

(No Model.)

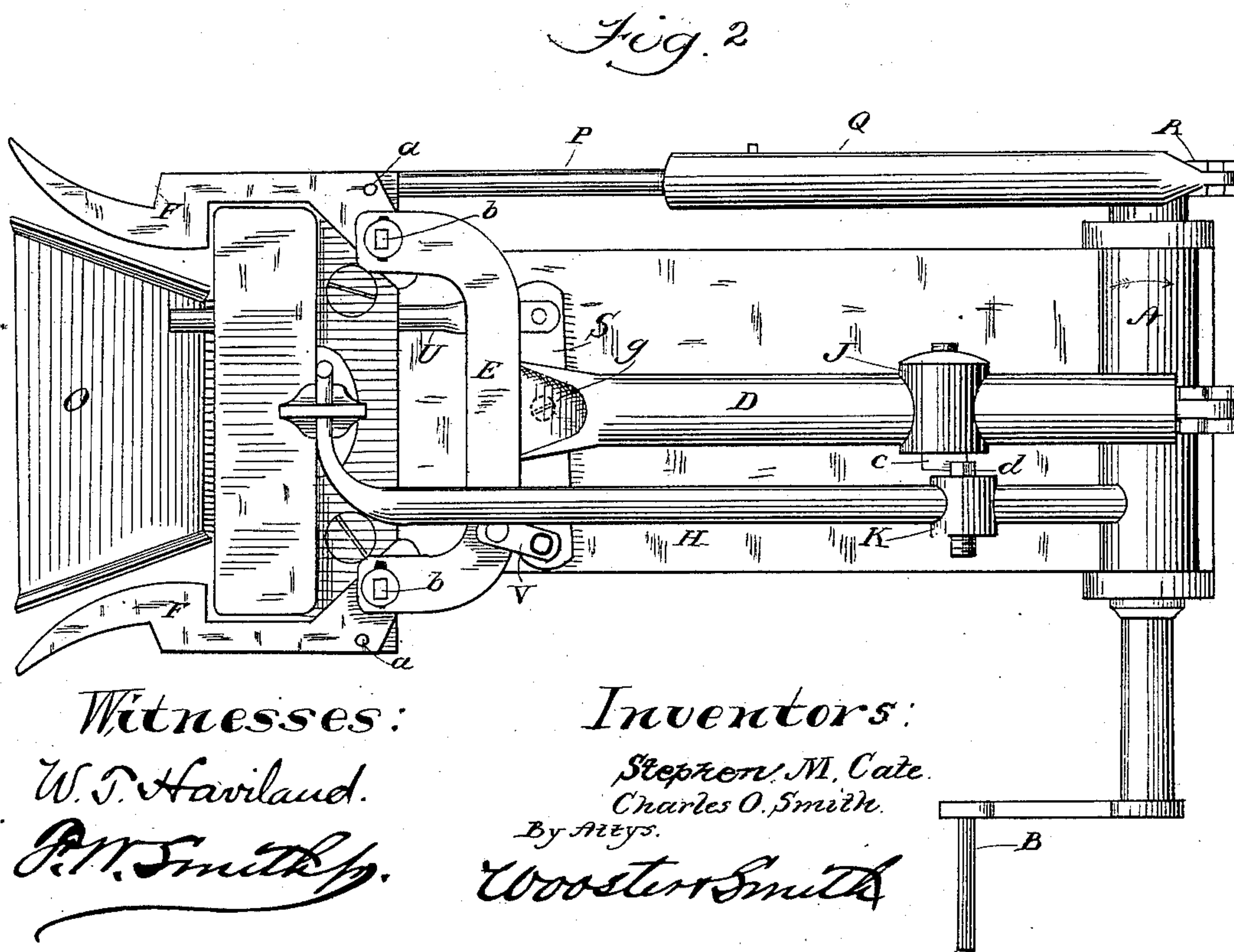
