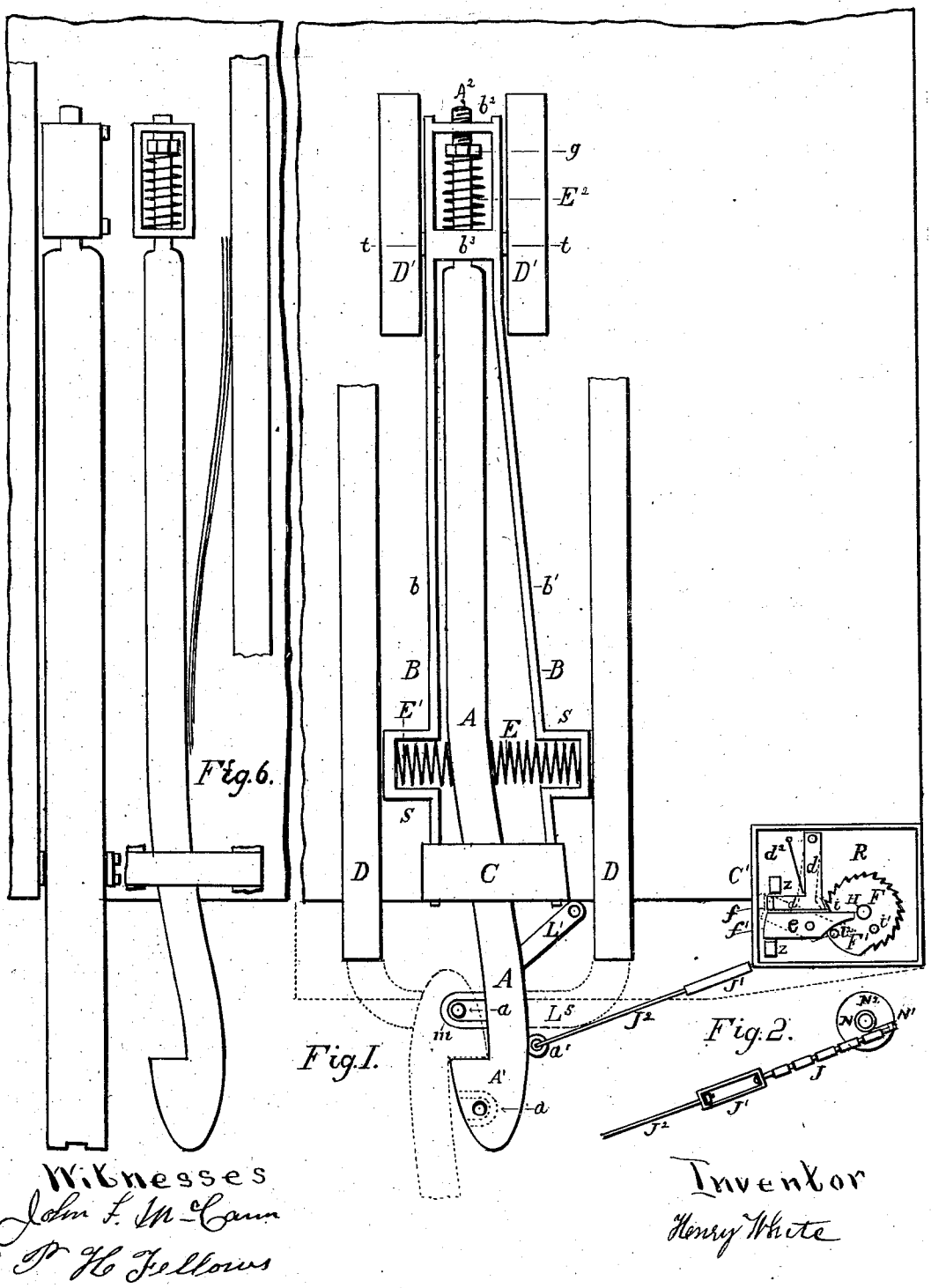
(No Model.) 2 Sheets—Sheet 1.

H. WHITE.

AUTOMATIC CAR COUPLING.

