

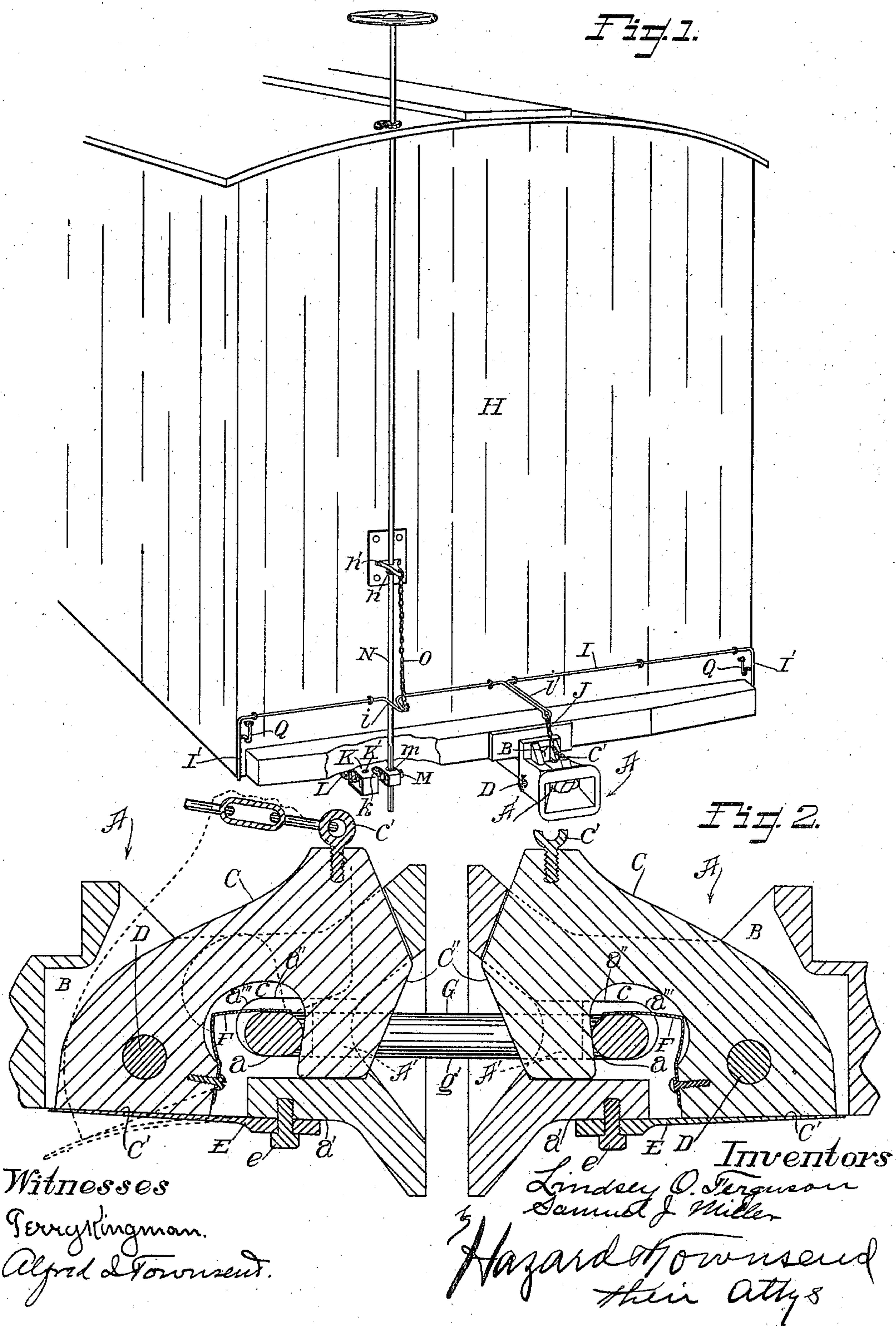
(No Model.)

2 Sheets—Sheet 1.

L. O. FERGUSON & S. J. MILLER.
CAR COUPLING.

No. 575,223.