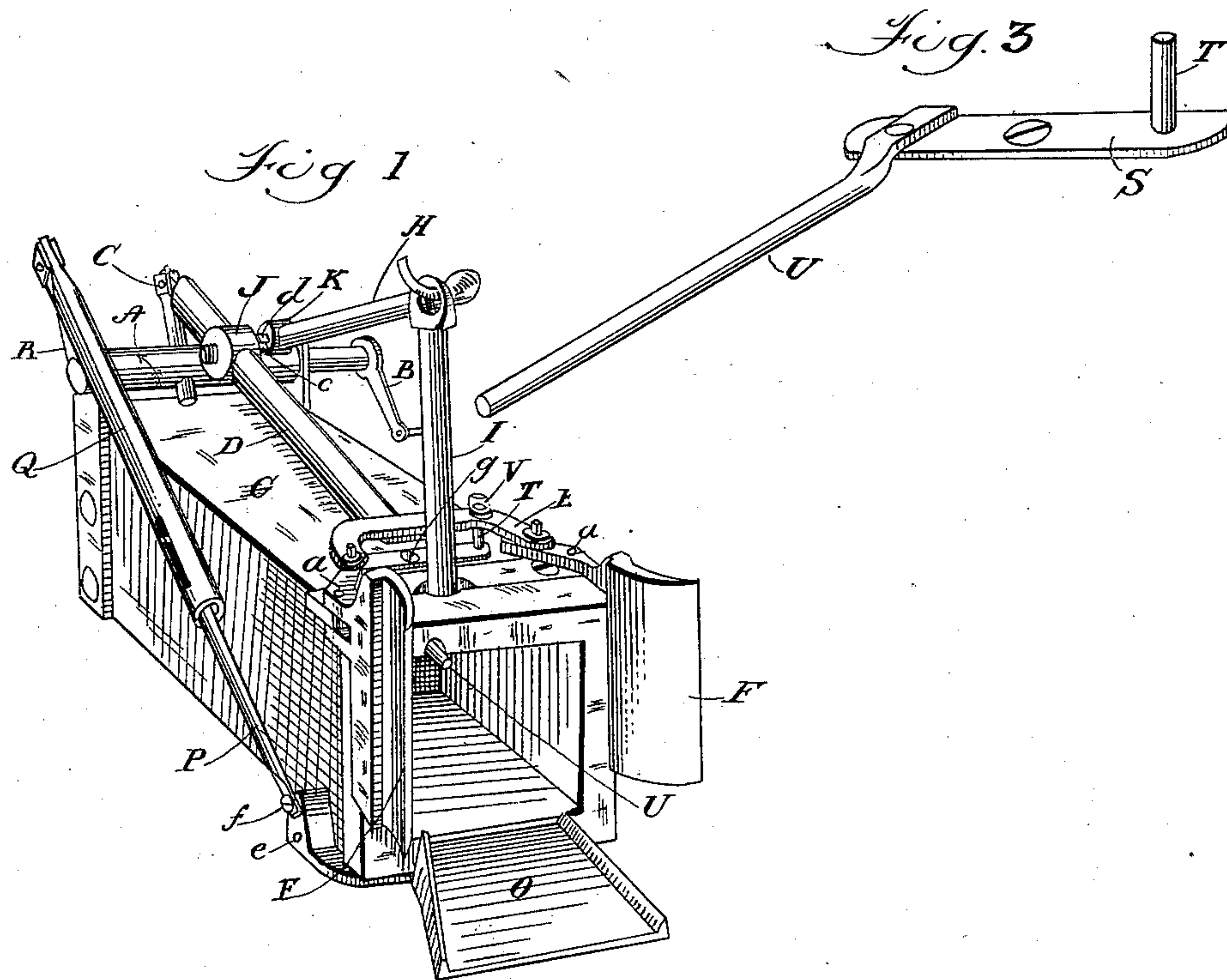
3 Sheets—Sheet 1.

