

(No Model.)

2 Sheets—Sheet 1.

J. L. SHOENBERGER.  
CAR COUPLING.

No. 452,807.

Patented May 26, 1891.

Fig. 1.

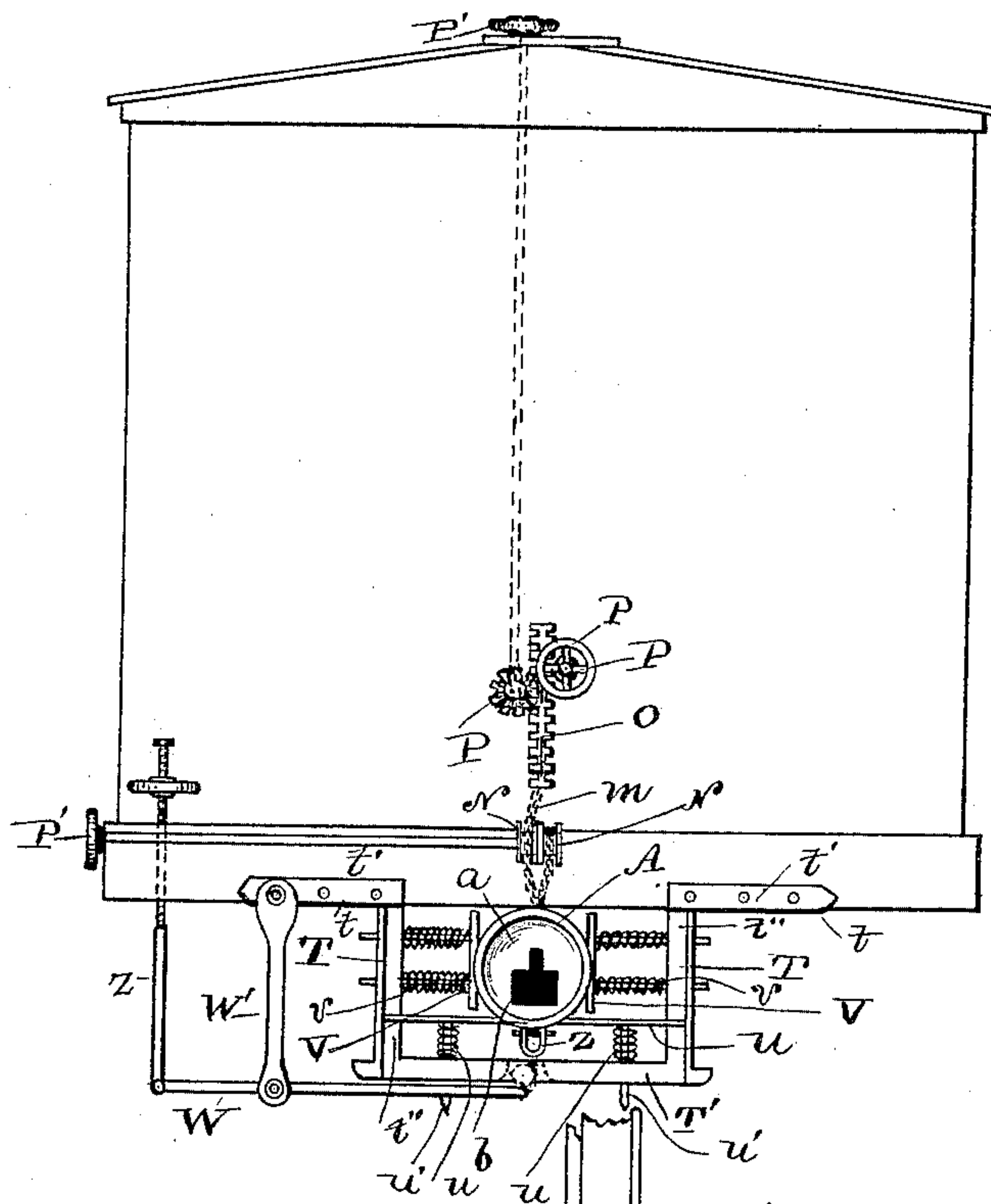


Fig. 2.

