(No Model.) 3 Sheets—Sheet 1.

A. C. BROWN.

CAR COUPLING.

No. 495,721. Patented Apr. 18, 1893.

FIG. 1.

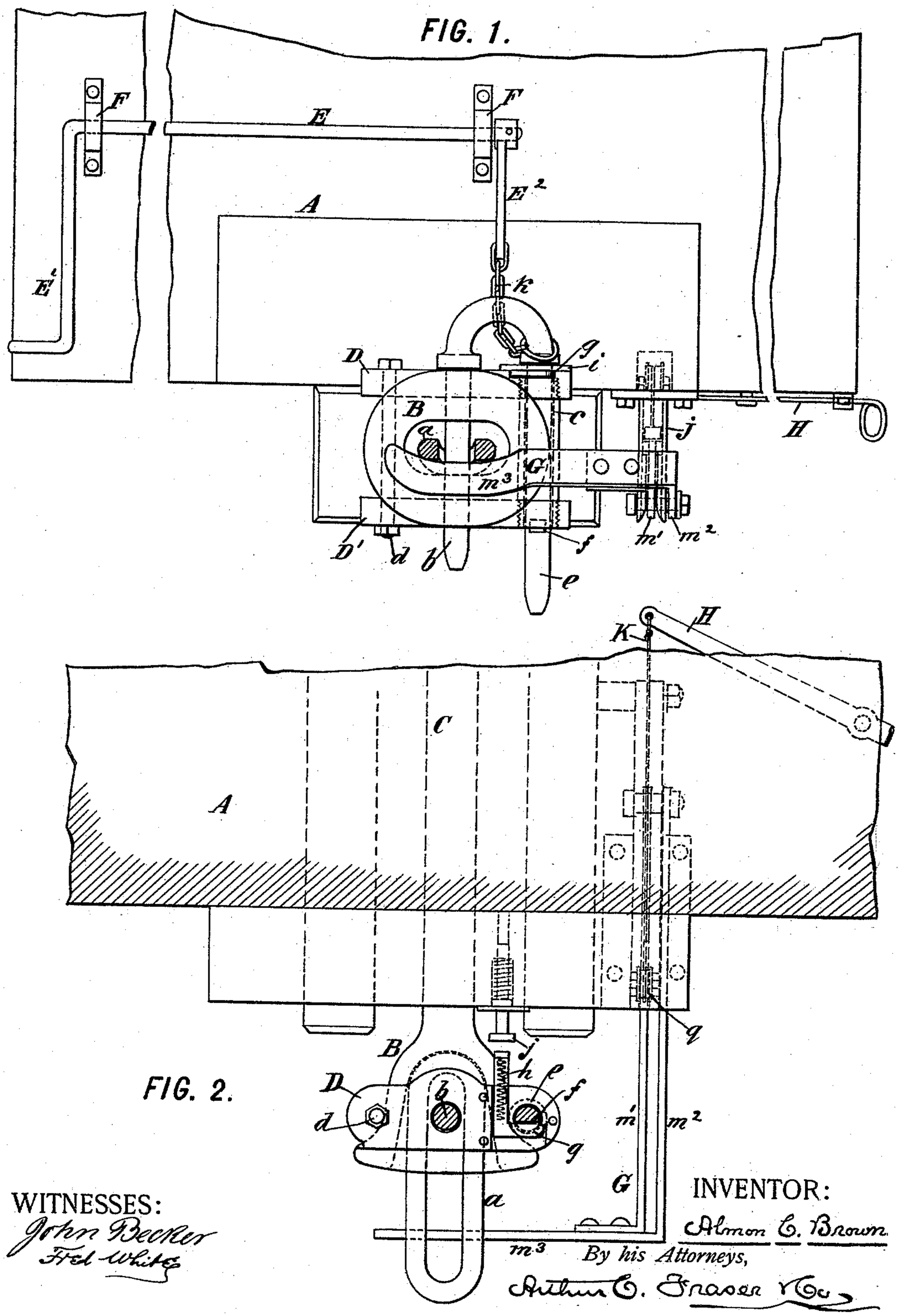

FIG. 2.

WITNESSES:
John Becker
Fred White

INVENTOR:
Almon C. Brown
By his Attorneys,
Arthur C. Fraser & Co

(No Model.)

3 Sheets—Sheet 2.

A. C. BROWN.

CAR COUPLING.

No. 495,721. Patented Apr. 18, 1893.

