

(No Model.)

3 Sheets—Sheet 1.

W. S. BROOKS & T. M. McDONOUGH.
CAR COUPLING.

No. 514,587.

Patented Feb. 13, 1894.

Fig. 1.

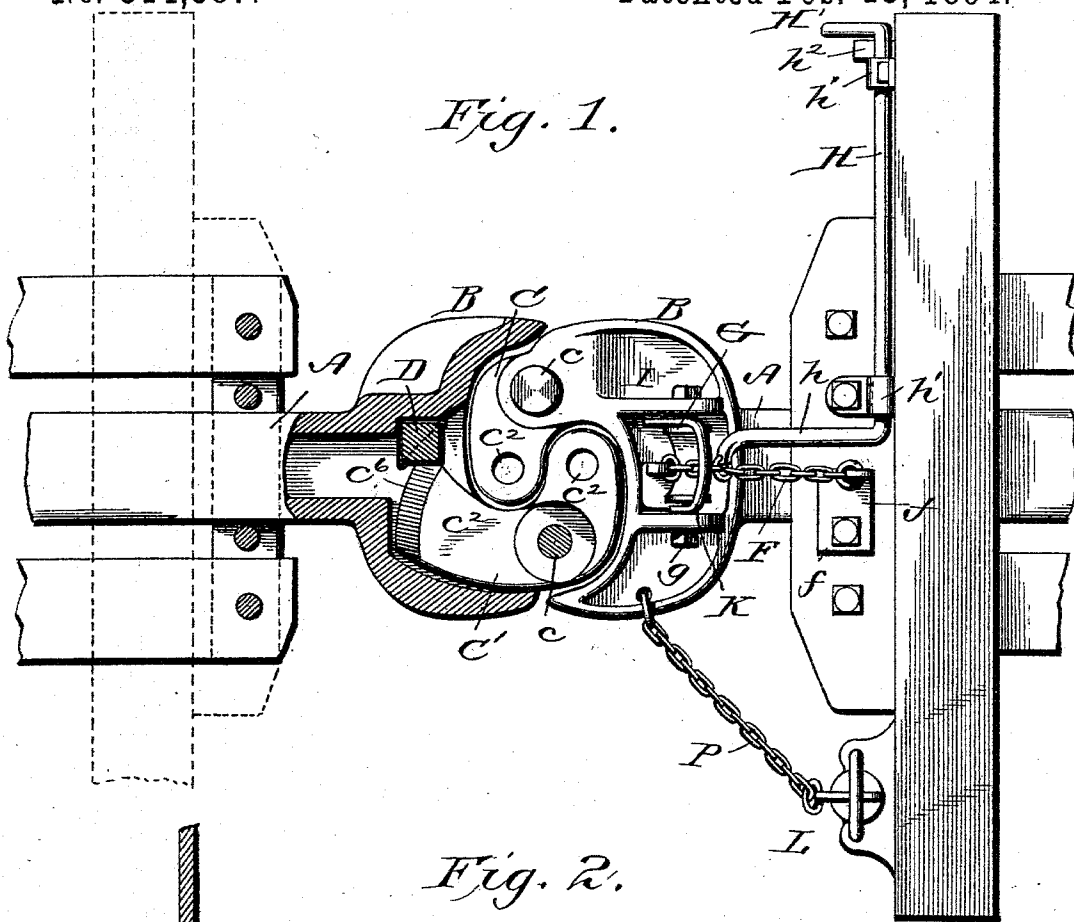
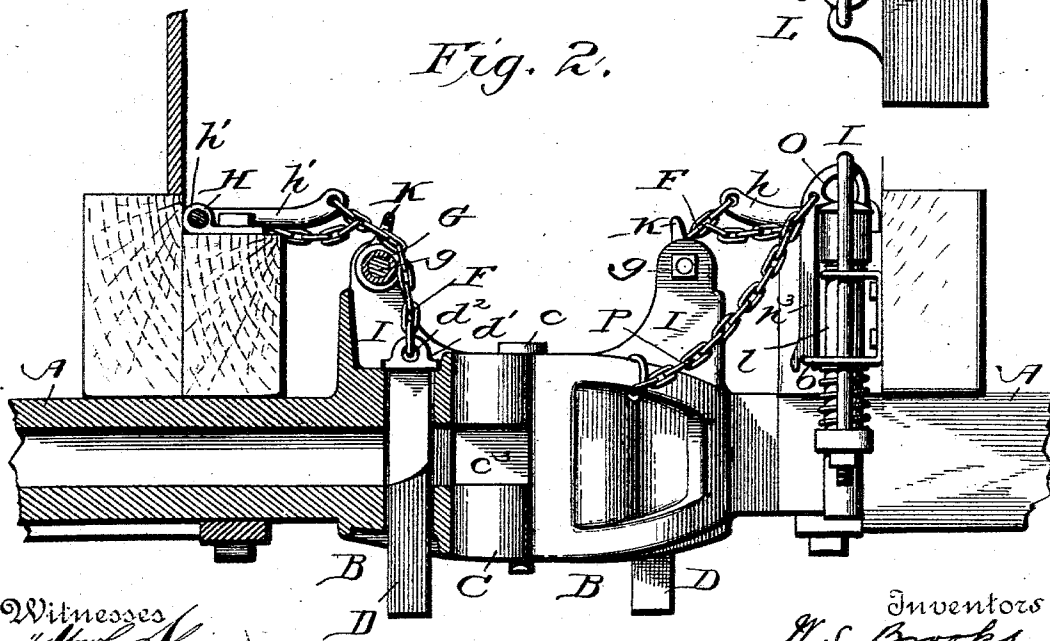