No. 500,309. Patented June 27, 1893.



Witnesses
John L. McCann
P. H. Fellows

Inventor
Henry White

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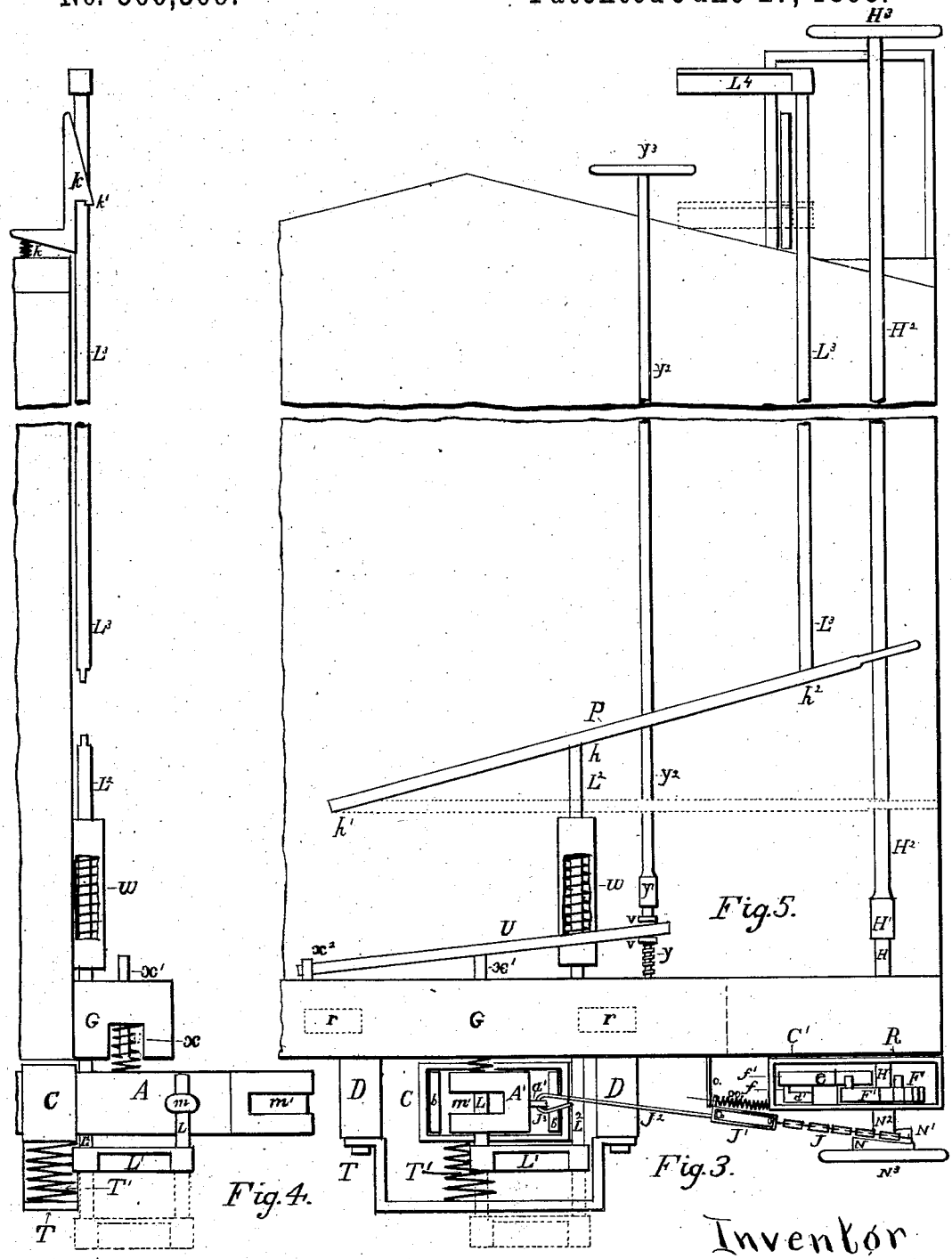

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UNITED STATES PATENT OFFICE.

HENRY WHITE, OF CHICAGO, ILLINOIS.

