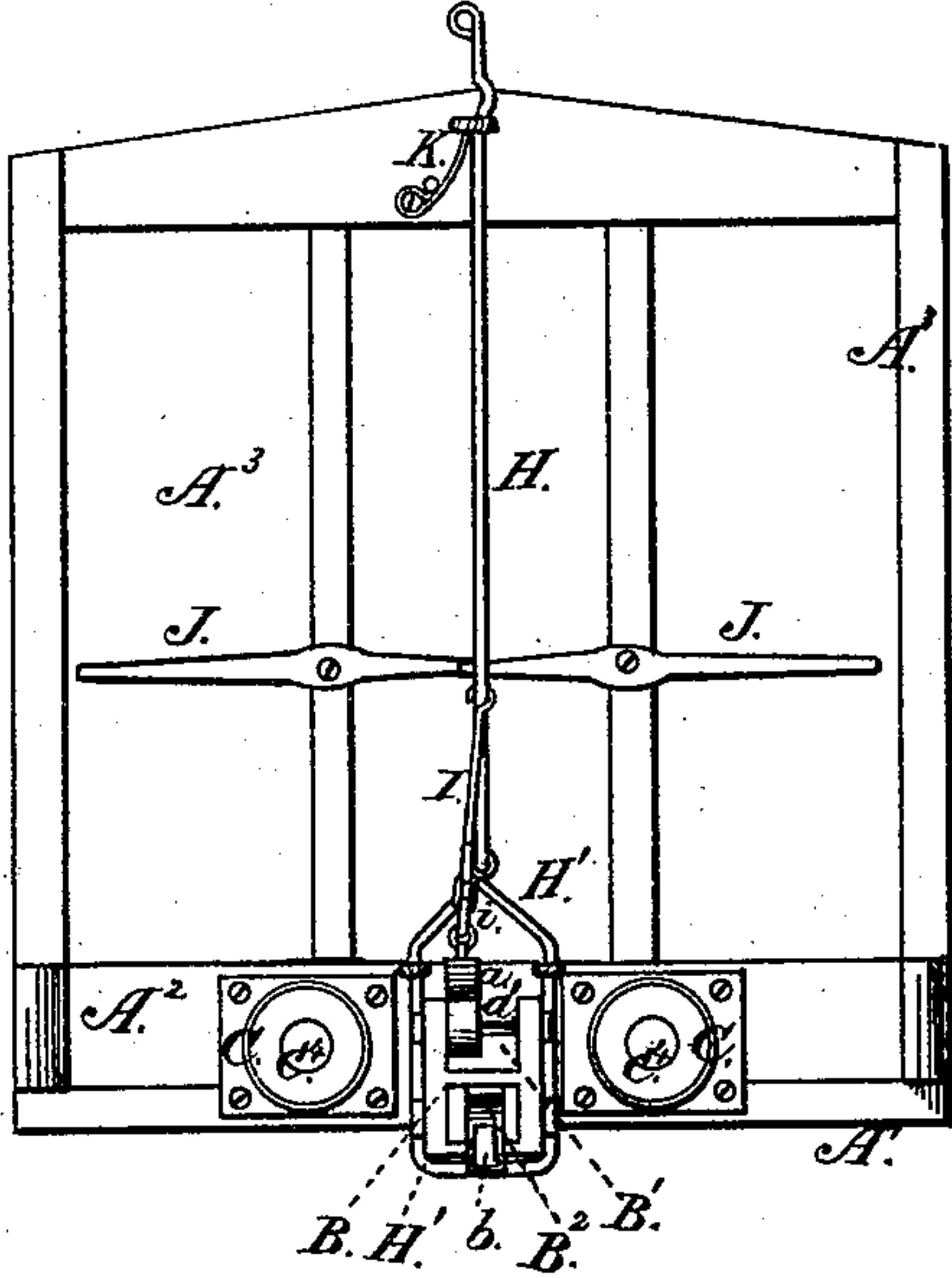


## CAR-COUPLING.

