M. A. BROWN.

CAR COUPLING.

APPLICATION FILED NOV. 9, 1908.

981,746.

Patented Jan. 17, 1911.

3 SHEETS—SHEET 1.

Fig. 2.

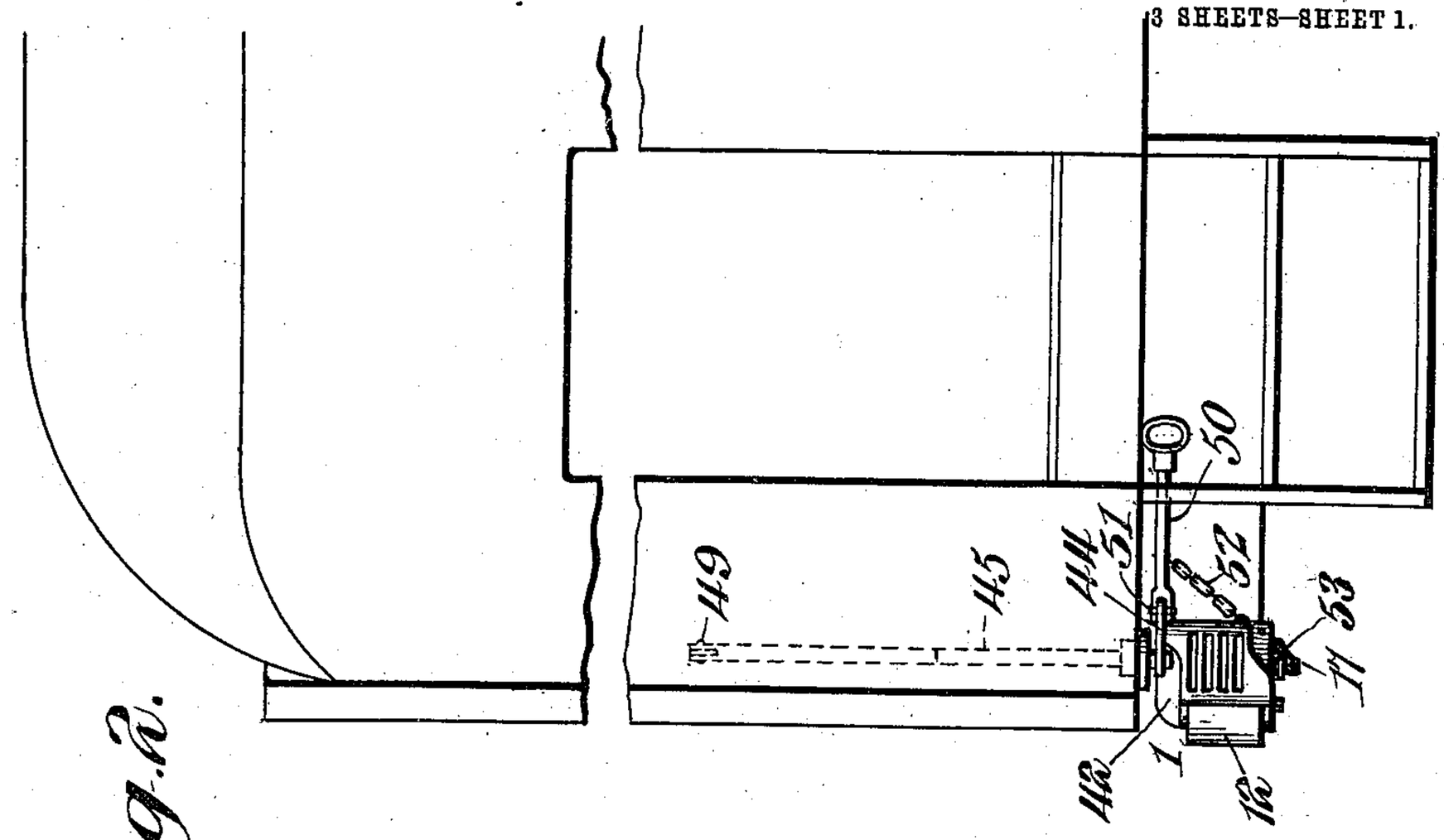
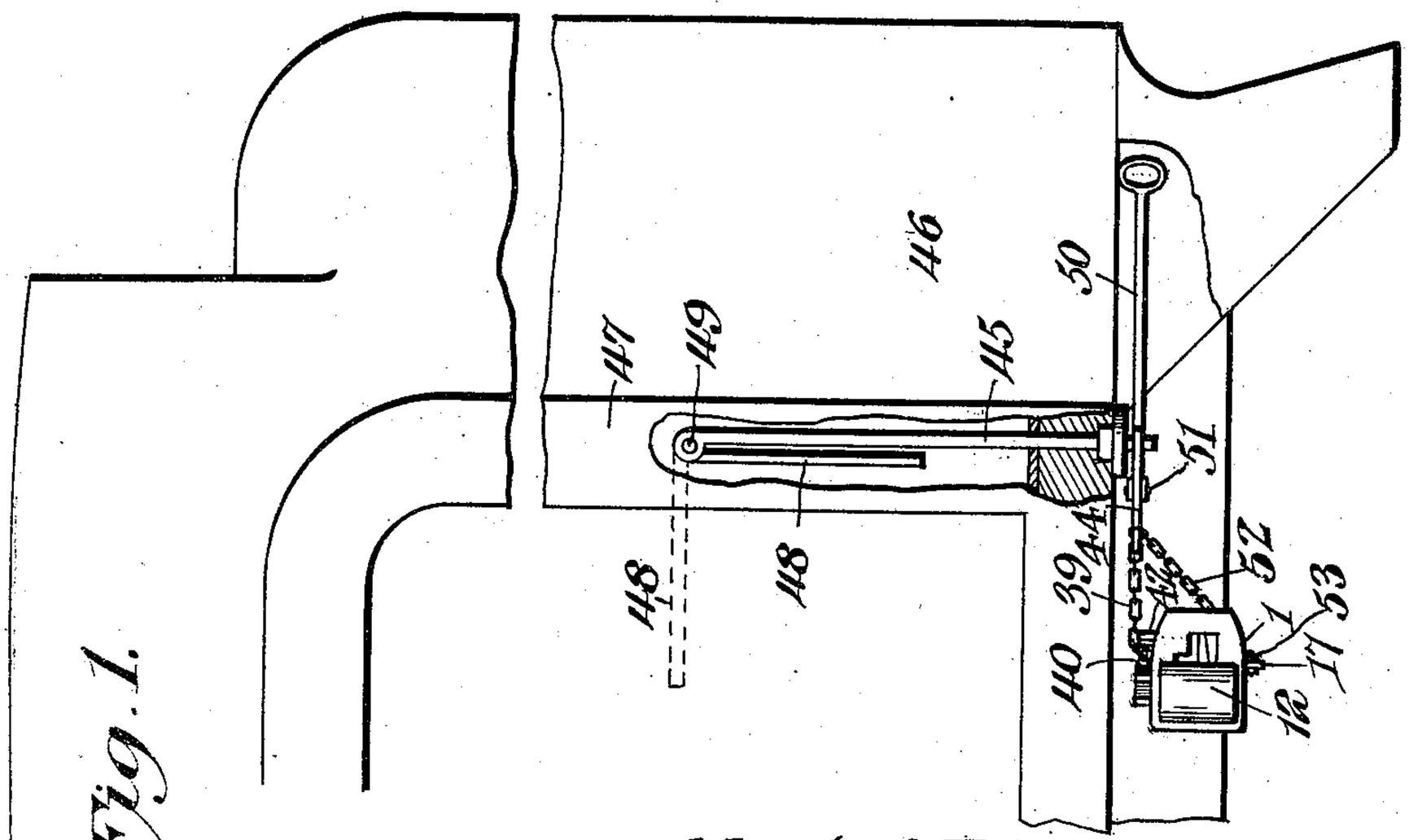