Fig. 2.



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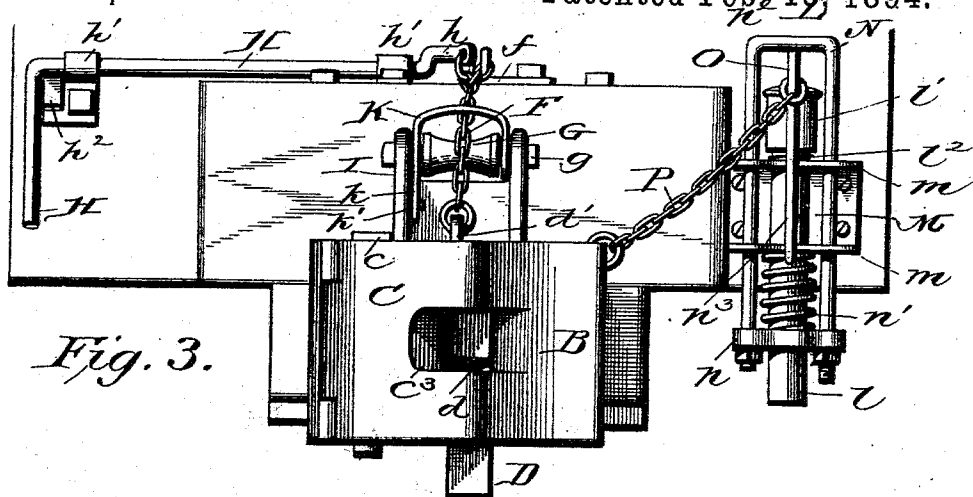
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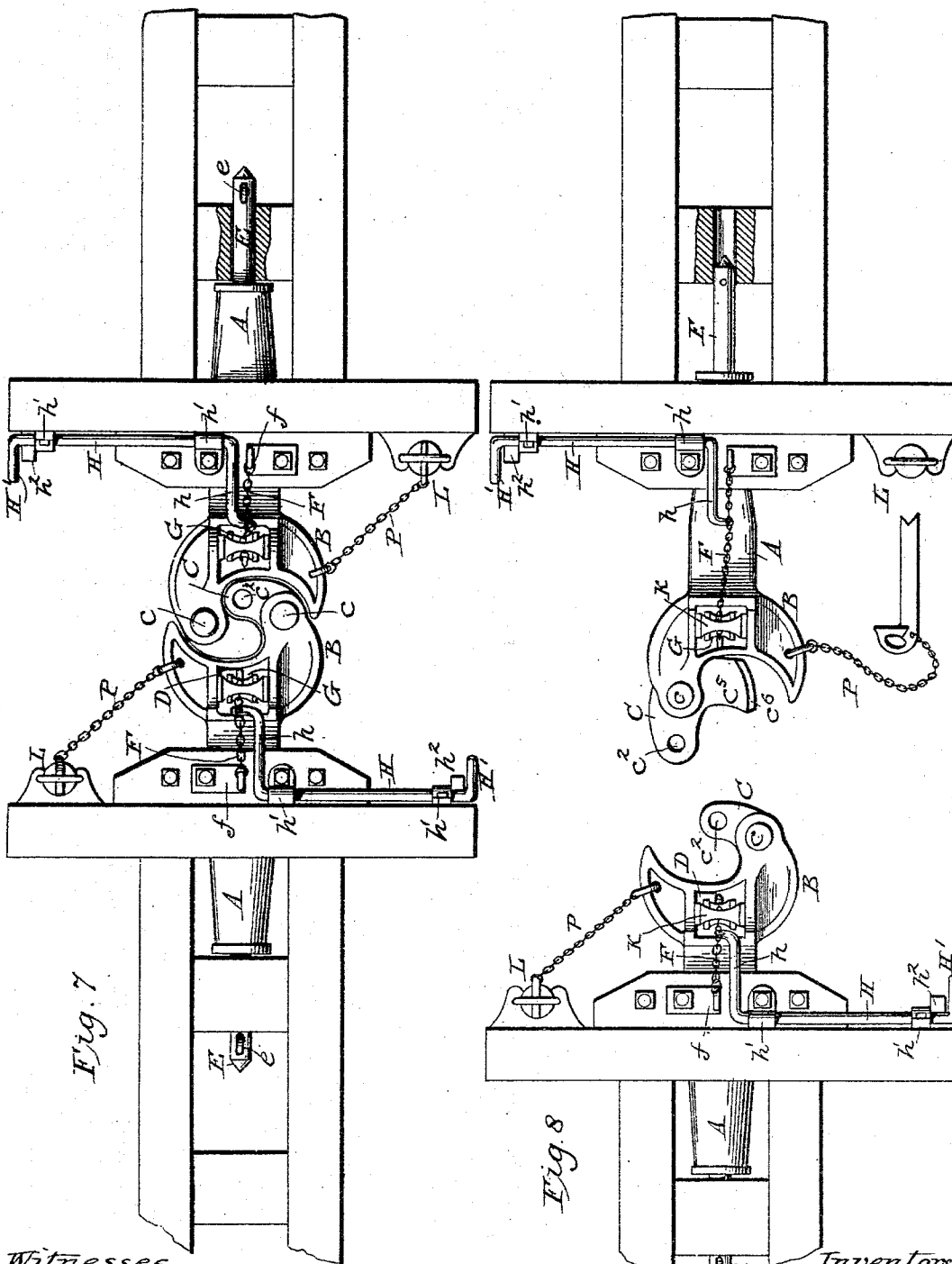
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UNITED STATES PATENT OFFICE.