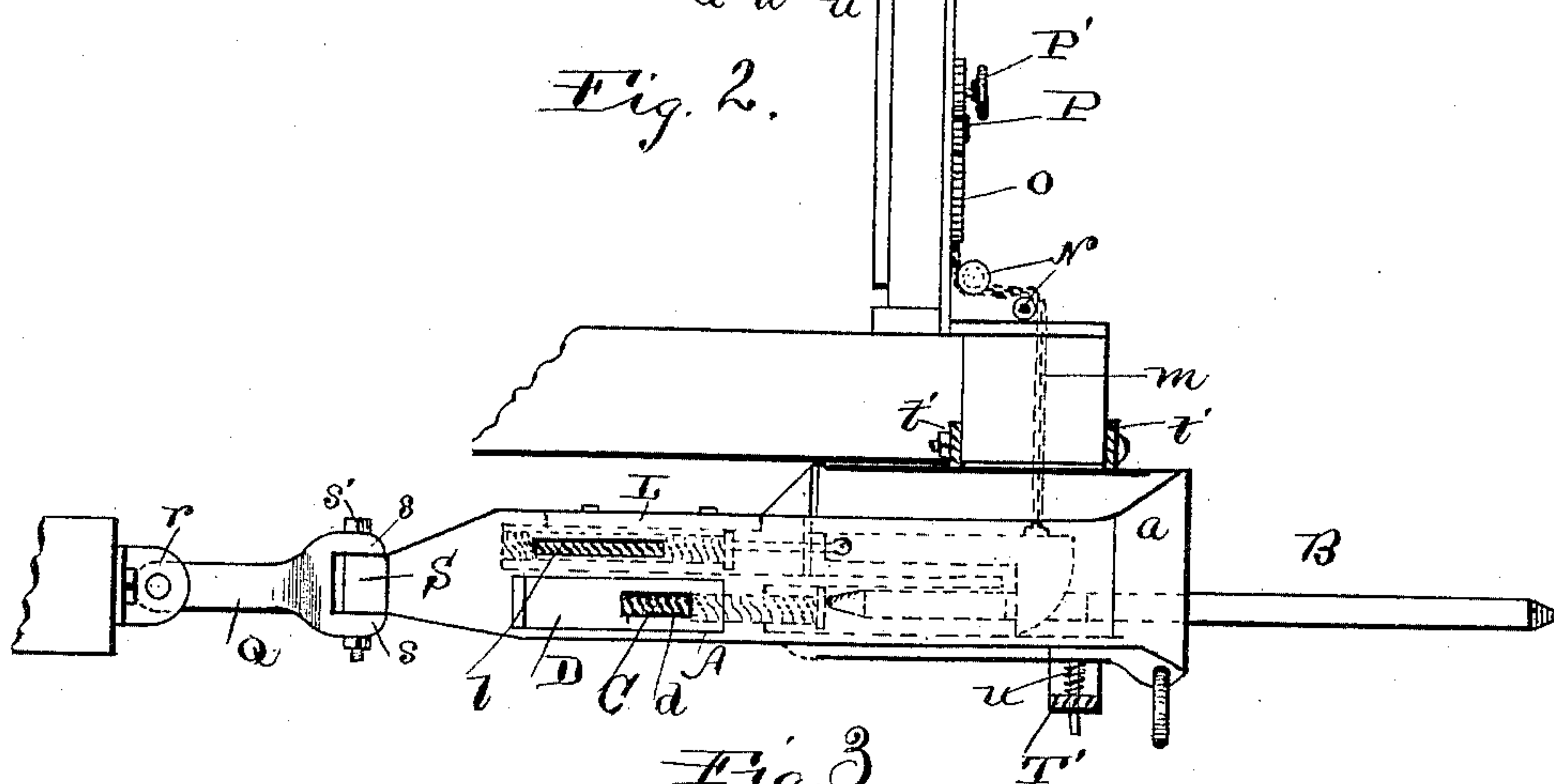
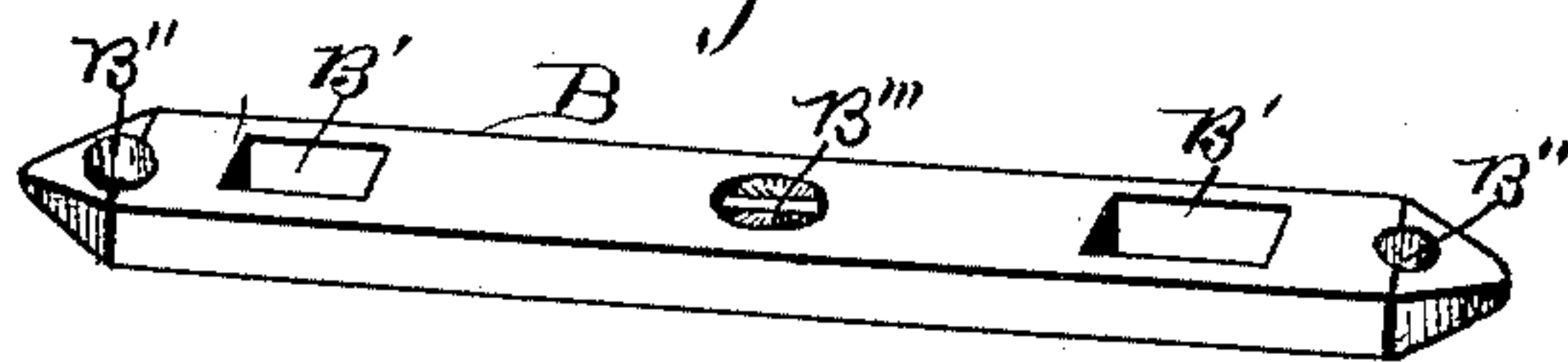


Fig. 3.



Witnesses:

J. P. Hawley

O. S. Day

Inventor:

John L. Shoenger.