Patented Jan. 12, 1897.



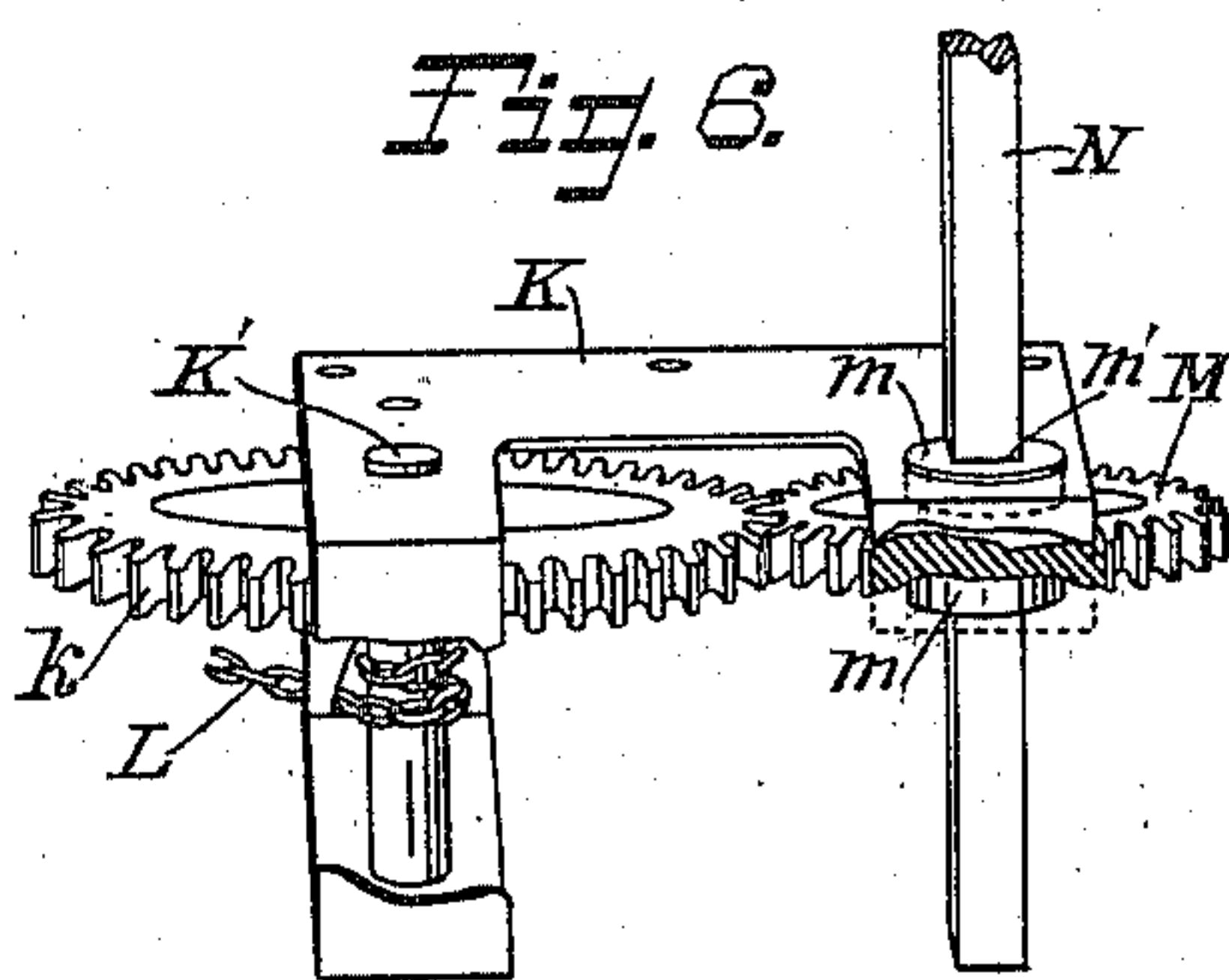