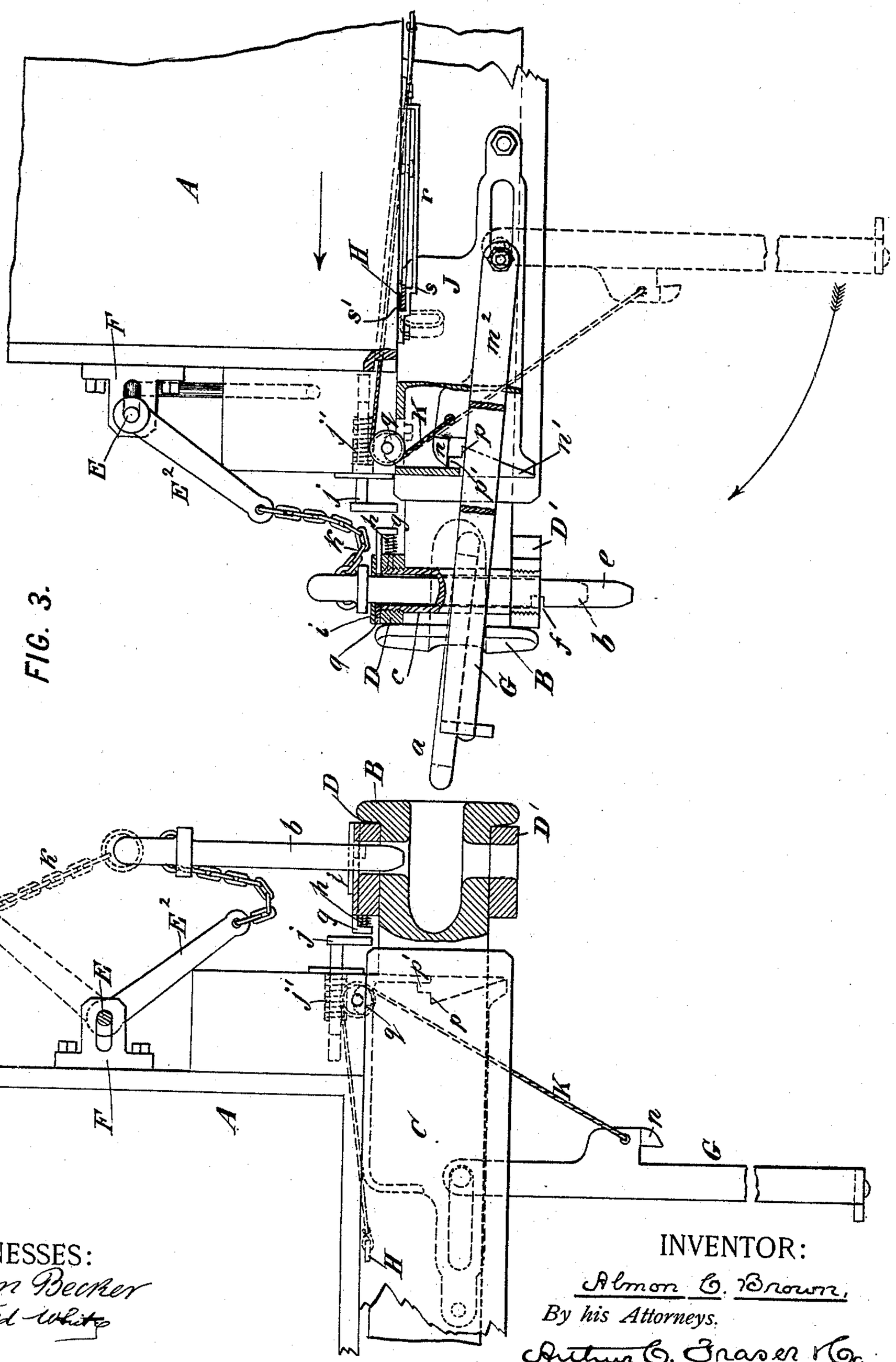

FIG. 3.

WITNESSES:
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INVENTOR:
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Arthur C. Fraser & Co.

(No Model.)

3 Sheets—Sheet 3.

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CAR COUPLING.

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FIG. 4.