S. M. CATE & C. O. SMITH.

CAR COUPLING.

No. 279,911.

Patented June 26, 1883.



Witnesses:

W. J. Haviland.

P. M. Smith.

Inventors:

Stephen M. Cate.

Charles O. Smith.

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Wooster Smith

(No Model.)

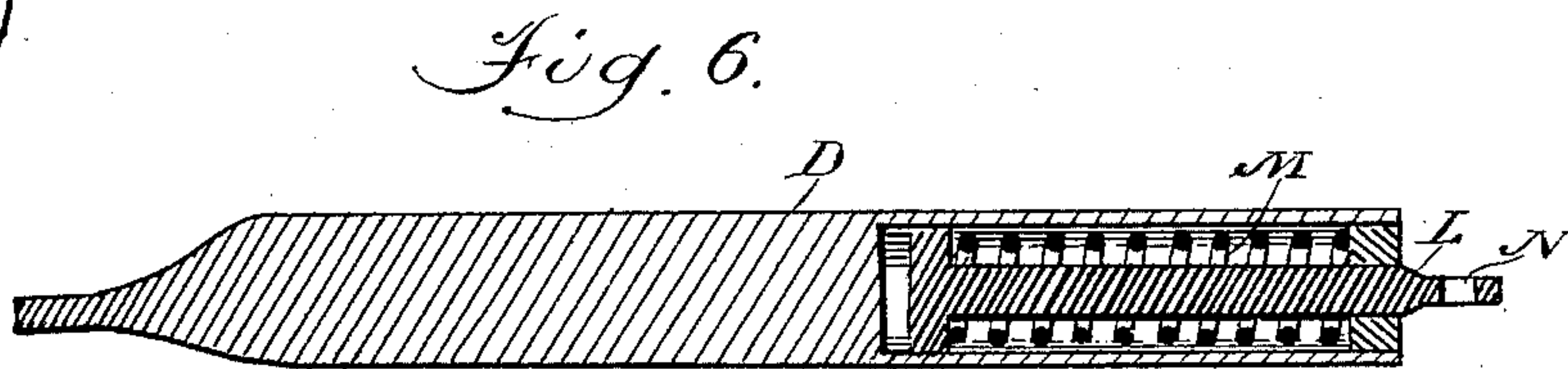
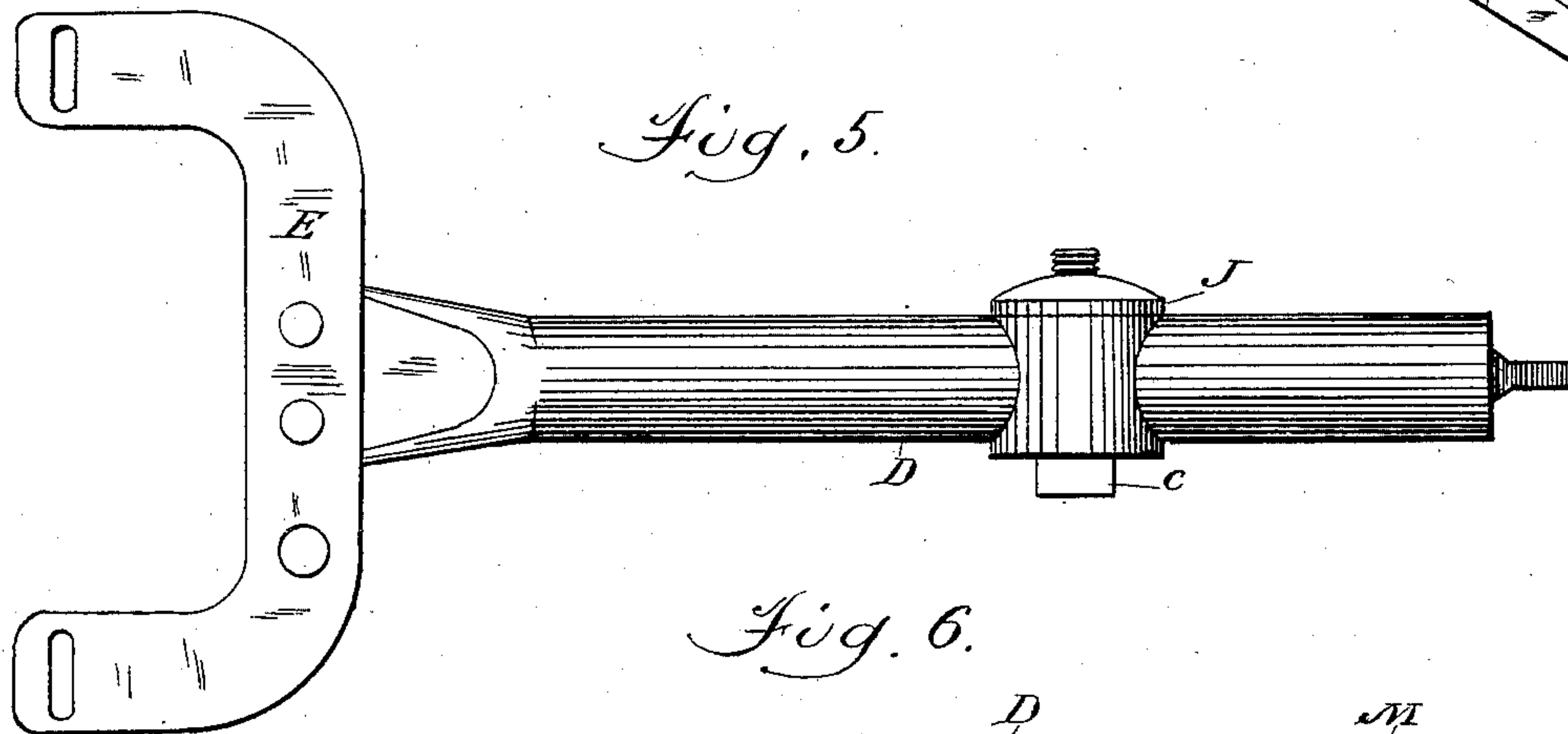
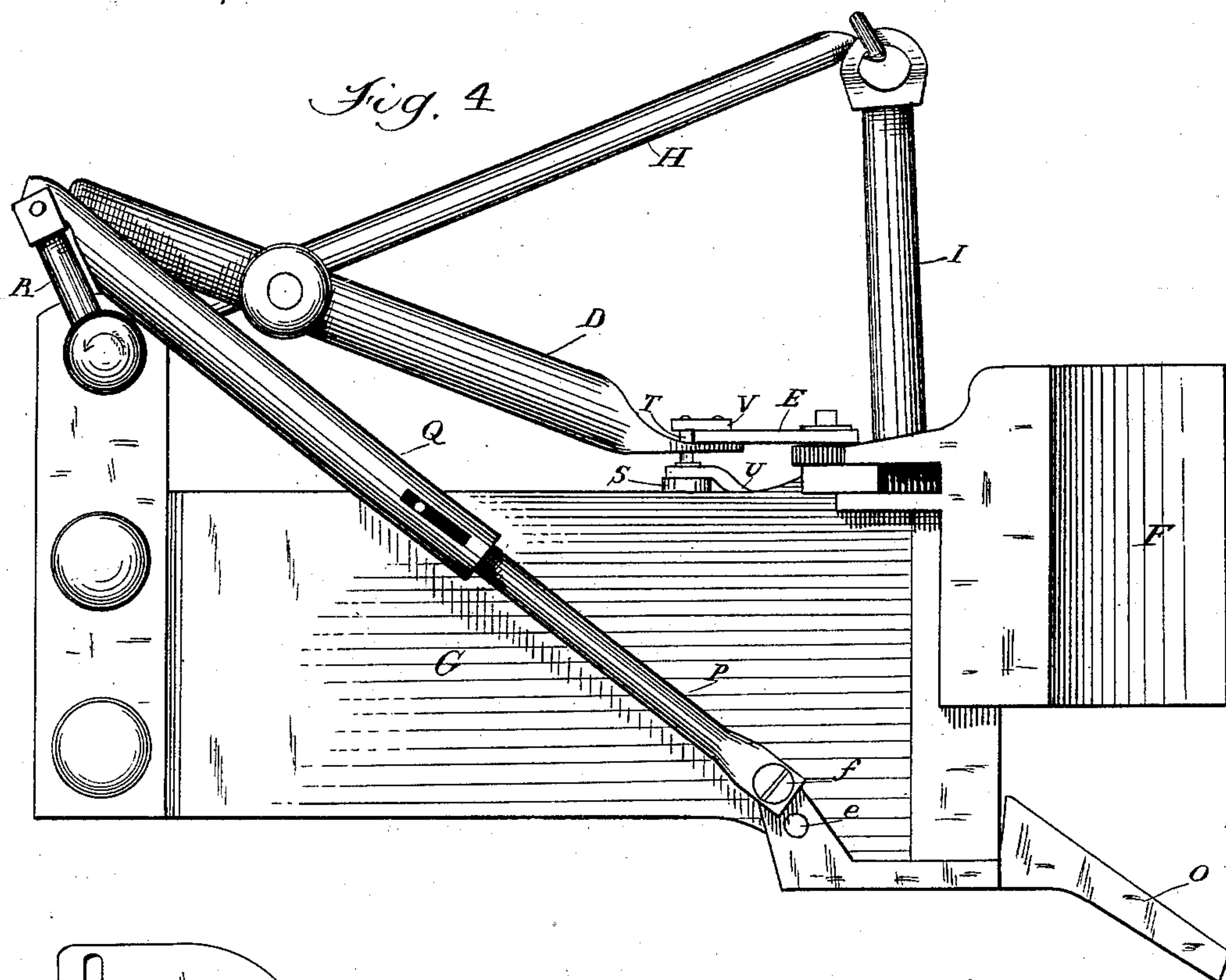
