

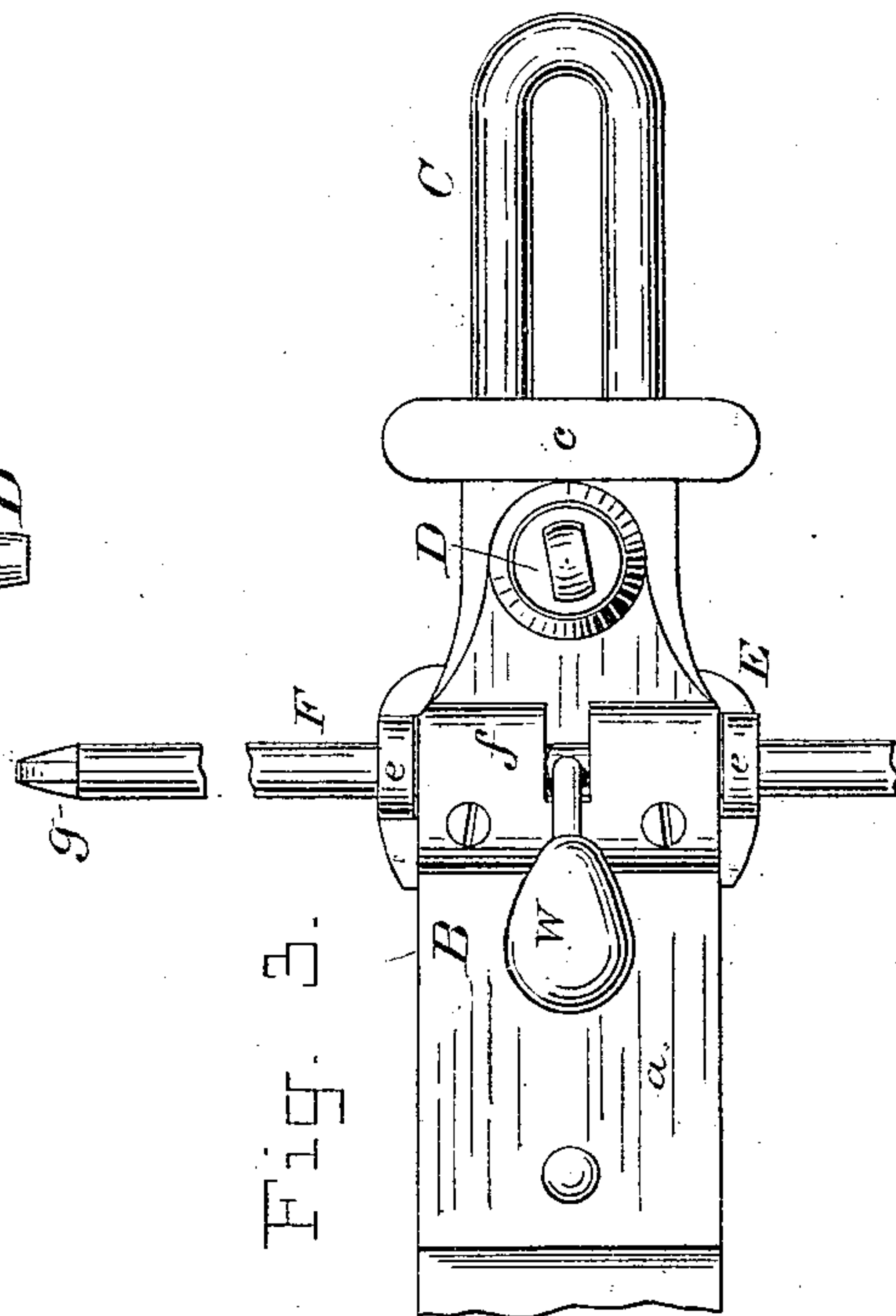