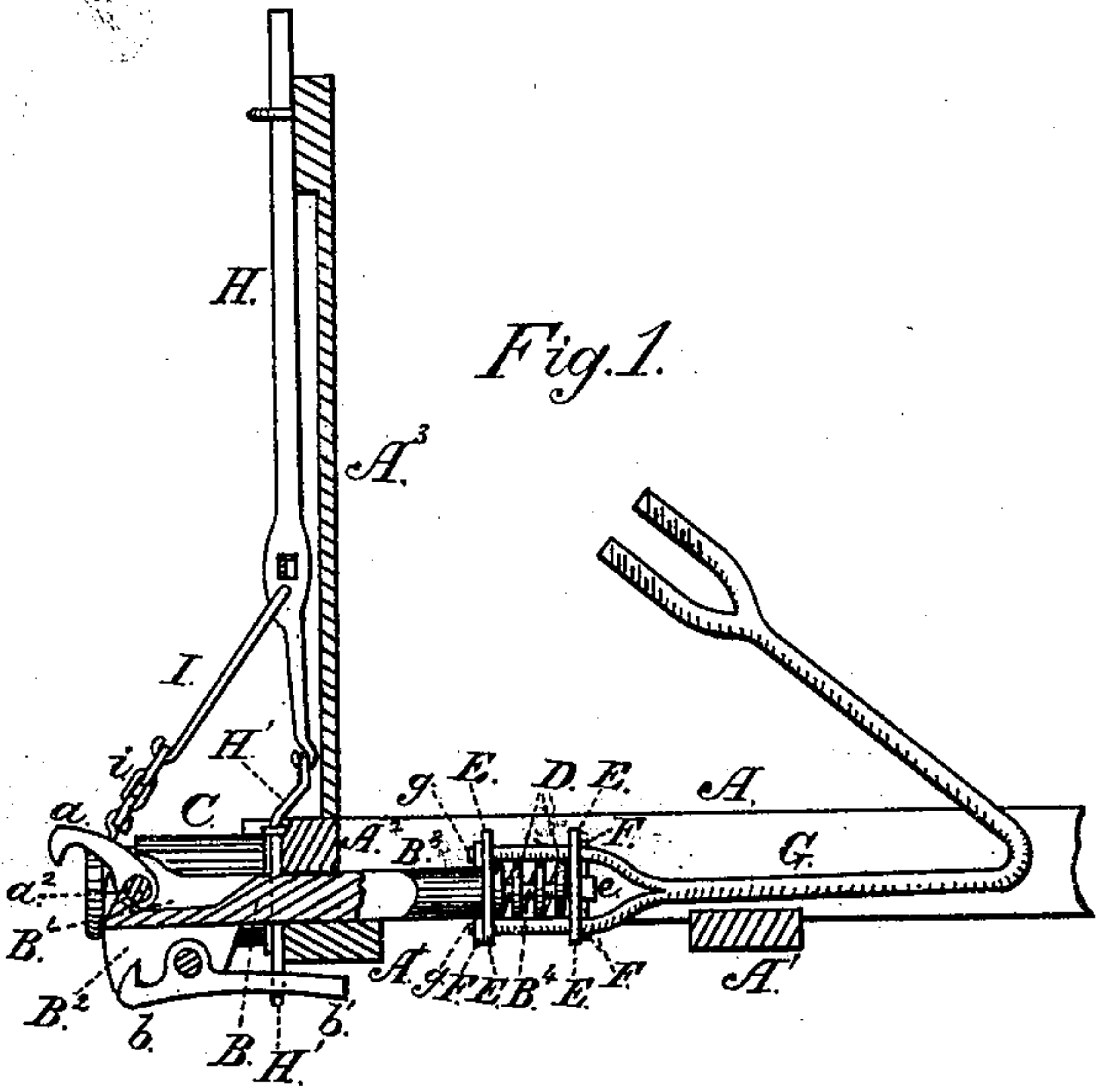
No. 178,741.

Patented June 13, 1876.

