(No Model.) 2 Sheets—Sheet 1.

# W. R. FINE.

## CAR COUPLING.

No. 448,949. Patented Mar. 24, 1891.

Fig. 1.

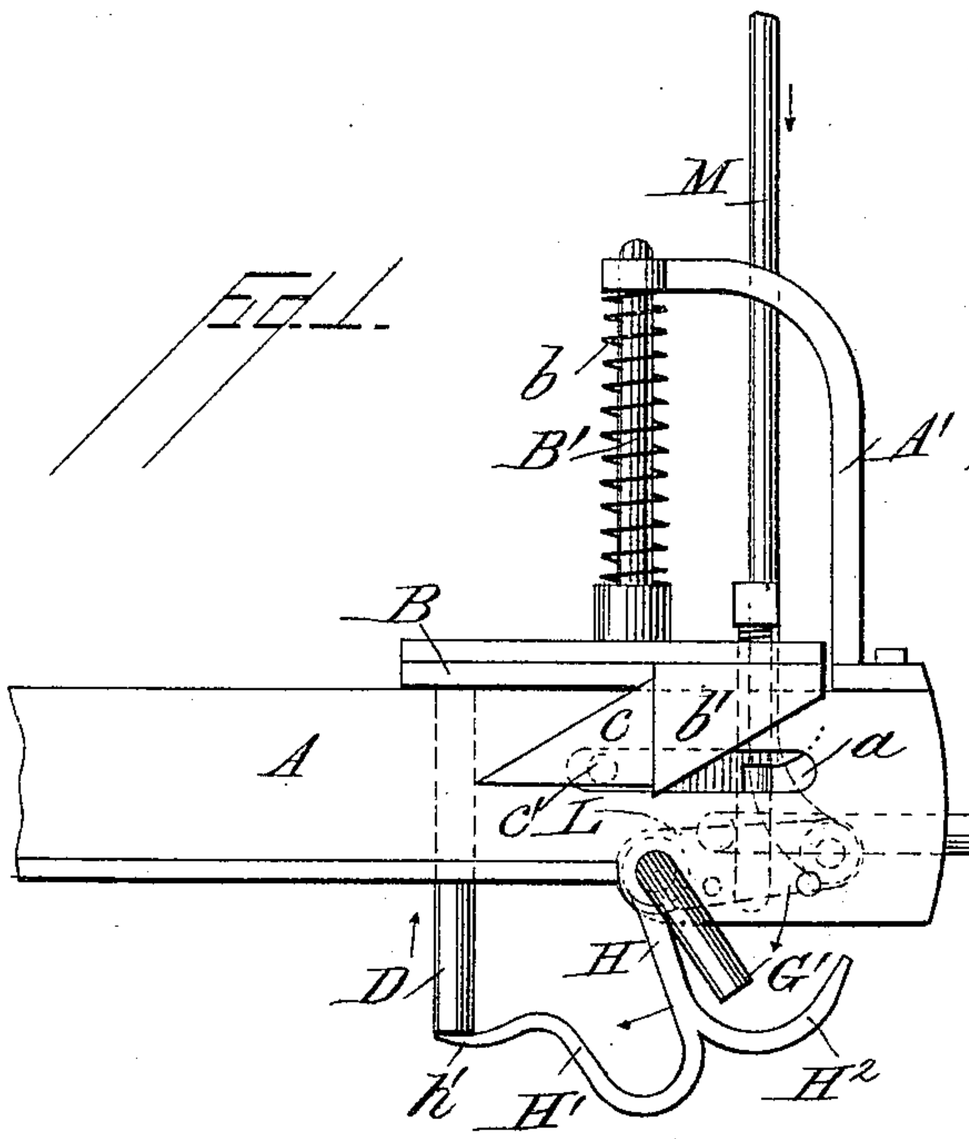



Fig. 2.

