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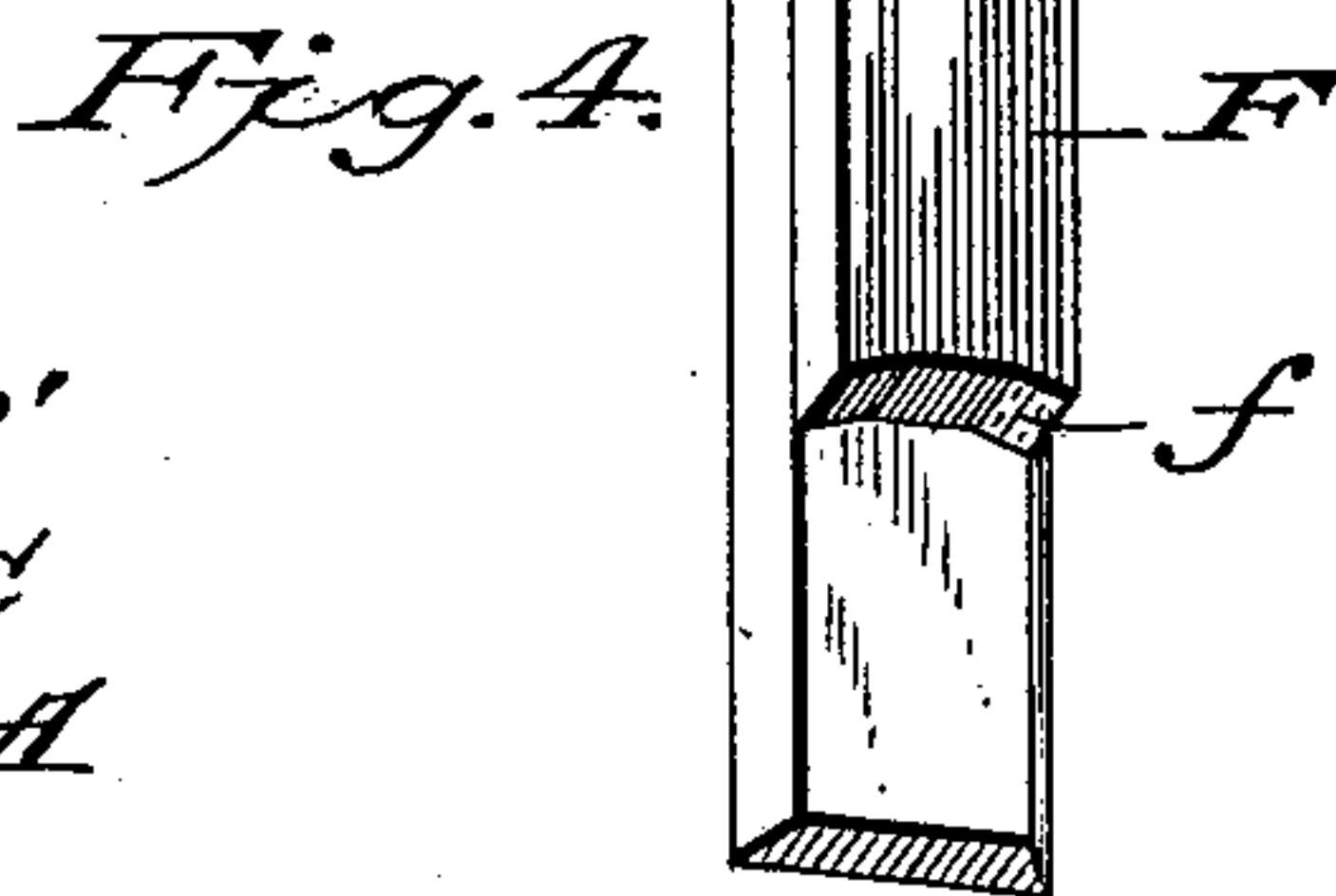