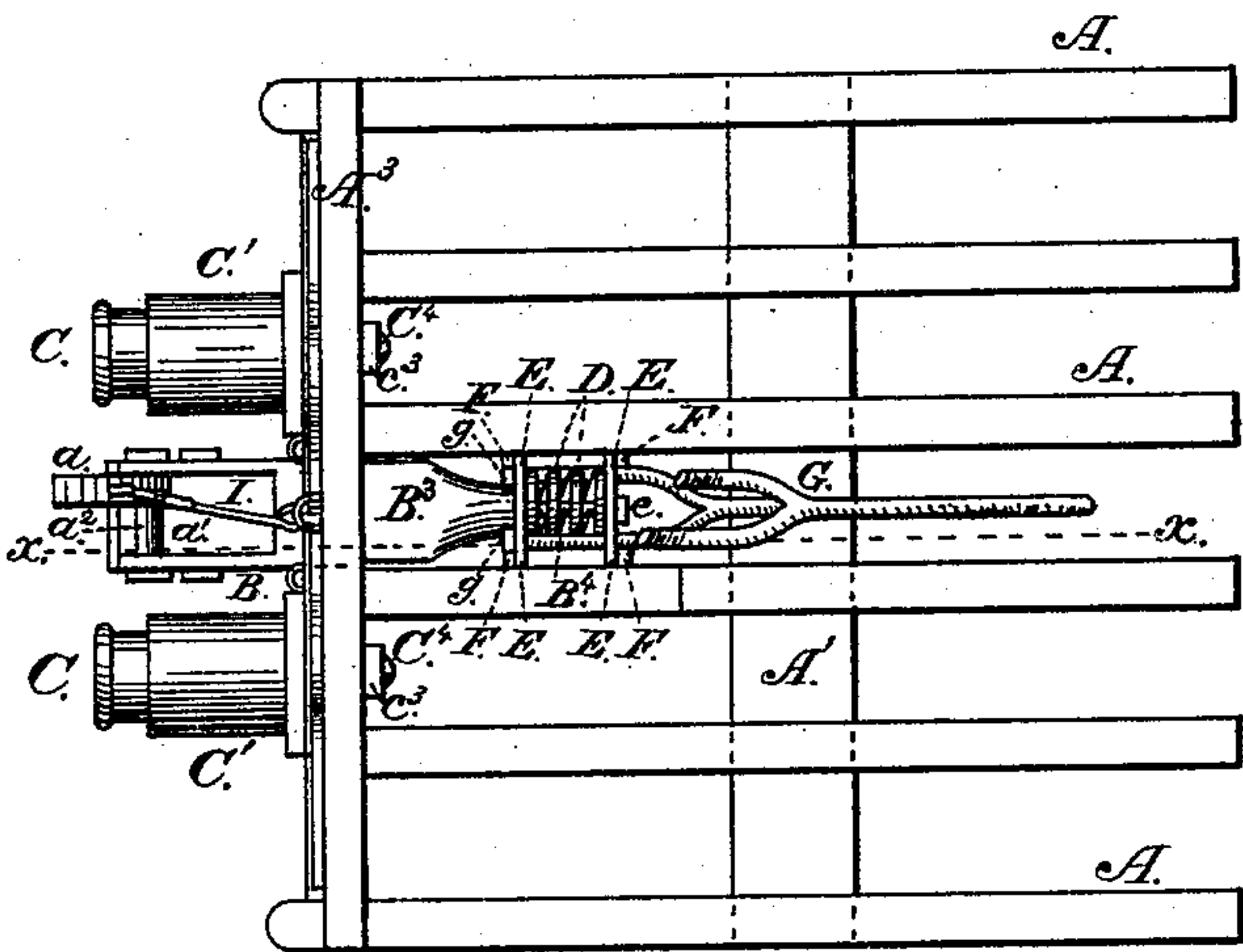
*Fig.3.*



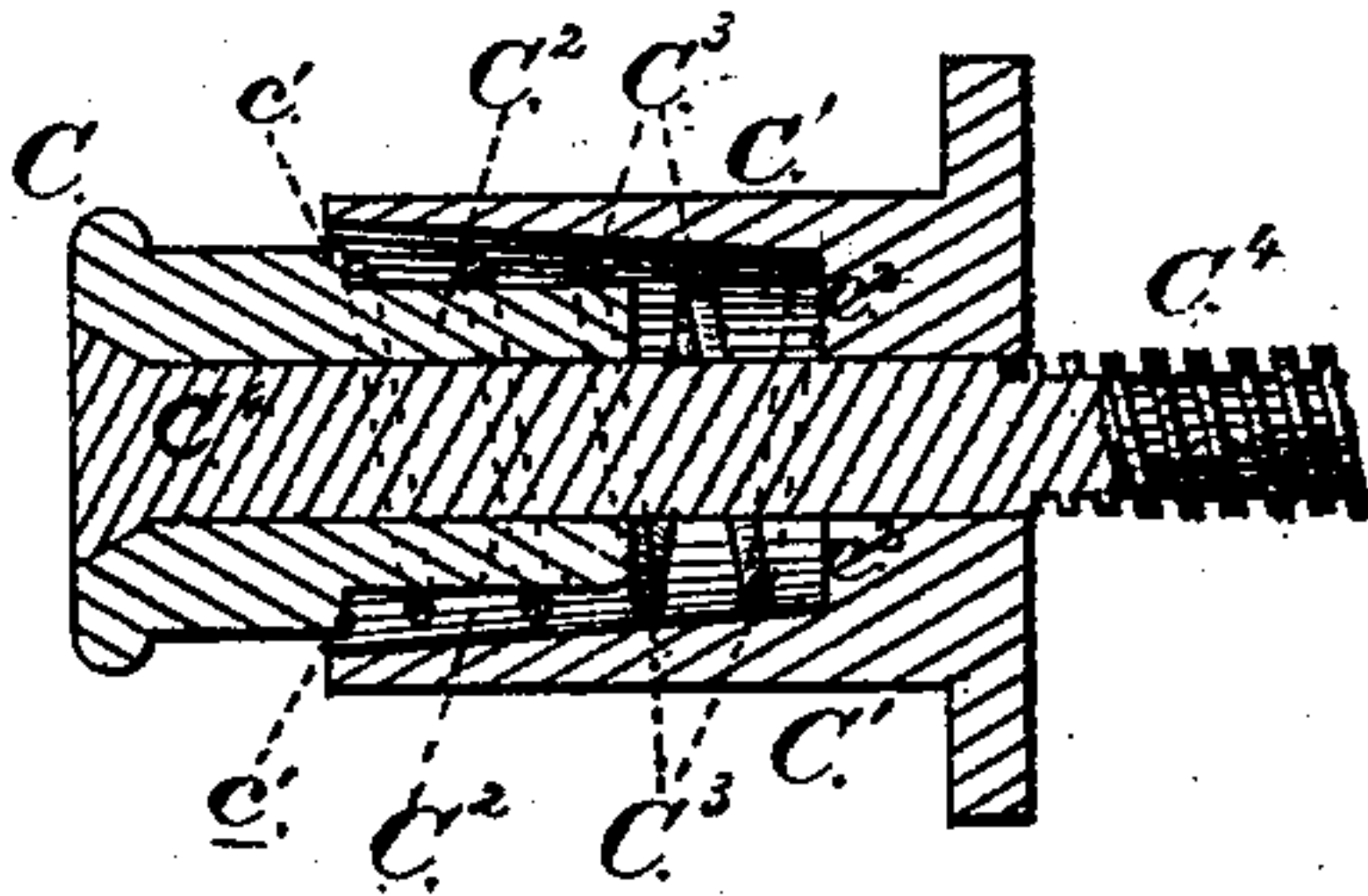
*Fig. 1.*



*Fig.2.*



*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

JOSEPH DAVENPORT, OF MASSILLON, OHIO.

## IMPROVEMENT IN CAR-COUPPLINGS.

Specification forming part of Letters Patent No. 178,741, dated June 13, 1876; application filed April 26, 1876.

*To all whom it may concern:*

Be it known that I, JOSEPH DAVENPORT, of Massillon, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Couplings and Buffing Attachments for Railroad-Cars; and I do hereby declare that the following is a full, clear, and exact description thereof, 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, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to couplings and buffing attachments for railroad-cars; and consists of an improved construction and arrangement of the parts, as hereinafter more fully and at large will appear.

The necessity for improvement in the present mode of attachment, or means by which cars are coupled together, and also in their buffing attachments, has been greatly felt for a long time by railroad companies. This is owing to numerous defects in the present arrangements, and principally to the enormous expense incident upon the use of links and pins. What is greatly desired is, first, a simple and effective device for coupling freight or other cars, which dispenses entirely with the use of links and pins, but at the same time is so constructed as to connect itself with the present manner of coupling, thereby affording an opportunity to use the old links and pins until they are worn out—the device adapted to couple either automatically or by hand, as desired, and be operated or uncoupled both from the top or sides of the car; second, in connection with the coupling, buffing attachments so constructed and arranged as to give much greater power of resistance and greater range of motion than those now employed—the coupling, with the buffing attachments, to be so placed with relation to each other that the line of connection and resistance will be on the same horizontal plane, and in a direct line through the bottom or floor timbers of the car, or place of greatest resistance.

Such an arrangement of devices for the purposes above set forth is accomplished or produced in the following-described invention.

In the drawings, Figure 1 represents a lon-

gitudinal vertical section on the line *x x*, Fig. 2; Fig. 2, a plan, and Fig. 3 a front view, of a portion of a car-frame with my invention applied thereto. Fig. 4 represents a detached sectional view of one of the buffers.