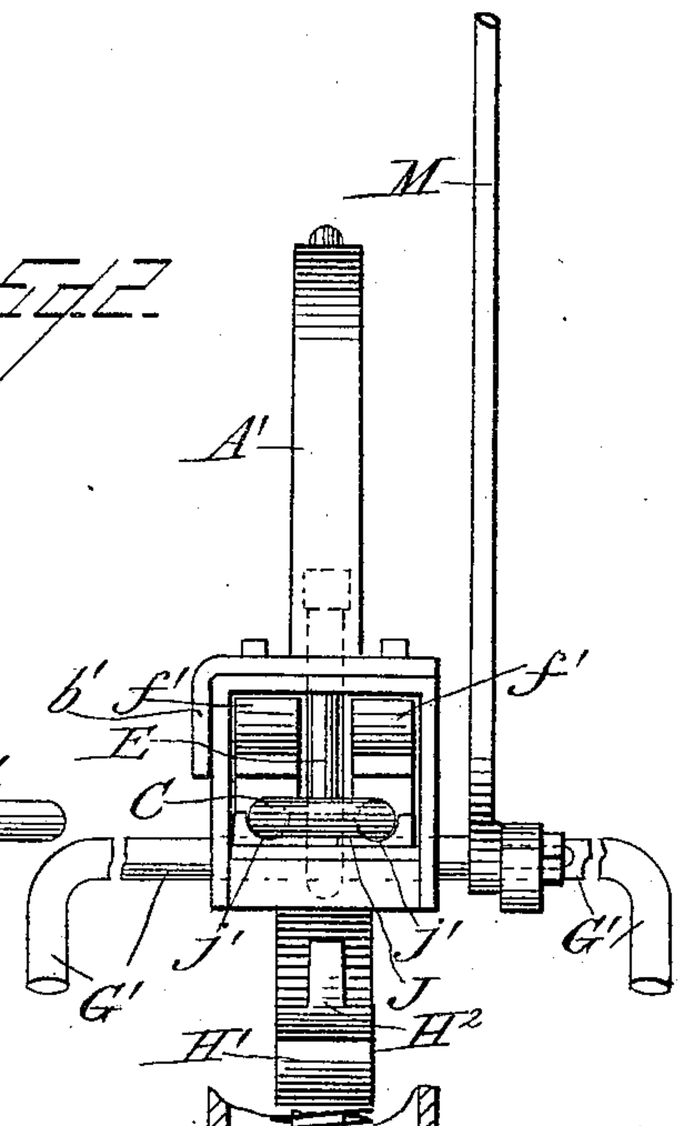



Fig. 3.