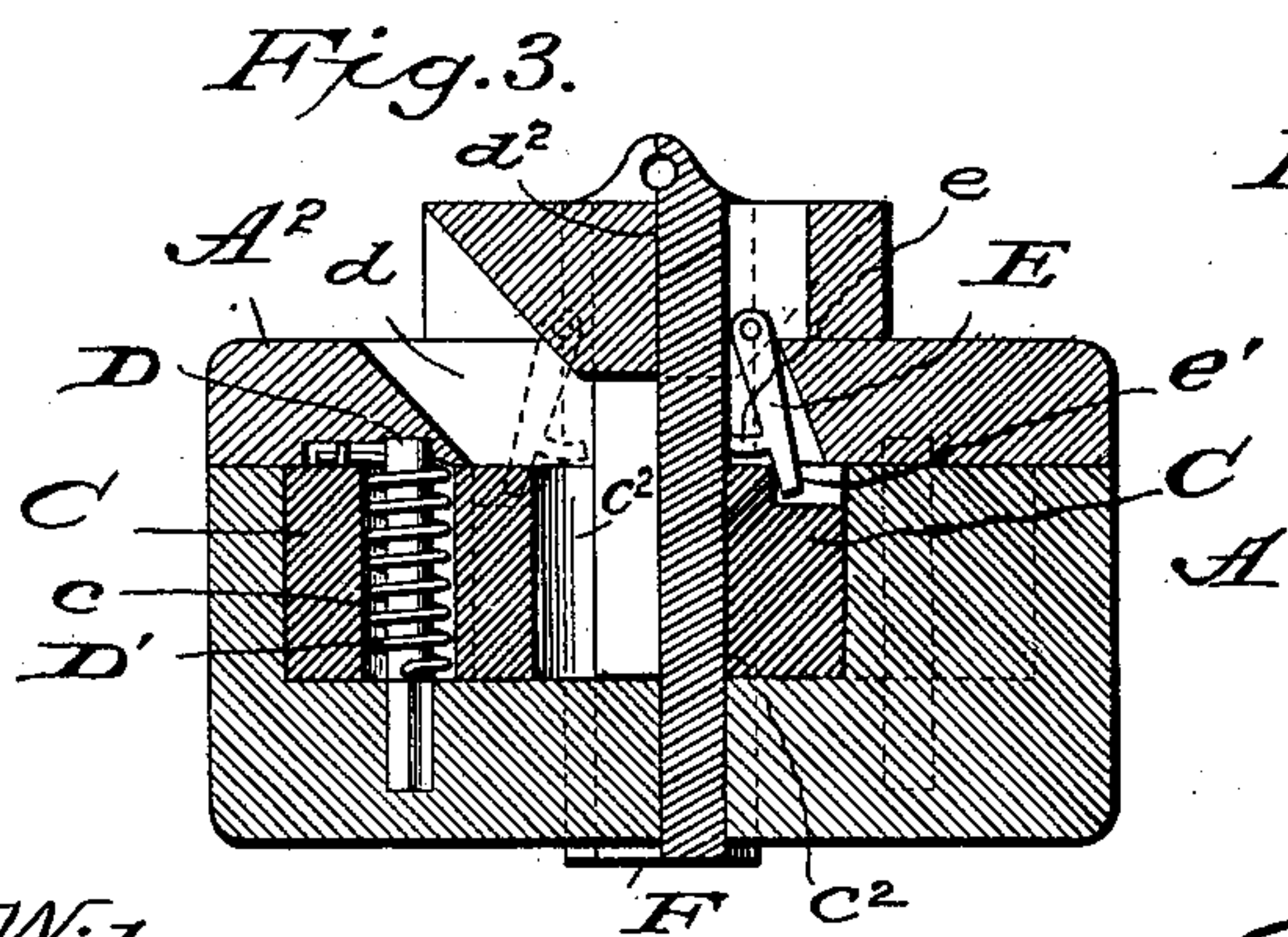
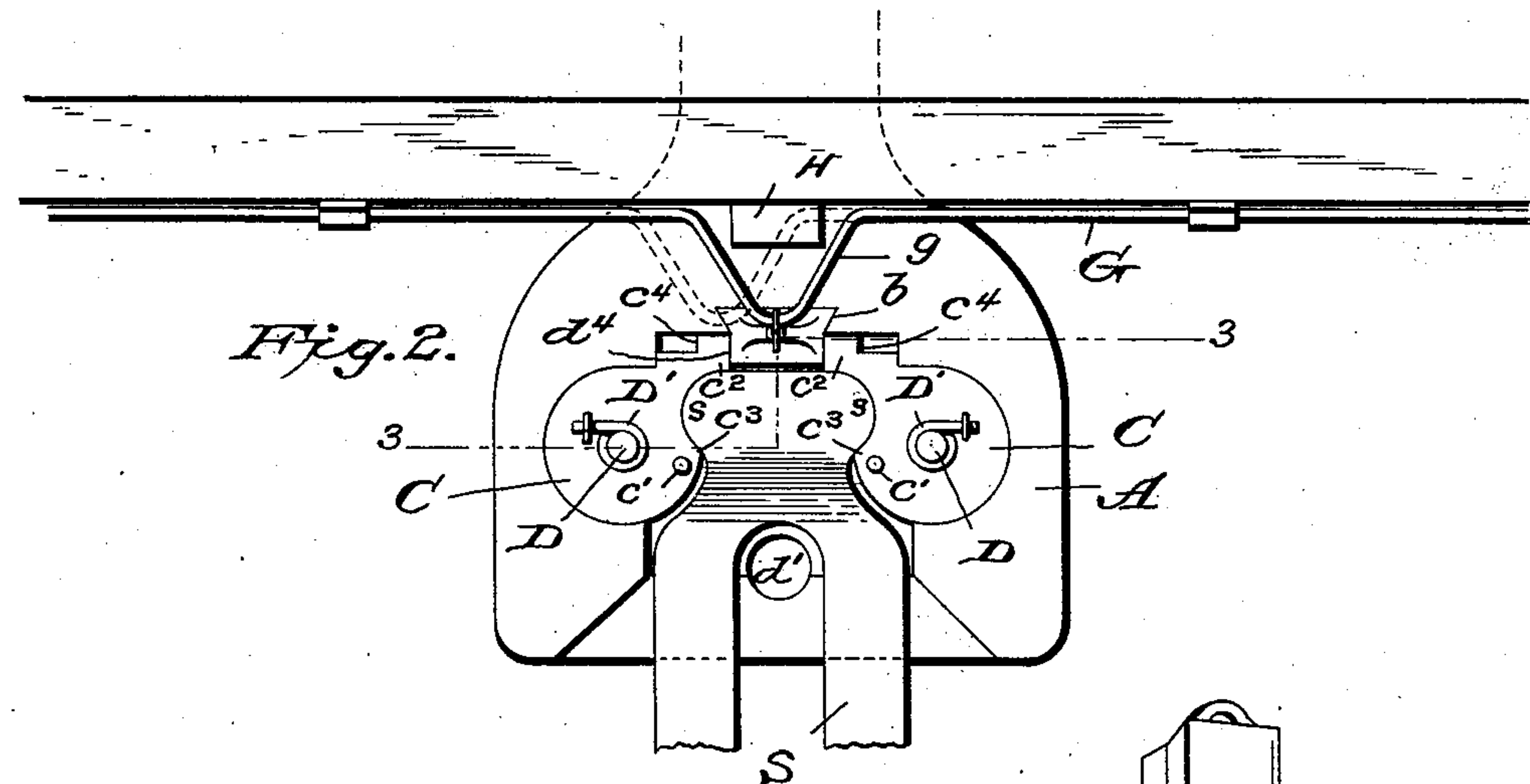