By his Attorneys

Higdon & Higdon

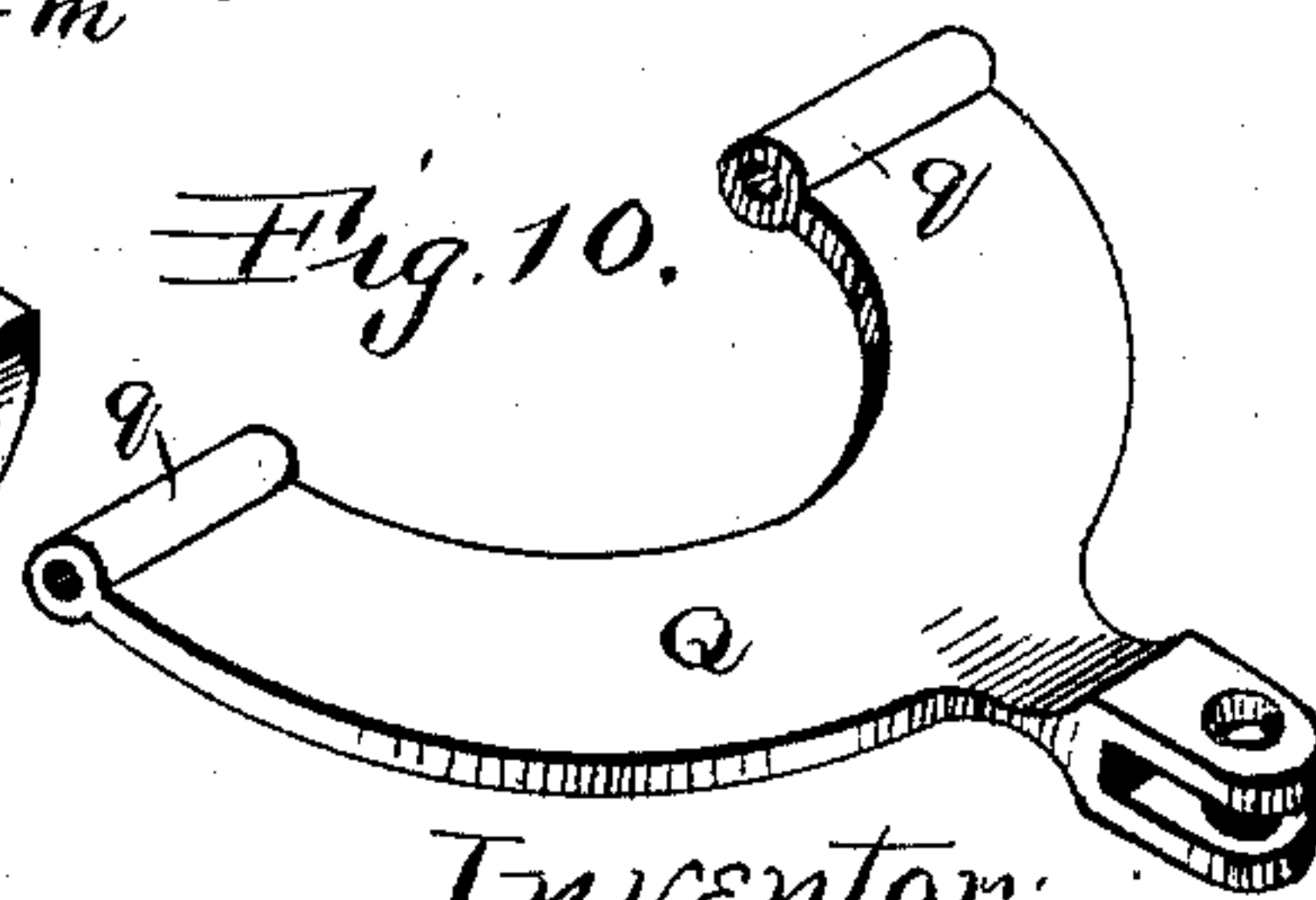
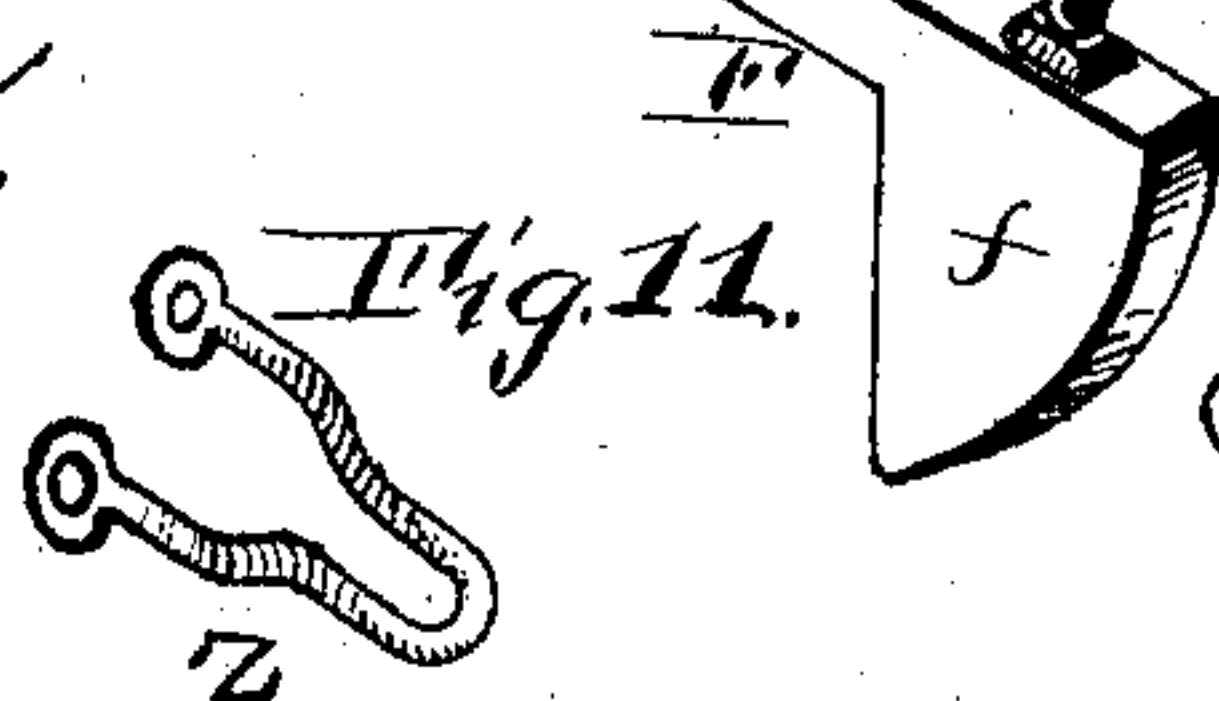
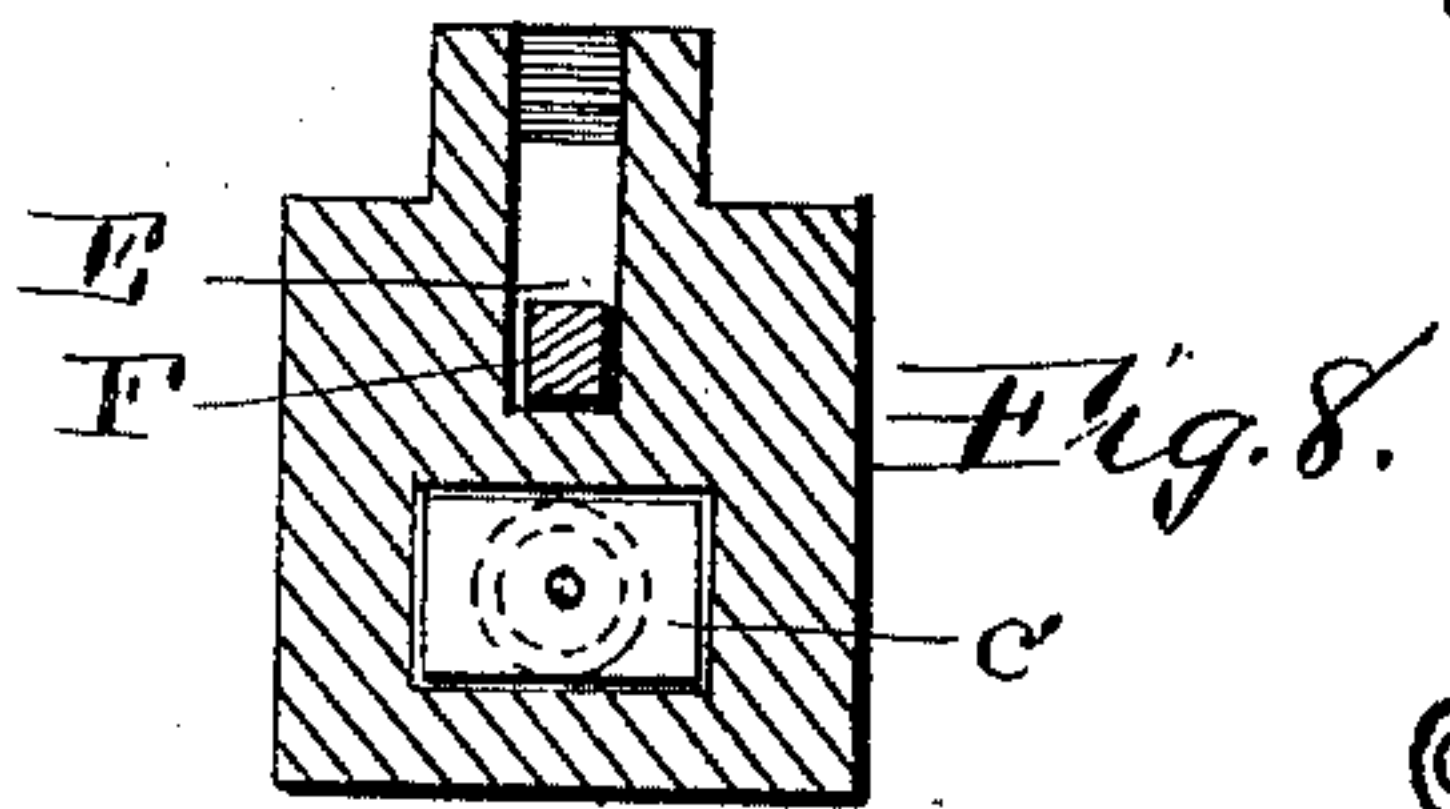