AUTOMATIC CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 500,309, dated June 27, 1893.

Application filed October 22, 1892. Serial No. 449,730. (No model.)

To all whom it may concern:

Be it known that I, HENRY WHITE, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented a new and useful improvement for coupling and detaching railway-cars, also a device to securely lock the same when in use, of which the following is a specification.

My invention relates to improvements in automatic car couplers for freight cars, and an automatic device to separate the same. The object of my improvement is to remove the danger to life and limb in the coupling of freight cars. To that end I propose first to use a draw bar and coupler hook now in common use on cars with platforms [from which it can be operated] with certain improvements thereto in setting and supporting the same and thereby adapting it for use on freight cars; second, to afford facilities in detaching the coupler hook when the cars are to be separated and which is to be operated from the top of car, and may also be operated from the ground; third, a device to prevent the separation of the coupler hook but which is to be used only when the cars are in the course of transportation, and, fourth, a device to depress or to elevate the coupler hook to adapt it to cars of unequal altitude.

I attain the objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1. is an uncovered view of a metallic frame B. B. into which the draw bar and coupler hook A. A. is to be placed and secured. Fig. 2. is an uncovered view of an automatic ratchet R. by which the coupler hook is to be drawn back when the cars are to be separated. Fig. 3. is a front end view of the coupler hook A. and a sectional view of the ratchet device R. Fig. 4. is a sectional view of the face of coupler hook A also of the locking and elevating devices. Fig. 5. is a front view of the different parts attached to the end of car above the guard timber G. Fig. 6 is an illustration of the coupler hook and draw bar now in use showing the manner of attaching the same to the frame of car.

Similar letters refer to similar parts throughout the several views.

The timbers D. D. and timbers D′. D′. are to be firmly secured to the under side of car frame and to constitute the support and protection of the frame B. B.

The metallic frame B. B. is to be constructed as follows: The side pieces *b.* and *b′.* and the end piece b^2. to be six inches in depth and of such form and thickness as may be required for strength. The side piece *b.* will be straight throughout its length and the side piece *b′.* to be parallel thereto to a point about four inches in front of the cross bar b^3. and from thence to the front end to flare outwardly four inches or more to make room to pull back the coupler hook, the front end of said frame B. B. to be open, and the sides *b.* and *b′.* to be secured in position by the clamp C. and the ends thereof secured thereto, the cross bar b^3. to have an oval aperture in the center thereof and to have trunnion pins *t. t.* on each end said trunnion pins to work in metallic journal boxes, said journal boxes to be set in the sides of the timbers D′. D′.

The draw bar and coupler hook A. A. will be placed in the frame B. B. to be passed through the clamp C, the shank A^2 of the draw bar to pass through the oval aperture in the cross bar b^3. and through the spiral spring E^2, also through the end piece b^2. and to have the nut *g.* threaded on said shank A^2. by which the spring E^2 may be adjusted.

The spiral spring E. is to be placed at the back of the draw bar A. for the purpose of holding and controlling the operation of said draw bar in coupling and uncoupling of the cars, the strength and elasticity of said spring E. to be adjusted to that purpose. (A spiral spring is adopted here because the strength can be accurately measured.) The spiral spring E′. is to be set opposite the spring E. for the purpose of holding the draw-bar A. parallel to the frame B. B. but to be of such strength as to resist pressure except from heavy surging of the cars, and is considered important and preferable to a solid rest for that purpose, the sockets S. and S. in the side pieces *b.* and *b′.* of the frame B. B. to be circular in form and the springs E. and E′. to be adjusted therein. The timber G. is to be placed on the end of car to support and protect the apparatus.

The stirrup T. will be placed underneath the clamp C. of the frame B. B. and secured to the timbers D. D. and the spiral spring T′.

set on the said stirrup T. and secured thereto, the strength and elasticity of the spring T'. to be adjusted to support the front end weight of the frame B. B. and also of the coupler hook and draw bar A. A. that the said frame and coupler hook may oscillate thereon when the cars are in motion.

Cars furnished with this device will couple automatically by momentum.

