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Patented Mar. 18, 1902.

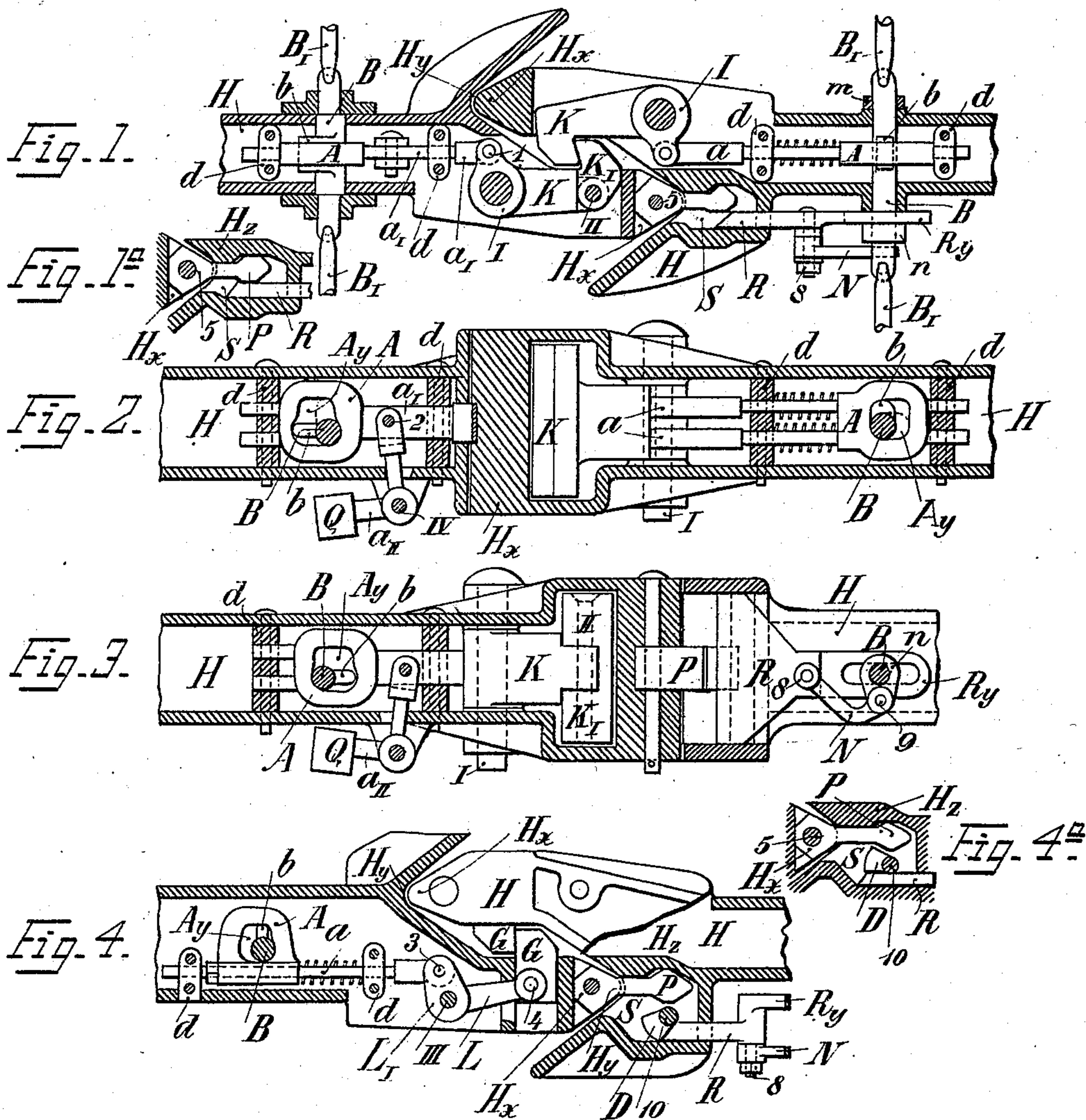
C. BANOVITS.

ENGAGING OR DISENGAGING DEVICE FOR AUTOMATIC RAILWAY CARRIAGE COUPLINGS.