WRILEY S. BROOKS AND THOMAS M. McDONOUGH, OF MONTGOMERY,
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CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 514,587, dated February 13, 1894.

Application filed May 31, 1893. Serial No. 476,161. (No model.)

To all whom it may concern:

Be it known that we, WRILEY S. BROOKS and THOMAS M. McDONOUGH, citizens of the United States, residing at Montgomery, in the county of Montgomery and State of Alabama, have invented certain new and useful Improvements in Car-Couplers, of which the following is a specification.

Our invention relates particularly to that class of car-couplers known as twin-jaw couplers, in which swinging knuckles are connected with jaws or coupler heads, in turn connected with draw bars. In this class of couplers, the jaws are usually connected with tail pins provided at their inner ends with cross pins or keys, which hold them in place. Heretofore, when the key or tail pin has broken, the coupler has often separated from the car and fallen on the ground, often being injured and causing unnecessary delays.

According to our invention, we provide improved mechanism whereby when the tail pin or key breaks, the knuckle is released and the coupling opened automatically, the jaw and parts connected therewith being held in place on the car on which they are supported. We also provide an alarm which is sounded whenever the tail pin is broken, and when the coupler is moved out of its normal position by reason of such breakage of the tail pin.

Our invention also involves an improved form of pin and knuckle and improved devices for operating the pin.