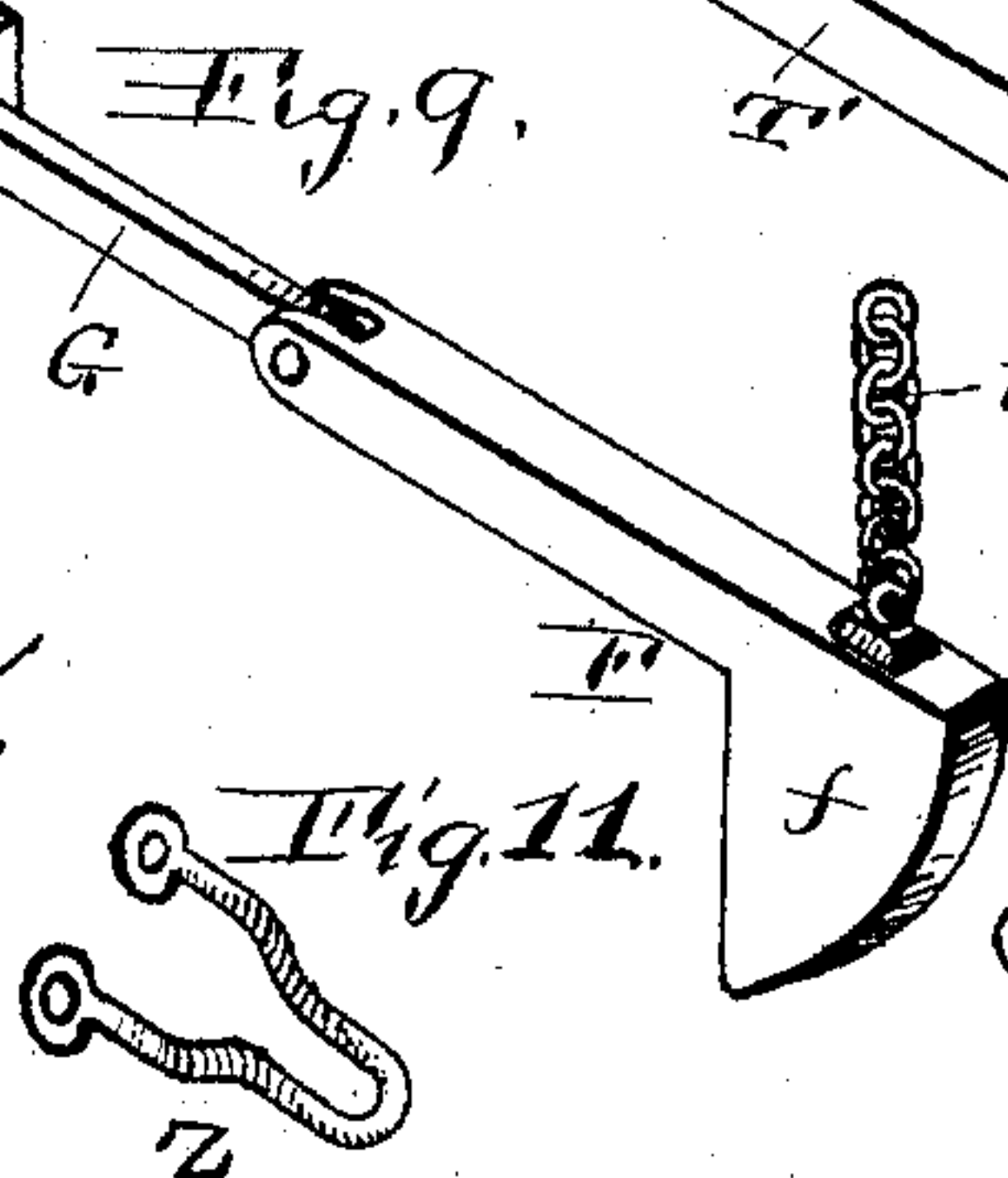
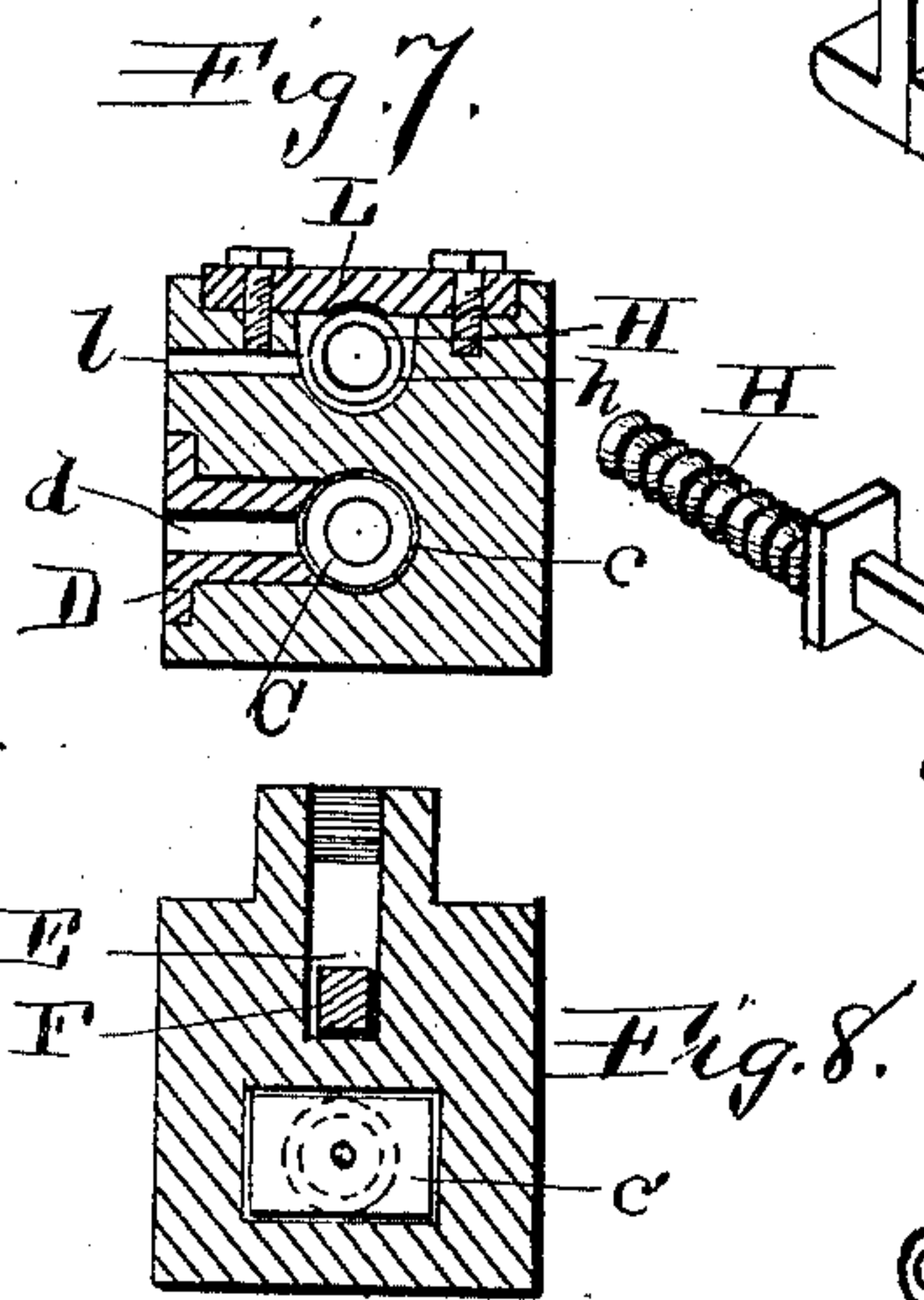
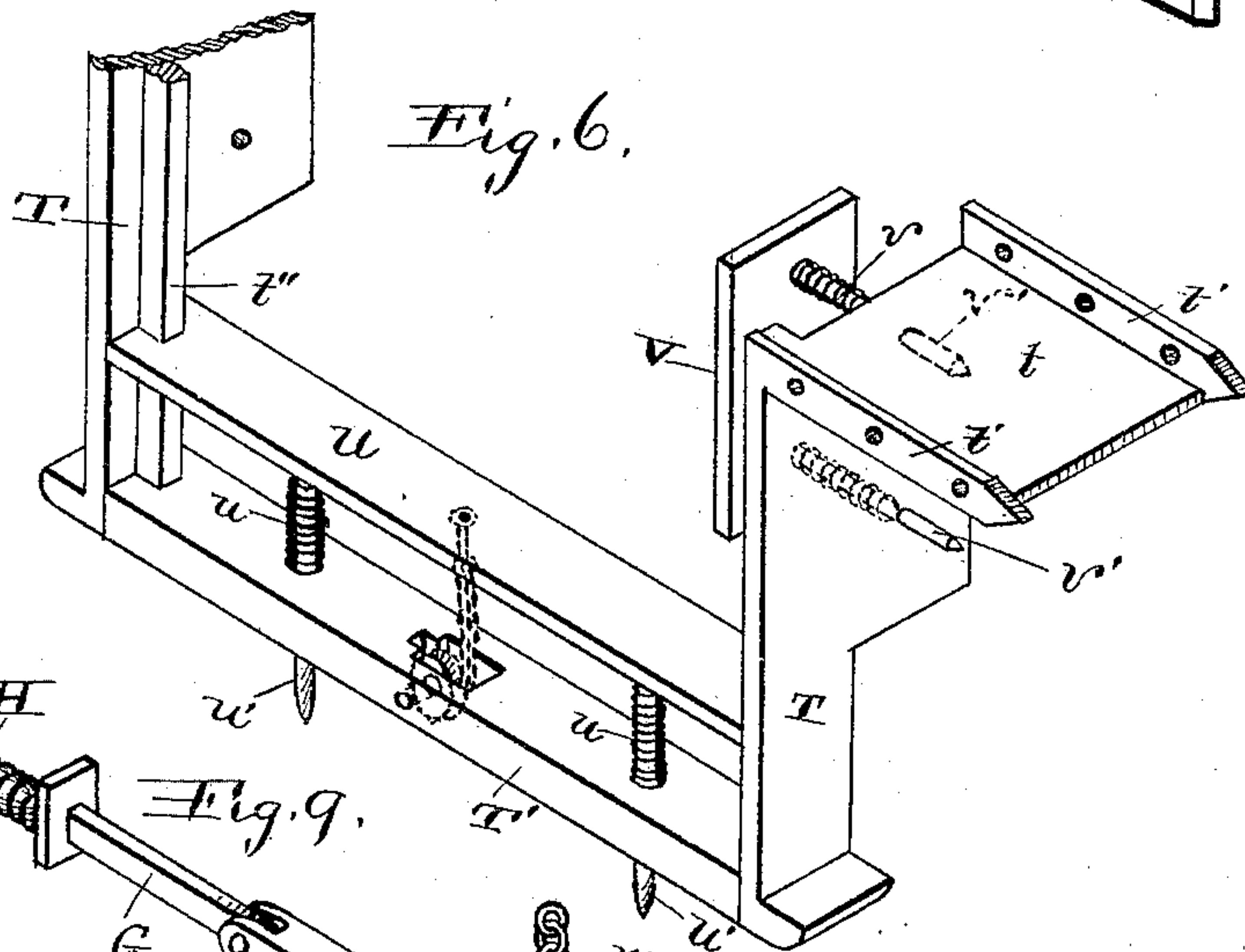