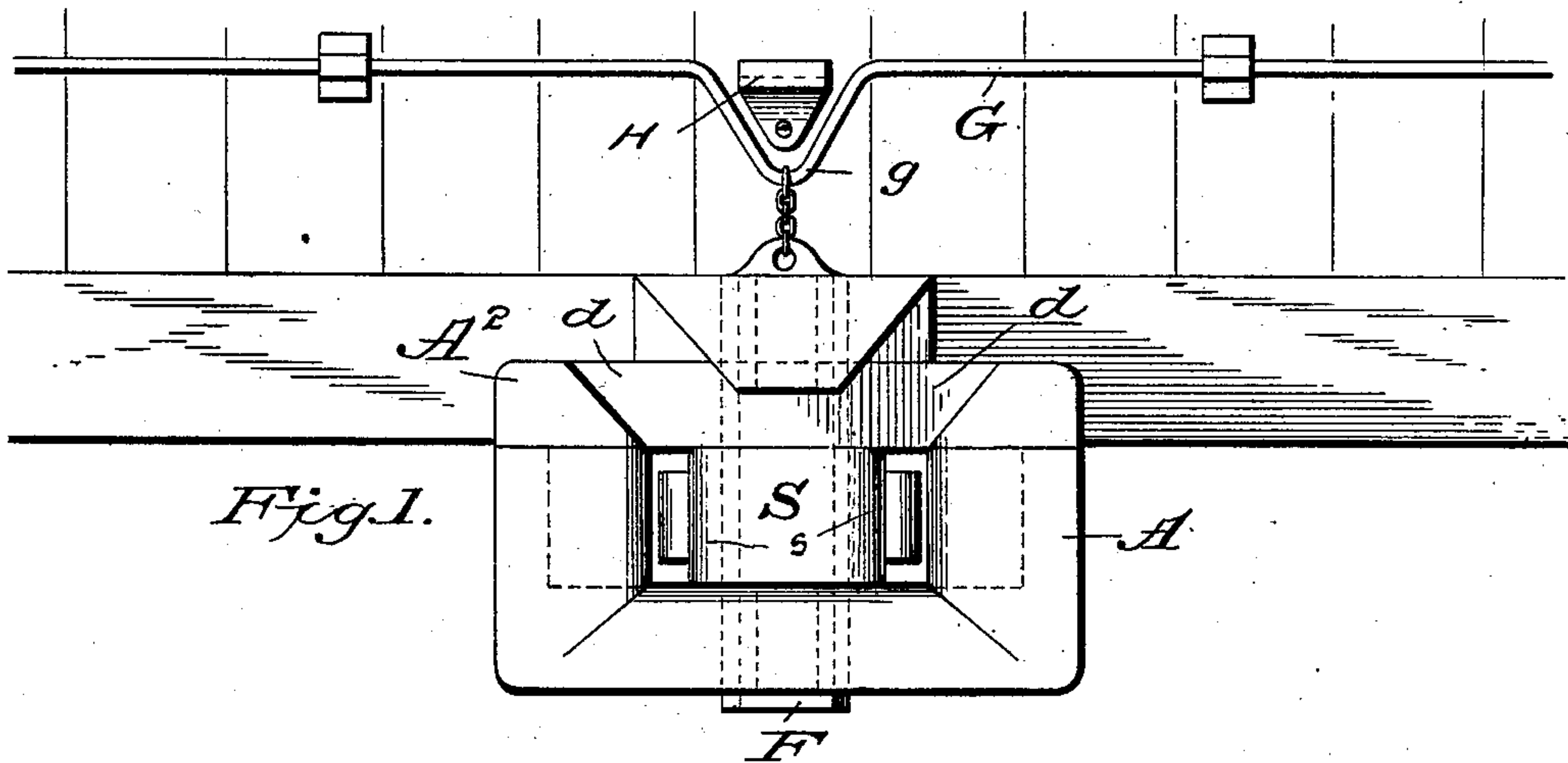
Patented July 5, 1898.

