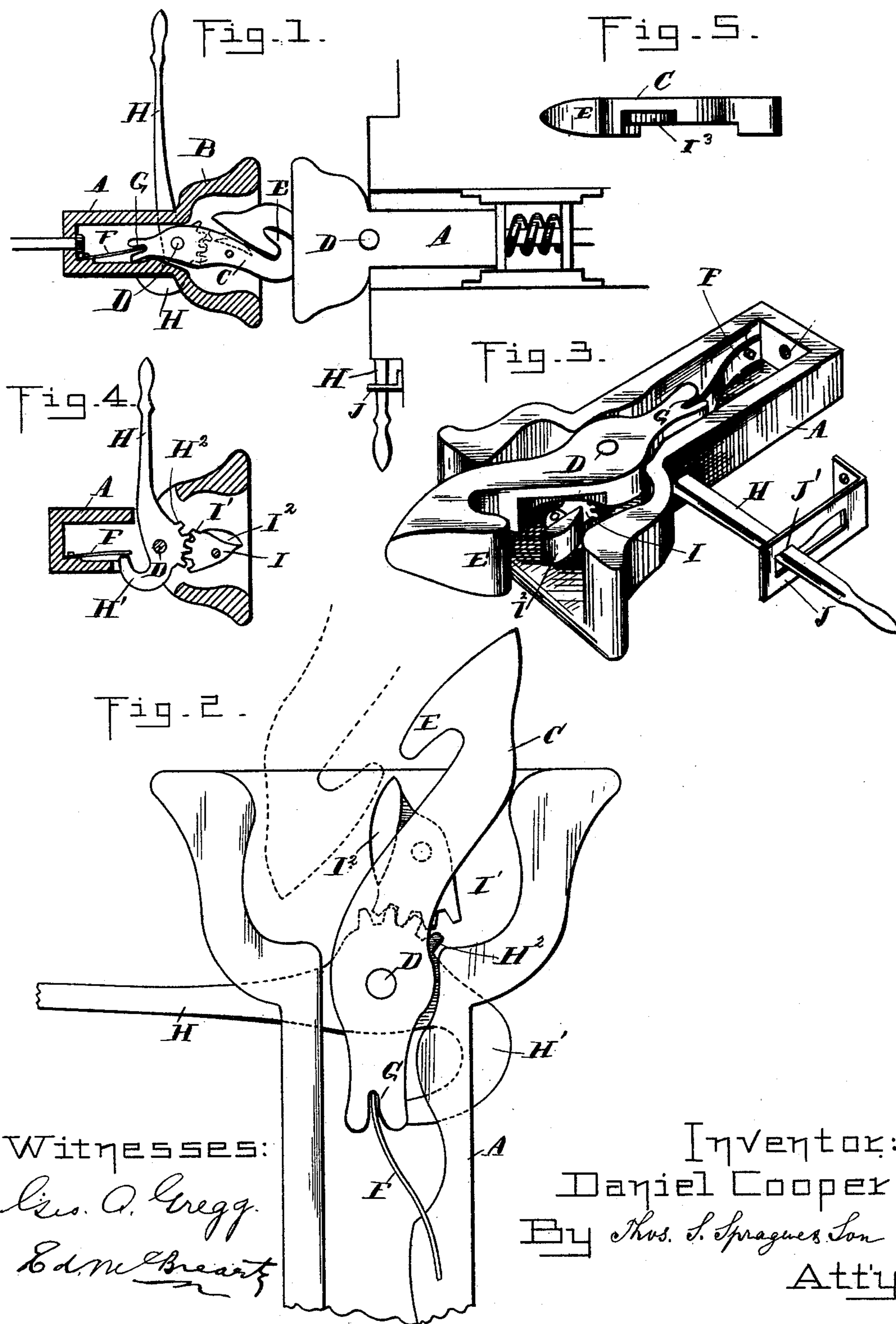


(No Model.)

D. COOPER.  
CAR COUPLING.

No. 410,579.

Patented Sept. 10, 1889.



# UNITED STATES PATENT OFFICE.

DANIEL COOPER, OF GRAND RAPIDS, MICHIGAN.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 410,579, dated September 10, 1889.

Application filed July 8, 1889. Serial No. 316,899. (No model.)

*To all whom it may concern.*

Be it known that I, DANIEL COOPER, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Car-Couplers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in car-couplings; and the invention consists in the construction and arrangement of the different parts, all as more fully hereinafter described, and shown in the accompanying drawings, in which—

Figure 1 is a plan of two couplers as in coupling together two cars, one coupler having the top wall of the draw-bar broken away to show the interior construction. Fig. 2 is an enlarged diagram of one coupler, showing the parts in position as in the act of uncoupling. Fig. 3 is a perspective view of the coupler with the top wall of the draw-bar removed and the parts shown in the act of uncoupling corresponding to Fig. 2. Fig. 4 is a horizontal section of the coupler with the coupling-hook removed. Fig. 5 is a side elevation of the coupling-hook detached.