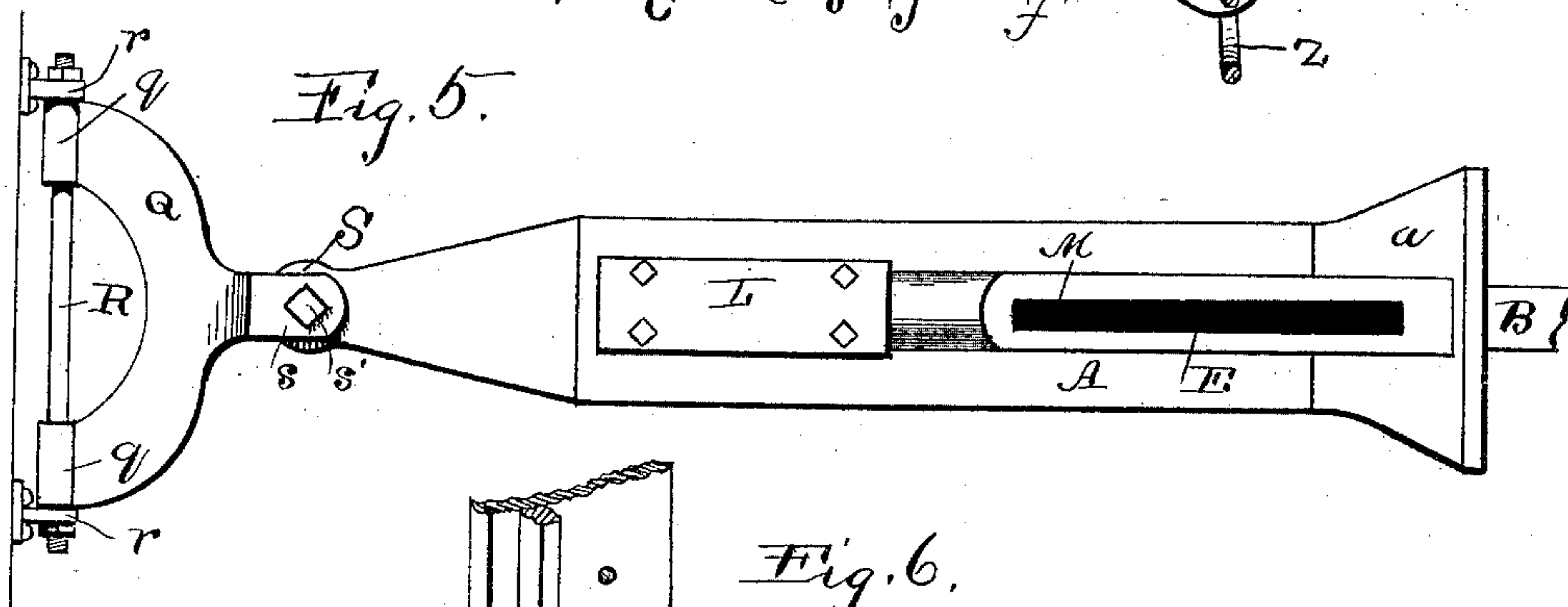
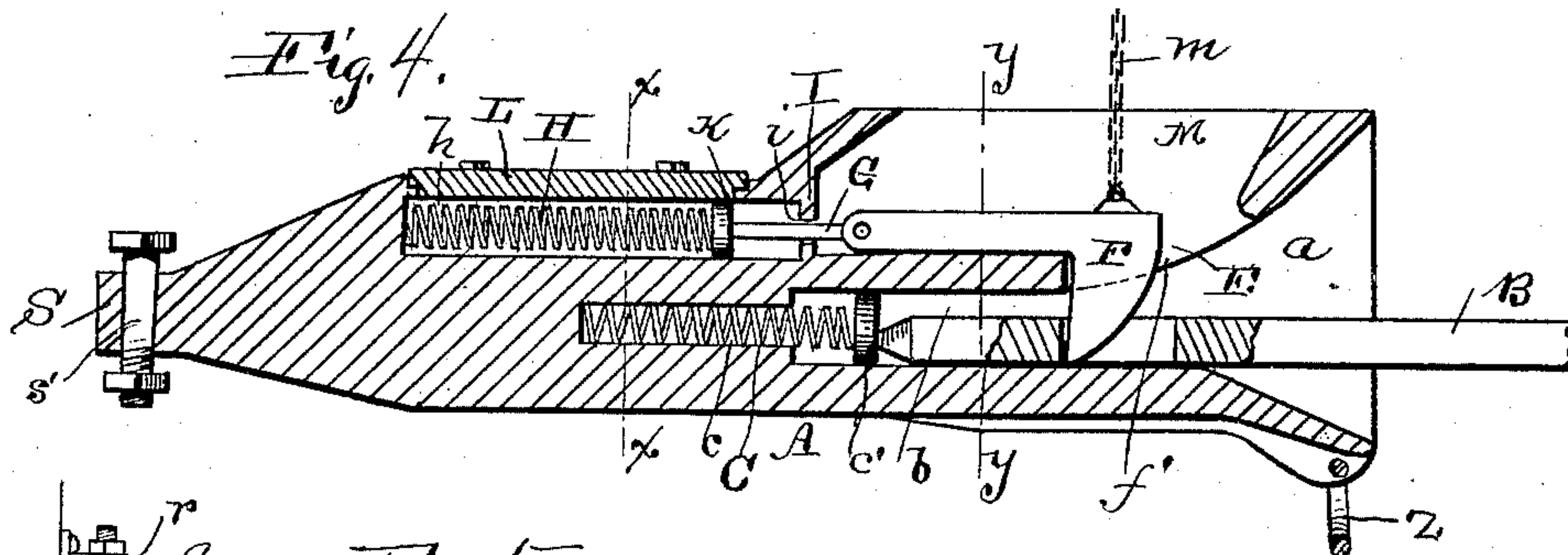
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O. E. & Co.