To uncouple the cars without danger in the operation the ratchet R. is arranged as follows (see Fig. 2.): The wheel F. is to have ratchet teeth on three fourths of the periphery thereof and the remaining quadrant F'. to be plain, but to be enlarged a half inch on the radius, the pawl *d*. to be constructed with an elbow *d'*. on the front end, said pawl *d*. to be set at a right angle to the end of car, and to impinge on the ratchet at the junction of the quadrant F'. at *i*, the elbow *d'*. to be about five inches long and have a lip *f*. on the end to be raised one inch or more in height, the bar *e*. to be in form as shown on the drawings and set to oscillate over the ratchet wheel F. F'. and elbow *d'*., the bar *e*. to be pivoted at or near the center thereof, the studs i' and i^2. to be set in the ratchet wheel F. F'. and adjusted to move the oscillating bar *e*. to and fro. The studs *z*. *z*. are to prevent the oscillating bar *e*. from being displaced or moved too far either way. The above parts will be placed in a metallic case C'., and placed under the corner of car and firmly secured thereto and of necessity at the back of the coupler hook A, the shaft H. to pass down through the floor of the case C'. and the hub N. and the hand-wheel N^3. secured thereto, the hub N. to be six inches or more in diameter and from N'. the hub to be cut down spirally about two inches in one circumference and the chain *j*. attached to the rim of the hub N. at N'. the drum N^2. to be two or more inches in diameter as may be required, the chain *j*. to be connected to the link j'. said link to be six inches or more in length in the clear, the rod j^2. to be attached to the coupler head A'. at a^2. by the loop j^3. and to the link j'. by a screw and nut by which the tension of the combined chain may be adjusted, the rod j^2. to be made to slide in the link j'. in order that when the coupler head is pushed in the act of coupling, the rod j^2. will slide into said link and thus avoid displacing the chain from the hub N. The link *j*. will be held in place by the spiral spring *o o*. attached thereto and secured to the guard timber G. by the rod *o*. and also secured to the case C'. the spring *o o*. permitting the link *j*. to move back when uncoupling the cars. The shaft H. is to extend up through the guard timber G. about eight inches and coupled to the shaft H^2., said shaft H^2. to extend up to and about two feet above the roof of car and have the hand wheel H^3. secured thereto, the coupling H'. to be made with a square taper shank, and a socket made to fit thereon, but to be constructed to rest on the head of the shank so that it may be readily lifted off or be readily separated in case of an accident.

To operate the ratchet R. the hand wheel H^3. has to be moved round three fourths of a circle when it is stopped by the action of the quadrant F' on the pawl *d*. and will then have opened the coupler and separated the cars. When the hand wheel has been moved to the point named the pawl *d*. and the elbow *d'*. will be raised out of the ratchet by the quadrant F'. and the oscillating bar *e*. moved by the stud i'. (as shown by the dotted lines) and the end f' moved under the lip *f*. by which the pawl *d* will thus be held suspended out of the ratchet F. until the ratchet wheel by the action of the spring E. on the coupler hook and draw bar A. A. will revolve back and by the back action the stud i^2. will strike and force the bar *e*. from under the lip *f*. when the pawl *d*. will by the action of the spring d^2. be forced again into gear with the ratchet F. and be automatically again ready for use. It may be necessary at times to hold the coupler open. This can be done by holding the ratchet back one or more notches in the ratchet when the coupler will remain open at the will of the operator.

In order that the coupler may be depressed or elevated as may be required for the purpose of coupling with cars of a higher or lower altitude the spiral spring *x*. is provided for that purpose, said spring *x*. to be set in the guard timber G. and placed over the coupler-hook A. and made to rest thereon, the stem x'. to be secured in the top end of the spring *x*. and extend up through the guard timber G. and be connected to the lever U, the lever U to have its fulcrum at x^2. and made to pass over and be connected to the stem x', the other end of the lever U to extend to the screw *y*. and be forked and made to span the shank of the screw *y*. between the collars *v*. *v*. thus permitting the said screw *y* to turn therein, the shank of screw *y*. to be connected to the shaft y^2 by the coupling y', the shaft y^2. to extend up to and above the roof of car and the hand wheel y^3. secured to the top end thereof, the coupling y'. to be constructed in the same manner as the coupling H'. heretofore set forth. The spring *x*. is intended also to form a stop over the coupler hook A. and is at all times to be kept under pressure for that purpose, the strength of said spring *x*. to be adjusted to yield only moderately to the heavy surging of the cars.