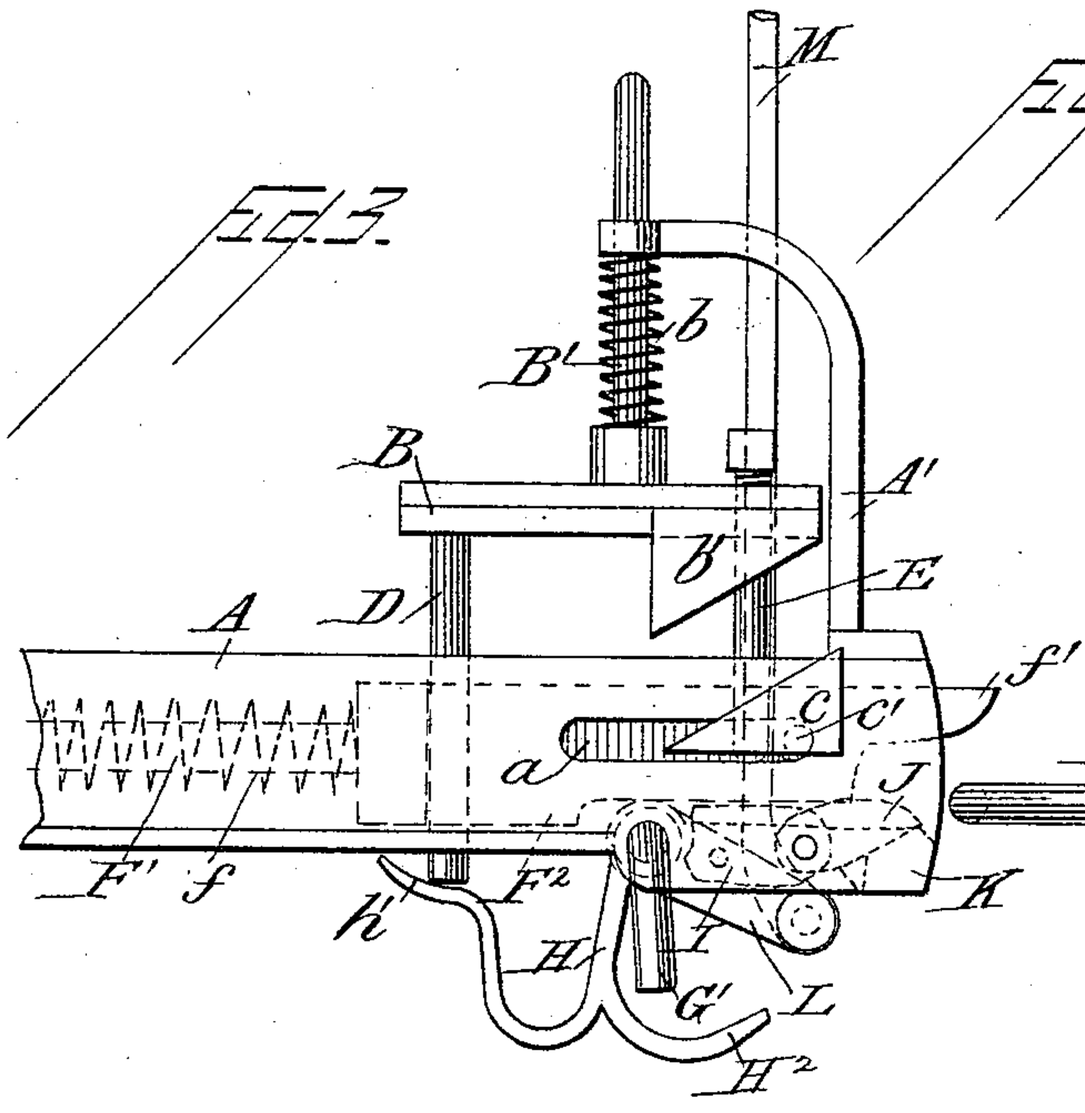
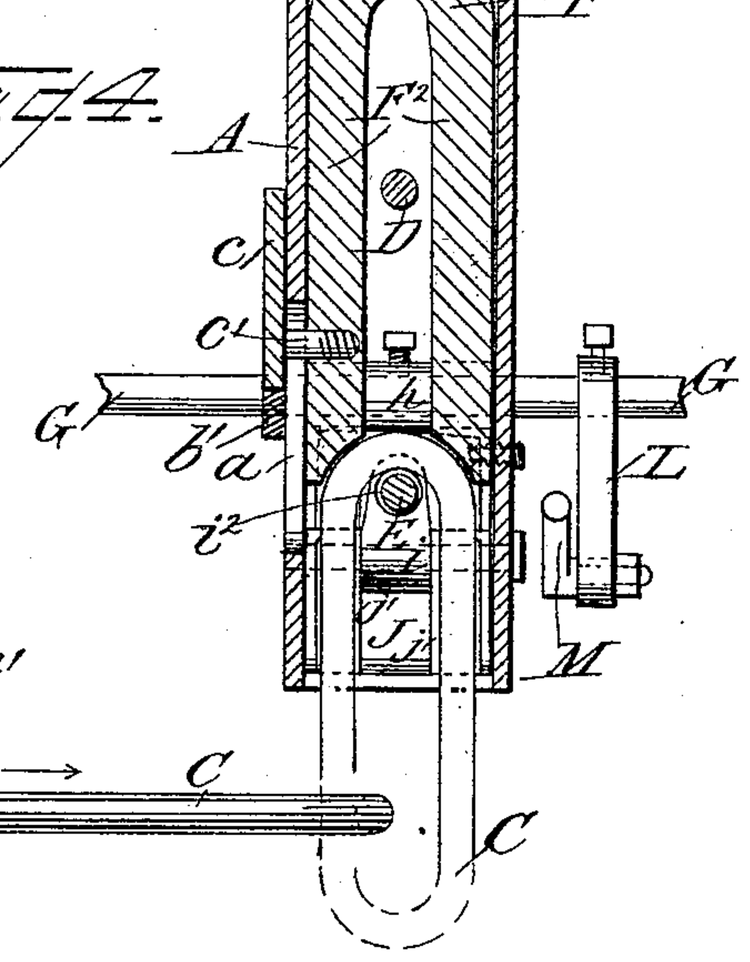