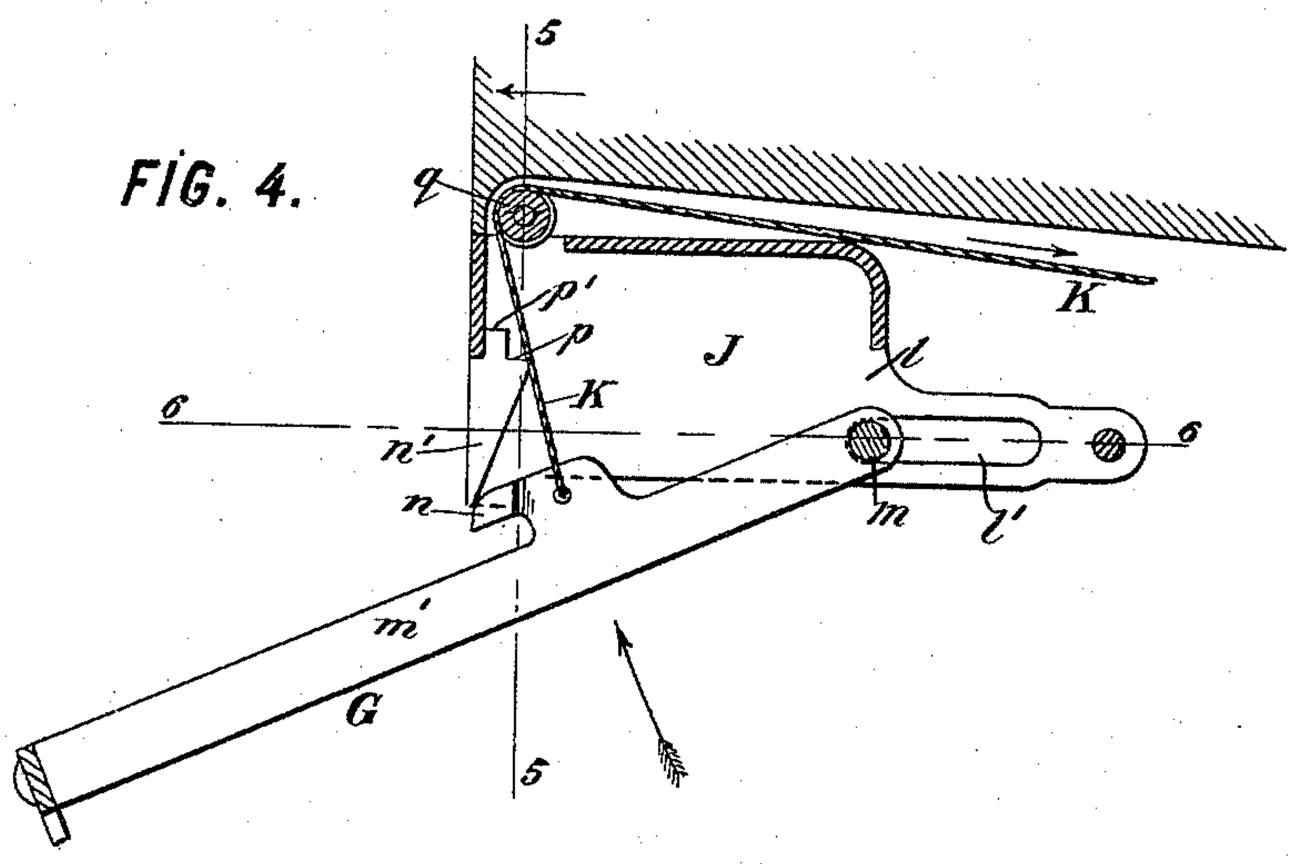


FIG. 5.

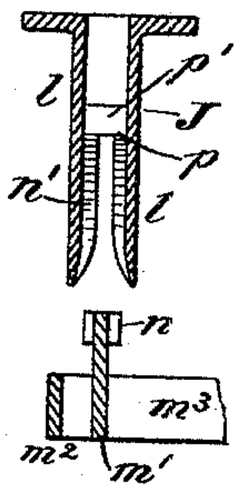


FIG. 6.

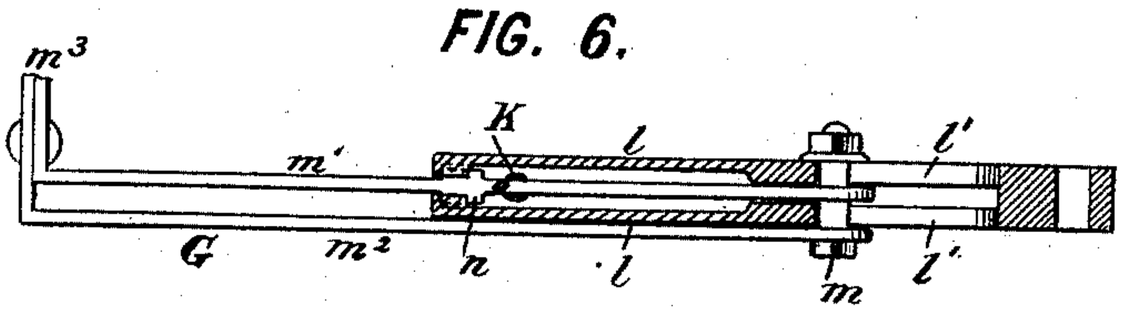


FIG. 7.

