

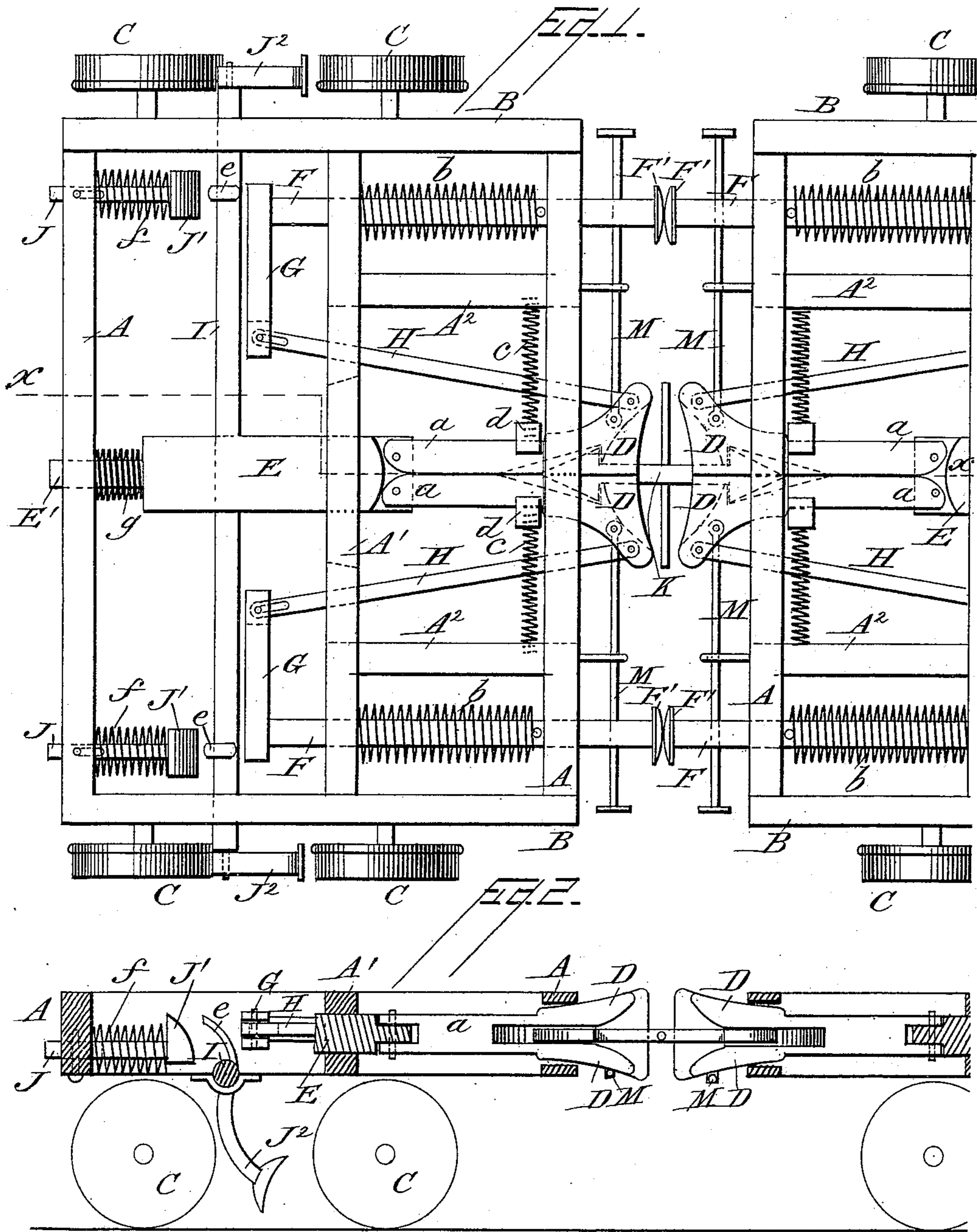
(No Model.)

2 Sheets—Sheet 1.

G. G. LANE.  
CAR COUPLING.

No. 420,809.

Patented Feb. 4, 1890.