Inventor;

John L. Shoenger.

By his Attorneys Higdon & Higdon



# UNITED STATES PATENT OFFICE.

JOHN L. SHOENBERGER, OF PITTSBURG, PENNSYLVANIA.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 452,807, dated May 26, 1891.

Application filed January 19, 1891. Serial No. 378,307. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN L. SHOENBERGER, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Car-Couplings; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

My invention has for its objects to provide a draw-bar which is capable of vertical and lateral adjustment to enable cars of different heights and cars at an angle to each other, as when upon a curve, to be coupled; furthermore to provide a draw-bar which is connected directly and firmly to the car without the use of a spring or springs at the point of connection, and is provided within itself with means to relieve the shock of meeting cars; furthermore, to provide simple and effective means for relieving the tension shock or jerking when the cars are starting; and, furthermore, to provide means for enabling interior parts to be readily inspected and replaced when worn or broken, and also to simplify and strengthen those parts which bear the strain, so that frequent breakage or displacement will be avoided.

Referring to the drawings, Figure 1 is a front view of the improved coupler applied in the operative position to a car, and showing the device for uncoupling. Fig. 2 is a side view of the draw-bar with the supporting-bracket for the front end of the same broken away. Fig. 3 is a detail view of the link. Fig. 4 is a central longitudinal section of the draw-bar. Fig. 5 is a top plan view of the same, showing the yoke for connecting the rear end of the draw-bar to the car. Fig. 6 is a detail perspective view of the supporting-bracket, partly broken away, and showing the means for adjusting the front end of the draw-bar. Fig. 7 is a transverse sectional view of the draw-bar, on line *x x* of Fig. 4. Fig. 8 is a similar view on line *y y* of Fig. 4. Fig. 9 is a detail perspective view of the pivoted lock detached from the draw-bar.

Fig. 10 is a detail perspective view of the yoke by which the draw-bar is connected to the car. Fig. 11 is a detail view of a small ring or link by which to connect with an ordinary pin-and-link coupler.