J. E. SMITH.
CAR COUPLING.

(Application filed Oct. 8, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

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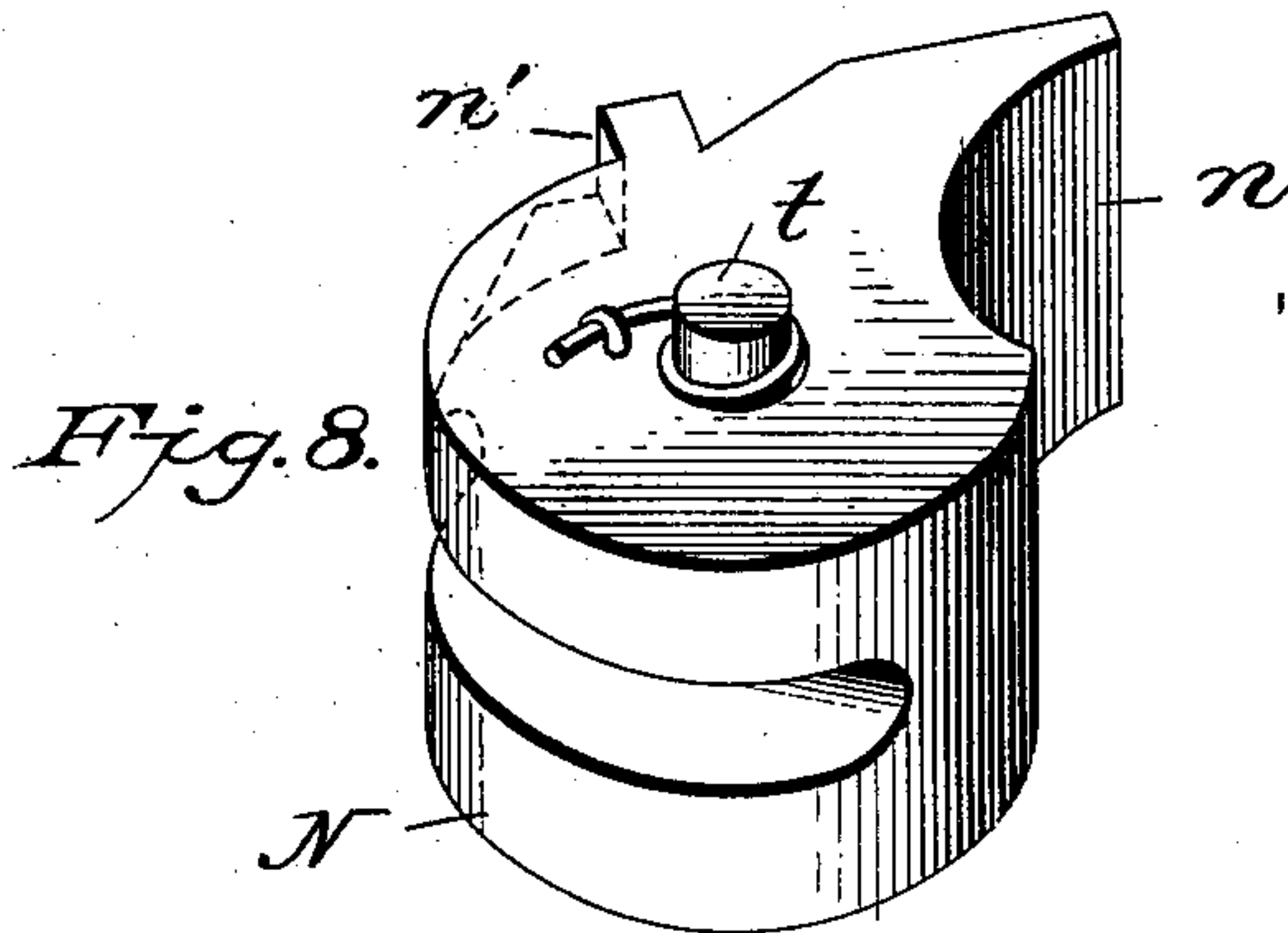
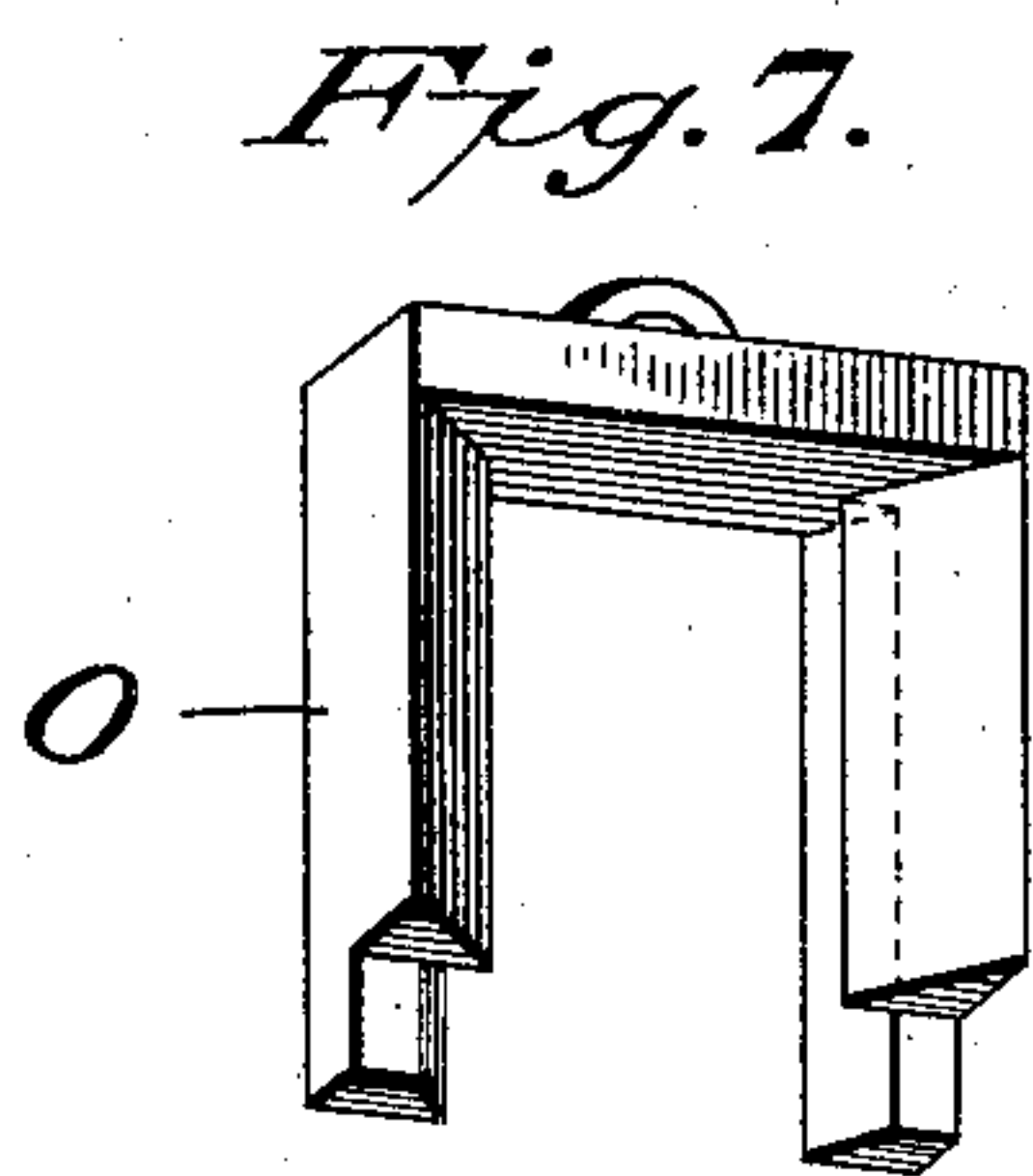
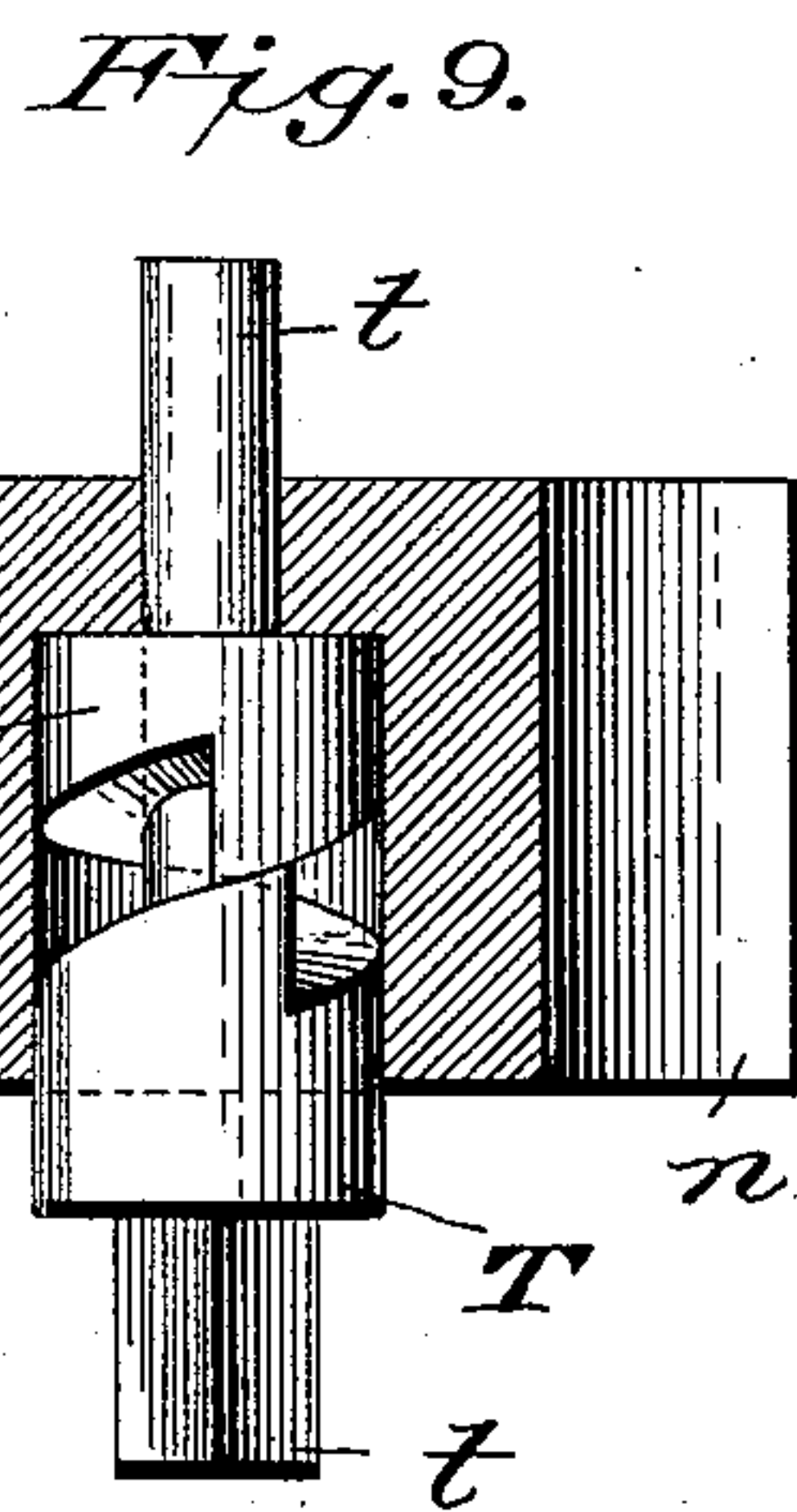