Fig. 1.




Witnesses

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3 SHEETS—SHEET 2.

Fig. 3.

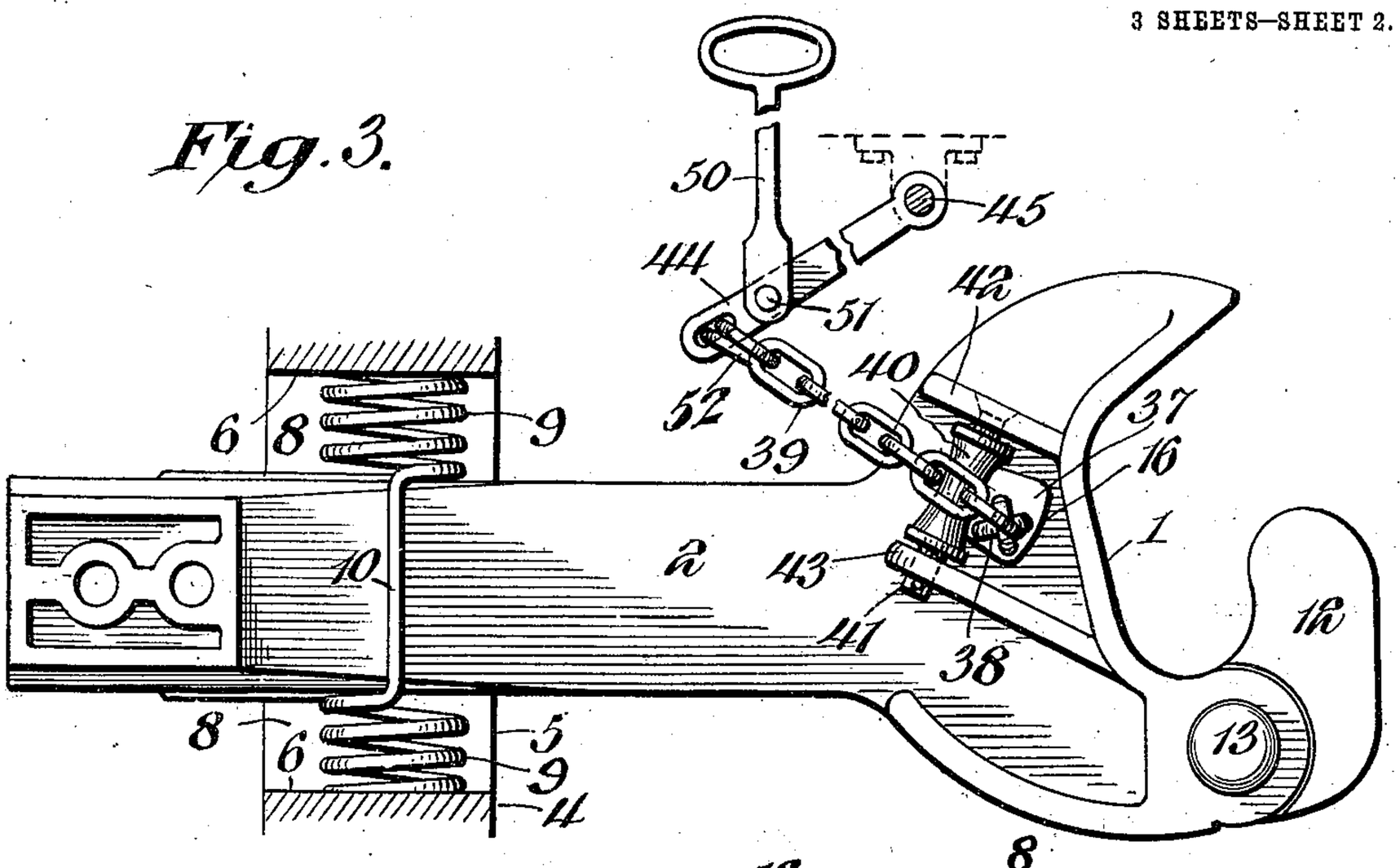



Fig. 4.

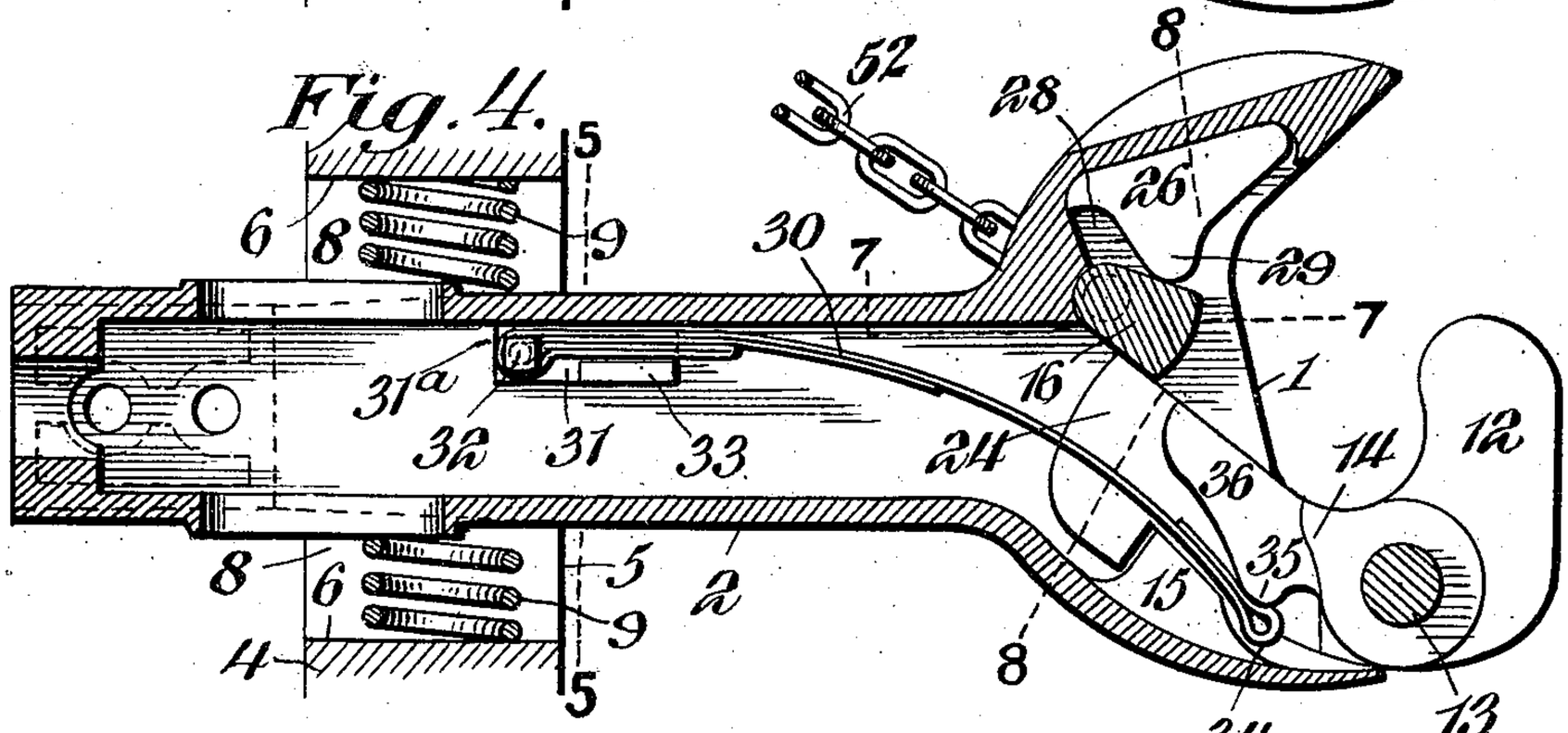
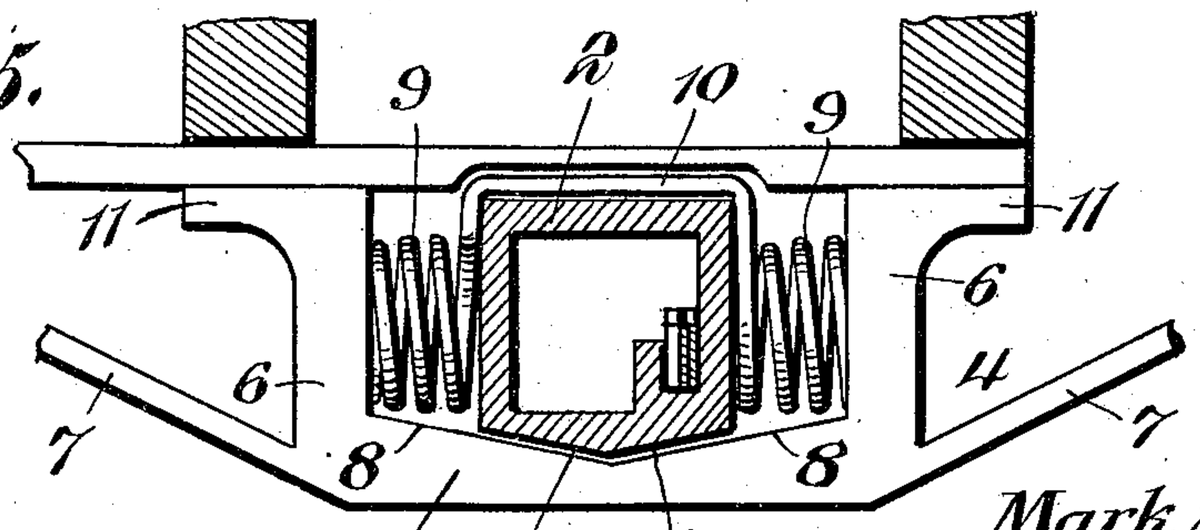