The draw-bar A is provided with a flared mouth *a*, which communicates with a narrow throat *b*, which is adapted to receive one end of the coupling-link B. The throat *b* is located near the lower side of the draw-bar, and is extended rearwardly to form a bore or socket *c*, in which is fitted a strong resistance-spring C, to receive the impact when two cars meet to couple. This spring carries at its front end a small plate, which fits and slides in the rear portion of the throat, and is adapted to be repressed by the end of the link B as the latter enters the draw-bar. This sliding plate *c'* moves freely in the throat of the draw-bar, and is in such a position that as the link enters the latter it will strike it and force it back, thus breaking the shock. A removable plate or slide D is fitted in the side of the draw-bar and forms one side of the bore or socket *c*, whereby when removed the spring C is exposed and may be withdrawn. This plate or slide D is provided with a longitudinal slot *d*, through which the said spring may be viewed at all times.

Above the throat is a chamber E, in which is arranged a pivoted lock F, and the nose *f* of said lock extends downward through an opening *f'* to the bottom of the throat to engage the openings or slots in the link. The nose of the lock has a beveled or rounded front side, and the ends of the link are tapered or cone-shaped to enable them to slide under and raise the lock when two draw-bars meet to couple. The shaft of the lock is pivoted to a short rod G, which is connected at its rear end to the front end of an extension-spring H. This spring is arranged in a bore or socket *h* above the bore or socket *c*, and is secured at its rear end to the rear end of the bore or socket to hold it in place. The rod G operates in a small guide-opening *i* in a vertical wall or web J and carries at its rear end a sliding plate K, which operates in the bore or socket in rear of said wall or web. The lock is capable of horizontal forward and rearward movement, and when drawn for-



ward against the strength of the spring H it is checked by the sliding plate coming in contact with the wall or web I, which acts as a stop.

A removable plate L is arranged on the upper side of the draw-bar over the bore or socket *h* to enable the spring to be removed or repaired, and a slot *l* is formed in the side of the draw-bar to enable said spring to be inspected without removing the plate.

The chamber E is extended vertically to form a narrow slot M, in which the pivoted lock operates, and to the front end of the lock is attached an operating-chain *m*, which passes upward through said slot. Said chain thence passes over small guide-pulleys N N, and is connected to the lower end of a rack-bar O, which is engaged by suitable pinions P. These pinions are provided with small hand-wheels P', whereby the rack-bar may be operated either from the platform or the side of the car. In the case of a freight-car a hand-wheel may be arranged at the top of the car, as shown in dotted lines in Fig. 1. In the case of a passenger-car the operating device is arranged on the platform, and may, if preferred, consist of an ordinary drum upon which to wind the chain. In case of flat cars, such as are employed to transport coal, stone, &c., one of the hand-wheels should be arranged at the side, as shown in full lines in Fig. 1, and in view of the fact that it is dangerous, especially in inclement weather, for train hands to walk on top of box-cars, it is also preferable in this case to have a hand-wheel at the side of the car.

To connect the rear end of the draw-bar to the car I employ a yoke Q, the free ends of the arms of which are provided with eyes *q q*, through which passes a horizontal bolt R, said bolt being secured to keepers *r r* on a stationary cross-timber of the car. The rear end of the draw-bar is provided with a horizontal eye S, which fits between parallel perforated ears *s s* on the front of the yoke, and a vertical bolt *s'* engages said eye and ears, and thus pivots the draw-bar to the yoke in such a manner that the former is capable of horizontal movement. Thus it will be seen that the draw-bar is capable of vertical and horizontal movement at its front end, while at the same time it is firmly and strongly secured to the car. There are no springs to break or slip out of place, and thus render the coupler useless. The front end of the draw-bar is held in position by means of a bracket, (shown in detail in Fig. 6,) which consists of vertical arms or side bars T T, which are provided at their upper ends with horizontal plates *t t*, having vertical side flanges *t' t'*. Said plates bear against the under side of the end timber of the car-body, and the flanges bear against the front and rear sides, respectively, of said timber, and are bolted thereto. The lower ends of the side bars T T are connected by a horizontal bar T', and a horizontal sliding plate U is arranged above said bar and is adapted to slide vertically between the side

bars. The ends of the plate U are notched to engage guide-ribs *t''* on the inner surfaces of the side bars.

Between the sliding plate U and the bar T' are arranged springs *u u*, which normally hold the plate in an elevated position, and as the front end of the draw-bar rests upon said plate the former is also held in an elevated position. Vertical side plates V V bear against opposite sides of the draw-bar and are held in position by springs *v v*, which bear at their outer ends against the side bars of the bracket. The springs *v v* and *u u* are held in the proper position by means of small rods or pins *u'* and *v'*, as shown clearly in Fig. 6. It will be seen that the spring-actuated side plates normally hold the front end of the draw-bar in the center of the bracket; but when the cars are upon a curve the draw-bar is drawn to one side to accommodate the position of the cars.

When it is desired to lower the front end of the draw-bar, the sliding plate U is drawn down, and to accomplish this I employ the following means: To the center of the plate is attached the upper end of a short chain *w*, and the operating-lever W, which is pivoted at an intermediate point to the vertical swinging arm W', is connected at its inner end to the lower end of the said chain. The outer end of the lever is connected to the lower end of a vertical threaded rod Z, which carries an independent hand-wheel Z'. When the front end of the draw-bar is to be lowered the said hand-wheel is turned down until it bears on the upper surface of the end timber of the car, through which the threaded rod extends, and then by continuing the rotation of the hand-wheel the rod is elevated and the sliding plate U, which is attached to the opposite end of the lever, is lowered. After the coupling is completed it is only necessary to unscrew the hand-wheel to allow the springs *u u* to return the sliding plate and the draw-bar to their normal positions. The link, which is shown in detail in Fig. 3, is provided with conical or tapered ends to enable it to readily enter the mouth of the draw-bar and raise the lock, and it is also provided near the ends with elongated openings or slots B' to receive the nose of the lock. The link is preferably of the flat form shown in Fig. 3, the width being somewhat greater than the thickness, and said width being just equal to the width of the throat of the draw-bar, so as to fit snugly therein and prevent lateral play. The width of the slots B' are also equal, preferably, to the thickness of the nose of the lock; but said slots are of such a length as to permit longitudinal movement of the link. Thus when the link enters the throat of the draw-bar and the nose of the lock drops into one of the slots B', the link may be repressed a considerable distance, thereby compressing the spring C. When the cars are strained apart, as when in motion or in starting, the lock is allowed a slight



forward movement, which is resisted by the spring H and is checked at a certain point by the sliding plate K coming in contact with the wall or web I. The ends of the link are further provided with perforations B'', to allow of the use of an ordinary pin-coupling, and the center of the link is provided with a handle B''', to enable it to be readily removed and replaced and transported. This handle is formed within the plane of the surface of the link by channeling or cutting the material away.

