*. As the link is forced into the mouth of the draw-bar it engages the upper and forward bearing-arm *d'* of the repression-piece, pressing the same backward and turning said

piece on the shaft *j*. This action causes the arm *d'* to turn downward on the hook *s*, so that the detent-arm is turned against the rear end of the coupling-jaw *c*, pressing the same downward. Upon the entrance of the link into its socket the head of said link passes up the inclined bridge *f* and engages the forward arm *d''* or bearing of the repression-piece, forcing the said arm back a distance limited by the stop-bearing *t* on the inside of the draw-bar and giving to said repression-piece a limited pivotal motion on its shaft or bolt. The rearwardly-extending arm *d'* of the repression-piece *d*, under the pressure of the link, presses the arm *s* downward, and at the same time the coupling-jaw at its rearward end is pressed down and the outward and forward end of the said jaw is raised, so that its shoulder *k* passes up behind the head of the link, thus holding said link in the socket of the draw-bar. The downward movement of the detent pivotally occasions also a downward thrust, due to the turning of the eccentric.

I prefer to provide the detent *e* with a projection *u*, Fig. 1, by means of which a cross-bar or key-rod *v* (outlined in Fig. 2) may be thrust through the draw-bar sidewise into engagement with said projection, and thus the said detent will be held in its downward or locking position for the purposes of preventing unauthorized persons from manipulating the hand-lever *w* and uncoupling the parts. This key-rod, however, may be dispensed with where it is deemed unnecessary. The detent is preferably cored out, as at *r*, at its downward-projecting arm to receive a sliding lock-bolt 3 for the purposes of a safety-lock to prevent uncoupling or unlocking because of the vibrations of the car while traveling. This bolt 3 at its opposite sides or ends is provided with projections 4, Fig. 8, which engage the stops 5. (Shown in side elevation in Fig. 4.) The sliding lock-bolt 3 is held into engagement with the said stop 5 by means of a spring 60, Fig. 8, although it may be employed and operated by gravity to lock the detent. The retirement of the detent, however, because of the eccentric *n*, disengages the said lock-bolt 3 from the said stop 5, so that said detent is free to open when the hand-lever *w* is brought into play to turn the eccentric.

At or near the upper limit of retiring movement of the detent certain segmental side lugs 6 on said detent engage segment-bearings 7 on the side walls of the draw-bar. (Shown more clearly in Fig. 4.) This engagement induces a forward rocking, sheering, or turning movement of the detent, so that the intermeshing gear-like bearings *s* *d'* of the detent and repression-piece are kept in proper relative position to receive the coupling impulse due to the insertion of the link into its socket.

Above the detent I prefer to form an opening 8 for waste to receive and hold lubricat-

ing-oil. The strap portion of the detent may also be perforated in line with said opening, as indicated in outline in Fig. 7, to allow the lubricant to pass down to the eccentric. The body of the draw-bar otherwise forms a hood to cover the detent *e*, jaw *c*, and repression-piece *d* to protect the same from moisture, dust, &c., such as would tend to clog the said working parts.

The upward movement of the detent-arm *d'* and the forward movement of the link-bearing *d''* are limited by the stop-bearing 9 on the inner wall of the draw-bar.

The link that I prefer is shown in Figs. 9, 10, and 11, where a straight shank or stem of heavy metal is provided at its opposite ends with the heads *g'*, adapted to enter the sockets *h* of the draw-bars and be held therein by the coupling parts *c* and *d*, as hereinbefore fully described. The links are preferably of the length of the standard links, but may be of any length suited for the purpose. The heads *g'* are preferably approximately acorn shape, being rounded at the sides to effect a quick rise as the head engages the incline of the bridge with a flat or approximately flat front bearing in line with the shank the forward face of the part *d* without damage thereto; and at the rear with an abrupt bearing or shoulder, by which the link can be held firmly within the coupling. The shanks may be rounded or oval in cross-section and may be provided with an eye *g''* to receive the old coupling-pin.