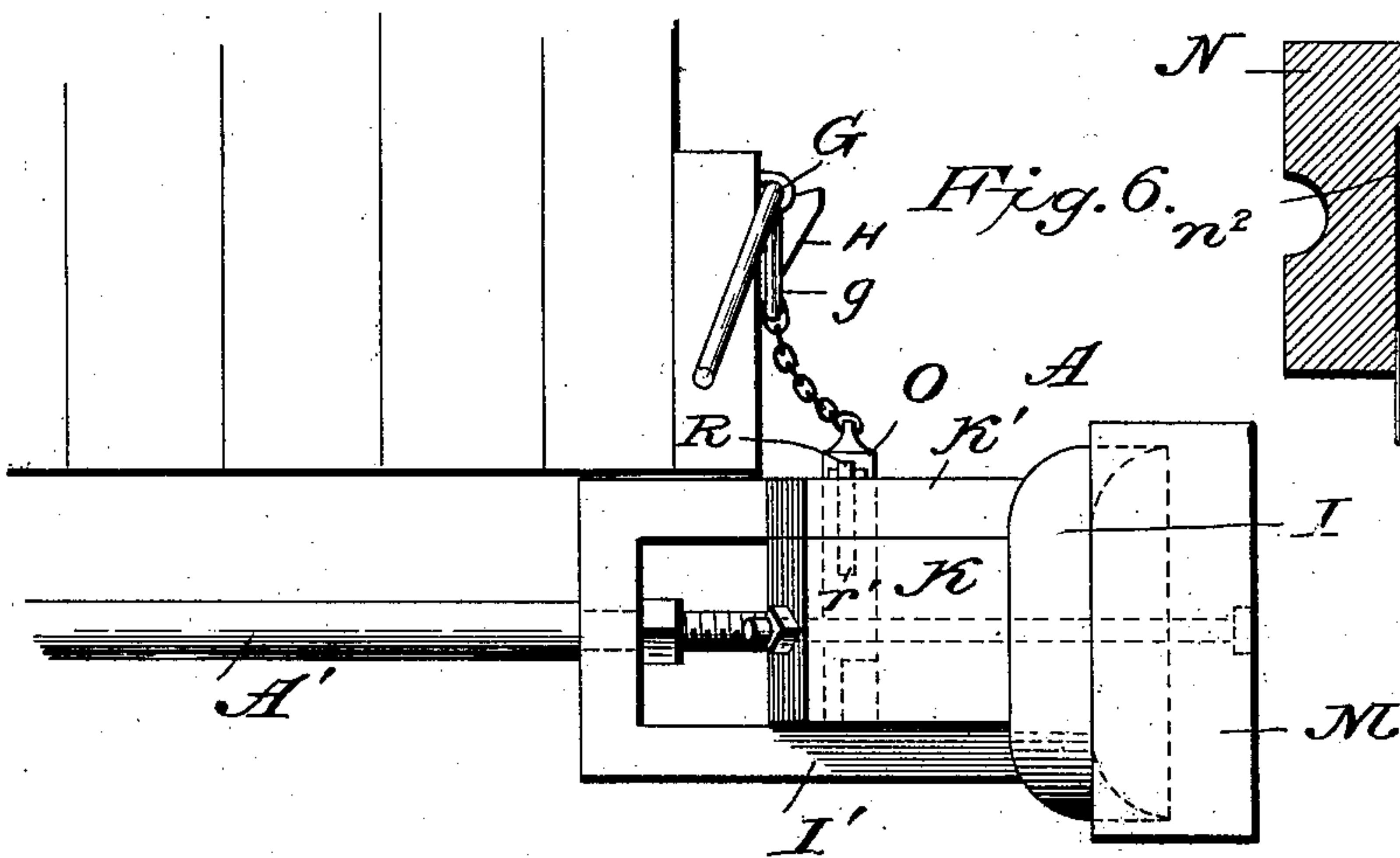
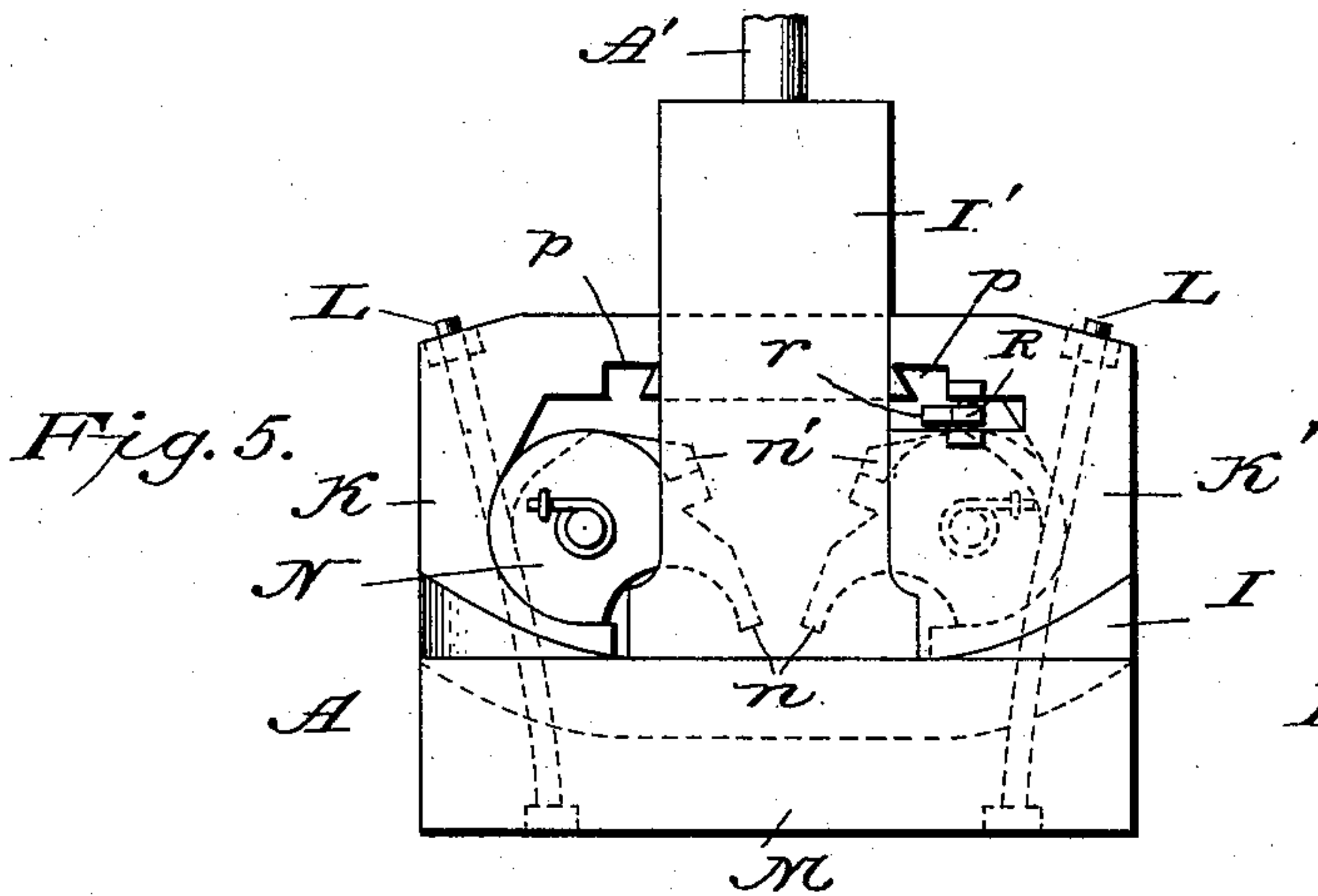
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(No Model.)