The front end of the draw-bar is provided with a small ring or link Z'' for the purpose of connecting with an ordinary pin-coupler.

I am aware that car-couplers have been provided heretofore with pivoted locks which are connected with springs; but in the ordinary construction the shafts of said locks pass through the springs, thereby compressing the latter as the lock is strained. By this construction the spring bears the entire strain of the draft, and if strong enough to be of any service in resisting the enormous strain it is too stiff to properly break the jar and prevent the jerking which is caused in starting. By my construction, however, the spring H is only designed to relieve the initial strain caused by starting, the actual strain of the draft being then received by the stop-plate, which bears against the wall or web I. Thus the spring need not be as strong as when it is designed to bear the full strain unassisted. The jerking which is caused in coupling and in stopping is relieved by the compression-spring, which receives the thrust of the link, the slots in the link being of a sufficient length to permit of considerable longitudinal play of the latter.

I object to the use of a spring or springs to connect the draw-bar to the car, for the reason that they are exposed and therefore become rusted and soon break, and, furthermore, they cannot be made strong enough to resist the continual strain of the draft and at the same time sensitive enough to break the jar when cars are being coupled and when they are being started and stopped. Both of these conditions cannot be fully carried out, and hence I find it more advantageous to connect the draw-bar firmly to the car, as shown and described, and employ independent and protected springs to relieve the strain.

The means which I employ for connecting the draw-bar to the car are simple, strong, and effective, the front end of the draw-bar being allowed free vertical and lateral adjustment. When the draw-bar is connected to the car by means of a heavy spring, this adjustment is not easily attained, and it is the usual practice to provide adjusting devices for the link. This construction, however, is objectionable from the fact that it complicates the construction at the particular point where the greatest simplicity is re-

quired—namely, at the point of engagement of the link with the draw-bar.

The improved means which I have provided for operating the lock are simple and direct, and enable a car to be coupled or uncoupled from the platform, the top, or the side, and obviates the necessity of going between two cars. The bracket which is employed to hold the front end of the draw-bar in position is provided with spring-actuated side plates, which bear against opposite sides of the draw-bar and normally hold it in the center of the end of the car, but at the same time permit it to swing to either side when the cars are upon a curve. The spring-actuated supporting-plate is normally held in an elevated position, and when it is desired to lower the front end of the draw-bar to accommodate a lower draw-bar on another car it is accomplished by raising the outer end of the operating-lever, in the manner hereinbefore described.

A further advantage of my improved coupler is that owing to its construction it can be placed almost entirely under the car-body. There is no necessity for it to project any considerable distance beyond the end of the car. Hence it is protected to a greater extent and all the operating parts are inclosed.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a car-coupling, the combination, with the draw-bar, of the extension-spring H, fitting in a bore or socket and secured at its rear end to the draw-bar, the rod connected to the front end of the said spring and carrying a stop to engage a wall or web to limit the extension of the spring, and the lock pivoted to the front end of said rod, substantially as specified.

2. In a car-coupler, the combination, with a draw-bar having a throat to receive the coupling-link and an upper chamber E above said throat, of a pivoted lock F, arranged in said chamber and connected at its rear end to an extension-spring E, and a compression-spring C, arranged at the rear end of the throat, substantially as specified.

3. In a car-coupler, the combination, with a draw-bar, of a pivoted lock F, an extension-spring E, connected to the rear end of said lock, a sliding plate K, carried by the lock and adapted to engage a vertical wall or web I to limit the forward movement of the lock, substantially as specified.

4. In a car-coupler, the combination, with a draw-bar provided with a throat b to receive the coupling-link, and a chamber E, arranged above the said throat and provided at its rear end with a vertical wall or web I, the extension-spring arranged in a bore or socket in rear of said wall or web I, the rod G, fitting in a guide-opening in the wall or web and connected to the front end of the spring, the sliding plate carried by said rod and adapted



to strike the wall or web to limit the extension of the spring, and the pivoted lock F, pivoted to the front end of the rod and provided with a nose to extend down into the throat of the draw-bar to engage the coupling-link, substantially as specified.

5. In a car-coupler, the combination, with a draw-bar provided in its top with a longitudinal slot, of a pivoted lock F, the rack-bar connected to said lock by a chain, and pinions engaging the rack, whereby it may be raised or lowered to operate the lock, substantially as specified.

6. In a car-coupler, the combination, with a draw-bar, of a yoke connected to the car by a horizontal bolt and connected to the rear end of the draw-bar by a vertical bolt, and a bracket to support the front end of the draw-bar, substantially as specified.

7. In a car-coupler, the combination of the yoke Q Q, having its arms connected to the car by means of a horizontal bolt R and provided at its front with the horizontal perforated ears s s, the draw-bar provided at its rear end with a horizontal eye S, which fits between the ears on the yoke and is pivoted thereto by means of a bolt s', and a bracket to support the front end of the draw-bar, substantially as specified.

8. In a car-coupler, the combination, with a draw-bar connected at its rear end to the car and capable of vertical movement at its front end, of a bracket provided with a sliding plate U, upon which the front end of the draw-bar rests, the springs under said plate to normally hold it in an elevated position, and a lever connected at one end to said sliding plate and provided at the other end with a threaded rod engaged by a hand-wheel, substantially as and for the purpose specified.

9. In a car-coupler, the combination, with a draw-bar pivoted at its rear end to the car,

of a bracket arranged under the front end of the draw-bar, the sliding plate U, provided with springs u u, the lever W, pivoted to a swinging arm W' and connected at one end to the sliding plate, the threaded rod Z, connected to the opposite end of the lever, and the hand-wheel engaging said rod, substantially as and for the purpose specified.

10. In a car-coupler, the combination, with a draw-bar pivoted to the car and capable at its front end of vertical and lateral adjustment, of the bracket provided with a horizontal sliding plate U, provided with springs u u, the vertical side plates V V, bearing against opposite sides of the draw-bar and provided with springs v v, and an operating-lever connected to the horizontal plate to enable it to lower the front end of the draw-bar, substantially as specified.

11. In a car-coupler, the combination, with a draw-bar provided with a pivoted lock F, of the coupling-link provided with tapered or cone-shaped ends, elongated openings or slots near the ends, and a handle arranged below the surface of the link, substantially as specified.

12. In a car-coupler, the combination, with a draw-bar provided with the throat b and a pivoted lock F, and a compression-spring located in the rear end of the throat, of the link provided with tapered ends, said link being equal in width to the throat and provided with elongated openings or slots which are equal in width to said lock to prevent lateral play, substantially as set forth.

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

JOHN L. SHOENBERGER.

Attest:

HENRY C. LYON,  
C. E. DOYLE.