In the accompanying drawings illustrating our invention, Figure 1 is a plan view partly in section of two coupler members coupled, with the pin operating mechanism and alarm devices attached. Fig. 2 is a view, partly in section and partly in side elevation, of our improvements. Fig. 3 is an end elevation thereof. Fig. 4 is a view on an enlarged scale, partly in elevation and partly in section, of our improved alarm. Fig. 5 is a perspective view of one of our improved knuckles. Fig. 6 is a perspective view of our improved coupling pin. Fig. 7 is a plan view, partly in section, of our improved coupling showing how the tail pins are secured to the cars. Fig. 8 is a similar view showing how when the tail pin or key is broken, the cars are automatically uncoupled, and the coupler

is prevented from falling or separating entirely from the car.

The draw bar A, is provided with an enlarged head or jaw B, in which is pivoted a knuckle C, by means of a pivot pin c. The jaw is in general outlines of usual construction, but is suitably modified to adapt itself to the improved form of knuckle which we employ, and which is shown in Fig. 5. This knuckle has a coupling portion c' adapted to engage with a similar coupling portion on another coupler, and it is provided with perforations c², as usual, and with a slot or recess c³, in order that it may be coupled to a car having the ordinary link and pin coupling. The pivot pin c extends through a vertical opening c⁴, in the central part of the knuckle, and from this central portion projects a wing c⁵, which carries a tapered or inclined flange c⁶, which is adapted to engage with and lift the coupling pin.

The coupling pin D, shown in Fig. 6, is preferably rectangular or square in cross section at its upper end, but is cut away from the point d to its lower end, the lower portion of the pin being preferably triangular in cross section. The upper wall of the cut-away portion is preferably inclined slightly, so that the inclined flange c⁶ on the knuckle may most efficiently operate on the pin to lift it at the proper time.

The draw bar is provided with a tail pin E, as shown in Fig. 7, which is held in place by a cross pin or key e. These parts of the coupler are of usual well known construction. The pin is formed on its upper end with a projection d', having a perforation d² to which is connected a chain F, which extends over a pulley or roller G, and is connected with the arm h, of an operating lever H, which extends along the front of the car and is supported in bearings h'. The outer end of the lever, next to the side of the car, is provided with a handle H'. The lever has a slight sliding movement toward and from the center of the car, and when in one position may be held in such manner as to hold the pin in an elevated position by means of a stop or rest h².

The roller G, is mounted and is free to turn on a bolt g, secured to the uprights I, on

top of the coupler head. These uprights may be either formed on the head or may be secured thereto. They are so located that the front of the pulley is in about the same vertical plane as the coupler pin, so that the chain pulls vertically on the pin and operates it easily.

In order to hold the chain in place, I provide a guide or shield K, which, as shown, consists of a metal bail arranged over the pulley and slightly in front of its axis, and having downwardly projecting arms through which the pin *g* extends. An arm *k* extending below the axis of the pulley engages with a stop *k'* which holds the guide in place and prevents its rotation.

By the organization thus described, the pin may be raised and lowered by an operator by means of the handle H', without going between the cars. When one of the couplers is open, as shown in Fig. 8, the cars will automatically couple when they come together. When the knuckle is in the position shown at the right-hand side of Fig. 8, the pin will be in its lowermost position, but as the knuckle swings inwardly, the inclined flange *c'* engages with the pin at *d*, and the pin is automatically raised and allows the knuckle to completely close. When it has reached its innermost position, the pin falls into position in front of the wing *c'*, as shown in Fig. 1, and the knuckle is locked. The connection is a secure one, and the couplers will automatically engage, no matter how far open the knuckle may be, or however sudden and sharp may be the blow. The coupling devices will not get out of order by ordinary wear, and there is not so much danger of the mechanism's breaking, as there is in some classes of couplers, because the pin is not subjected to any great shock when the knuckle is being moved inwardly, but is immediately raised and then immediately falls as soon as the knuckle is moved into position. The strain which the pin receives after the knuckle is moved in is a lateral one, and as the pin is braced by the sides of its seat in the head, there is no liability of shearing or breaking the pin when in use.

It sometimes happens in this class of couplers, that the securing pin *e*, or the tail pin E, will break, and heretofore when this has happened, the entire draw bar has been withdrawn longitudinally from the car and dropped on the ground. By our improvements, this is avoided, because when the key or locking pin *e* or the tail pin E, breaks, the draw bar will first move out into the position shown on the right-hand side of Fig. 8. In so moving, the chain F, is placed under tension, and the pin is drawn up, thus unlocking the knuckle which automatically opens, and the cars are uncoupled. The longitudinal strain on the draw head being thus relieved, it will not move further, but will remain in the position shown in Fig. 8.