2 Sheets—Sheet 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

JACOB E. SMITH, OF HOMESTEAD, PENNSYLVANIA.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 606,688, dated July 5, 1898.

Application filed October 8, 1897. Serial No. 654,584. (No model.)

To all whom it may concern:

Be it known that I, JACOB E. SMITH, a citizen of the United States of America, residing at Homestead, in the county of Allegheny and State of Pennsylvania, 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.

This invention is an improvement in car-couplings, the object being to provide a strong and durable coupling in which the parts are so constructed and arranged as to positively engage the coupling-link automatically when the cars come together, distributing the tension strain in such manner as to prevent breakage or rupture of the draw-head and relieving the locking-pin of any considerable pressure to insure its proper manipulation in uncoupling.

The invention includes the particular construction of draw-head by which the coupling-link is permitted to slip out of said draw-head when one of the cars is thrown at an excessive angle with respect to the other by reason of becoming derailed or through other accident thereto.

The invention also contemplates an arrangement by which the improved coupling is readily and conveniently applied to the well-known skeleton coupling of the link-and-pin type.

The above objects are accomplished by the construction and disposition of the instrumentalities shown in the accompanying drawings and described in detail in the following specification, and what I consider to be novel in the art to which my invention pertains is more specifically set forth in the appended claims.

In the drawings, Figure 1 is a front elevation of a car-coupling constructed in accordance with my invention. Fig. 2 is a plan view with the top removed. Fig. 3 is a vertical transverse sectional view. Fig. 4 is a detail view of the locking-pin. Fig. 5 is a plan view showing the application of the principal parts of the invention to the ordinary skeleton coupling-head, the locking-pin being removed. Fig. 6 is a side elevation of Fig. 5.

Fig. 7 is a detail view of the locking-pin used in connection with the construction shown in Figs. 5 and 6. Fig. 8 is a detail perspective view of the jaw. Fig. 9 is a modification of the operating means for the jaw.

Referring more particularly to said drawings, A designates the draw-head, which is connected to a draw-bar A' of any approved construction, the top A² of said draw-head being rigidly secured to the lower part or body to form a part thereof. The draw-head presents the ordinary flaring mouth leading to a central link-chamber, the side walls of which are curved in the segment of a circle, as shown more clearly in Fig. 2, while the rear end has a vertical dovetailed recess b extending through the bottom. In each side of the link-chamber is mounted a cylindrical jaw C, having an axial opening c, through which passes a vertical shaft D, bearing at its ends in the top and bottom of the draw-head, the lower end being squared and stepped in a corresponding recess. The axial opening is somewhat larger than the shaft to receive a helical spring D', encircling the latter, to which it is secured at one end, the other end of the spring being attached to the jaw, said spring serving the purpose of returning the jaw to a normal position, a limit of movement being had by a lug c' on the jaw working in a recess in the top of the draw-head. Each jaw is provided with a projection or arm c², adjoining which the body of said jaw has a segmental recess presenting a cam projection c³, which engages the coupling-link S, while the arms c² form the parts against which the link strikes to swing said jaws and also the parts with which the locking-pin engages, as will hereinafter appear.

The top A' of the draw-head is constructed to present a central raised portion, the side edges at the forward end of which are beveled or undercut and opposed to corresponding edges of the main portion of the top, forming oppositely-inclined slots d d, through which the coupling-link will pass when the draw-head is turned to a certain angle in either direction. The forward end of the raised portion of the top is provided with a vertical opening d', registering with a corresponding opening in the bottom of the draw-head, to receive an ordinary pin when coup-

ling with a car having the link-and-pin type of draw-head. At the rear end of the raised portion of the top A^2 is formed a rectangular recess or vertical opening connecting with a dovetailed opening in the main portion of said top, said openings corresponding with the cross-section of the upper part of the pin, the dovetailed opening forming a continuation of the recess b and opening into a rectangular opening d^4 . In the ends of the last-mentioned opening are pivoted swinging dogs $E E$, having inwardly-projecting hooks e and depending tails e' , the hooks of said dogs engaging the lower end of a forward enlargement f of the locking-pin F , the longitudinal edges of the latter being beveled to provide a better engagement for the hooks. The tails e' of the dogs are engaged by the projections or arms of the cylindrical jaws C to swing said dogs out of engagement with the pins, said arms being recessed to present shoulders c^4 , which strike the tails.

The coupling-link S is provided at its ends with heads s , adapted to be engaged by the cam projections c^3 of the jaws C , while the body portion of the link is preferably solid, though it may be provided with longitudinal slots in order to make a coupling with an ordinary link-and-pin style of draw-head.

It will be understood that the locking-pin drops into the draw-head by gravity, being held in position for coupling by the swinging dogs. In order to raise the pin from the side of the car, it is connected to the crank portion g of a shaft G , which extends across the front of the car, being journaled in bearings which permit a shifting movement of said shaft. The crank portion of the shaft is held raised to support the pin out of operation by means of a step H , with which either member of the crank may engage, said step being of such a width as to permit the crank portion to straddle the same and drop. The connection between the locking-pin and crank portion is a flexible one, or chain, which will not interfere with the automatic operation of the coupling.