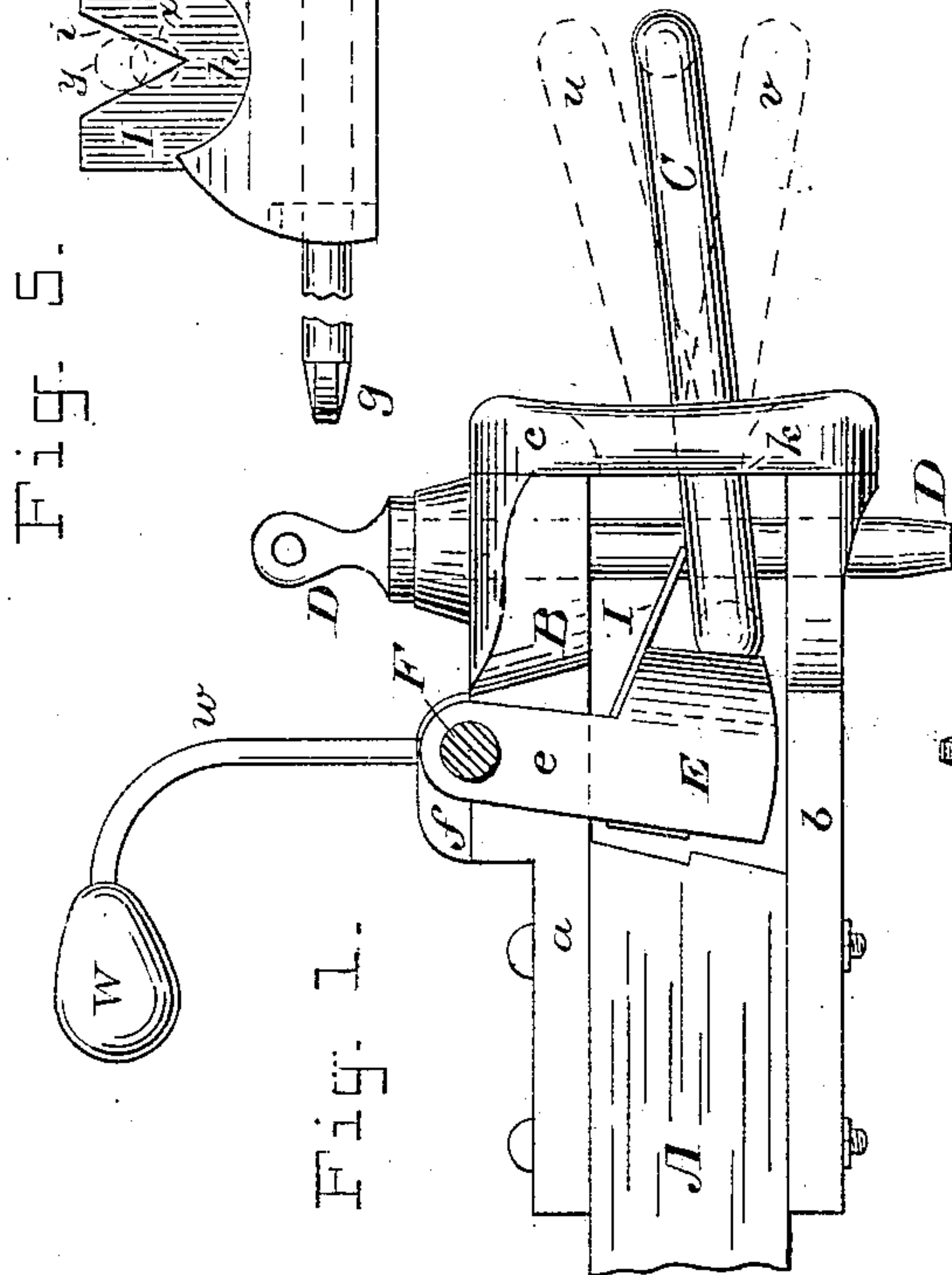