Fig. 4.




Attest:

J. H. Schott

Wm. L. Boyden

Inventor

William R. Fine

per Fred G. Dasher, Atty

(No Model.)

2 Sheets—Sheet 2.

# W. R. FINE.

## CAR COUPLING.

No. 448,949. Patented Mar. 24, 1891.

Fig. 5.

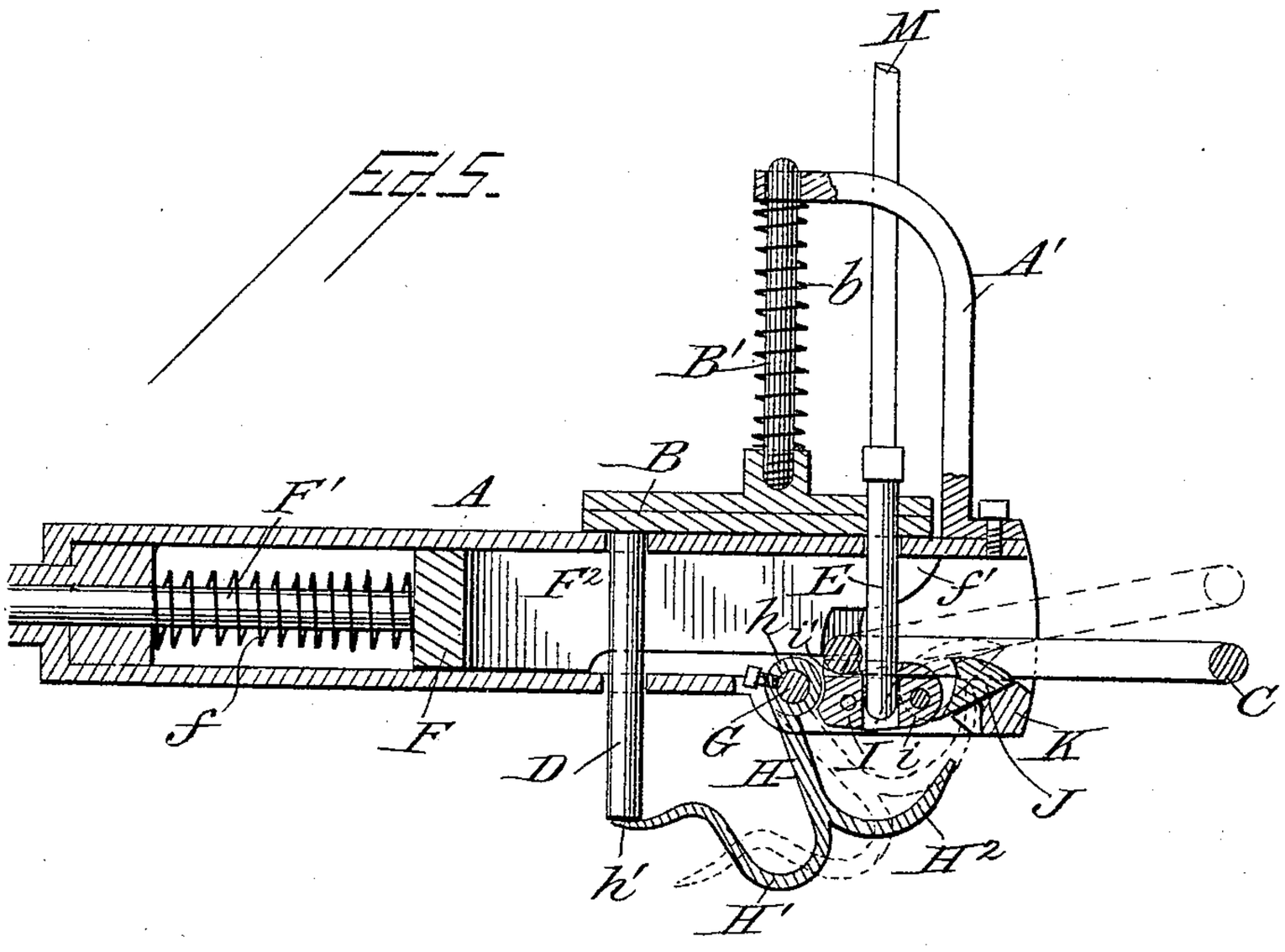



Fig. 6.

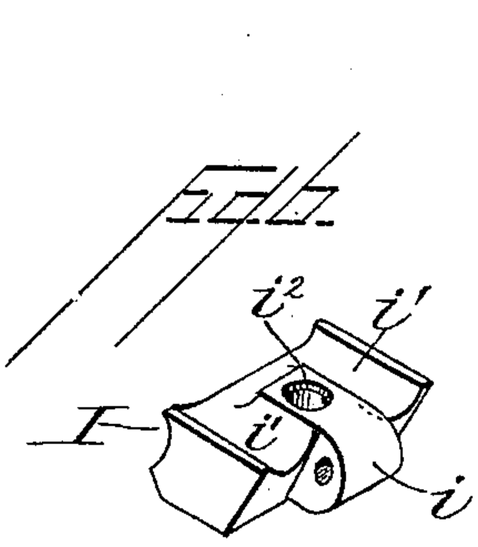



Fig. 7.