Fig. 5.

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3 SHEETS—SHEET 3.

Fig. 6.

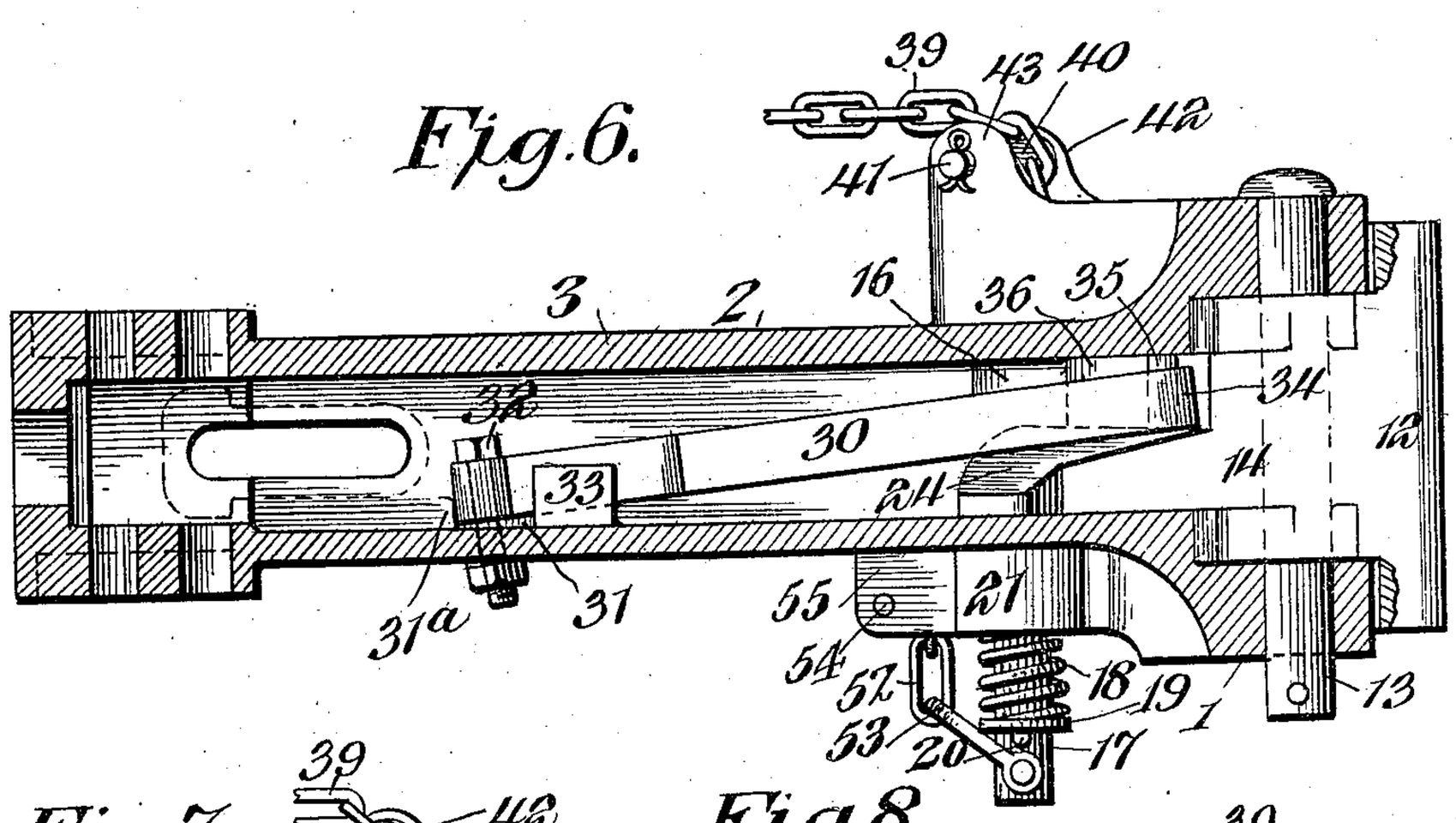



Fig. 7.

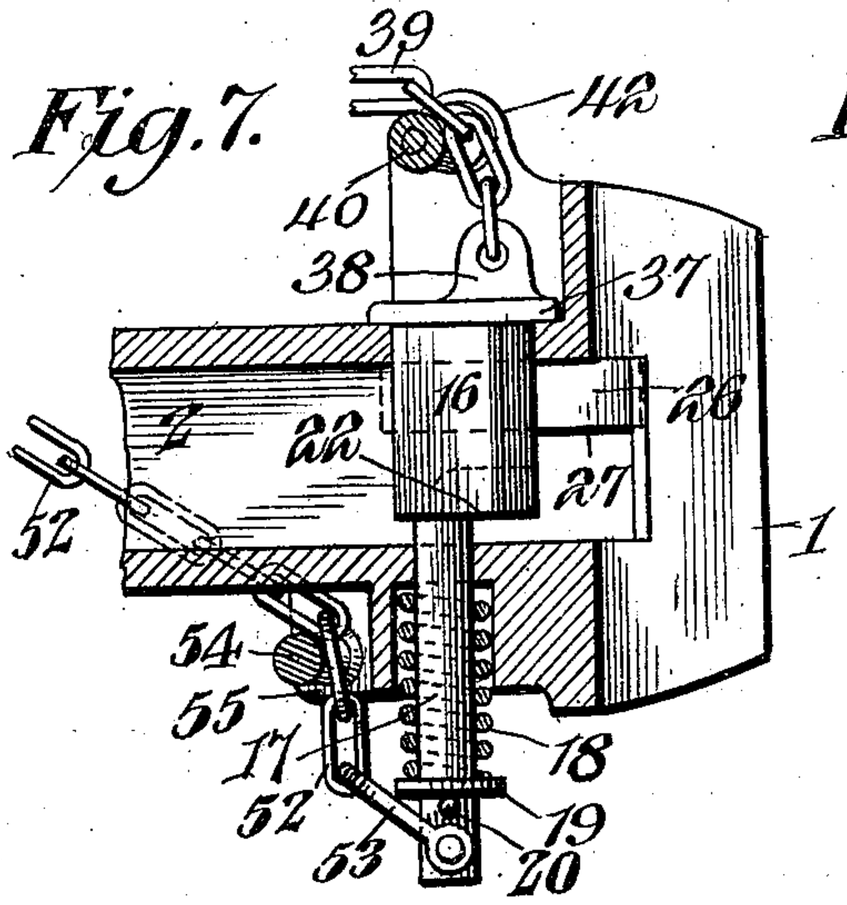



Fig. 8.

