

(No Model.)

2 Sheets—Sheet 1.

J. H. BROWNE.
CAR COUPLING.

No. 480,803.

Patented Aug. 16, 1892.

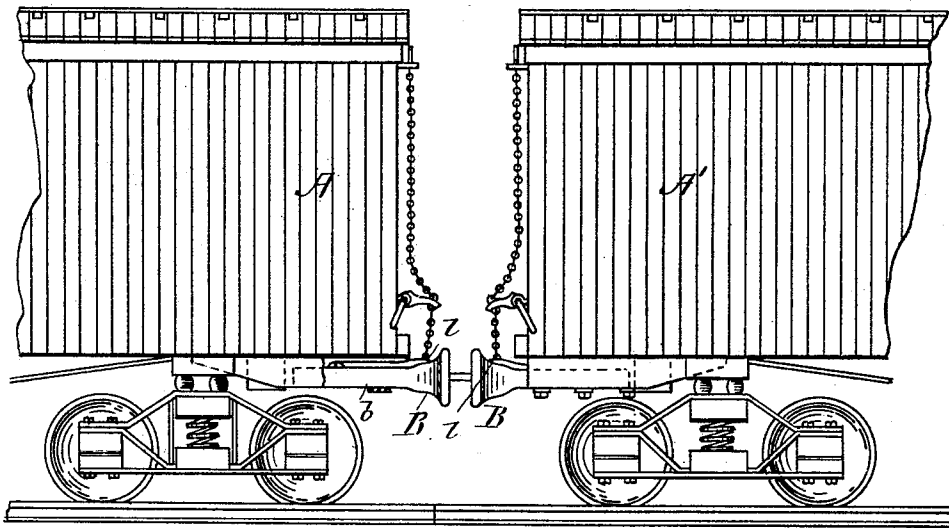


Fig. 1.

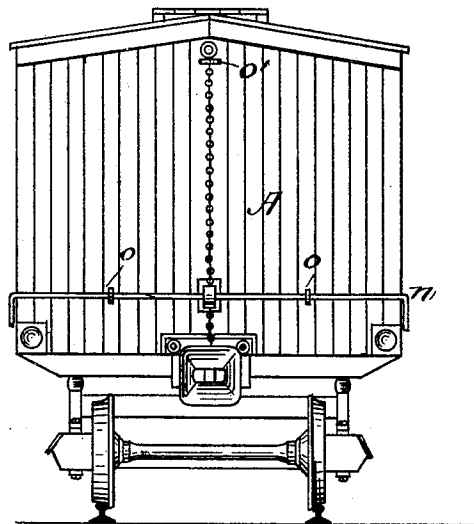


Fig.2.

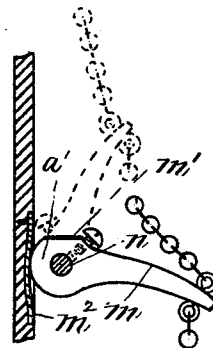


Fig.3.

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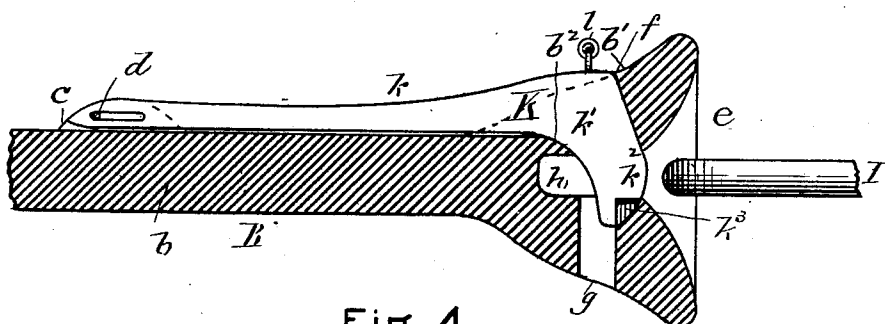


Fig. 4.

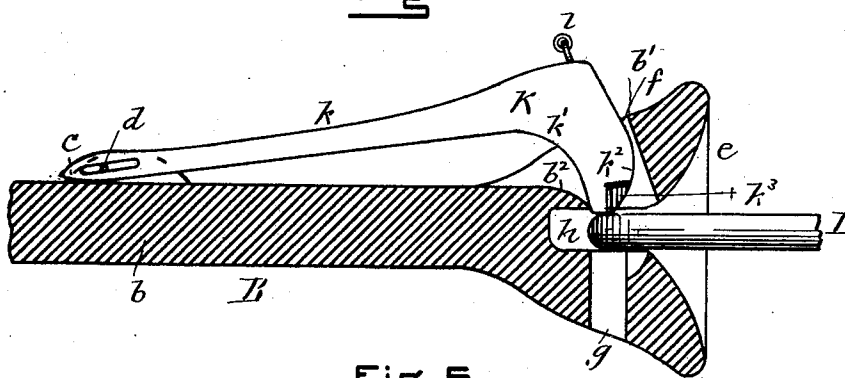


Fig. 5.