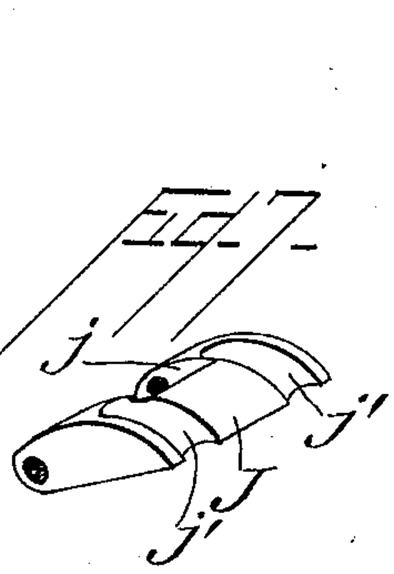
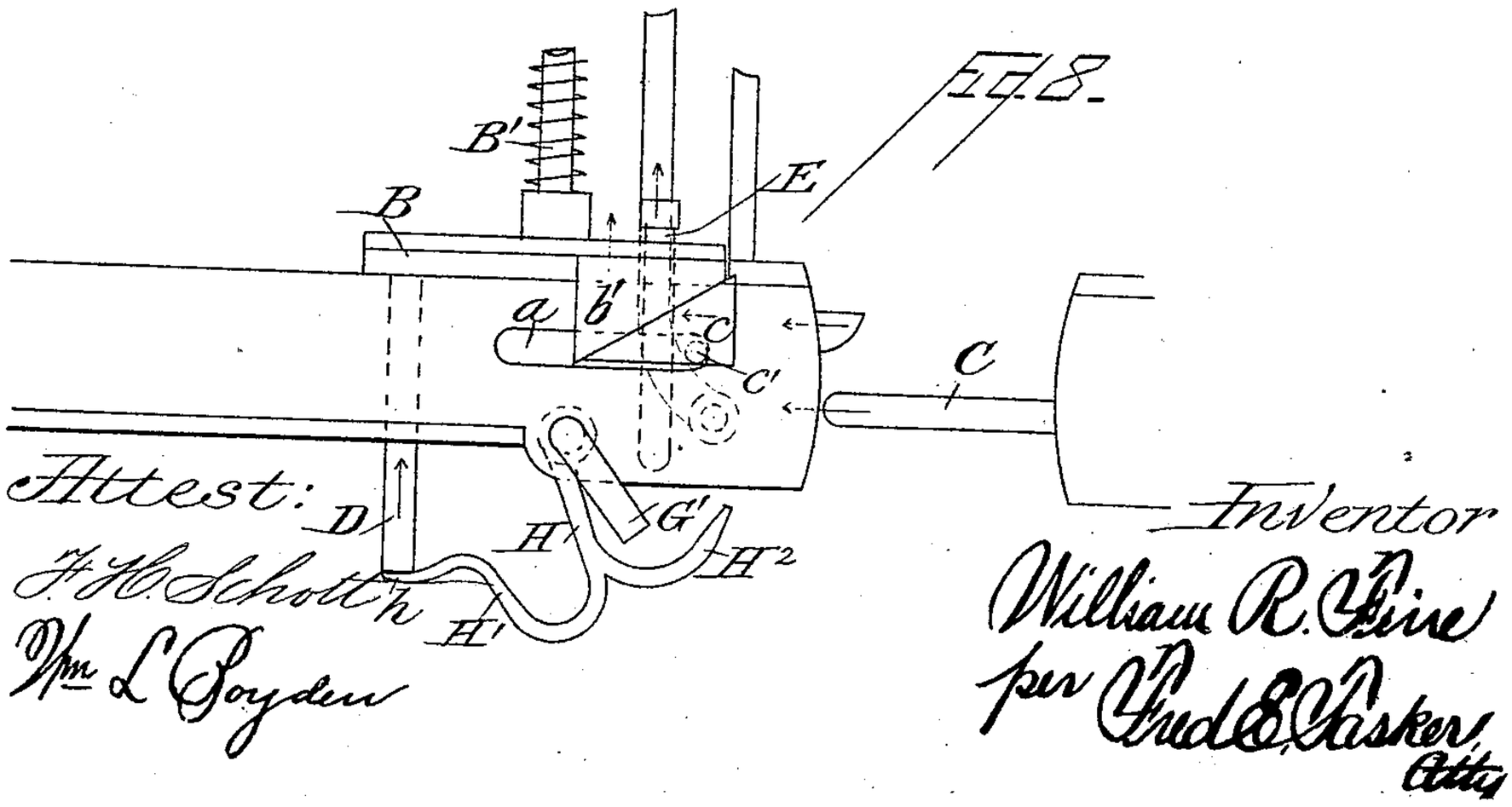



Fig. 8.




Attest:
J. H. Schoolcraft
Wm. L. Boyden

Inventor
William R. Fine
per Fred G. Fisher
Atty

# UNITED STATES PATENT OFFICE.

WILLIAM R. FINE, OF WILSONVILLE, ASSIGNOR OF ONE-HALF TO WILLIAM H. PENLAND, OF NEWPORT, TENNESSEE.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 448,949, dated March 24, 1891.

Application filed December 8, 1890. Serial No. 373,923. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM R. FINE, a citizen of the United States, residing at Wilsonville, in the county of Cocke and State of Tennessee, 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 invention has reference to an improvement in car-couplers, its object being to provide a simple, cheap, and efficient coupler consisting of but few parts, operating automatically and adapted for use with either freight or passenger cars, and capable of being uncoupled either from the sides or top of the car; and the invention consists, essentially, in the construction, arrangement, and combination of parts and in the combination of the mechanical equivalents of the several parts, all substantially as will be hereinafter described and claimed.

In the annexed drawings, illustrating my invention, Figure 1 is a side elevation of my improved car-coupler. Fig. 2 is a front elevation of the same. Fig. 3 is a side elevation similar to Fig. 1, but showing the parts in the position that they occupy when uncoupling. Fig. 4 is a horizontal section. Fig. 5 is a longitudinal section of my coupler, the several parts thereof being shown arranged in operative position in connection with a draw-head, and said parts being represented in the position that they occupy when the coupling has been effected. Fig. 6 is a detail perspective view of one of the parts, said part being that which is provided with a pin-hole. Fig. 7 is a detail perspective view of the pivoted link-lifting latch or plate. Fig. 8 is an outline side elevation of the coupler, showing the parts in the position that they assume after uncoupling.

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

A denotes the draw-head, which may be of any suitable and preferred construction, it having a hollow interior and an open front end or mouth, which is designed to be entered by the link C.