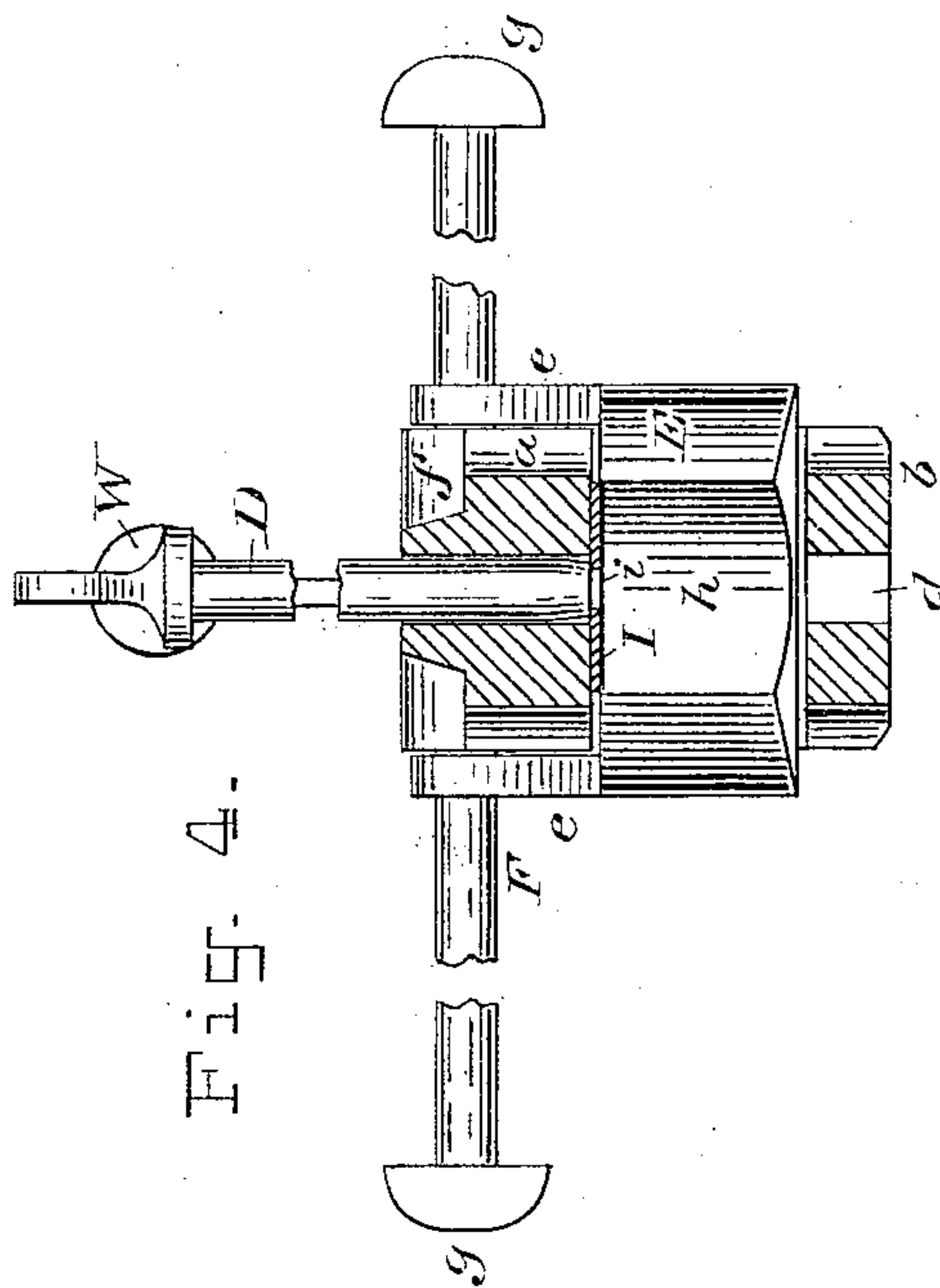