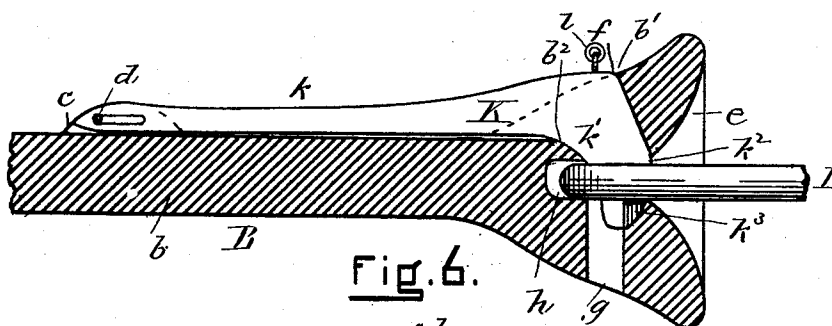


Fig. 6.

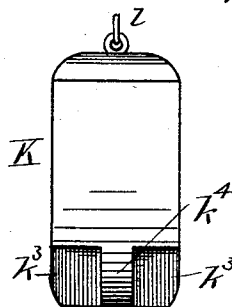


Fig. 7.

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UNITED STATES PATENT OFFICE.

JOSIAH H. BROWNE, OF SALEM, MASSACHUSETTS.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 480,803, dated August 16, 1892.

Application filed September 16, 1891. Serial No. 405,920. (No model.)

To all whom it may concern:

Be it known that I, JOSIAH H. BROWNE, of Salem, in the county of Essex and Commonwealth of Massachusetts, have invented a new and useful Improvement in Automatic Couplers, of which the following description, in connection with the accompanying drawings, forming a part thereof, is a sufficient specification to enable others skilled in the art to make and use my invention.

This automatic coupler belongs to the link variety and operates much like a link-and-pin coupler, although in lieu of the pin it employs a hook.

In the drawings, Figure 1 is a representation of two cars provided with this coupler and showing its arrangement with relation to the body of the car. Fig. 2 is an elevation of the end of a car provided with this coupler. Fig. 3 is a section, with similar parts in elevation, of the rock-shaft employed in lifting the hook by a brakeman on top of the car in uncoupling. Fig. 4 is an enlarged view showing the draw-head in section and the link and hook in elevation when the car is about to be coupled. Fig. 5 is a similar view when the car is half coupled, and Fig. 6 is a similar view when the car is coupled. Fig. 7 is a front elevation of the end of the automatic hook.

A A', Fig. 1, are the bodies of two cars. Each of them is provided with a draw-bar and draw-head B, which is placed in a housing such as is usual with draw-heads, and the rear end of the draw-bar *b* is slotted transversely in the usual way for the passage of a pin to lay hold of the housing and draw the car. The stem *b* of the draw-bar is of any usual pattern; but it is provided on top with two lugs *c*, pierced from side to side for the passage of the bolt *d*, as shown in Figs. 4, 5, and 6. The draw-head is peculiarly formed. It has a mouth *e* of very much the usual shape, but instead of being perforated vertically for the passage of a pin behind the lips which form the mouth it is recessed, as shown in Figs. 4, 5, and 6 at *f* on the upper side and as shown at *g* on the lower side. A cavity *h* in the center serves for the reception of the end of the link I. A hook K, having a long stem *k*, slotted at its rear end for engagement with the pin *d* and provided, as shown in Figs. 1 and 7, at its forward end, where the bill

of the hook joins the stem, with a ring *l* for the attachment of a lifting-chain, is made to fit easily the upper recess. The bill of this hook K is formed at *k'* into a curve which slants upward and backward and when the hook is down engages with a somewhat-similar curve *b²* which forms the back of the upper recess of the draw-head B. The front of this hook is also slanted upward and backward, and there is a similar slant in the draw-head, as shown at *b'*. The point of the hook at *k²* is rounded downward and backward, and the sides of the hook are cut away, as shown in Fig. 7 at *k³*. The draw-head is provided with projections to enter these cavities *k³* and with a recess into which the tongue *k⁴* fits. It will be observed from this construction that when the link I enters the mouth of the draw-head it impinges against the convexity *k²* of the bill of the hook K and will press the hook backward, bringing the two counterpart inclines *k'* of the hook and *b²* of the draw-head in contact with each other, and the hook continuing to move backward on account of the slot through which it engages with the bolt *d* the front of hook K will move upward, the incline *k'* riding upon its counterpart *b²*, and the further entering of the link I will carry it beneath the bill of the hook, because the curvature at *k²* gradually sweeps round until it becomes horizontal at the point of the hook. On passing under the hook into the recess *h* the hook K will drop and catch in the cavity of the link. When the link is pulled upon, it will pull the front of the hook into contact with the incline *b'* of the draw-head and so make a very firm connection. If allowance is to be made for cars of different heights, it will be made by making the cavity *h* deeper than it is drawn in Figs. 4, 5, and 6. The object would be to furnish a support for the link on the upper side in the rear part of the mouth of the draw-head and on the under side at the front. This would make the link stand out comparatively horizontal. In order to lift this hook I from its position, it is attached by a chain, as shown at *l*, Figs. 1 and 7, to an arm *m*, mounted on a rock-shaft *n*, which rock-shaft is mounted in eyes *o* on front of the car, and is furnished with a lever or handle at each outer end. By turning this handle the arm *m* may be moved up or