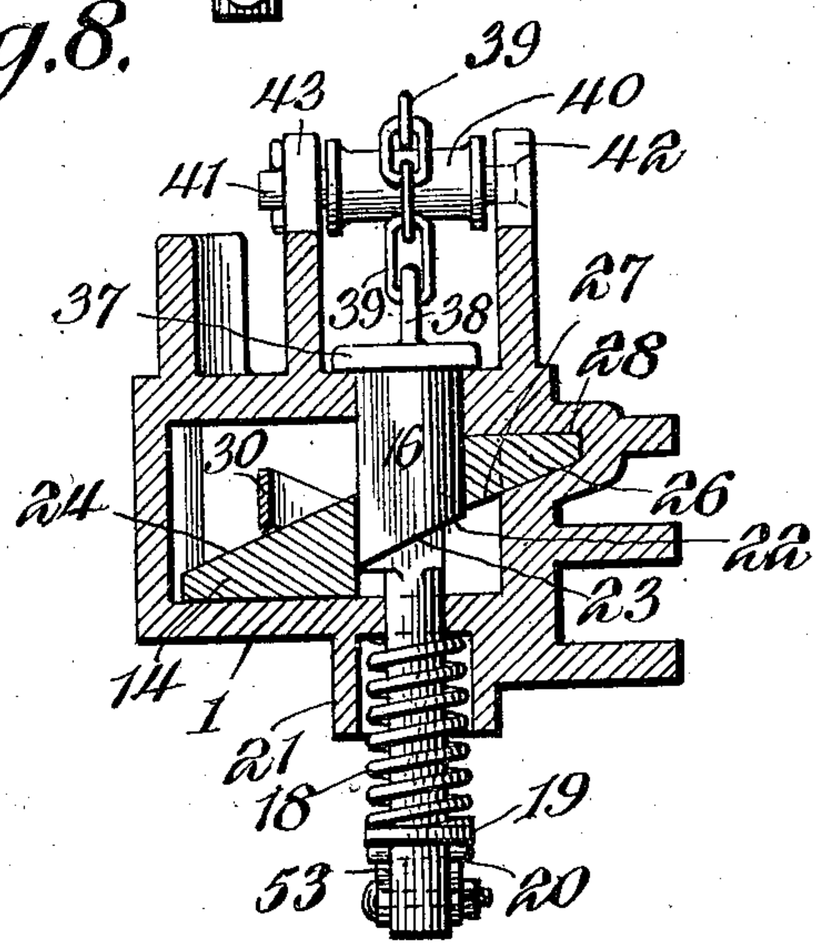
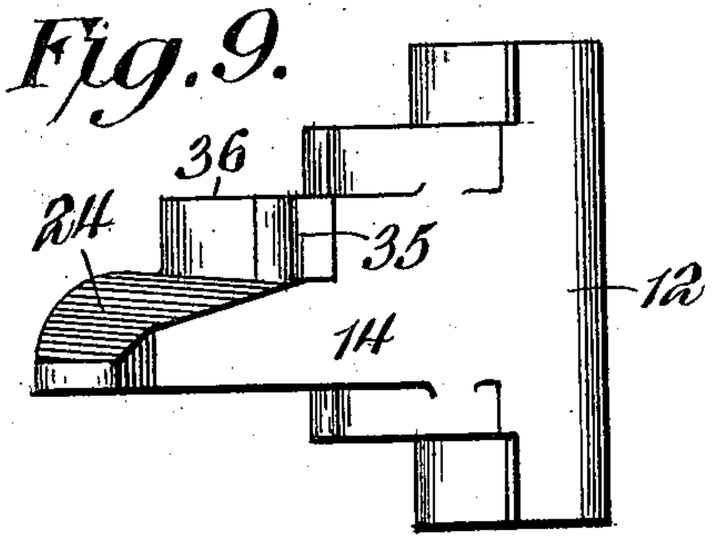



Fig. 9.

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# UNITED STATES PATENT OFFICE.

MARK ANTHONY BROWN, OF CHATTANOOGA, TENNESSEE, ASSIGNOR TO THE SAFETY CAR COUPLER CO. INC., OF CHATTANOOGA, TENNESSEE.

## CAR-COUPLING.

981,746. Specification of Letters Patent. **Patented Jan. 17, 1911.**

Application filed November 9, 1908. Serial No. 461,753.

*To all whom it may concern:*

Be it known that I, MARK A. BROWN, a citizen of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented a new and useful Car-Coupling, of which the following is a specification.

The invention relates to improvements in car couplings.

The object of the present invention is to improve the construction of car couplings, and to provide a simple, inexpensive and efficient car coupling, capable of coupling automatically and equipped with a lock set, adapted to maintain the knuckle locking means out of engagement with the knuckle to permit the latter to open.

A further object of the invention is to construct the draw head and the lock set so that water, snow, cinders, etc. will not interfere with its operation, and to enable it to be automatically disengaged from the knuckle locking means by the knuckle in opening.

Another object of the invention is to provide automatically operable means, capable of completely opening the knuckle and of maintaining the same in such position until the cars come together in coupling.

The invention also has for its object to provide means for enabling the operation of uncoupling to be performed from the interior of the vestibule of a passenger coach and also from the side of the car with perfect safety and with ease even while the car couplings are subjected to the pressure of the cars.