Having thus described the invention, what I claim as new is—

1. The improved car-coupling herein described in which is combined with the draw-bar *a*, having at its forward extremity an integral bell which is interiorly chambered to receive the end of a link, the upper part of said draw-bar chamber being closed at the top and having a recess *h*, and being open at the bottom where it receives said link end, a coupling-jaw working in said open bottom of the draw-bar and adapted to hold said link end in the recess of said draw-bar, a repression-piece arranged contiguous to said recess, *h*, to be engaged by the link end as the latter passes into the said recess of the draw-bar bell, a detent acted on by said repression-piece and engaging the jaw to hold the same in coupling relation, substantially as set forth.

2. The improved car-coupling herein described, comprising a recessed and bell-shaped draw-bar, the bottom of which is open for the reception of a coupling-jaw, and is provided with a forwardly-inclined bridge or integral bearing-surface *f*, adapted to raise the end of the link as it enters, into the recess of the draw-bar, a coupling-jaw for holding said link end into said recess, a detent for the grasping-jaw and a repression-piece for operating the detent, substantially as set forth.

3. The improved car-coupling herein described, comprising a hooded draw-bar with an open bottom, a lever-like repression-piece

adapted to receive the end thrust of the coupling-link, a coupling-jaw operable at its forward end to engage the link to hold the same in its coupled position, and a detent engaged by the repression-piece and engaging the coupling-jaw, substantially as set forth.

4. The improved car-coupling herein described comprising a draw-bar, a repression-piece to be pressed by the link attached to the approaching car, a lever-like detent engaged by the repression-piece and a lever-like coupling-jaw engaged in turn by the lever-like detent and held thereby, substantially as set forth.

5. The improved car-coupling herein described comprising a draw-bar, a repression-piece fulcrumed on a transverse shaft or bar, a detent fulcrumed on another transverse bar and a lever-like coupling-jaw held in its coupling relation by said detent and repression-piece, substantially as set forth.

6. The improved car-coupling herein described comprising a draw-bar, repression-piece, a detent carried by an eccentric, and a coupling-jaw, arranged and adapted to operate, substantially as set forth.

7. The improved car-coupling, herein described, comprising a draw-bar, a repression-piece having arms d' , d'' , a detent arranged on an eccentric, means for turning said eccentric and retiring the detent and a lever-like coupling-jaw, all arranged and combined, substantially as set forth.

8. The improved car-coupling herein described comprising a draw-bar, having a bottom opening bridged by an inclined portion f , of said draw-bar, a lever-like repression-piece having arms d' , d'' , a detent adapted to be turned by hand-operable means, and a fulcrumed, vertically-movable coupling-jaw, arranged in said bottom opening, substantially as set forth.

9. The improved car-coupling herein described comprising a draw-bar, a repression-piece d , a jaw c , and a detent e engaging said jaw c , and adapted to be retired to permit an opening of said jaw and means for retiring said detent, substantially as set forth.

10. In a car-coupling, the combination with the draw-bar, a lever-like repression-piece adapted to receive the end thrust of the cooperating coupling device, a coupling-jaw adapted at its forward part to engage said cooperating device, a detent engaging said jaw to lock the same and engaged by said repression-piece, and an eccentric carrying said detent and means for turning the same, substantially as set forth.

11. The improved car-coupling herein described, in which is combined a draw-bar having a hollow hooked chamber provided with bearings t and 9 , for limiting the movements of the repression-piece arms, a lever-like repression-piece d , having arms d' , d'' , adapted to engage said bearing and be limited in their movements thereby, a coupling-jaw and de-

tent, all arranged and operating, substantially as set forth.

12. The improved car-coupling herein described in which is combined with the draw-bar having a segment-lug 7 , a lever-like coupling-jaw, a repression-piece and a detent having lugs 6 , all arranged and combined, substantially as set forth.

13. The improved car-coupling herein described, comprising the draw-bar having a bell end and interior chamber the walls of which have the stops t and 9 , and segmental lugs 7 , a lever-like coupling-jaw, a lever-like detent for the same having lugs adapted to engage said lugs 7 , an eccentric for retiring said detent and occasioning a sheering or rocking action upon the said lugs 7 , and a repression-piece all arranged and combined, substantially as set forth.

14. The improved car-coupler herein described comprising a draw-bar, a lever-like coupling-jaw, a pivoted repression-piece having arms d' , d'' , a detent having an arm engaged by the arm d' , and engaging the coupling-jaw, an eccentric and a lock for said detent, all arranged and combined, substantially as set forth.