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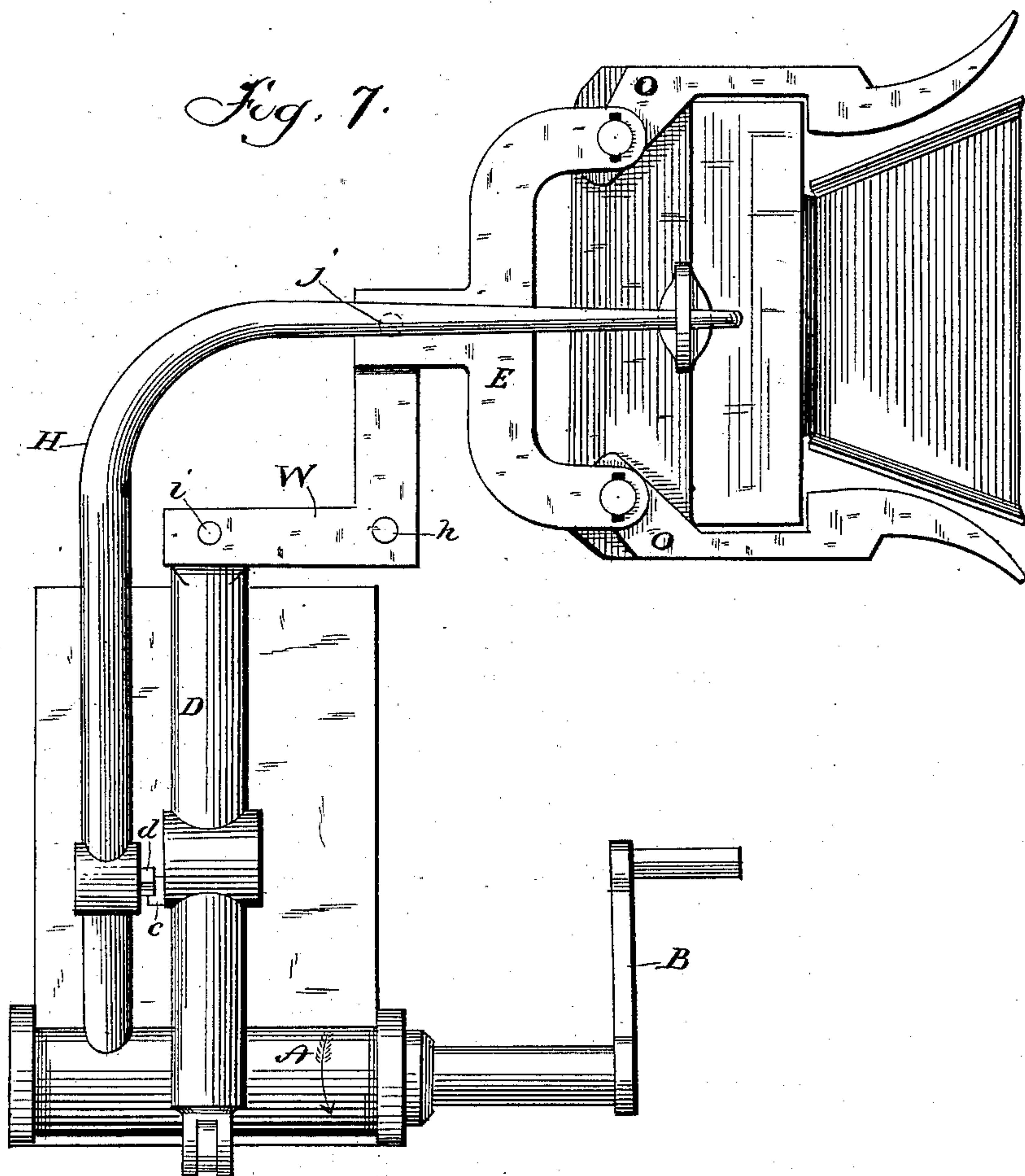
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S. M. CATE & C. O. SMITH.