A further object of the invention is to provide means for automatically maintaining the car coupling in a central position to insure automatic coupling when two cars come together.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is an end elevation of a portion of a passenger coach, equipped with a car coupling constructed in accordance with this invention. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view of the car coupling. Fig. 4 is a horizontal sectional view of the same. Fig. 5 is a transverse sectional view on the line 5—5 of Fig. 4. Fig. 6 is a vertical longitudinal sectional view. Fig. 7 is a transverse sectional view on the line 7—7 of Fig. 4. Fig. 8 is a similar view on the line 8—8 of Fig. 4. Fig. 9 is a detail view of the knuckle.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a draw head provided with a draw bar 2, having oppositely inclined bottom faces 3, extending downwardly and inwardly from the side faces of the draw bar to the center thereof, and arranged upon a seat of a carrier iron 4. The carrier iron 4 is composed of a transverse bottom portion 5, vertical side portions 6 and inclined outer bars or members 7, extending upwardly and outwardly from the transverse bottom portion. The bottom portion, which forms a seat for the draw bar, has oppositely inclined upper edges 8, extending upwardly and outwardly from the center and conforming to the configuration of the oppositely inclined bottom faces of the draw bar.

The draw bar is maintained normally in a central position by means of opposite spring coils 9, preferably constructed of a single piece of spring metal and connected by a transverse portion 10, extending over the top of the draw bar, as clearly illustrated in Fig. 5 of the drawings. The springs or spring coils 9 are interposed between the sides of the draw head and the side portions or members 6 of the carrier iron, and they are of sufficient strength to over-come the friction resulting from the weight of the draw bar and centrally positioning the car coupling in order to insure automatic coupling of two cars, when the same come together. The side portions or members 6 have enlarged upper ends 11, which are bolted, or otherwise secured to the frame-work of the car, and the upper terminals of the inclined braces or members 7 are also secured to the frame-work of the car.

The draw head carries a pivoted knuckle 12, connected with the draw bar by means of

a knuckle pin 13, and provided with an inwardly or rearwardly extending arm 14 substantially L-shaped in plan view to enable it to interlock, when closed, with a shoulder 15 of the draw head, whereby the knuckle will be prevented from pulling out should the knuckle pin become broken. The knuckle is locked in its closed position by means of a vertically movable locking pin 16, having a reduced lower portion 17 and cross sectionally tapered at its upper portion, which is rounded at its front and rear faces, as clearly shown in Fig. 4 of the drawings. The lower portion 17 of the locking pin extends through the bottom of the draw head and receives a coiled spring 18, interposed between the bottom of the draw head and a washer 19, which is secured to the lower end of the draw head by means of a key 20. The coiled spring 18, which maintains the locking pin in engagement with the knuckle and which positively moves the locking pin downward, has its upper portion housed within a bracket 21 of the draw head.

The reduced lower portion of the locking pin forms a shoulder at the lower end of the upper portion. The shoulder 22, which is located at the front and sides of the locking pin, is inclined at the front, as shown at 23 to enable it to be automatically raised by the arm 14 of the knuckle, which is also provided with an inclined upper face 24. The locking pin is set at an angle, as illustrated in Fig. 4 of the drawings, and it presents a flat angularly disposed side face to the adjacent side edge of the arm of the knuckle when the latter is closed, whereby the knuckle is firmly maintained in its closed position. When the locking pin is raised by the means hereinafter described, it is automatically engaged by a gravity acting lock set 26, consisting of a substantially triangular block or piece, arranged to project beneath the shoulder 22 for supporting the locking pin in an elevated position to permit the knuckle to open. The lock set maintains the upper portion of the locking pin above the plane of the arm 14 of the knuckle, so that the said arm 14 is free to pass beneath the engaging portion of the locking pin. The lock set, when in engagement with the locking pin, is arranged in the path of the arm 14 of the knuckle, and the said arm is carried into contact with the lock set through the opening movement of the knuckle, whereby the lock set is disengaged from the locking pin, which is permitted to fall and rest upon the arm of the knuckle. The arm 14 in the closing movement of the knuckle is also adapted to engage the lock set and release the locking pin, should the latter be supported in an elevated position by the lock set while the knuckle is open. The locking pin is then supported by the arm of the knuckle until the latter is closed and reëngaged by the locking pin. The lock set, which is tapered transversely of the draw head, is provided with an inclined bottom face 27, and it operates in a recess 28 having an inclined bottom face or wall down which the lock set slides, when the locking pin is raised to release the knuckle. The substantially triangular shape of the lock set forms a projecting portion 29, which extends beneath the upper portion of the locking pin. The projecting portion 29 is rounded and is engaged by the arm of the knuckle, when the latter opens.

The gravity acting lock set extends from the inner or rear wall of the recess 28 to the adjacent side of the locking pin when the knuckle is locked, and it thereby operates as a brace to prevent the locking pin from being broken by the lateral strain resulting from the pressure exerted on it by the arm of the knuckle. The gravity acting lock set by substantially filling the entire recess prevents cinders or dust accumulating on the inclined bottom face or wall and interfering with the operation of the lock set.