It will be observed that the roller G, is so

located that the chain will pull vertically on the pin D, whenever it is put under tension. Were the rollers not thus located, the strain might be at such an angle as to have no effect on the pin when the draw head is moved longitudinally in the manner above indicated.

In order that the attendant may be notified that there has been an accident to the couplers, we provide an alarm L, which, as shown, consists of a tube or barrel *l* at the upper end of which is arranged a cap *l'* held in the position slightly elevated above the upper end of the tube by a spring *l''*. The barrel is secured to a supporting bracket M, having flanges *m*, through which extends a yoke N, which carries at its lower end a cross head *n*, between which and the bracket M is interposed a spring *n'*. The arrangement is such that the yoke is pressed downwardly by the spring and its upper end or top piece *n''* bears on the cap *l'*.

In order to hold the yoke in an elevated position, we interpose between the cap and the yoke a jack O, the upper end of which bears on the under side of the yoke and the lower end rests on the cap. The downwardly projecting arm *n''* rests on a projection *o* on the bracket M. The jack is connected by a chain P with the draw head. Between the cap and the barrel we interpose a percussion cap, torpedo or the like, which, when exploded, will give the desired signal. Normally the parts are in the position shown in Fig. 2. When the draw bar is drawn away from the car by reason of the breakage of the tail pin or the like, the jack will be drawn out from engagement with the yoke and cap as indicated in Fig. 8. The yoke will descend and cause the cap to explode the torpedo. Not only, therefore, have we provided an efficient form of twin automatic coupler, but we have provided means for preventing the draw head from separating from the car and have provided means for notifying the attendant that an accident has happened.

When the yoke is in its lowermost position, as shown in Fig. 4, it may be raised into the position shown in Fig. 3, and in dotted lines in Fig. 4, by means of the jack R. This is shown as consisting of a hook *r*, adapted to engage with the bracket M, a hook *r'* adapted to engage with the yoke at its lower end and an operating lever *r''*. This lever is pivoted at *r'''* to the lower end of the hook *r*, and has a projecting arm *r''''* pivoted at *r'''''* to the end of the hook *r'*. When the lever is lifted, as shown in Fig. 4, it is in position to engage with the bracket, and with the yoke without lifting it, but by turning the lever down to the position shown in dotted lines in Fig. 4, the two hooks of the jack are drawn toward each other and the yoke is elevated. When thus elevated, the jack O may be inserted, as indicated in Fig. 3. The end of the chain F, is preferably secured to a plate *f*, securely bolted to the frame or dead wood of the car, and the operating lever is connected with the chain be-

tween its point of attachment *f* and its attachment to the pin.

We claim as our invention—

1. The combination of the coupling jaw, the swinging knuckle, the vertically moving pin, the operating chain, attached to the pin and to the car-body, in rear of the pin a roller mounted in bearings over the coupling pin over which the chain extends, and means for operating the chain.

2. The combination of the coupling jaw, the swinging knuckle, the vertically moving pin, a chain connected with the pin and with an operating lever, mounted on the car-body, in rear of the pin and a guide mounted in bearings directly over the pin.

3. The combination of the coupling jaw and knuckle, the vertically moving pin, the chain for operating it, the roller mounted in bearings directly over the chain, the shield or guide for holding the chain in position on the roller, and means for operating the chain.

4. The combination, with the coupler-head, of a detonating or audible alarm, mounted on

the car-body, and a chain connecting the coupler-head with the alarm, the organization being such that the alarm is automatically operated by the longitudinal movement of the head, when the tail-pin thereof is broken.

5. The combination with the coupler-head of the alarm comprising a barrel, a cap, and a spring-actuated cross head, a jack for holding the cross head elevated and connections between the jack and the coupler head.

6. The combination with the draw bar of a tail pin, means for holding the tail pin in position, a coupler jaw, a swinging knuckle, a vertically moving pin, a chain connected with the pin, a guide for the chain over the pin, and means for operating the chain.

In testimony whereof we have hereunto subscribed our names.

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