Attest: *J. H. Schott*  
*W. L. Boyden*

*George G. Lane*  
per *John L. Parker*  
Att'y

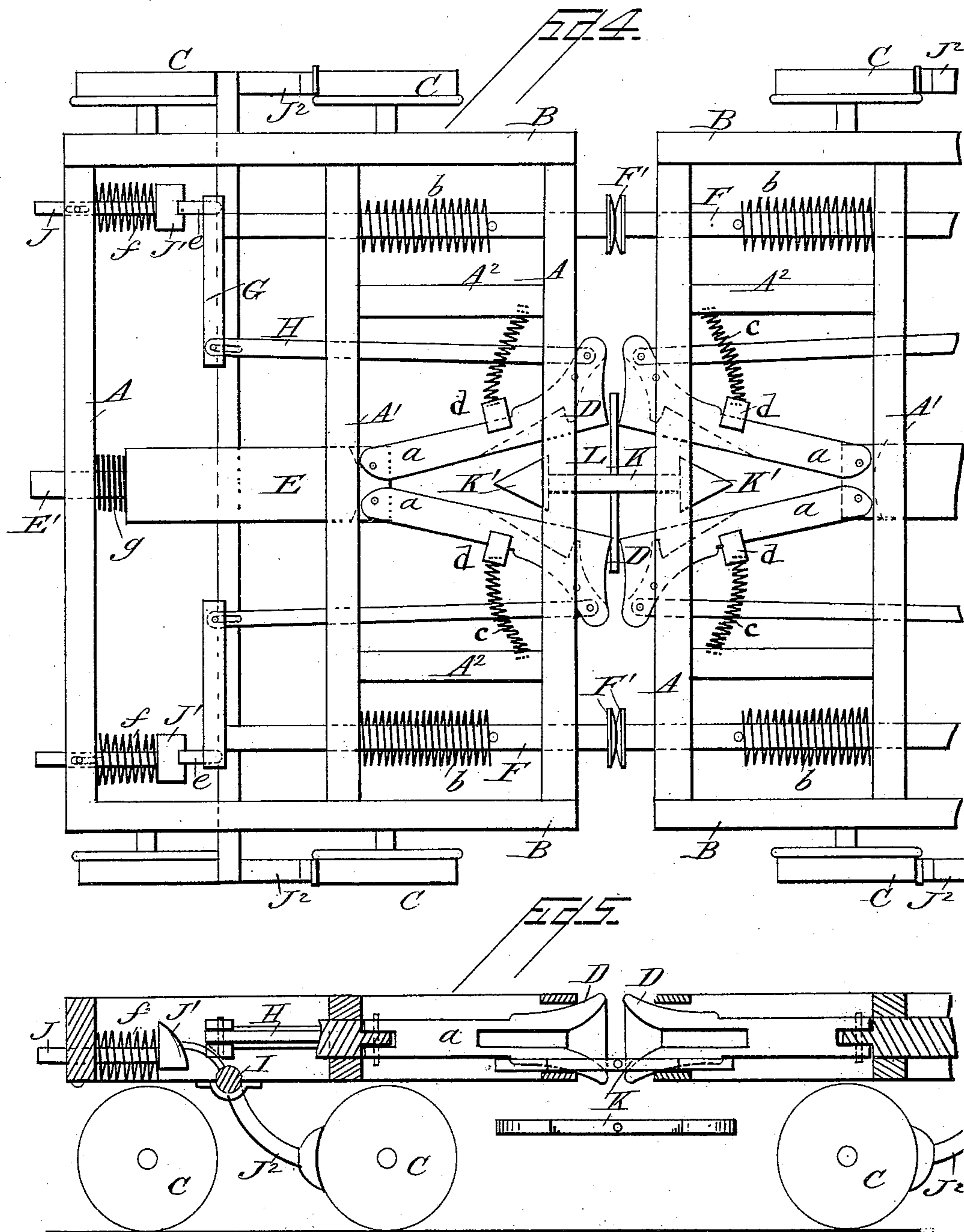
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George G. Lane  
per John C. Parker  
Atty

# UNITED STATES PATENT OFFICE.

GEORGE G. LANE, OF PROSPERITY, SOUTH CAROLINA, ASSIGNOR OF ONE-HALF TO ROBERT L. LUTHER, OF SAME PLACE.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 420,809, dated February 4, 1890.