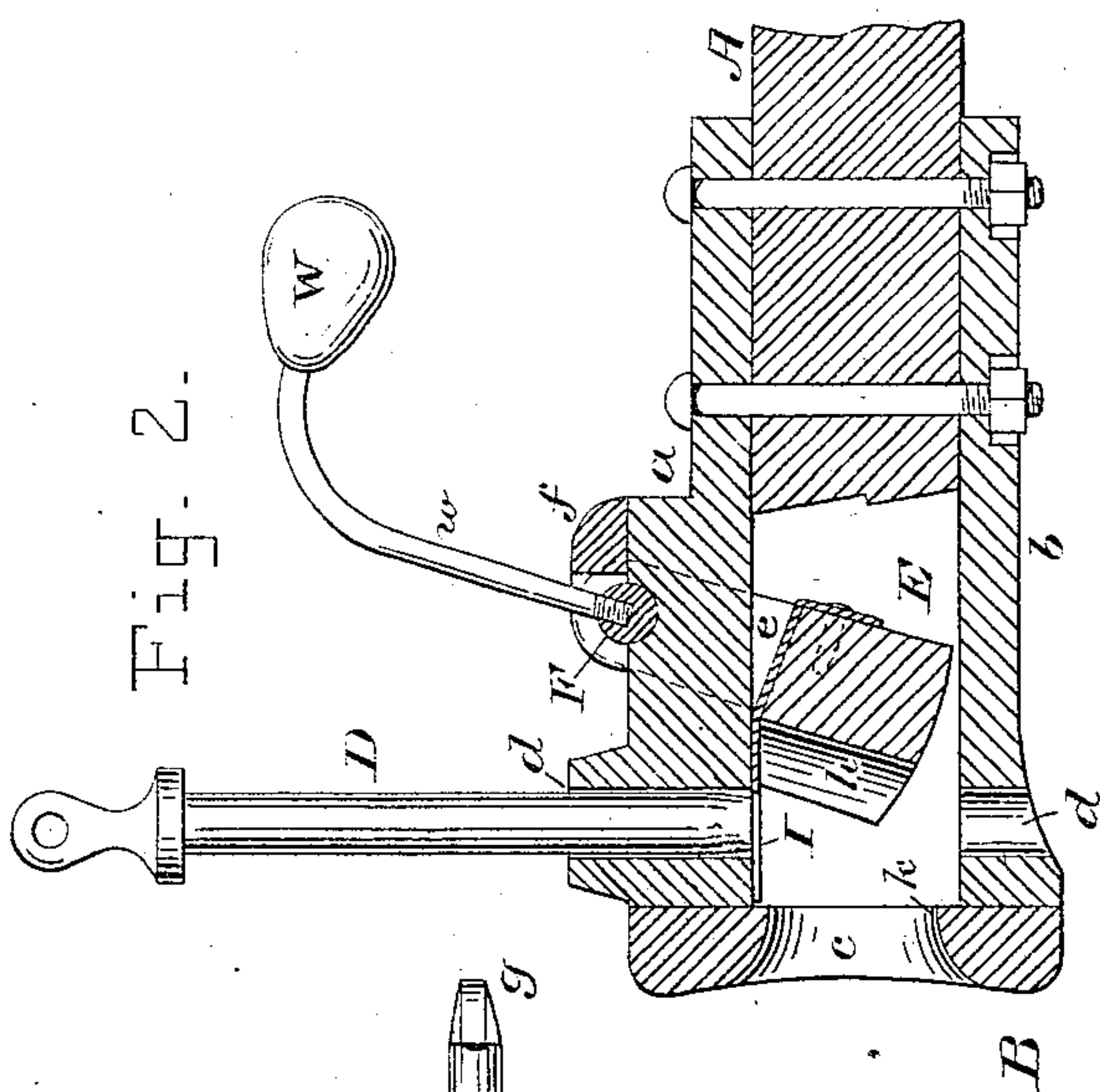
(No Model.)