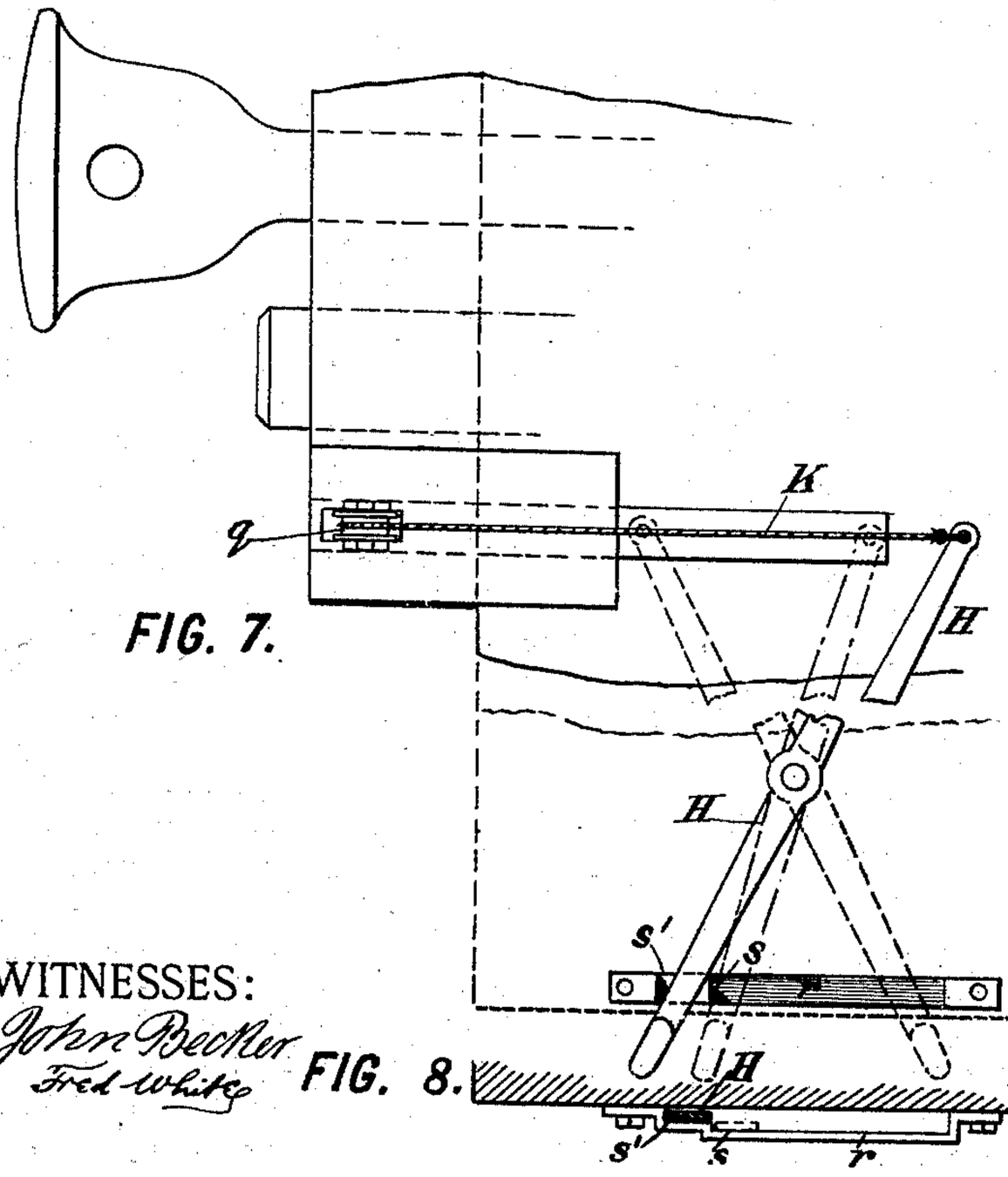
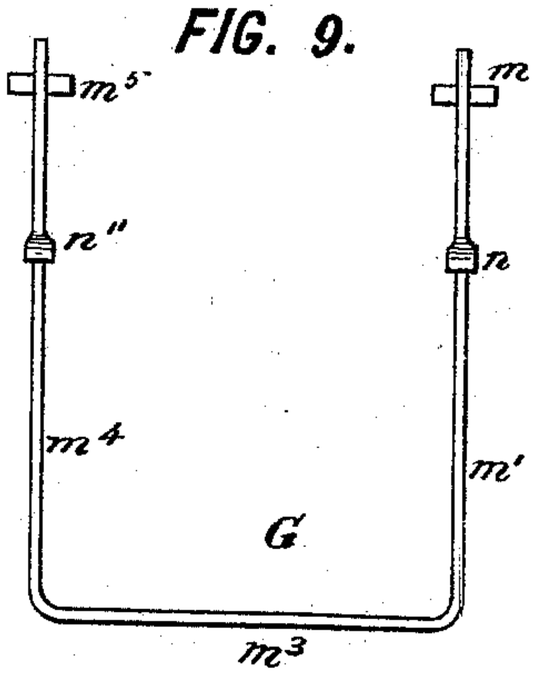


FIG. 8.