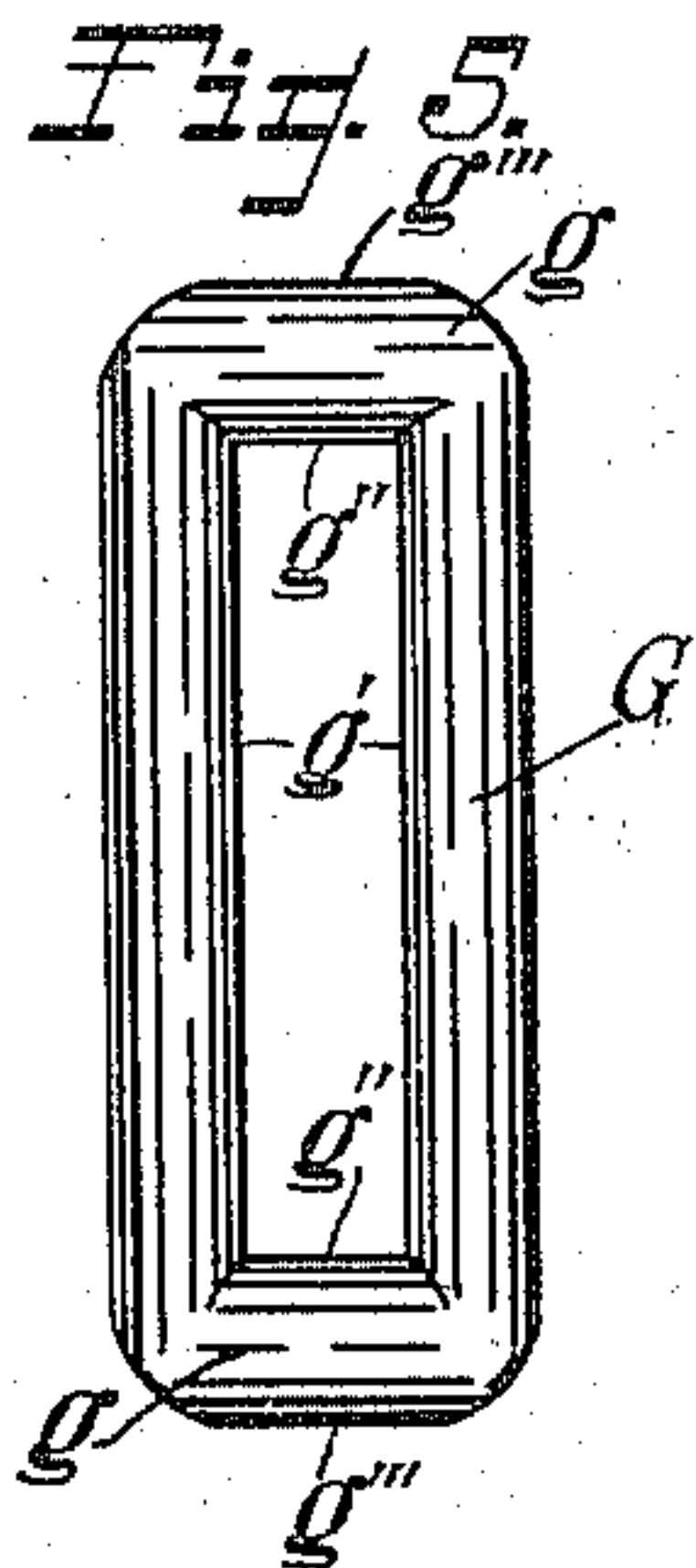
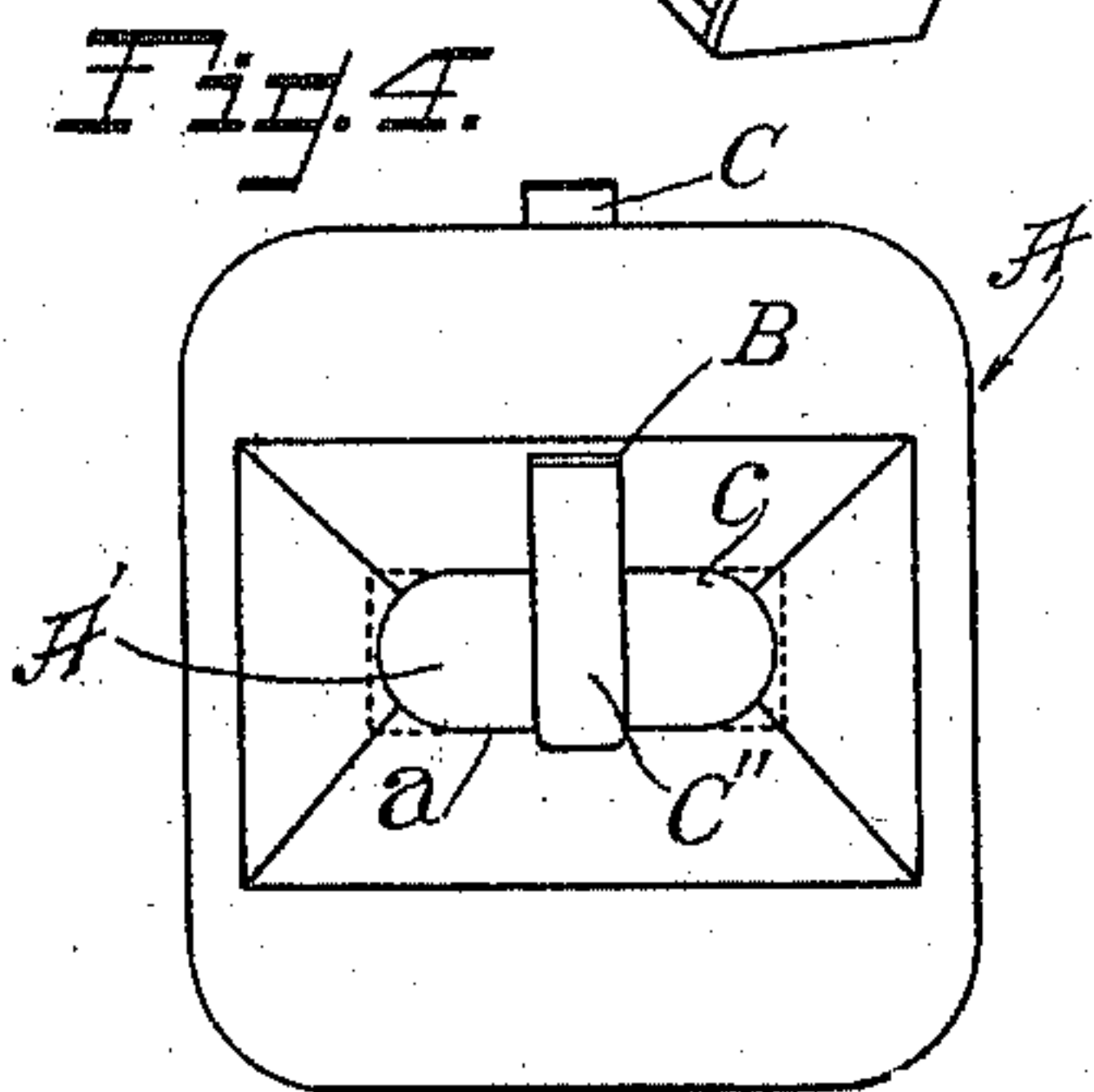