W. CRANDELL.

CAR COUPLING.

No. 271,685.

Patented Feb. 6, 1883.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

WILLIAM CRANDELL, OF WESTFIELD, NEW YORK.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 271,685, dated February 6, 1883.

Application filed September 25, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM CRANDELL, a citizen of the United States, residing at Westfield, in the county of Chautauqua and State of New York, have invented certain new and useful Improvements in Railway-Car Couplings, of which the following is a specification.

My invention seeks to provide an efficient and reliable automatic coupling suitable for use on freight as well as passenger cars.

Two important objects of my invention are to enable the train-man to lift the end of the link to the proper height and guide it properly into the coupling-head on the approaching car, without the necessity of his standing between the cars as they come together, and to prevent the lifting or working up of the coupling-pin while the train is running, thereby insuring against the accidental uncoupling of the train.

In the accompanying drawings, Figure 1 is a side elevation of one of my improved couplings, and Fig. 2 is a vertical section of another like coupling cut in the plane of the line 2 2 in Fig. 3. Fig. 3 is a plan of Fig. 1. Fig. 4 is a vertical transverse section cut in the plane of the line 4 4 in Figs. 1, 2, and 3; and Fig. 5 is an inverted plan of one of the parts removed.

Let A designate the draw-bar; B, the draw-head or coupling-head; C, the coupling-link, and D the coupling-pin. These parts are or may be all of the usual construction.

I have shown the head B as made of upper and lower plates, *a* and *b*, bolted to the top and bottom of the bar A, and a buffer-cup, *c*, fastened to the front ends of these plates; but the entire head may be cast in one piece, if preferred, and it may have closed sides. The upper plate, *a*, is made somewhat thicker than usual, and is formed with a boss on its upper side, through which passes the hole *d* for the pin D.

E is a pivoted block, which I call a "cam," and which works within the coupling-head. It is provided with two arms, *e e*, extending up each side of the plate *a* and fixed to a cross-rod, F. This rod F has bearings on the plate *a*, formed by screwing down thereupon a plate or bearing-cap, *f*. Thus the rod F is able to turn or oscillate slightly within the limits pre-

scribed by the room afforded within the coupling-head for the movement of the block E. The ends of the rod F extend far enough each side to be easily reached by a man standing outside the car, and on each end is a knob, crank, button, or other handle, *g*, by which it may be turned. The back side of the block E is plane, and when the block is pressed back it rests against the plane end G of the bar A, which forms a re-enforcing shoulder to receive the thrust of the block. The front side of the block E is hollowed out to form a concave recess, *h*, to receive the end of the link C. This recess is best shown in Fig. 5, which is a bottom view of the block E and rod F removed from the draw-head.

To the upper side of the block E, and projecting beyond its front side, is fixed a finger-plate, I, having an angular or V shaped notch extending into its center from its outer edge; or two fingers may be substituted having their adjacent sides cut at an angle to the same effect. This plate thus constitutes two arms or fingers, which, when the front end of the block is depressed, rest on the link C. A weight, W, is connected to the block E by its stem *w* being fastened to the rod F, or otherwise; or a spring may be substituted. Its tendency is to throw up the front end of the block, causing it to assume the position shown in Fig. 2, where the pin is shown as resting on the plate I. The bottom end of the pin here occupies the position on the plate indicated by the dotted circle *x* in Fig. 5, so that it does not fall through the notch *i*.

Figs. 1 and 2 show the two coupling-heads on two opposite cars in the act of coming together to be coupled. The link C is already connected to the head in Fig. 1, where the pin is down. In Fig. 2 the pin is shown as held up by the plate I, as just described, and ready for the entrance of the link. A train-man is supposed to be standing at one side of the car to which the head shown in Fig. 1 belongs, and by grasping one of the handles *g* with his hand to have turned it slightly in the direction denoted by the arrow in Fig. 1 until the link C has assumed the position shown in full lines, where it is ready to enter the coupling-head shown in Fig. 2. By oscillating the rod



F the train-man can cause the link to rock or vibrate from the upper position (shown in dotted lines at *u*) to the lower position, (shown at *v*.) The fulcrum, on which the link rocks is the lower side, *k*, of the opening in the buffer-cap *c*, and as its greater portion is in front of that fulcrum, it tends to hang down, as shown at *v*, being only raised when the ends of the two fingers of the plate *I* press down upon it.