The knuckle is automatically opened by a spring 30 preferably composed of a plurality of leaves and set at an inclination, as clearly illustrated in Fig. 6 of the drawings. The lower or rear end of the spring 30 is provided with an eye, and is clamped on an inclined seat 31 by a screw or bolt 32, passing through the bottom of the draw bar and provided at its lower threaded end with a nut, which may be keyed to the bolt if desired. Any other form of fastening device may be employed for securing the spring upon the seat 31. The inclined seat 31, which extends longitudinally of the draw bar, is located at one side thereof, and is provided at the front or outer portion with an upwardly extending side flange 33, spaced from the adjacent side of the draw head to receive the spring, which is held against lateral movement by the flange 33. The seat is also provided at its inner or rear end with a shoulder or stop 31ª for the lower end of the spring, which is adapted to be removed, repaired or replaced by a new spring without taking down the draw head.

The upper or front end of the spring is bent upon itself to form a head 34, which engages a rounded portion 35 of an enlargement 36 of the upper face of the arm of the knuckle. The enlargement or boss 36 extends rearwardly along the arm 14, and it is provided at the inner side with the laterally projecting portion 35, which is rounded, as clearly shown in Fig. 4 of the drawings. The front end of the spring 30 is adapted to engage the projecting portion at the apex and also at the front side, whereby a complete opening of the knuckle is effected.

The upper end of the locking pin is provided with a horizontal flange 37, and it

has an upwardly extending ear or lug 38, perforated to receive one end of a chain 39, which passes upward over a horizontal roller 40, set at an angle at a point in rear and above the ear or lug of the locking pin. The roller, which is tapered from each end to the center to provide a concave face, is mounted on a shaft or pin 41, which pierces spaced webs or flanges 42 and 43, formed integral with the draw head and set at at angle, as clearly illustrated in Fig. 3 of the drawings. The upper or inner end of the chain 39 is connected with a horizontal arm 44 of a vertical shaft 45, journaled in suitable bearings of a car 46 and piercing the sill of the vestibule 47, and equipped at its upper end with a folded arm 48. The arm 48, which is pivoted to the shaft at 49, is adapted to be swung upward from the folded position, shown in Fig. 1 to the horizontal dotted position, illustrated in the said figure for enabling the shaft to be partially rotated for unlocking the knuckle. The operation of uncoupling may also be performed from the side of the car by means of a rod 50, connected at its inner end to the arm 44 by a pivot 51. The operating rod 50 is provided at its outer end with a suitable grip or handle, and it is adapted to be drawn outward to swing the arm 44 horizontally, and thereby raise the locking pin. The particular arrangement of the roller with relation to the locking pin will enable the knuckle to be easily unlocked even when two car couplings are subjected to the pressure of two cars. The locking pin is also adapted to be operated from the bottom by means of a chain 52, connected with the lower end of the locking pin by a link or yoke 53 and passing over a lower roller 54. The roller 54 is mounted in a suitable bracket 55, preferably formed integral with the draw head at the bottom thereof and located at the back of the same. The lower roller is located beneath and is preferably set at the same angle as the lower roller 54, and the chain 52 is connected with the arm 44 of the shaft 45, and when pulled upon moves the locking pin upward. This will enable the car coupling to be operated from the bottom of the draw head in addition to the other operating mechanism, and either one of the operating chains 39 and 52 may be employed.

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

1. A car coupling including a draw head having a draw bar provided with an interiorly arranged inclined seat, a spring arranged at an inclination and having its lower end secured upon the said seat, and a pivoted knuckle having an arm arranged to be engaged by the spring.

2. A car coupling including a draw head having a draw bar provided at the bottom with an inclined seat, said seat being located adjacent to one side of the draw bar and having an upwardly extending side flange, an inclined spring arranged upon the seat between the said flange and the adjacent side of the draw head and provided at its lower end with an eye, a fastening device extending through the eye and securing the spring to the draw head, and a knuckle having an arm engaged by the said spring.

3. A car coupling including a draw head, a knuckle pivoted to the draw head and having an arm provided at the inner side with a rounded projection extending laterally from the side face of the arm, and a longitudinal knuckle-opening spring secured at its inner end and having its outer end bent back on itself to form a head, which bears against the rounded projection of the knuckle.

4. A car coupling including a draw head provided at one side with a recess having an inclined bottom wall, a locking pin arranged at an intermediate point between the sides of the draw head, a knuckle pivoted to the draw head at the side opposite that at which the recess is arranged and having an arm engaging with one side of the locking pin when the knuckle is closed, and a gravity acting lock set located at the opposite side of the locking pin and seated upon the inclined bottom wall of the recess and projecting beyond the latter and bearing against the inner or rear wall of the recess and the adjacent side of the locking pin and forming a brace for the latter when the knuckle is locked.

5. A car coupling including a draw head provided at one side with a recess having an inclined bottom wall, a locking pin arranged at an intermediate point between the sides of the draw head, a knuckle pivoted to the draw head at the side opposite that at which the recess is arranged and having an arm engaging with one side of the locking pin when the knuckle is closed, and a gravity acting lock set of triangular form seated upon the inclined bottom wall of the recess and substantially filling the latter and projecting beyond the same and bearing against the inner or rear wall of the recess and the adjacent side of the locking pin to form a brace for the said locking pin when the knuckle is locked.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

MARK ANTHONY BROWN.

Witnesses:

S. M. HUDLAW,

T. W. MORRIS.