Within the draw-head A is a sliding or reciprocating bar F, which is provided with a central longitudinal recess or slot $F^2$. Behind this sliding bar F is coiled a spring *f*, which lies around a horizontal rod or pin F′, which is connected to the rear end of the slide F and is itself held in a proper bearing, so that the slide F is thus spring-actuated, the spring operating to normally keep the slide pressed forward into a position near the mouth of the draw-head and said spring operating to return the slide to this forward position whenever it may have been temporarily retracted. The forward ends of the two sides of the sliding bar F are formed with curved or inclined faces *f′ f′*, against which the link strikes when it enters the draw-head for the purpose of coupling, and said sides of the bar F just below the curved faces *f′* are suitably recessed or provided with a shoulder, against or into which the end of the link C slides from the aforesaid faces *f′*. The slide F may therefore be termed a "spring-actuated skeleton slide."

On the upper surface of the draw-head is a suitably-formed flat plate B, which carries a rigid vertical post B′, which is surrounded by a coiled spring *b*. The upper end of this post B′ passes through the perforated end of a curved standard A′, which is bolted or otherwise firmly secured to the front end of the draw-head A on the upper side thereof, as clearly shown in Figs. 1 and 5. The spring *b* is tensioned between the end of the standard A′ and the plate B. Thus it will be seen that the plate B may have a vertical movement above the upper side of the draw-head, on which it rests, and that whenever it may for any purpose be raised above said draw-head the spring *b* will operate to return it into close contact with the draw-head. This plate B carries a downwardly-projecting pin D, secured to the under side thereof near the rear end and passing down through suitable perforations in the upper and lower sides of the draw-head A, and also through the central recess $f^2$ in the spring-actuated slide F; also, the plate B carries the coupling-pin E, which is connected thereto near the forward end, and which passes down through the draw-head and the recess $F^2$. It is clearly evident

that the slide F in its reciprocations plays on each side of the pin D and the coupling-pin E. The coupling-pin E may be connected to the plate B in any manner that may be desired. Furthermore, the plate B carries at one side a downward projection or angle-plate $b'$, having an inclined edge. The slide F also carries a small bar, plate, or leg $c$, having an inclined edge parallel to the edge of the projection $b'$, said inclined part $c$ being connected by the pin $c'$, as shown in Fig. 4, to the slide F, the wall of the draw-head A being provided with a horizontal slot $a$, within which the pin $c'$ has an opportunity to move freely during the back-and-forth motion of the slide F. A force pressing upon the front end of the sliding bar F will cause the incline $c$ to press against the incline $b'$ and lift the latter from the position shown in Fig. 8, thus causing the plate B to be lifted until the end of the incline $c$ passes the end of the incline $b'$ and allows the latter, with its connected plate, to drop under the force of the spring $b$ into the position shown in Fig. 1, where the coupling-pin is in engagement with the coupling-link, and therefore, if the link be the force which exerts its pressure upon the front end of the slide F, the result will obviously be to effect a coupling, the pin being thrust through the link by the downward tendency of the spring $b$.

G designates a horizontal shaft running transversely through the draw-head A and having bearings therein and terminating in each end on either side of the car, at which points it is preferably provided with cranks G′, as shown in the drawings, so that a person standing on the side of the car and grasping one of these handles can shift or rock the shaft G.

Below the draw-head is a W-shaped or two-armed yoke or lever H, which has a sleeve $h$, which surrounds that part of the rock-shaft G lying within the draw-head, said sleeve $h$ being secured rigidly by means of a set-screw or other suitable means to said rock-shaft, so that it will vibrate with it, and thus cause the two-armed lever to partake of a simultaneous vibration. This lever H has its arms preferably curved so that it partakes of the form of a W, one of said arms being denoted by the reference-letter H′, and extending in a compound curve backwardly or rearwardly, its top end $h'$ adapted to rest beneath (at the proper time) the lower end of the downwardly-extending pin D, while the forward arm $H^2$ of this W-lever H is likewise curved and has its top end adapted to come in contact with and operate against the under side of a pivoted link-lifting latch K. The form of this double lever H may vary considerably without departing from my invention, the primary design and purpose of said lever being to provide a rearwardly-extending arm which can operate beneath the pin D and an upwardly-extending arm which can operate against a link-lifting latch, both of said arms being formed integral and rigidly connected to a device which can be operated from either side of the car or from the top thereof by connections to be presently explained.

Contiguous to the point where the rock-shaft G is journaled in the draw-head there is located a perforated block I, (shown in detail enlarged perspective in Fig. 6,) said block I being placed horizontally and having the perforations $i^2$, through which the lower end of the coupling-pin E enters, and which perforation is designed to receive and contain the lower end of the pin, except at the times when it may be temporarily lifted out of the same during coupling or uncoupling. Said block I is connected to the draw-head so as to be suitably held in place. It is formed on its upper sides with grooves $i'$ $i'$ and with a horizontal perforated tongue $i$. This tongue is designed to enter a recess $j$ in the link-lifting latch J, which latch is pivoted to the said block I by a pivot passing through the tongue $i$. Further, the latch J is provided on its upper side with grooves $j'$ $j'$, parallel to each other and designed to receive the two parallel sides of the link C, which can rest thereon. If the top end of the forward arm $H^2$ of the two-armed lever strikes against the under side of the link-lifting latch J, it will operate to shift the same from its position shown in full lines in Fig. 5 to the position shown in dotted lines in the same figure, and the result will be to lift the outer end of the link C, and thus graduate its horizontality to correspond with the height of the draw-head of a car which the said link may be at any time approaching for the purpose of coupling with.