CAR COUPLING.

No. 279,911.

Patented June 26, 1883.



Attest;

Walter Fowler,
W. T. Haviland.

Inventors:

Stephen M. Cate
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UNITED STATES PATENT OFFICE.

STEPHEN M. CATE AND CHARLES O. SMITH, OF BRIDGEPORT, CONNECTICUT.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 279,911, dated June 26, 1883.

Application filed April 2, 1883. (No model.)

To all whom it may concern:

Be it known that we, STEPHEN M. CATE and CHARLES O. SMITH, citizens of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Car-Couplings; and we 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.

Our invention relates to certain novel and useful improvements in car-couplers, and more especially to that class designed for automatically coupling freight-cars, and has for its object to provide a coupler which shall be perfectly safe and simple in its operation, while at the same time its action shall be positive; and with these ends in view our invention consists in the details of construction and combination of elements hereinafter fully and in detail explained, and specifically designated by the claims.

In order that those skilled in the art to which our invention appertains may more fully understand its construction and operation, we will proceed to describe the same in detail, referring by letter to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view of our coupler with the several parts in position ready to couple; Fig. 2, a top or plan view of the same; Fig. 3, a detail view of a trigger which may be used to operate the coupler; Fig. 4, a side elevation, showing the coupling-pin raised up, and also illustrating mechanism to guide the link; Fig. 5, a plan view of what will hereinafter be referred to as the "lever-arm;" Fig. 6, central longitudinal section of said lever-arm, and Fig. 7 a modification showing the operating mechanism turned at right angles to the front portion of the coupler and adapted to perform its functions in substantially the same manner as illustrated at Fig. 1.

Similar letters denote like parts in the several figures.

A is a cylinder mounted in bearings or in

any other suitable way in such a manner as to be freely rotated by a crank or lever, B.

C is a pin secured within the cylinder or cast integral therewith. At the upper portion of this pin is pivoted a lever-arm, D, in the manner hereinafter explained, which is connected at its lower extremity to a cross-piece, E.

F are false bumpers pivoted to the draw-bar G, as seen at *a*. At the rear ends of these bumpers a pivotal connection is made with the extremities of the cross-piece E, as seen at *b*; and it will be readily understood that any movement of the lever-arm D will cause the false bumpers F to swing on the pivot *a*.

H is a hook-arm secured to the cylinder A and attached at its outer extremity to the coupling-pin I, as shown at Figs. 1 and 2, so that the rotation of said cylinder will raise or lower the hook-arm and operate the pin, as will be presently explained.

On the arms D H are arranged beveled trips *c d*, respectively, either by means of sliding adjustable collars J K, as shown, or in any other suitable and ordinary way.

Within the arm D is a pin, L, to which is imparted spring action by means of the spring M. This pin terminates at its outer extremity in an eye, N, and is pivotally connected at that point to the pin C. Thus it will be readily understood that the planes of movement of the lever-arm D and hook-arm H are about at right angles to each other, and also that the trips *c d* will approach each other in planes intersecting at about said angle. These trips are so located on the arms D H that as the cylinder A rotates in the direction indicated by the arrow in Figs. 1, 2, and 7 they will come in contact, when, owing to the nature of their beveled surfaces, the trip *d* will ride upward against the trip *c*. As the cylinder continues to rotate the tendency is to draw the arm D backward; but when the trips have come into contact as shown a resistance to any further movement of said arm is made by the trip *d*, and the continued rotation of the cylinder will cause the pin L to be pulled out, the arm D meantime remaining stationary, while at the same time the hook-arm H is be-

ing raised. The rotation of the cylinder continues to pull the said pin out and to raise the hook-arm until the trip *d* on the latter has been elevated above the trip *c* on the lever-arm, when the resiliency of the spring *M* causes the said lever-arm to shoot backward, thus bringing the trip *c* over the trip *d*, so that the former will rest upon the latter, thereby keeping the coupling-pin in an elevated position, as seen in the drawings. The device is now in a position for coupling, which is accomplished as follows: When the approaching car strikes the buffers *F*, the latter are forced outward, which causes them to swing backward on their pivotal connections *a*, thereby drawing the lever-arm *D* forward, and consequently disengaging the trips *c d*. The pin *I* now drops down within the coupling-link, which has in the meantime entered within the draw-bar, so as to be in the proper position for coupling.

In uncoupling the car the crank *B* may be used and operated at the side of the car, as shown; or a lever may be attached to the cylinder, and extended upward so as to operate our improvement from the top of the car, if desired, or a chain or lever may be attached directly to the hook-arm *H*, and the device operated by simply raising said arm, which latter method is perhaps preferable, especially in manipulating our coupler from the top of the car.