Application filed December 5, 1889. Serial No. 332,698. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE G. LANE, a citizen of the United States, residing at Prosperity, in the county of Newberry and State of South Carolina, have invented certain new and useful Improvements in Car-Couplers; 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.

My present invention relates to an improvement in car-couplings, the object thereof being to provide a simple, cheap, and efficient device for the purpose of coupling railway-cars; and the invention consists in the construction and arrangement and combination of parts, substantially as will be hereinafter described and claimed.

In the annexed drawings, illustrating my invention, Figure 1 is a top plan view of my improved car-coupler as practically applied to the adjacent ends of two cars, said cars being shown as coupled. Fig. 2 is a vertical sectional elevation on the line *xx* of Fig. 1. Fig. 3 is a detail front elevation of one of the draw-heads. Fig. 4 is a top plan view similar to Fig. 1, showing the cars uncoupled as the result of the automatic operation which opens the sectional draw-heads. Fig. 5 is a vertical section of Fig. 4, similar to the section in Fig. 2.

Similar letters of reference designate like parts throughout all the different figures of the drawings.

My improved car-coupling is intended for use with any kind of a railway car or vehicle. The parts of the car, therefore, which are shown in the drawings are given by way of example only, as I am not restricted to any particular construction of the car.

In carrying my invention into practical effect I first provide the under portion of the end of the car with a horizontal rectangular frame or its equivalent, consisting, essentially, of the side pieces *A A*, which are parallel to the end of the car and are located at a suitable distance apart, said strips *A A* being connected by the side strips *B B*, which are parallel to the sides of the car.

*C C C C* designate the trucks arranged below the horizontal rectangular frame which

supports the several parts of my improved car-coupling. Within the horizontal rectangular frame is a cross-bar *A'*, parallel to the side strips *A A* and about midway between them. Between the cross-bar *A'* and the outer strip *A* are two connecting-bars *A<sup>2</sup> A<sup>3</sup>*, arranged parallel to the sides *B B*. This construction of the frame, as here stated, is given by the way of example only, and I am not restricted to its precise arrangement. It is one convenient frame-work which may be provided wherewith to arrange the several mechanical parts which compose my automatic car-coupler.

The draw-head consists of two sections *D D*, which are horizontally-movable toward and away from each other within a slot *h* in the outer strip *A*, as clearly shown in Fig. 3 of the drawings, said sections *D D* having their inner ends *a a* pivoted to a bar *E*, located within a square opening in the cross-bar *A'*, which bar *E* has a rounded end *E'* entering the opening in the inner strip *A*, a spring *g* being coiled between the strip *A* and the bar *E*, as shown in Figs. 1 and 4. It will thus be seen that the bar *E* is susceptible of a certain amount of reciprocatory movement, and that in this movement it will carry the sectional draw-head with it. The spring *g* normally holds the bar *E* in such a position that the draw-heads will be extended a proper distance beyond the outer strip *A*. The draw-head, when its sections or jaws are closed together, presents an opening *i*, (see Fig. 3,) adapted to receive the arrow-head of the coupling-bolt. Furthermore, it will be noted that the outer face of the draw-head is provided with a recess more or less deeply concaved; also, the opposing faces of the sections *D D* are recessed or formed with cavities arranged so that when the sections are closed together, as seen in Fig. 1, the arrow-head of the coupling-bolt may lie nicely within the recess. This recess is indicated by dotted lines in Fig. 1. Thus it will be apparent that if the sections of the draw-head are close together, as in Fig. 1, and the arrow-head coupling-bolt enters the concave face of the draw-head and its point enters the opening *i* the said sections *D D* will be forced apart sufficiently to permit the arrow-head to

drop into the recess provided therefor, after which the sections of the draw-head may be closed together by some suitable agency, leaving the arrow-head within its recess while the bolt will lie in the opening *i*.