15. The improved car-coupling herein described comprising a draw-bar, a lever-like coupling-jaw, a pivotal repression-piece, a detent engaged by the repression-piece and holding said coupling-jaw an eccentric for retiring the detent and a sliding lock-bolt arranged in a slot in said detent, substantially as set forth.

16. The improved car-coupling herein described comprising a draw-bar having a flaring forward end and open bottom the bottom opening having a bridge with an inclined bearing, and the interior of the walls having stop-bearings 9 and t , segmental bearing 7 , and stop 5 , for the lock-bolt, a shaft j , on which the repression-piece d , is fulcrumed said repression-piece having a forward arm d' , back of the bridge and adapted to receive the incoming link, and having a rearward arm d'' , adapted to gear with the detent, said detent, arranged on an eccentric n , back of said repression-piece and having a slotted arm engaged by the repression-piece and engaging the coupling-jaw, said eccentric having means whereby it may be turned and a lock-bolt within the slot of the slotted arm, said bolt engaging the stop 5 , and said coupling-jaw having ears pivoted upon the said shaft j , all substantially as set forth.

17. In a car-coupling, the combination with the draw-bar having a bell end, open bottom and bridge, of a lever-like coupling-jaw working virtually within said open bottom and at its forward end adapted to form a socket to receive and hold the head of the coupling-link and at the rear end adapted to receive a detent adapted to hold said jaw in its coupling relation, substantially as set forth.

18. In a car-coupling, the combination with

the draw-bar having the recess *h*, and inclined bridge, the inclined surface of which is adapted to guide the head of the link upward to cause the upper part of said link-head to enter the said recess, a coupling-jaw adapted to engage the side of said link-head and hold it in said recess, and a repression-piece adapted to be engaged by said link-head and operate a train of mechanism by which said jaw is closed against the link-head, of said link having opposite heads which are of conoid shape with rounded sides to give a quick upward movement when sliding on the inclined bridge, abruptly shouldered at the back and flattened at the front in line with the shank to present a broad surface to the repression-piece and reduce indentation under the force of impact, substantially as set forth.

19. In a car-coupling, the combination with the draw-bar having a flaring forward end and open bottom, the bottom opening having a bridge with an inclined bearing above which the draw-bar is interiorly recessed or socketed, a jaw for holding the link into said upper recess, means for fastening said jaw automatically in its holding position, and a link having a rounded head adapted to engage said inclined bridge and be raised into the socket or recess and held therein by the jaw, substantially as set forth.

20. In a car-coupling, the combination with the draw-bar, repression-piece and coupling-jaw, of a detent pivoted on an eccentric, and means for turning said eccentric, substantially as set forth.

21. In a car-coupling, the combination with the jaw draw-bar having a flaring end with a closed top within which a recess *h*, is formed and an open bottom to receive a coupling-jaw, which open bottom is bridged, the bridge being integrally formed in said draw-bar and

having an inclined bearing-surface adapted to guide the link upward into said recess *f*, a repression-piece having a bearing to receive the forward extremity of the link, a detent operated by said repression-piece, a lever-like jaw adapted to be thrown by said detent into coupling engagement with the link-head and to hold said link-head in coupling engagement and recessed to produce a ball-socket with said recess *h*, and a link having a truncated conoid head rounded at the base to fit the recess in the draw-bar and coupling-jaw, to permit a ball-and-socket movement of the link, substantially as set forth.

22. In a car-coupling, the combination with the draw-bar, repression-piece, and coupling-jaw, of a detent pivoted on an eccentric, and having a projection *u*, said eccentric and means for operating the same, and a cross-bar or key-rod *v*, substantially as set forth.

23. The combination with the draw-bar, jaw *c*, detent and repression-piece *d*, of an eccentric carrying, said detent and a feather working in a slot larger than said feather whereby the detent is allowed a limited independence of movement on the eccentric, substantially as set forth.

24. The combination with the draw-bar, jaw, detent, operable by a hand-lever, and repression-piece arranged, substantially as described, said detent having the projection *u*, of a key-rod *v*, adapted to be thrust through the draw-bar sidewise into engagement with said projection, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 6th day of March, 1897.

BENJAMIN F. OLMSTED.

Witnesses:

CHARLES H. PELL,
C. B. PITNEY.