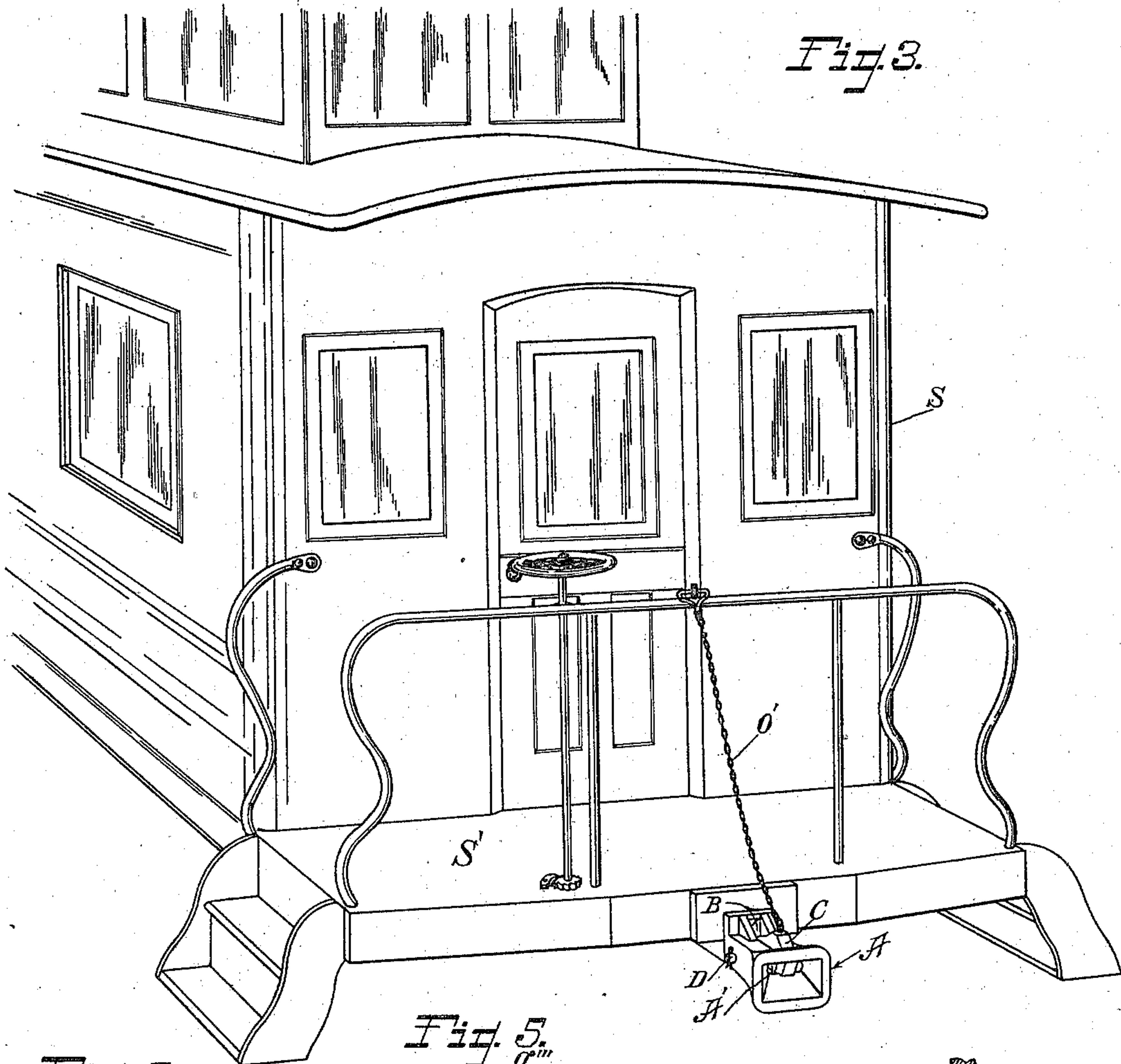
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2 Sheets—Sheet 2.