To prevent the coupling hook from separating during transportation by the springing and surging of the cars when in motion the staple *m*. is to be set in the face of coupler hook A. in a position to mesh into the groove m'. in the coupler head A'. and adjusted to come in line with the pin holes *a* into which the coupling pin L. will be inserted from underneath up and through the pin holes *a*. in the coupler head A'. and through the staple *m*. and to thus prevent the separation of the couplers.

To operate the coupling pin L. the rod L^2. will be placed to the left of the coupler hook A. but as near thereto as practical and the arm L'. secured to the lower end thereof and also to the lower end of coupling pin L, said arm L'. to be placed underneath the coupler hook A. and as near thereto as will permit of the vertical movements of said coupler hook A., the rod L^2 to pass up and through the spiral spring *w*. and made to reciprocate therein, the lever P. to be attached to and secured to the top end of the rod L^2 at *h*, the fulcrum of lever P. pivoted to the car at *h'*, the lever P. to extend to the side of car and adjusted to be operated from the ground, the rod L^3. to be attached to the lever P. at h^2. and extend up to and about twenty inches above the roof of car and the arm L^4. secured to the top end. The spring latch K is to be secured to the roof of car and adjusted to catch the arm L^4 when said arm is pressed down (as shown by the dotted lines) and made to hold the same so that it can be released only from the top of car, the latch K. to be actuated by the spiral spring *k*, the strength of the spiral spring *w* to be adjusted to carry the weight of the several parts of this device, but of such elasticity as to be readily depressed in order to carry the coupling pin L. below the coupler hook and draw bar A. A. The lip *k'*. of the latch K. is to have one inch or more recess, and to be square angled and to hook over the arm L^4 when said arm is pressed down and made so as to hold the same securely from the percussive shaking caused by the movements of the cars. This arrangement is considered important and a most safe and convenient method of holding this device out of gear when not required for use. The coupling pin L. is to be kept in position by the guard L^5. Shown in dotted lines, (see Fig. 1.)

r. r. in dotted lines on the face of the guard timber G. are indicated as seats for buffers, but no device for buffers is here presented as there are a number in use which will answer for the purpose.

I am aware that prior to my invention automatic car couplers have been made with draw bars similar to that herein shown and adjusted to be operated with springs as illustrated in Fig. 6, but such draw bars are affixed rigidly to the frame of car, and have no vertical play independent of the motion of the car, and they are not adapted to freight cars. I therefore do not claim such a combination broadly; but

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. The combination in an automatic car coupler of an oscillating frame B. B. having reciprocal motion and elastic supports with a draw bar and coupler hook as A. A. adjusted to work therein, all substantially as set forth and for the purpose specified.

2. In the automatic ratchet R. the combination of the wheel F. F'., the pawl *d*. having elbow *d'*., the oscillating bar *e*, the studs *i'*. and i^2. the hub N, and the adjustable chain, connecting the ratchet R. to the coupler head A'., all substantially as set forth and described.

3. The combination in an automatic car coupler of the coupling pin L. staple *m*. and the reciprocating rod L^2., having arm L' all substantially as set forth, and for the purpose specified.

4. In an automatic car coupler and detacher the combination of the spring *x* and stem *x'*. the lever U, the screw *y*. and the shaft y^2, substantially as set forth.

5. The combination in a car coupler and detacher of the oscillating frame B. B. carrying the coupler hook and drawbar A. A. the ratchet R. secured to the said coupler hook, and having automatic action, the spring *x*, adapted to the said coupler hook, and the coupling pin L. and staple *m*. all substantially as set forth and for the purposes specified.

HENRY WHITE.

Witnesses:
JOHN F. MCCANN,
P. H. FELLOWS.