My improved car-coupling belongs to that class known as "vertical-plane hook couplers," and consists of a hollow draw-bar A, secured to the under side of the car-body in the usual manner and provided with a bell-mouthed draw-head B, in which the hook C is free to play horizontally. This hook is pivotally secured in the draw-bar by means of a vertical pin D. It projects with its hooked front end E beyond the mouth of the draw-head and has an extension in the rear of its pivot.

F is a spring secured in the rear end of the draw-bar and engaging with its free end into a vertical slot G in the rear end of the coupling-hook.

H is an uncoupling-lever pivotally secured upon the pivot-pin D below the hook, which latter is cut away on its under side to permit the free play of the lever. The lever projects with its outer end toward one side of the car and terminates in a suitable handle, and the inner end has a rearwardly-curved arm H', which is adapted to bear against the rear end of the hook.

In the mouth of the draw-head under the hook is pivotally secured the spreader I, which is provided with a rearwardly-projecting segmental gear I', engaging with a corresponding gear H<sup>2</sup>, formed on the lever H.

Near the front end of the spreader is preferably formed an upwardly-projecting toe or flange I<sup>2</sup>, which is adapted to bear against the hook of the opposite coupler when the couplings are engaged, and the under side of the hook, under which the spreader is located, is suitably cut away at I<sup>3</sup> to permit the free movement of the spreader under the action of the lever H.

In practice, the parts being constructed and arranged as shown and described, they are intended to operate as follows: Normally the spring F holds the coupling-hook C in or about the longitudinal center line of the coupler, and therefore if two couplers meet each other their coupling-hooks will strike against each other with their inclined forward ends, and thereby force their way past each other until the hooked ends are in position to engage with each other under the action of the springs F, which force the two coupling-hooks against each other. Thus the two hooks couple automatically, and when thus coupled the extreme ends of the hooks project into the draw-heads of the opposite coupler with sufficient play to provide for the contingencies usually requiring it. The two couplers are also engaged with a sufficient slack between the draw-bars to assist in hauling heavy trains.

To uncouple, the brakeman takes hold of one of the levers H (which preferably project outside the track to prevent stepping between the cars) and pulls it in the direction of the arrow shown in Fig. 1. This brings the inner end of the lever to bear against the rear end of the coupling-hook, and at the same time the engagement of the lever with the spreader-bar turns the latter on its pivot to bear with its toe against the hook of the other coupler, as shown in Fig. 2. Thus the two hooks are forced apart out of engagement.

The toe I<sup>2</sup> of the spreader normally fits into a corresponding recess I<sup>3</sup> on the side of the hook; but when turned by the lever H into the position shown in Fig. 3 it prevents the hooks from coupling.

The coupling-hook is wedge-shaped on its front end to be readily guided into the draw-head, which latter acts as a guide in coupling.

The lever H may be provided, if desired, with any suitable device for holding it in its uncoupled position, such as the slotted bracket J, having a notch J', in which the lever may be engaged and held against the tension of the spring F.

10 What I claim as my invention is—

1. In a car-coupling, a vertical-plane coupling-hook pivoted in the draw-bar and projecting with its hooked front end beyond the mouth of the draw-head and with its rear end  
15 slotted in rear of its pivot, and a spring secured in the draw-bar and engaging with its free end into the slot in the rear end of the coupling-hook, substantially as described.

2. In a car-coupling, coupling-hooks C, pivotally secured by the vertical pivot-pin D in the draw-bar and provided with the hook E, projecting beyond the draw-head, and the rear extension in rear of its pivot provided with the vertical slot G, and the spring F, secured  
25 in the rear end of the draw-bar and engaging with its free end into the slot G of the coupling-hook, substantially as described.

3. In a car-coupling, the combination of the vertical-plane coupling-hook pivoted in the draw-bar, the spring engaging with the rear  
30 end of said hook, the spreader pivotally secured in the draw-head, and the uncoupling-lever engaging with said coupling-hook and spreader to simultaneously operate them in uncoupling, substantially as described. 35

4. In a car-coupling, the combination of a vertical-plane coupling-hook C, pivoted in the draw-bar, the spring F, engaging with the rear end thereof, the spreader I, pivotally secured under the coupling-hook in the mouth of the  
40 draw-head, and the uncoupling-lever H, provided with the slot H<sup>2</sup>, engaging the rear end of the spreader, and the rearwardly-curved arm H', engaging with the rear end of the coupling-hook, substantially as described. 45

In testimony whereof I affix my signature, in presence of two witnesses, this 2d day of April, 1889.

DANIEL COOPER.

Witnesses:

GEORGE W. THOMPSON,  
FRED C. TEMPLE.