O is a link-guide, secured to the draw-bar by means of the pivot *e*. Attached to this guide by a pivot, *f*, is a rod, *P*, which slides within a cylinder-arm, *Q*, with a spring movement similar to that of the pin *L* in the arm *D*. This arm *Q* is pivoted to a pin, *R*, which is secured to or cast integral with the cylinder *A*. The guide *O* thereby has a spring movement, and the great advantage in this is that when the link strikes said guide the latter will yield, thereby preventing injury either to the link or guide. Instead of operating the arm *D*, as described, by the bumpers *F*, the latter may be entirely dispensed with, and the device illustrated at Fig. 3 substituted therefor. This consists of a cross-bar, *S*, which is pivoted to the draw-bar, as seen at *g*, a pin, *T*, projecting upward from the plane of the cross-bar, and a shank or spindle, *U*, which is pivoted to the cross-bar and acts as a trigger, all of which will be presently explained. The pin *T* projects in such a manner as to come in contact with and force forward the cross-piece *E* when the trigger is pushed inward. The function of the false bumpers is merely to act as levers to draw the lever-arm *D* forward, as hereinbefore explained, and they are designed for use only in coupling cars where the draw-bars are of unequal heights; but when the draw-bars are about the same height the device illustrated at Fig. 3 is preferably used with the same results. The operation of the latter is as follows: The trigger *U* is pushed inward, causing the cross-bar *S* to swing and bring the pin

T against the cross-piece *E*, thereby forcing the trips *c d* out of engagement and dropping the coupling-pin *I*. We preferably connect this pin *T* to the cross-piece *E* by a link, *V*, Figs. 1 and 2, which prevents any disarrangement of the two parts and renders their action more positive.

In order to more conveniently adapt our improved coupler to particular cars, the cylinder and the arms connected thereto may be arranged in a position at right angles to that shown in Figs. 1 and 2, and the hook-arm crooked, as shown, to engage with the coupling-pin, and the lever-arm operates the cross-piece through the medium of an L-shaped lever, *W*, pivoted at *h* to the draw-bar or body of the car and pivotally connected at its extremities to the arm *D* and cross-piece *E*, as seen at *i* and *j*, respectively. In this latter construction less space between the cars is required and the device is more compact, which is a matter of especial advantage.

We do not wish to confine ourselves to the exact location of the hook-arm, as the latter may be secured at any suitable part of the cylinder, and the location of the trips changed accordingly, without departing from the spirit of our invention.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a car-coupler, a cylinder adapted to rotate in bearings, and having secured thereto a hook-arm which operates the coupling-pin, and a lever which is attached to mechanism for operating the coupler, said arm and lever having trips adapted to engage at the uncoupling of the car, whereby the arm is held in an elevated position by the lever, substantially as set forth.

2. In a car-coupler, the cylinder *A*, adapted to rotate in bearings, and having arms *D H* connected at their outer extremities to mechanism for operating the coupler and to the coupling-pin, respectively, said arms having trips *c d*, adapted to engage with each other and hold said pin in an elevated position, substantially as described.

3. The lever-arm *D*, having interiorly arranged therein the spring-pin *L*, which is pivoted to the pin *C*, secured to the cylinder, and with adjustable trip *c*, in combination with the arm *H*, provided with trip *d*, and mechanism, substantially as described, for forcing said lever-arm forward, whereby the trips are disengaged and the coupling-pin is dropped, substantially as set forth.

4. The bumpers *F*, pivoted to the draw-bar, in combination with the cross-piece *E*, secured to the arm *D*, substantially as set forth.

5. The cylinder-arm *Q*, pivotally attached to the pin *R*, secured to the cylinder *A*, and having interiorly arranged therein the spring-rod *P*, in combination with the link-guide *O*, pivoted to the draw-bar, substantially as set forth and described.

6. The combination of the cylinder *A*, hav-

ing pin C, lever-arm D, with spring-pin L,
and adjustable trip c, and secured at its lower
portion to the cross-piece E, false bumpers F,
and hook-arm H, with adjustable trip d, and
5 attached at its outer extremity to the coup-
ling-pin I, substantially as and for the pur-
poses hereinbefore set forth.

In testimony whereof we affix our signatures
in presence of two witnesses.

STEPHEN M. CATE.
CHARLES O. SMITH.

Witnesses:

W. T. HAVILAND,
F. W. SMITH, Jr.