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Witnesses
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UNITED STATES PATENT OFFICE.

LINDSEY O. FERGUSON AND SAMUEL J. MILLER, OF GLENDORA, CALIFORNIA.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 575,223, dated January 12, 1897.

Application filed July 11, 1896. Serial No. 598,786. (No model.)

To all whom it may concern:

Be it known that we, LINDSEY O. FERGUSON and SAMUEL J. MILLER, citizens of the United States, residing at Glendora, in the county of Los Angeles and State of California, have invented new and useful Improvements in Car-Couplers, of which the following is a specification.

Our invention relates particularly to that class of couplers in which a hook is employed for holding the link in its coupled position in the draw-head.

One object of our invention is to provide a coupler of this class in which the tendency of the draft will be to hold the hook firmly in its coupled position and to so arrange the parts that there will be no liability whatever of the hook working up when the car is traveling over rough track.

A further object of our invention is to provide improved means for operating the coupler from the tops of freight-cars.

A further object of our invention is to provide novel means for yieldingly holding the link in position to enter the throat of another draw-head while the coupling is being effected.

Our invention comprises the various features of construction and combinations of parts hereinafter fully set forth and claimed.

The accompanying drawings illustrate our invention.

Figure 1 is a perspective front view showing our invention applied to a freight-car. Fig. 2 is a fragmental longitudinal vertical section of two draw-heads in their coupled position. Fig. 3 is a front view showing our invention applied to a caboose. Fig. 4 is an end view looking into the throat of one of the draw-heads. Fig. 5 is a plan view of one of our improved links; Fig. 6, a detail showing frame for winding-shaft and brake-shaft.

In the drawings, A represents our improved draw-head, which is provided with a throat A' for receiving the link of the coupling, and is also provided with a vertical hook-receiving slot B, which intersects the throat of the draw-head. In this slot is pivoted a coupling-hook C by means of a pivot D, which has its center arranged below the extended plane of the lower wall a of the throat of the draw-head.

By this means the line of draft is brought above the pivotal point of the hook, and the tendency of the draft is to draw the hook downward into its coupled position instead of to draw it upward into its uncoupled position, as is the case when the pivotal point of the hook is arranged above the line of draft. When the pivotal point is arranged above or even substantially in line with the line of draft, in passing over rough roads the hook is liable to work up and out of its coupled position. By our improved arrangement this tendency is entirely avoided and there is no liability whatever of the coupling becoming accidentally uncoupled from any cause whatever.

The base C' of the hook is flat and is arranged substantially in line with the bottom face a' of the draw-head. A flat spring E is secured to the under face of the draw-head by means of a cap-screw e and is arranged to bear against the flat face of the base of the hook, as shown in Fig. 2, and to thus hold the hook firmly in its coupled position, but to yield to allow the hook to be raised into its uncoupled position, as indicated in dotted lines in the draw-head at the left hand in Fig. 2.

The link-receiving recess c of the hook C is made sufficiently large to extend both above the top face a'' of the throat of the draw-head and also to the rear of the rear face a''' of the throat of the draw-head when the hook is in its coupled position, and to the wall of the link-recess of the hook we secure a spring F, which is weaker than the spring E and is arranged to extend across the recess from rear to front and to bear upon the top of the link G when the link is in place in the draw-head, as shown in Fig. 2, thereby to yieldingly hold the link in a horizontal position, so that it will readily enter the throat of the opposing draw-head, to which it is to be coupled. By reason of the hook being provided with a recess larger than the link-recess of the throat of the draw-head when the cars are coupled together the link will be forced into contact with the rear wall of the link-recess of the draw-head and cannot engage the hook to strain the pivot-pin of the hook or to lift the hook. Also when the link is moved up and down the spring F is free to move up into the

recess *c*, so that the top wall of the throat of the draw-head takes the pressure of the end of the link, thus preventing breakage or injury of the spring *F* by being squeezed between the link and the wall of the recess *c*.

By reason of the spring *F* being weaker than the spring *E* the spring *E* and the weight of the hook overcomes the tendency of the spring *F* to lift the hook when the spring is lifted by the link. This avoids making the hook large and cumbersome in order to give sufficient gravity to overbalance the link and also avoids the objection of having the hook rest directly upon the link, which construction necessitates the hook being raised whenever the link moves up.

In order to provide convenient means for operating the coupling from the top of a freight-car, we journal to the end of the car *H* a transverse crank-shaft *I*, which is provided at each end with a lever-handle *I'* and is also provided intermediate the ends with two crank-arms *i* and *i'*. The front end of the hook is provided with a suitable eye *c'*, and a suitable connection, such as a chain *J*, connects the eye with the crank-arm *i'*.