Parallel to the sides *B B* of the supporting-frame are two rods *F F*, held in suitable openings in the cross-bar *A'* and the outer strip *A*, said rods being provided with coiled springs *b b*, the ends of which bear, respectively, against the cross-bar *A'* and a pin on each rod *F*, thus keeping the rods in place to permit them to have an endwise movement. The outer ends of the rods *F*, which project through the strip *A*, are provided with buffers *F'*. The buffers *F' F'* on the adjacent ends of two cars will meet and come in contact with each other, as shown in Figs. 1 and 4, which contact will produce the result of moving the rods *F F* endwise and compressing the springs *b b*, as shown in Fig. 4. The inner ends of the rods *F F* have secured thereto at right angles short bars *G G*. The ends of these bars *G G* are connected with the outer ends of the sections *D D* of the draw-head by links *H H*; hence when the rods *F F* are moved endwise, consequent upon a violent collision or abrupt meeting of two cars, it will be evident that the links *H H* will operate to separate the sections *D D* of the draw-head by turning said sections on their pivotal points, and thus placing them in the position shown in Fig. 4. Each of the sections *D* is preferably provided with a block *d*, inserted into the side thereof. A spring *c* connects this block *d* with the cross-piece *A<sup>2</sup>*. These springs *c c* act to return the sections *D D* to their former position and close them after they have been opened by any means.

*I* denotes a rock-shaft journaled in suitable bearings in the frame. This rock-shaft is provided at each end with arms *J<sup>2</sup> J<sup>2</sup>*, having on the end thereof brake-shoes, which are adapted to bear against the trucks *C C*. Furthermore, the rock-shaft *I* is provided with projections, preferably curved, (designated *e e*), and located adjacent to the bars *G G*, so that when the rods *F F* are reciprocated in their bearings the bars *G G* will strike the curved projections *e e*, thus rocking the shaft *I* and pressing the brake-shoes against the trucks. As the rock-shaft *I* revolves the curved projections *e e* will strike against the beveled blocks *J' J'*, carried on the inner ends of the spring-actuated pins or bolts *J J*, which are held within openings or bearings in the inner strip *A*, said pins *J J* being enveloped by springs *f f*, which are tensioned between the blocks *J' J'* and the strip *A*; hence when the bars *G G* press on the curved projections *e e* and force these projections against the bevel-blocks *J' J'* it is manifest that the pins *J J* will slip within their bearings and the springs *f f* will be more or less compressed; but when the springs *b b* on the rods *F F* act to return said rods *F F* to their former position, thus re-

moving the bars *G G* from contact with the curved projections *e e*, then the springs *f f* will thrust the bevel-blocks *J' J'* back into their former position, which will result in removing the brakes which were formerly applied to the trucks. The pins *J J* are preferably slotted, through which slots pass pins in the side *A*, so as to limit the extent of movement of the said pins *J J*. From this arrangement it will be observed that when two cars come violently together, their buffers *F' F'* striking forcibly, the result will be not only to open the sectional draw-head, release the coupling-bolt, and thus uncouple the cars, but also simultaneously with this uncoupling action to apply the brakes, and thus assist in stopping the car.

The coupling-bolt which I use in my present invention is a substitute for the ordinary link, consisting of the ordinary metallic bolt *K*, having at each end arrow-heads *K' K'*, and provided also with a central pin *L*, affixed at right angles to the bolt *K*. This pin is long enough to rest between the sections *D D* of the opposite draw-heads, when said sections are unclosed as well as when they are closed—that is, when they occupy the position shown in Fig. 4, as well as when they occupy the closed position indicated in Fig. 1.

Referring to Fig. 1, *M M* denote handles pivotally connected to the sections *D D* of the draw-head and extending to a point near the sides of the car, where they may be easily and readily grasped for the purpose of opening the draw-head to permit the removal of the coupling-bolt without obliging the operator to pass between the cars. These handles are supported on suitable projections on the end of the car. It will be observed that the links *H H*, at the points where they are connected with the bars *G G*, are provided with slots, as shown in Figs. 1 and 4, through which slots pass short pins in the ends of the bars *G G*. These slots in the links *H H* permit said links to have a certain freedom of movement when the sections *D D* are unclosed by hand, without also moving the bars *G G* and the spring-actuated buffer-rods.