We have already seen that the rock-shaft G is provided at each end (see Fig. 2) with cranks G′ G′, situated at the sides of the cars, whereby the shaft can be rocked and uncoupling effected at any time. It is obvious that mechanism will be necessary whereby this shaft may be rocked by the person on top of a car. I therefore provide the shaft with an arm L, securely fastened thereto, the end of which arm is pivoted to the lower end of an upright M, which extends up to the top of the freight or other car, and is arranged so as to be readily manipulated by a brakeman at that point. The brakeman by pressing downward upon the rod M will rock the shaft G and uncouple the coupler.

I will now proceed to describe the operation of my improved coupler, which will be readily apparent from the foregoing description of the construction and arrangement of the several parts. When the device is uncoupled and the parts are in the position that they occupy in readiness for coupling, these parts will occupy the position shown in Fig. 8, the spring-actuated slide being pressed forward so that its curved faces $f'$ will be near the outer end of the draw-head. If now the link strikes against said faces $f'$ and drops into the notch or against the shoulder just below

these spaces, said link continues to press upon the slide F, forcing it backward. The coupling-pin will be lifted in the manner that I have already pointed out and caused to drop into the link, engaging the same. Whenever it may be desired to uncouple, all that the brakeman will need to do will be to, by means of the crank at the sides of the car or the device at the top of the car, rock the shaft G and lift the pin until it becomes disengaged from the link and until the incline *b'* becomes disengaged from the incline *c* in the manner shown in Fig. 3, when the spring behind the slide F will be free to act to throw out said slide, and thus eject the link from the draw-head, after which the parts will resume the position shown in Fig. 8. It will be observed that the rotation of the shaft G or its partial rocking will vibrate the two-armed lever H and cause the end thereof which lies between the post D to act upwardly, forcing said post up, and thereby lifting the coupling-pin. In this way the coupling-pin is enabled to rise in the act of coupling or uncoupling. Suppose now that the coupler has the link engaged therewith and is carrying the same, as shown in Fig. 1 and also in Fig. 5. Suppose that the car carrying the link in this manner is approaching another car with which it is desired to couple, and that the draw-head on the car which is being approached is not of the same height as the draw-head A, (shown in Fig. 1,) which is carrying the coupling-link C. Suppose that the draw-head on the car being approached is higher. Then obviously, if the link C be permitted to remain in the horizontal position which it occupies in Fig. 5 the coupling will not be properly effected, because the link will not be properly introduced into the draw-head of the other car. Therefore it is necessary to lift the link more or less, so that its end may be readily introduced into the mouth of the other draw-head. Ordinarily this lift has to be done by the person going between the cars, which is dangerous to life and limb. By the provision of the pivoted link-lifting latch J, (shown in detail in Fig. 7,) said latch being pivoted to the block I and adapted to normally rest upon the transverse bar K, I am enabled to lift the link for the purpose just indicated and cause it to occupy the position shown in dotted lines in Fig. 5. This is done by causing the rock-shaft G to oscillate in an opposite direction from what it does in uncoupling, said oscillation being accomplished either by pulling upward upon the rod M or by manipulating the cranks G' G' in the opposite direction from what they would be turned in uncoupling. This reverse vibration of the rock-shaft causes the tip end of the arm $H^2$ of the W-shaped lever H to strike against the under side of the pivoted latch J and move the same upon its pivot, lifting its forward end into the position shown in dotted lines in Fig. 5, and thus causing it to push the link upward, so that its outer end may be of the proper height to be readily inserted into the draw-head of the other car. This is an important feature of the invention.

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

1. In a car-coupler, the combination, with the draw-head, of the spring-actuated slotted slide therein, the spring-actuated plate carrying the coupling-pin and an auxiliary pin, the link, and a leverage acting on the auxiliary pin.

2. In a car-coupler, the combination, with the draw-head, of the spring-actuated slotted slide therein, the spring-actuated plate carrying the coupling-pin and an auxiliary pin, the coupling-link, the rock-shaft journaled transversely in the draw-head, and a two-armed lever connected to said shaft and operating on the auxiliary pin.

3. In a car-coupler, the combination of the draw-head, the slotted slide therein, the plate carrying near the rear end the downwardly-projecting auxiliary pin and near the forward end a coupling-pin, said plate having a vertical movement, the coupling-link, the vibrating shaft journaled transversely in the draw-head, and the two-armed lever connected to said shaft and having the end of one of its arms operating beneath the aforesaid auxiliary pin, substantially as described.