*A A* are the longitudinal, *A<sup>1</sup> A<sup>1</sup>* the transverse, and *A<sup>2</sup>* the front floor-timbers, and *A<sup>3</sup>* the front wall or frame, of a freight car. *B* is the coupling or draw head, placed in the center of the front timber *A<sup>2</sup>*, and extending back and secured at its end between the floor-frame *A*. *CC* are the buffing attachments or buffers, secured to the front beam *A<sup>2</sup>* on each side, in close juxtaposition, and on the same horizontal plane, with the coupling portion of the draw-head *B*. The draw-head *B* is constructed in its front with separate coupling mouths or portions *B<sup>1</sup> B<sup>2</sup>*, placed one above the other. The top part is provided on one side with a gravitating-hook, *a*, and on the opposite side with a mouth, *a<sup>1</sup>*. The lower part is provided with a gravitating-hook, *b*, constructed with a weighted rear end, *b'*, the hook *b* thus being made to operate or catch by an upward movement of its hook end. The pivot-bolt *a<sup>2</sup>* of the top gravitating-hook *a* is placed and extends across the mouth *a<sup>1</sup>* of the top coupling-mouth *B<sup>1</sup>*, in such position as to form the engaging-face or retainer for the hook of a matching draw-head on an opposing car. The rear of the draw-head *B* is prolonged, or formed into a portion, *B<sup>3</sup>*, which passes through the front beam *A<sup>2</sup>* of the car and end cylindrical portion *B<sup>4</sup>*. This cylindrical portion receives a heavy spiral spring, *D*, passes through two plates, *E*, which plates slide and are held in place in a guide-frame, *F*, secured to the timbers *A A*, and is secured by nut *e* on its end. *G* is a draw-rod, the branch end of which passes through the plates *E*, and is secured by nuts *g* on its ends. This draw-rod extends through, and is secured in a similar manner to, the end of the draw-head on the opposite end of the car.

By thus securing the rear end of the draw-head and providing the draw-bar, the draw-head is allowed both a forward and rearward play, and the entire train of cars, when coupled together, are united by a continuous elastic or yielding draw-bar. Thus the jar as the cars collide or jerk apart in stopping and starting



is materially prevented. H is a rod secured to the end of the car, and extending up to the top thereof. The lower end of this rod H is formed into a yoke, H', which extends around and beneath the draw-head B, and under the weighted end *b'* of the gravitating-hook *b*. I is a rod secured at its top end to the rod H, and at its bottom by short chain *i*, to allow play to the gravitating-hook *a*. J J are pivoted levers operating in the vertical bar H, and extending to the sides of the car. K is a spring for retaining the rod H in position.

An upward movement of the rod H, which may be given from the top or sides of the car, draws the top gravitating-hook *a* and the weighted end of the bottom hook up, which brings down the front or hook end *b*, and simultaneously disengages both hooks, thus uncoupling the cars.

The object and purpose of forming the draw-head with two separate mouths and set of coupling devices is to, by the top one, dispense entirely with the use of links and pins and form a new means of coupling, but at the same time, by the lower one with its hook, provide a means by which the old links, pins, and draw-heads now in use may still be used until worn out. Thus, when a car having the old form of buffer, with link and pin, comes opposite the new form of draw-head, the parts may be coupled the same, by the link entering the lower mouth and engaging over the hook *b*.

Should it be desired to have the parts operate automatically, the rod H is brought down, which releases and allows the hooks to swing free. Thus, when an entering link or hook comes in position, they pass over the engaging face or hook, as the case may be, and drop into position, thus securing or coupling the parts. When it is not desired that the parts shall operate automatically, the rod H is raised to its full extent, which draws back the coupling-hooks and holds them out of position, thus preventing their action until the rod H is operated to release them.

In order to give greater power of resistance and range of motion to the buffing attachments, they are constructed as shown in Fig. 4, to wit: C<sup>1</sup> is the buffer-box, secured by its flange to the front cross-beam A<sup>2</sup>. C is the buffer head or disk, constructed with a front shoulder and a smaller rear portion, C<sup>2</sup>, on which the buffer-spring C<sup>3</sup> is received, which spring, when in position, abuts against the shoulder *c*<sup>1</sup> on the head, and shoulder *c*<sup>2</sup> in the inside of the buffer-box.

C<sup>4</sup> is a strong conical-headed bolt, which passes through and is seated in the head C, box C<sup>1</sup>, and timber A<sup>2</sup> of the car-frame, and secured on the inside by a nut, *c*<sup>3</sup>. The portion C C<sup>2</sup> of the buffer, and also the box C<sup>1</sup>, are made of such length that when in their normal position the face of the disk C will be about flush with the face of the draw-head. Thus, when the cars impinge, the draw-head is compressed at the same time that the buf-

fers are. Thus the strain on each is greatly relieved. By providing the long cylinder C<sup>2</sup> of the head C, and securing the parts by a central rod, on which said head slides, a stronger buffer is secured—a greater range of motion and power of resistance given to the springs; consequently, the buffers are better adapted to receive and sustain heavy and oft-repeated shocks.