down, as desired. If it is wished to operate this arm from the top of the car, it can readily be done by a chain, or, better, a jointed rod led from the point of the arm *m* to the top of the car and there passed through a screw-eye *o*, as shown in Fig. 2. This lever at times it would be desirable to have remain up in order that cars may be thrown together in the train-yard without necessarily coupling. To this end I make upon the boss of the arm, as shown in Fig. 3, a flat place or rest *m'*, and I provide in the front of the car a spring-plate *m²*, against which this flat space may rest. Ordinarily when the arm *m* is down this spring will be put in tension, and when the arm is up the spring will be released. In lieu of having the spring-plate *m²*, as shown, the rod *n* or rock-shaft may be made to serve as the spring by having the hub of the arm *m* of such size as to spring the center of the rock-shaft *n* outward a little when the flat rest *m'* of the arm *m* is not against the front of the car.

I am aware that a number of automatic couplers which operate with a hook in the place of a pin have been patented, among which may be mentioned those of the patents to Knowlton, No. 186,682, of January 30, 1887; to Papineau, No. 333,025, of December 22, 1885; to Allison, No. 395,107, December 25, 1888, and to Gunn, No. 408,345, of August 6, 1889. Of course I do not claim the things therein shown and described; but there are some features of this coupler which so essentially differ from the couplers described in these patents and which serve important purposes in the operation of the coupler that it is proper in this place to point them out. In order that the hook may rise more readily from its lowest position on coming in contact with the end of the link presented to it, the rear face of the hook is formed into an incline, (shown at *k'*) which engages with a counterpart incline *b²* in the draw-head, so that when the bill of the hook is pressed upon by the end of the link the hook rises along this inclined plane as the hook gives way endwise in consequence of its slotted connection at *d* with the draw-head, until the end of the link I encounter the sharper part of the incline toward the end of the bill of the hook, below the place marked *k²*, under which slope it readily slips, raising the hook after the engagement between the incline *k'* of the hook and the incline *b²* of the draw-head has served to partially lift the hook. Nothing of this sort is shown in either of the patents referred to. The automatic lifting of the Knowlton hook depends upon the engagement of the link with the front face of the hook and upon the inclination of that front face to the line of action of the link. The same is true with regard to the Gunn patent, and the same also is true with regard to the Allison patent. These devices, however, all show the slotted engage-

ment between the stem of the hook and the draw-head which exists in my device. The Papineau patent does not have this slotted engagement.

Another feature which exists in the present device and is not found in either of the other devices referred to is that when the hook and link are engaged and there is a strain upon them the front face of the hook is engaged with a gradual backwardly-sloping incline in the draw-head, which is lettered *b'*, and which locks the hook down when pulled upon, but allows it to rise when pushed.

In lieu of this device for holding the hook down the Knowlton device has a small sharply-beveled flange, under which the hook, with its corresponding bevel, fits. It is not a long slightly-sloping incline, as in my device, which occupies the whole of the back face of the upper lip of the draw-head, as mine does, but it is a small additional projection or flange. It must be cleared entirely before any rise can begin. The Allison patent seems to have no representative part for this purpose, and the Papineau uses a spring, while the Gunn patent has a projection on the forward face of the hook which locks under the upper lip of the draw-head, and the place of engagement between the hook and the rear face of the upper lip of the draw-head is vertical.

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

1. The combination, with the end of a car, of a rock-shaft *n*, an arm *m*, having a boss at its butt *a'* round the rock-shaft, the curved periphery of which boss is partly cut away and flattened, as shown at *m'*, and a spring, all operating together, substantially as and for the purpose described.

2. The combination of the draw-bar and the draw-head B, having the incline *b²* upon the front face of the rear part of the hook-cavity, in combination with the hook K, provided with the forwardly-presented convexity *k²*, and the backwardly-sloping incline *k'*, which hook is combined with the draw-head by a slotted connection at the rear end of its horizontal arm, substantially as and for the purpose described.

3. The combination of a draw-head B, provided in its hook-cavity with the backwardly-sloping incline *b²* in the rear of the hook-cavity and *b'* in the front of the hook-cavity with the hook K, provided with the counterpart inclines to engage said inclines in the draw-head, and with the convexity *k²*, and increasing slope below the same, and having a slotted connection between the horizontal arm of said hook and the draw-head, substantially as and for the purposes described.

JOSIAH H. BROWNE.

In presence of—

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H. E. JACKSON.