To the end of the car we secure a suitable supporting-frame *K*, in which we journal a shaft *K'*, having secured thereto and arranged to wind thereupon one end of a chain *L*, which operates the brake in the usual manner. To this shaft *K'* we also fix a cog-wheel *k*, and in the frame we journal a pinion *M* by means of outwardly-projecting collars *m*. An angular opening *m'* is provided, which extends through the pinion.

The shaft *N*, which operates the brake, is made angular at its lower end and fits into the angular opening in the pinion, as shown. The shaft is journaled to the car by means which allow it to reciprocate vertically, and upon the shaft we secure a collar *n*, and above the collar we journal a clip *n'*. A suitable connection, such as the chain *O*, connects the clip with the crank-lever *i*. By raising the brake-shaft vertically the clip is thus carried upward and the chain *O* draws upon the crank *i*, thus operating the crank *i'* and lifting the hook into its uncoupled position, thereby avoiding the necessity of the trainman descending from the top of the car to uncouple the coupling.

It will be seen that the brake can be used in the ordinary manner and, furthermore, that by employing the pinion in connection with the cog-wheel greater power is secured than in the ordinary form of brake, so that when our cog and pinion are employed the brakeman can dispense with the lever ordinarily carried for the purpose of setting up the hand-brakes now in use.

The end of the hook *C* is slightly rounded on its sides in order to adapt it to center the link in case the link should enter the draw-head at one side of the center thereof. The bottom of the throat of the draw-head is made inclined toward the center, as shown in Fig.

4, so that the link will be caused by its own weight to slide upon the inclined faces to center itself in the throat of the draw-head. The side walls of the throat of the draw-head are slightly drawn in to contract the mouth of the throat, so that the end of the link may have sufficient room in the draw-head to move sidewise when passing around a curve and at the same time to avoid making the mouth of the throat so wide as to cause any liability of the link entering so far to one side while coupling as to prevent the entrance of the hook into the link.

The link *G* has its ends *g* made heavier and thicker than its side members *g'*, and the inner face *g''* of each end is substantially straight from one side member of the link to the other to thereby allow free play of the link upon the hook. The ends of the link, being strong and heavy, are adapted to stand the end thrust of the cars when the cars are coupled, and by making the end faces *g'''* substantially straight across the link cannot project back into the hook-slot *B* to engage with the hook to drive it upward in coupling cars.

In Fig. 3 we have shown our draw-head applied to a caboose *S* of a freight-train. A chain *O'* leads from the coupling to the top of the guard at the end of the car, so that the brakeman can thereby operate the coupler from the platform *S'* with convenience and perfect bodily safety.

In practice when it is desired to uncouple the cars if the brakeman is on top of the car the brake-shaft *N* is raised to lift the hook *C* out of its coupled position, as hereinbefore described, and the cars can then be readily drawn apart. The brake-shaft is then allowed to slide down, thus releasing the crank-lever *I*, and the hook falls into position ready to be again coupled. In coupling the link *G* is inserted into one draw-head, as shown in Fig. 2, and the hook falls into the coupled position, thus bringing the spring *F* down upon the top of the link and holding the link in its horizontal position. Then the two draw-heads are brought together, and the end of the link is brought against the inclined face *C''* of the hook and by its contact therewith forces the hook up into the position shown in dotted lines at the left of Fig. 2 to allow the link to pass beneath the hook, and when the link has fully entered the throat of the draw-head the hook falls down into its coupled position, as shown in solid lines in said Fig. 2. When the draft is applied, the tendency thereof is to pull the hook down firmly into its coupled position, and it is impossible for the hook to work up and become accidentally uncoupled. The arrangement of the flat spring bearing against the flat base of the hook gives great simplicity of construction and in practice is highly satisfactory in its operation.

We provide a suitable latch *Q* at each end of the crank-shaft *I* to engage the levers *I'*

to hold the hook in its uncoupled position when it is not desired that the cars shall couple when brought together.