FIG. 9.



WITNESSES:

John Becker

Fred White

INVENTOR:

Almon C. Brown,

By his Attorneys,

Arthur C. Fraser & Co.

UNITED STATES PATENT OFFICE.

ALMON C. BROWN, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO EDWARD A. SUMNER, OF NEW YORK, N. Y.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 495,721, dated April 18, 1893.

Application filed January 31, 1891. Serial No. 379,783. (No model.)

To all whom it may concern:

Be it known that I, ALMON C. BROWN, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Car-Coupling Attachments, of which the following is a specification.

The object of this invention is to provide a simple and efficient attachment for ordinary link and pin car couplers by which such couplers shall be rendered automatic.

The invention provides means for upholding the pin, and for lifting and upholding the link, and for automatically releasing both pin and link as the coupler heads come together.

The object of the invention is to provide such a construction for attachments of this class as will enable the setting up of the pin and link ready for coupling to be performed from the side of the car without going between the cars, and with the minimum expenditure of time and effort.

To these ends I provide a guiding frame which fastens onto the drawhead and serves to guide the pin, having an automatically engaging bolt or latch for holding the latter elevated; and for lifting and upholding the link I provide a swinging arm pivoted in suitable position behind the drawhead, an operating handle extending to the side of the car, and intervening means for lifting the arm with interengaging sustaining shoulders connected respectively to the swinging arm and to some fixed part, so that the arm when lifted will be upheld by the interengagement of these shoulders. The height to which the arm is lifted is determined by the extent to which the operating handle is moved, which in turn is limited by suitable graduated stops.

Figure 1 of the accompanying drawings is a front elevation of a coupler and portion of the end of a car provided with my invention. Fig. 2 is a horizontal section of the end portion of a car showing the coupler and attachment in plan, the pin being in section. Fig. 3 is a side elevation of two couplers in the act of coming together for automatic coupling, the one at the left being in vertical section, and the one at the right partly broken away in vertical section. Fig. 4 is a fragmentary side elevation showing the link lifter and its lifting and sustaining part. Fig. 5 is a vertical section thereof on the line 5—5 in Fig. 4. Fig. 6 is a horizontal section thereof on the line 6—6 in Fig. 4. Fig. 7 is a fragmentary plan of the end portion of a car showing the operating lever for communicating motion to the link lifter. Fig. 8, shows the guide strap of said operating lever. Fig. 9, shows a modified form of the link-lifter.

Let A designate the car body, B the coupler head formed as usual on the front end of a draw-bar C, and provided as usual with a link *a* and pin *b*.

My invention in nowise changes the ordinary construction of link and pin coupler, it being designed as an attachment to such couplers to convert them into automatic couplers.

My attachment involves two portions, the first of which pertains to the guiding and supporting of the pin, while the second has reference to the lifting and upholding of the link.

The pin-guiding attachment is constructed of two plates D and D′ applied against the upper and lower sides of the drawhead respectively, and connected together by clamping bolts or screws, preferably by a piece of gas-pipe *c* at one side of the head, and a bolt or threaded rod *d* at the other. The pipe *c* is formed with right and left screwthreads at its opposite ends which screw into threaded holes in the plates D D′ so as to draw these plates firmly together and in connection with the screwing-up bolt *d* to clamp them tightly upon the head. The pin is made of inverted U-shape, the one leg *b* entering the coupler head to engage the link in the usual manner, while the other leg *e* passes through the gas-pipe *c* which forms a guide for it. This leg has a notch *f* in its front side which when lifted is engaged by a bolt or latch *g* consisting of a plate mounted to slide on top of the plate D, and pressed rearwardly by a spring *h*, shown best in Fig. 3. This bolt is covered over to protect it from wet and ice, by a plate *i*. When the cars come together, the backward movement of the coupler head against the draw-bar spring carries the bolt *g* back, bringing its rear end into contact with a presser-bar *j* seated against a spring *j′*, as shown

in Fig. 3, this being preferably held in the bolster of the car body over the draw-bar. The spring j' being stronger than the spring h, this backward thrust displaces the bolt g relatively to the pin e, so that its forward portion is disengaged from the notch f, and the pin drops.