4. The combination of the draw-head, the spring-actuated sliding bar therein, the plate on top of the draw-head, provided with a spring and having a downwardly-projecting coupling-pin and an auxiliary pin, a coupling-link, a transverse rock-shaft in the draw-head, a two-armed lever connected thereto and having the end of one of its arms operating beneath the auxiliary pin, and a pivoted link-lifting latch below the link and operated upon by the end of the other arm of the said lever, substantially as described.

5. The combination of the draw-head, the spring-actuated sliding bar therein, the plate on the top of the draw-head, having the upwardly-extending post provided with a spring and connecting with a standard on the draw-head, said plate having also a coupling-pin and an auxiliary pin connected thereto and extending downwardly through the draw-head, a coupling-link, a rock-shaft adapted to be operated either from the side or top of the car by suitable connections, and a lever connected to said shaft and operating beneath the bottom end of the auxiliary pin, substantially as described.

6. The combination of the draw-head, the spring-actuated slotted sliding bar therein, the spring-actuated vertically-movable plate on the top of the draw-head and provided with the downwardly-extending coupling-pin and auxiliary pin, a coupling-link, a block in the base of the draw-head, having a pin-hole adapted to receive the coupling-pin, a link-lifting latch pivoted to said block, a rock-shaft journaled transversely in the draw-

head, and a lever connected to said draw-head and having two arms, one of which operates beneath the lower end of the aforesaid auxiliary pin and the other operates beneath the link-lifting latch, substantially as described.

7. The combination of the draw-head, the spring-actuated sliding bar therein, the spring-actuated plate carrying a downwardly-projecting coupling-pin and the auxiliary pin, an inclined projection on the side of said plate, and another inclined projection on the sliding bar, which projections operate in connection with each other, substantially as described.

8. The combination of the draw-head having an open mouth and a side slot and suitable perforations at top and bottom, a spring-actuated slotted sliding bar provided with a projection working through the said slot of the draw-head, which projection carries an incline, a spring-actuated plate on the top of the draw-head, movable vertically and carrying the downwardly-projecting coupling-pin and auxiliary pin, said plate having an inclined projection operating in connection with the other incline, the coupling-link, the rock-shaft, and the two-armed lever, the end of one of which arms operates beneath the auxiliary pin, substantially as described.

9. The combination of the draw-head, the sliding bar therein, the spring-actuated plate carrying the coupling-pin and auxiliary pin, the coupling-link, and the rock-shaft, with the two-armed lever connected thereto, the arms of said lever being suitably curved, one projecting forwardly and the other rearwardly, the tip of the rearwardly-projecting arm operating beneath the auxiliary pin, while the tip of the forwardly-projecting arm is adapted at the proper time to operate beneath the link-lifting latch for the purpose of adjusting the horizontality of the link.

10. The combination of the draw-head, the sliding bar therein, the plate B, carrying the upwardly-projecting post B′ and the downwardly-projecting coupling-pin E, pin D, the curved standard A′ on the draw-head, perforated at one end to permit the passage therethrough of the post B′, the spring *b*, coiled around said post, the link C, and the two-armed lever, substantially as described.

11. The combination, with the draw-head A, having the spring-actuated slotted slide-bar therein, and provided at its forward end with curved faces and a shoulder, and the vertically-movable spring-actuated plate carrying the downwardly-projecting coupling-pin and the auxiliary pin, the link C, the transverse shaft G, having crank ends and a connection with the top of the car, and the two-armed lever H, having arms H′ and H², substantially as described.

12. The combination, with the draw-head and the spring-actuated sliding bar therein, of the link C, the pivoted link-lifting latch J, and the rock-shaft G, carrying the two-armed lever H, the forwardly-extending arm H² of which operates beneath the latch J.

13. The combination of the draw-head A, the coupling-pin E, block I, having a pin-hole $i^2$, the link-lifting latch J, pivoted to the projection *i* of said block, the link C, resting on said latch J, and the shaft G, having the two-armed lever H connected rigidly thereto, the forward arm H² of which operates beneath the latch J, substantially as described.

14. The combination of the draw-head A, the spring-actuated slotted sliding bar therein, the spring-actuated vertically-movable plate B, carrying the pin E and the pin D, the link C, and the rock-shaft G, together with the two-armed lever H, having arms H′ and H², the tip end *h′* of which arm H′ operates beneath the pin D, substantially as described.

15. The combination of the draw-head A, the spring-actuated bar F, plate B, having upwardly-extending post B′, enveloped by spring *b*, and having the downwardly-projecting coupling-pin E and the pin D, the block I, having the pin-hole $i^2$, rock-shaft G, and the two-armed vibratory lever H, having arms H′ and H², substantially as described.

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

WILLIAM R. FINE.

Witnesses:
ALLEN G. BRYANT.
J. M. STUART.