By making the ends of the link G heavier and thicker than the side members we are enabled to shorten the distance between the inside end faces of the link and still make the link of the same outside length as those already in use. This shortening of the link prevents too much play between the draw-heads.

Now, having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a car-coupling, the combination set forth of a draw-head provided with a vertical hook-receiving slot extending through the draw-head and intersecting the throat thereof; a coupling-hook pivoted in the slot by means of a pin passing through the draw-head and through the body of the hook and having its center arranged below the extended plane of the bottom of the throat of the draw-head, such hook being provided with a flat base arranged substantially flush with the bottom face of the draw-head; and a spring secured to the bottom of the draw-head and adapted to press against the flat base of the hook.

2. In a car-coupling, the combination set forth of the draw-head provided with a vertical slot intersecting the throat of the draw-head; a coupling-hook pivoted in such slot by means of a pin having its center arranged below the extended plane of the bottom of the throat of the draw-head, such hook being provided with a link-receiving recess extending, when the hook is in its coupled position, to a point above the top and to the rear of the top and rear faces of the throat of the draw-head; and a spring secured to the inner face of the hook-receiving recess and arranged to rest upon the top of the link when the draw-head is coupled, and to yieldingly hold the link in its horizontal position.

3. In a car-coupling, the combination set forth of a draw-head provided with a vertical hook-receiving slot intersecting the throat of the draw-head; a coupling-hook pivoted in the draw-head by a pin having its center arranged below the extended plane of the bottom of the throat of the draw-head, such hook being provided with a link-receiving recess extending both above and to the rear of the top and rear faces of the throat of the draw-head, such hook being also provided with a flat base arranged substantially flush with the bottom face of the draw-head; a spring secured to the rear face of the link-receiving recess of the hook and adapted to yieldingly bear upon the link when the link is in place in the draw-head to hold such link in its horizontal position; and a flat spring secured to the under face of the draw-head and arranged to bear against the base of the hook.

4. In a car-coupling, the combination set forth of a shaft having one end of the brake-chain, and a cog-wheel fixed thereto; an operating-pinion provided with an angular opening, journaled to the car, and meshing with the cog-wheel; the brake-shaft journaled to the car and provided with an angular stem arranged to slide through the angular opening in the pinion; a collar secured upon the brake-shaft; a clip journaled upon the brake-shaft above the collar; a crank-shaft extending across the end of the car, journaled thereto and provided with two projecting crank-arms; suitable means connecting one of the crank-arms with the clip; and suitable means adapted to connect the other crank-arm with an automatic coupler, whereby when the brake-stem is reciprocated vertically in its bearings, it will operate to uncouple the coupling; and such coupler.

5. In a car-coupling, the combination set forth of a draw-head provided with a vertical hook-receiving slot intersecting the throat of the draw-head; a coupling-hook pivoted in such slot by a pin having its center arranged below the extended plane of the lower wall of the throat of the draw-head; a spring arranged to normally hold the hook in its coupled position; and a second spring weaker than the first spring arranged to rest upon the top of the link when the link is in place in the draw-head and to normally tend to yieldingly hold the link in a horizontal position.

6. In combination, an automatic coupler; a shaft having one end of a brake-chain, and a cog-wheel fixed thereto; a pinion arranged to mesh with the cog-wheel and provided with an angular opening; a brake-shaft having an angular stem adapted to slide through the angular opening in the pinion; and suitable means connecting the brake-shaft with the automatic coupler and adapted to operate to uncouple the coupler by the reciprocation of the brake-shaft.

7. In a car-coupler, the combination of a frame; a shaft journaled in the frame; a cog-wheel fixed to such shaft; a brake-chain having one end secured to the shaft; a pinion provided upon each face with a projecting hub or collar, journaled in the frame thereby and meshing with the cog-wheel, such pinion being provided with an angular opening; a brake-shaft journaled to rotate and arranged to reciprocate vertically, and having an angular stem arranged to slide in the opening in the pinion; an automatic coupler; and suitable means connecting the coupler with the brake-shaft and adapted to operate the coupler by the reciprocation of the brake-shaft.

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