For setting the pin up ready to couple automatically I provide a shaft E extending along the end of the car from the middle thereof to one side, hung in suitable bearings thereon, and formed at the side of the car with a crank-arm E′ by which to turn it, and provided at the middle of the car with an arm E^2 connected by a chain k to the pin. In order to compensate for the varying positions of the drawhead and enable the pin to be pulled directly upward notwithstanding these varying positions, I hang the shaft E in slotted or elongated bearings F F, so that it may slide in the slots thereof toward or from the car in order to bring the end of the arm E^2 as nearly as possible over the top of the pin.

The construction as thus far described somewhat resembles the construction of the attachment for guiding and upholding the pin in United States Patent No. 437,644, granted September 30, 1890, to A. H. S. Davis and myself, and is an improvement thereon. My improved construction differs therefrom in the use of the tubular bolt c which serves the double function of fastening together the plates D D′ and of forming a smooth and continuous guide for the leg e of the pin; and the spring-seated presser-bar j for elastically disengaging the bolt g, and in the shaft E and its connected parts for lifting the pin.

That part of my invention which relates to the attachment for upholding the link to properly guide it into the opposite coupler will now be described. It consists generally of a swinging arm G pivoted to the car body with its outer end extending transversely under the link, with an operating lever H extending to the side of the car, by the movement of which to throw up the lifting arm G, and means for upholding this arm at different heights when it has been thrown up by the operating lever. The lifting arm G is pivoted in a standard or frame J, which is fastened underneath the car body to one side of the usual beams for guiding the drawhead. This standard is constructed preferably with two longitudinal walls $l\ l$, see Fig. 5, through which are formed horizontal slots l', shown best in Figs. 4 and 6. The rear end of the arm G has a bolt or stud m fixed in it which passes through these slots so that the arm is pivotally connected to the slots. The arm is shown of L-shape, consisting of two side bars m' m^2, and a front bar m^3, the latter projecting under and adapted to support the link. The side bar m' passes between the walls $l\ l$ of the standard J, and is formed with a forwardly projecting hook n made preferably wider and thicker than the remainder of the bar, as best shown in Figs. 4 and 5. As the arm G is thrown up, this hook moves against the inclined end wall n' of the standard, by which the hook and consequently the arm G is caused to travel backwardly in the slot l' until the hook passes over a shoulder or ledge p, whereupon it moves forward and may rest thereon, thereby upholding the arm G, or by raising it higher, the hook may be brought over and caused to rest upon an upper shoulder p', thereby upholding the arm G at a higher elevation, as clearly shown in Fig. 3. There may be two or more such shoulders.

The arm G may be connected to the operating lever H through any suitable mechanical connection. The one shown consists of a wire rope or chain K attached at one end to the bar m' of the arm, passing thence upward within the standard J and over a pulley q, and thence backward and attached to the inner arm of the lever H. This lever is pivoted to the under side of the car body and projects at its handle end slightly beyond the side of the car, as shown best in Fig. 7. Its handle end is guided by a strap r applied to the side of the car body, as best shown in Fig. 8.

It is often necessary to lift the link to different heights in order to insure that it shall properly enter the opposite coupler, which may stand either on a level with, or higher than, or lower than the coupler carrying the link. If it stands lower than the latter, the link will usually not require to be lifted at all; but if it stands on a level with or higher than the link-carrying coupler head, the link will require to be lifted to a less or greater extent. By throwing up the lever G until its hook n is supported by the shoulder p, the link will be held approximately level, and by throwing it so that the hook rests on the shoulder p', the link will be tilted upwardly enough to enter a higher coupler. The extent to which the arm G is thus lifted obviously depends upon the extent of angular movement of the operating lever H. It is desirable that some means be provided for definitely determining this extent of movement so that the operator can quickly and by a single push or jerk of the operating lever H, bring the link to the height that he desires. To this end I provide graduated stops for determining the movement of the lever H. These stops are formed by preference on a guiding strap r, and are lettered s and s' respectively in Fig. 8. By pressing downwardly on the lever H, while imparting a thrust thereto, it will be deflected sufficiently to bring it against the strap r and in line with the stop s, and will be stopped thereby in the position shown by the dotted lines in Figs. 7 and 8, thereby bringing the lifting arm G to its lower position with its hook resting on the ledge p. But if it is desired to lift the link to its highest angle, the operator will press upwardly on the lever H while thrusting it, thereby sliding it along the bottom of the car body and bringing it into line with the stop s', so that it has a longer movement, being finally arrested in the