From the foregoing description of the construction and arrangement of the several parts of my improved car-coupler its operation will be manifest. It will be seen at a glance that the coupling of two cars together may be automatically effected by the use of this coupler. Furthermore, it will be clear that when a collision takes place the cars will automatically uncouple, and simultaneously with the uncoupling the application to the brakes will take place. The automatic uncoupling of the cars will cause a rebounding of the coaches and telescoping will be prevented. The springs can easily be made sufficiently strong to rebound any weight that may be placed on the coaches. One coach will rebound against the next adjacent coach and this will continue through the entire train, and although the last coach may not

rebound sufficiently to effect an uncoupling, still its movement will be sufficient to prevent telescoping. When the sections of the draw-head are opened or unclosed by the use of the hand-levers, the arrow-head coupling-bolt will drop out of engagement with the draw-head and fall clear of the same, so that it may be entirely disengaged without the necessity of exposing the operator to the danger of going between the ends of the cars.

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

1. In a car-coupling, the combination of the sectional draw-head, the spring-actuated buffer-rods, the links connecting said rods with the sections of the draw-head, and the closing-springs for the draw-head sections, arranged substantially as described.

2. In a car-coupling, the combination of the draw-head consisting of pivoted sections, the spring-actuated buffer-rods carrying bars at right angles thereto, the links connecting said bars with the draw-head sections, and the closing-springs for the draw-head sections, all combined substantially as specified.

3. The combination of the draw-head consisting of the pivoted sections, the spring-actuated buffer-rods having right-angled bars connected to the inner ends thereof, the links connecting said bars with the draw-head sections, the closing-springs for the draw-head sections, and the rock-shaft carrying brake-shoes and provided with curved sections operated by the spring-actuated buffer-rod, substantially as described.

4. The combination of the draw-head consisting of pivoted sections, the spring-actuated buffer-rods having right-angled bars connected to the inner ends thereof, the links connecting said bars with the sections of the draw-head, the closing-springs for the draw-head sections, the rock-shaft carrying the brakes and provided with projections acted on by the buffer-rods, and the spring-actuated pins carrying bevel-blocks and acting to release the brakes, substantially as described.

5. The combination of the draw-head consisting of pivoted sections, the spring-actuated buffer-rods carrying right-angled bars,

the links connecting said bars with the draw-head sections, the closing-springs for the draw-head sections, the rock-shaft carrying brake-shoes, the spring-actuated pins having bevel-blocks and acting to release the brakes, and the spring-actuated bar, to which the draw-head sections are pivoted, all arranged substantially as described.

6. The combination of the draw-head consisting of sections D D, said draw-head being formed with an internal cavity and with a concaved outer face having a central opening, the spring-actuated bar to which the ends *a a* of the draw-head sections are pivoted, the closing-springs *c c* for the draw-head sections, and the devices, as described, for automatically opening the sections, substantially as set forth.

7. The combination of the draw-head consisting of sections D D, constructed as described, the spring-actuated bar E, to which the inner ends *a a* of the draw-head sections are pivoted, the closing-springs *c c* for the draw-head sections, the buffer-rods F F, provided with springs *b b*, and having bars G G connected to said rods, and the links H H, connected to the bars G G and also to the draw-head sections D D, all substantially as described.

8. In a car-coupling, the combination with the draw-head consisting of pivoted sections, the spring-actuated buffer-rods having right-angled bars connected to the inner ends thereof, the links pivoted to said bars and also to the draw-head sections, the closing-springs for the draw-head sections and the rock-shaft I, having arms  $J^2 J^2$ , each end thereof carrying brake-shoes, and having also the curved projections *e e* and the pins J J, carrying beveled blocks  $J' J'$ , adapted to be in contact with the curved pins *e e*, and the enveloping springs *f f*, surrounding said pins J J, substantially in the manner and for the purpose herein described.

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

GEORGE G. LANE.

Witnesses:

I. H. HUNT,

J. B. FELLERS.