Thus the train-man is able to guide the end of the link into the opposite coupling-head as readily as if he were between the cars, and absolutely without danger to himself. When the end of the link enters the head shown in Fig. 2 it strikes the concave surface *h* of the block *E* thereof and drives back that block against the shoulder *G*, whereby the plate *I* is caused to descend in a curved path described from the center of the rod *F*, and when it has thus moved back until the pin *D* is in the position relatively to it indicated by the dotted circle *y* in Fig. 5 the pin is no longer supported, and falls through the notch *i* and link *C*, thereby coupling the two cars together. As soon as the train starts the thrust of the link against the block *E* ceases, and the latter is thrown forward and upward by the action of the counter-weight *W*, whereby the angular notch *i* comes in contact with the pin *D*, its thin sides press against the pin, and by the vibration of the car are caused to wedge themselves into close and firm connection with the pin, thereby preventing the latter from jumping or working up and so uncoupling the cars. This result is due partly to the position of the center of rotation of the block, which causes the sides of the notch *i* to bite harder against the pin the greater the upward tendency of the latter. Thus the plate *I* and block *E* together constitute a pivoted pawl tending to engage the pin. When it is desired to withdraw the pin to uncouple the cars the train-man has only to turn the rod *F*, and so move back the block *E*, when the pin is freed and can be easily pulled out. I make the plate *I* of spring-steel in order that when the entering link drives back the block the fingers of the plate pressing down on the link shall yield; but these fingers may be made rigid if the parts are differently proportioned.

It must not be inferred from my detailed description that my invention is by any means limited to the precise details hereinabove set forth. On the contrary it is susceptible of many modifications which will readily suggest themselves. Among others, I may mention that the pawl for biting against the coupling-pin and preventing its lifting may be a separate piece from the pivoted block and pressed upward by independent means.

I am aware that it is not new to provide for tilting the link to enable it to enter a higher or lower draw-head on the adjoining car, and

also that a pivoted pawl has been arranged within the cavity of a draw-head to press upon the coupling-pin from the rear when it is dropped into place, being pivoted back of the pin and at a point higher than its contact therewith; but such pawls have been pivoted in vertically-slotted bearings, permitting them to lift vertically, and they have been unprovided with any angular recess to engage the pin.

I claim as my invention—

1. The combination of a draw-head, coupling-pin, and link with a transverse rod having oscillatory bearings in the upper part of the draw-head, back of said pin, a block within the cavity of the draw-head, connected by arms to said rod, and fixed thereto so as to oscillate therewith, and arms or fingers projecting forward from said block on each side of the said pin when the latter is in place, and capable of bearing down upon and tilting the link, whereby on turning said rod the link may be elevated to the requisite height and guided into the opposite draw-head, substantially as set forth.

2. The combination, with a draw-head and coupling-pin, of a transverse rod having oscillatory bearings in the upper part of said head, back of said pin, a pawl or arm fixed to said rod so as to oscillate therewith, having an angular notch or socket in its end for engagement with said pin, and with means for imparting to said pawl a tendency to move into engagement with said pin, and thereby to wedge the same fast and prevent its vertical displacement, substantially as set forth.

3. The combination of draw-head *B*, shoulder or rocking fulcrum *k*, transverse rod *F*, having rotary bearings in the draw-head above the link cavity and behind the coupling-pin socket, block *E* within the draw-head, and fixed to said rod so as to oscillate therewith, and plate or fingers *I* extending forward from said block on opposite sides of the coupling-pin when the latter is in place, substantially as and for the purposes set forth.

4. The combination of draw-head *B*, coupling-pin *D*, transverse rod *F*, having bearings in upper part of said draw-head and back of the coupling-pin socket, block *E*, arranged within the cavity of the draw-head and connected through arms to said rod, so as to oscillate therewith, elastic plate or fingers *I*, having angular notch *i*, or its described equivalent, for grasping said pin, and means tending to force said block forward, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM CRANDELL.

Witnesses:

WILLIAM RUSSELL,  
B. B. PARSONS.