position shown in full lines in Figs. 7 and 8. This longer movement results in lifting the arm G higher so that its hook *n* rests on the ledge *p'*. The position of the pulley *q* is such relatively to the point of attachment of the wire rope or chain to the arm G, that its pull beginning when the arm is dropped down to the position shown in dotted lines in Fig. 3, tends constantly to pull the arm forward, until its hook *n* strikes the incline *n'* on the standard in the position shown in Fig. 4. The further pull holds it against this incline, while the incline itself thrusts the arm backward, causing its pivotal stud *m* to slide backwardly in the slots *l'*, until the hook *n* passes beyond the incline, when by reason of the oblique position of the rope or chain, it pulls both forwardly and upwardly on the arm, and the latter immediately moves forward, thereby sliding the hook *n* over the ledge *p* or *p'* as the case may be. In practice, a sudden quick thrust or jerk is imparted to the operating lever H by which the arm G is brought instantaneously to the proper position, where it remains with its hook *n* firmly held upon the supporting shoulder by the weight of the arm and link, and without liability of being jarred off by any travel the car may make prior to the coupling operation. In coupling, when the two couplers come together, the opposite one, immediately after the link enters it, strikes the front arm m^3 of the link-lifter and forces the latter back, its stud *m* sliding freely in the slots *l'*. As soon as it has been pushed back far enough to enable its hook *n* to clear the shoulder *p*, it will ordinarily fall to the position shown in dotted lines in Fig. 3, where it is out of the way. Occasionally, however, the movement may be so quick as to catch or nip the link-lifter between the two coupler heads as they come together, but no damage can result from this since the slots *l'* are made sufficiently long to permit the link-lifter to move back as far as the extreme movement of the coupler against its buffer springs. The link-lifter will then fall as soon as the couplers separate. As soon as the two couplers come together so that each is pressed back against its buffer springs, this retrograde movement of the coupler carrying the elevated pin will bring its bolt *g* against the presser *j*, thereby displacing it and dropping the pin through the link which has entered the coupler head, whereby the coupling operation is completed.

As shown in Fig. 1, the operating lever E E' for lifting the pin extends from the middle of the end of the car to one side, while the operating lever H for working the link-lifter projects to the opposite side of the car. The opposite end of the car is equipped in like manner, and all the cars being likewise equipped, it follows that when two cars come together, the trainman standing on either side can operate the pin-lifter on one car and the link-lifter on the other without entering between them. By making it a rule in each yard to uncouple always from the same side of the track, say for example, always from the south side if the tracks run east and west, the coupler which carries the link will always oppose itself to a coupler carrying no link, and the pin of which is already elevated.

By my improved attachment the coupling and uncoupling of link and pin couplers are not only made automatic, but the setting of the couplers for automatic coupling is rendered so easy that it can be performed with great rapidity and almost as rapidly as a trainman can run along the side of the train from car to car. As both the operating levers project to the same side of the cars to be coupled, the setting up of the pin and link can be performed both from the same side, and without any necessity of passing between the cars.

My invention is by no means limited to the precise construction shown, as this may be variously modified. For example, the lifting arm G may be of U-shape and pivoted by both legs to the car, instead of being of L-shape as shown and pivoted to the car by only one leg. Also it is unessential to construct it of two bars *m' m²*, as it might be constructed with a single side bar, in which case this should be the bar *m'*, as it is this bar which passes between the walls of the standard J and is furnished with the hook *n*, the bar m^2 being merely to add greater strength. Fig. 9 shows these modifications, the lifter G being of U-shape consisting of a bar m^3 in front and two side bars *m'* and *m''* formed with hooks *n* and *n''* and with pivotal studs *m* and m^5 respectively.

The invention may be otherwise modified in manners of construction, or certain parts thereof may be used without the remaining parts, those features which are essential to my invention being the ones hereinafter defined in the claims.

I make no claim herein to anything claimed in said patent No. 437,644. Said patent shows a link-lifter consisting of a swinging arm movable bodily forward or back, and one or more ledges for upholding it when lifted with which it engages by a forward movement, so that as the cars come together it is displaced backwardly and thereby freed from the ledge so that it falls freely beneath. Said patent, however, shows no means for lifting and thrusting forward the link-lifter which can be operated from the side of the car, it being so far as said patent shows necessary for the trainman to step between the cars and move the link-lifter by hand. My present invention provides mechanical means for operating the link-lifter, the distinguishing feature of such means being that it engages the lifter by imparting a thrust to it in a diagonally upward and forward direction, so that it not only lifts it, but at the same time imparts to it a tendency to move bodily forward, and thereby to move into engagement with the upholding ledge. Although I have shown this

operating device as consisting in part of a wire rope or chain engaging the link-lifter so as to exert a diagonal pull against it, the use of such rope or chain or other flexible connection is not material, as any other mechanical agent for engaging the link-lifter, by means of which may be imparted to it the diagonal thrust that is essential to the accomplishment of the result contemplated by my invention, may be employed in lieu of the means shown.