In Figs. 5, 6, and 7 I have shown a construction of parts to adapt the coupling to be applied to an ordinary skeleton draw-head. In this modification I designate the front, and I' the loop or frame, of the skeleton coupling, while K designates the main portion or body of my improved coupling, said body being slipped laterally between the top and bottom of the frame I' and shaped at its forward end to properly engage the front I , against which it is held by any suitable device, preferably that shown in the drawings. Lateral movement of the body is prevented by the top plates $K' K'$, which are rigidly secured to said body and bear against the top of the frame I' , the parts being further braced, in connection with the skeleton coupling, by means of curved tie-rods L , extending through the body and through a supplemental front M , passing by the inner edges of the front I of the skele-

ton coupling. The tightening-nuts at the rear ends of the tie-rods are let into the body K , so as not to strike the dead-wood of the car when the coupling-head is forced rearward by the opposing draw-head in coupling, and it will be noted that the said tie-rods where they pass the jaws N form stops to limit the movement thereof. These jaws are constructed slightly different from the jaws C , being provided in addition to the arms n , with projections n' , which engage the locking-pin O , the draw-head K having vertical recesses $p p$ at opposite sides of the skeleton frame to receive the members of the locking-pin, said members being beveled to conform with the shape of the vertical openings formed by the recesses in the draw-head and jaws. The locking-pin is engaged by swinging dogs $R R$, pivoted in openings in the top plate K' and having hooks r and tails r' , the latter being engaged by shoulders on the projections n' .

From the foregoing description, in connection with the accompanying drawings, the construction and operation of my improved car-coupling will be readily understood, for the parts being arranged with the locking-pin supported by the dogs the coupling-link entering the draw-head will strike the arms of the jaws and forcing them rearward will trip said dogs, releasing the pin, which drops into engagement with the aforesaid arms, the head of the link being engaged by the cam projections of the jaws. Thus it will be seen that the operation of coupling is accomplished automatically, and to prevent coupling—for instance, in backing a car or shifting in making up trains—it is only necessary to raise the pin by means of the shaft, and by shifting said shaft to cause its engagement with the step H the said pin will remain elevated or out of operation. When the cars are coupled, the draft on the link will cause the greatest strain to be at the point where the jaws impinge against the side walls of the link-chamber, thus relieving the arms to a considerable extent.

In the modification Fig. 9 a plug n^2 is inserted in an opening therefor in the jaw, said plug having an inclined surface upon which rides a similar surface of a collar T , fixed to a shaft t , which is stepped in the draw-head. By this means the jaw is returned to its normal position without the aid of springs, the gravity of the jaw being sufficient.

A car-coupling constructed in accordance with my invention presents one that is exceedingly strong and durable, the several parts being quick and positive in their action and not liable to get out of order. It will also be observed that the improved coupling can be readily applied to an ordinary skeleton draw-head without in any manner altering the same.

Having thus described my invention, I claim—

1. In a car-coupling, the combination of the

draw-head, rotatable jaws mounted therein and provided with cam projections, a locking-pin having a vertical movement in the draw-head and adapted to engage the rotatable jaws, swinging dogs pivoted at their upper ends to the draw-head, said dogs having hooks and gravitated to engage the pin when the latter is raised, the dogs being so positioned as to be tripped by the jaws, substantially as shown and described.

2. In a car-coupling, the combination of the draw-head, rotatable jaws mounted therein and provided with cam projections, swinging dogs mounted within the draw-head at the rear end thereof, said dogs presenting hooks and tails, and a locking-pin engaged by the hooks of the dogs and held normally elevated thereby; the tails being positioned to be struck by the rotatable jaws, substantially as shown and described.

3. In a car-coupling, the combination of the draw-head, rotatable jaws mounted therein and having axial openings, stationary rods extending through said openings, springs encircling the rods and connected thereto and to the jaws to move the latter in one direction, and stops limiting the movement of the jaws; together with swinging dogs pivoted within the rear end of the draw-head, said dogs having hooks and tails, and a locking-pin supported by the hooks of said dogs, the latter being so positioned that the tails will be struck by the rotatable jaws to trip said dogs, substantially as shown and for the purpose set forth.

4. In a car-coupling, the combination of the draw-head having a vertical dovetailed recess in its rear end and segmental recesses in the sides of the link-chamber, cylindrical

jaws mounted in said segmental recesses and provided with arms and cam projections, the former having shoulders at their upper ends; dogs pivoted within the rear end of the draw-head, and a locking-pin having a forward projection at its upper portion and beveled side edges, the pin being supported by the dogs engaging the projection thereof and said dogs tripped by the upper shoulders on the jaws, substantially as herein shown and described.

5. In a car-coupling, the combination of the draw-head having oppositely-inclined open-ended slots in the top communicating with the link-chamber and opening through the said top; rotatable jaws mounted within the link-chamber and presenting cam projections, and a locking-pin adapted to engage the jaws; together with a coupling-link shaped to be engaged by the cam projections of the jaws and of a size to pass through the open-ended slots, substantially as shown and for the purpose set forth.

6. In a car-coupling, the combination with a skeleton draw-head, of a body or frame adapted to slip laterally therein, top plates secured to the body to bear against the top of the skeleton draw-head, a supplemental front bolted to the draw-head; rotatable jaws mounted within the draw-head or body and presenting cam projections, and a locking-pin having a vertical movement in the draw-head to engage the rotatable jaws, substantially as shown and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JACOB E. SMITH.

Witnesses:

A. A. McCANDLESS,
N. B. McCOLLUM.