The object of permitting the head to play on the bolt independent of the movement of the bolt itself is to give all possible range and ease of motion to the head, thus providing for slight lateral shocks or impingement of the cars, which are taken up and eased by the head itself, and without subjecting the bolt to lateral strain and displacement.

It will be seen that by providing a car with the yielding draw-head, with draw-rods constructed and arranged as herein described and shown, the entire train of cars is rigidly and securely united in a continuous line; also, by placing the buffers as close as possible on each side of the yielding draw-head, and at the central portion of the bottom of the car, instead of at the outside ends, as is usual, the strain, resistance, &c., are brought in a direct line through the middle portion of the bottom of the car or place of greatest strength and power of resistance. Thus less damage to the car is done by violent concussions, because of the greater strength at this point, and adaptability of the car to receive and sustain shocks here than at its edges; and, further, the buffers are relieved from the unnecessary jar and strain when turning curves which is incident to the buffers when placed at or near the outside of the car.

At the same time that an intimate connection between each car is established by the yielding draw-bar and buffers operating in conjunction one with the other, the parts of the line, or each separate car, is allowed a certain articulation or degree of flexure, extension, and compression. Thus the shock, jar, rattling, &c., and damages consequent upon the cars impinging or abutting against each other in stopping or starting, are almost entirely prevented and overcome.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The draw-head B, constructed with two separate mouths, B<sup>1</sup> B<sup>2</sup>, provided with coupling gravitating-hooks *a b*, substantially as and for the purposes described.

2. In combination with the draw-head B, constructed with two separate coupling portions, B<sup>1</sup> B<sup>2</sup>, the gravitating-hook *a*, the pivot-bolt *a*<sup>2</sup> of which forms the retaining-catch for an opposing hook, and long weighted upwardly-catching hook *b b'*, substantially as and for the purposes described.

3. In combination with the gravitating-hook *a* and weighted hook *b b'*, the rod H H', extending down around the draw-head and beneath the weighted end of the hook *b*, and rod



I *i*, for raising or disengaging the gravitating-hooks *a b* by an upward movement, substantially as described.

4. The combination, with the gravitating-hooks *a b*, rod H, with yoke H' at its lower end, and rod I, with chain *i* at its lower end, of the hand-levers J J, substantially as described.

5. The combination and arrangement of coupling-mouths B<sup>1</sup> B<sup>2</sup>, gravitating-hooks *a b*, rod H H', and rod I *i*, all constructed and operating substantially as described, whereby, in the same draw-head, an entirely new means of coupling is secured, but at the same time provision is made to connect with the ordinary draw-head, with its link and pin, and the parts are adapted to couple either automatically or by hand, as desired.

6. The combination, with the draw-head B, the end of which is formed into an extension, B<sup>3</sup>, and cylindrical portion B<sup>4</sup>, of two sliding plates, E E, spiral spring D, and independent draw-rod G, said draw-rod passing from the rear through both sliding plates E E, and secured by nuts *g* on the outside of the front plate, thence extending rearward and secured in a similar manner to the end of the coupling-head on the opposite end of the car, all

constructed and arranged as described, whereby a yielding and elastic cushion is provided for the draw-head, and, by the draw or connecting rod G, each coupling or draw head in the train is secured or united together in a continuous line.

7. The buffer consisting of flanged box C<sup>1</sup> c<sup>2</sup>, cylindrical head C, with shoulder *c* and smaller cylindrical rear extension C<sup>2</sup>, for receiving the resisting spring, spiral spring C<sup>3</sup>, and conical-headed bolt C<sup>4</sup>, which passes centrally through the head C C<sup>2</sup>, and is seated therein flush with its face, spiral spring C<sup>3</sup>, box C<sup>1</sup> c<sup>2</sup>, and front timber A<sup>2</sup> of the car, behind which it is secured, all constructed and arranged as shown, whereby the head or buffer-disk is securely held and guided in position by the bolt, and the bolt itself receives directly on its head the concussion or shock, sustaining and overcoming it equally with the buffer-disk.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOSEPH DAVENPORT.

Witnesses:

CHAUNCEY C. GROVE,  
ISAAC H. BROWN.