The number of supporting ledges p p' will depend upon the numper of angular positions to which it may be desirable to lift the link; for example, if four different elevations for the link are desirable, there will be four correspondingly arranged ledges p p', as shown.

I claim as my invention the following-defined novel features or improvements, substantially as hereinbefore specified, namely:

1. The combination with a car-coupler of a link-lifter, consisting of a swinging arm movable bodily forward or back, one or more ledges for upholding it, and an operating device engaging said arm and imparting a thrust to it in an upward and a forward direction, whereby it is lifted and when at the requisite height given a tendency to move bodily forward to bring it into engagement with the upholding ledge.

2. The combination with a car-coupler of a link-lifter, consisting of a swinging arm movable bodily forward or back, one or more ledges for upholding it, and an operating device engaging said arm and imparting a thrust to it in a diagonally upward and forward direction, whereby it is lifted and at the same time is given a tendency to move bodily forward to bring it into engagement with the upholding ledge.

3. The combination of a link-lifter consisting of a swinging arm movable bodily forward and back and formed with a projection or hook, means for upholding it consisting of one or more stationary ledges or shoulders, with a guiding incline leading thereto adapted to engage and displace said projection during the upward movement of the arm, and an operating device engaging said arm and imparting a thrust to it in a diagonally upward and forward direction, whereby it is lifted and thrust against said incline, and on passing the latter is given a tendency to move bodily forward to bring its projection into engagement with the upholding ledge.

4. The combination of a standard J formed with a ledge p and an incline n', a link-lifter G consisting of a swinging arm movable bodily forward or back and having an upholding projection or hook n, and an operating device comprising a wire rope or chain engaging said arm and arranged to exert a pull thereagainst in a diagonally upward and forward direction, whereby in lifting said arm it imparts to it a tendency to move forward to bring its hook into engagement with said ledge.

5. The combination of a standard J formed with vertical side walls thickened to constitute a ledge p and guiding incline n', and formed with horizontal slots l', a link-lifter G consisting of a swinging arm mounted between the slots of the standard and having a pivotal stud working in said slots, and a projection or hook n adapted to engage with said incline and ledge, and an operating device engaging said arm and imparting a thrust to it in a diagonally upward and forward direction.

6. The combination with a car-coupler of a link-lifter, consisting of a swinging arm and means for upholding it consisting of ledges or stops adapted to engage the arm and sustain it at two or more different heights, and an operating device for raising said arm consisting of a lever connected thereto, and stops for limiting the extent of movement of said lever adapted to arrest it in positions to bring the link-lifting arm into engagement with one or another of the upholding ledges respectively.

7. The combination with a car-coupler of a link-lifter, consisting of a swinging arm and means for upholding it consisting of ledges or stops adapted to engage the arm and sustain it at two or more different heights, and an operating device for raising said arm consisting of a lever connected thereto, and a guide for the projecting or handle end of said lever formed with two or more stop shoulders in different paths, whereby in operating the lever it may be thrust into the path of either shoulder and be arrested thereby in position to bring the link-lifter into engagement with the upholding ledge corresponding to said shoulder.

8. The combination with a car-coupler of a link-lifter, consisting of a swinging arm and means for upholding it consisting of ledges or stops adapted to engage the arm and sustain it at two or more different heights, and an operating device for raising said arm consisting of a lever connected thereto movable in a horizontal plane beneath the car body and having its handle end projecting beyond the car body, and a guiding strap r applied to the car body and formed with shoulders s s' for arresting the movement of the lever in different positions corresponding to the different upholding ledges, whereby in operating the lever it may be pressed up or down to bring it into the path of one or other of said shoulders, and the height to which the link shall be lifted and upheld be thereby determined.

9. The combination with a car-coupler, of an attachment consisting of upper and lower plates applied to the coupler head, a threaded tube engaging said plates on one side of the head and adapted to connect them together, a bolt for connecting the plates on the other

side of the head, and a coupling pin having a guiding leg passing through said tube, whereby said tube serves both to connect the plates together and to afford means for guiding said leg.

10. The combination with a coupler head of a bolt or catch for holding the pin elevated, and a spring-seated presser applied to the bolster of the car and arranged behind said bolt to be encountered thereby when the coupler head is driven back, whereby it serves to yieldingly displace the bolt and cause it to disengage and drop the pin.

11. The combination with a car-coupler of an attachment consisting of upper and lower plates fastened to the coupler head, a tube fastened between said plates, and a coupling pin having a guiding leg passing through said tube, whereby the pin is guided in its movement by said tube.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ALMON C. BROWN.

Witnesses:
GEORGE H. FRASER,
ARTHUR C. FRASER.