(Application filed July 28, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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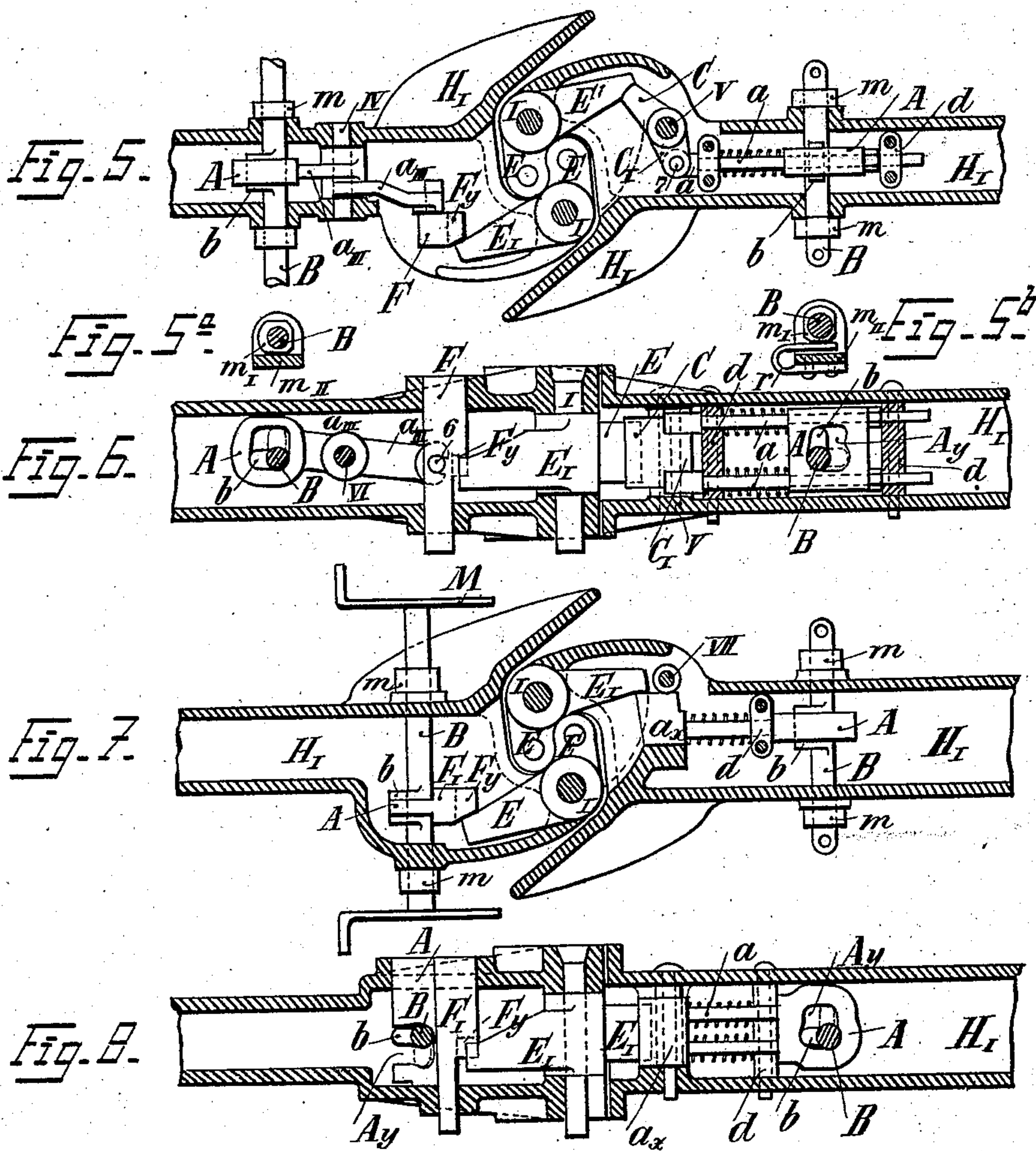
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(Application filed July 28, 1900.)

(No Model.)

2 Sheets—Sheet 2.



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CAJETÁN BANOVITS, OF BUDAPEST, AUSTRIA-HUNGARY.

ENGAGING OR DISENGAGING DEVICE FOR AUTOMATIC RAILWAY-CARRIAGE COUPLINGS.

SPECIFICATION forming part of Letters Patent No. 695,595, dated March 18, 1902.

Application filed July 28, 1900. Serial No. 25,193. (No model.)

To all whom it may concern:

Be it known that I, CAJETÁN BANOVITS, a subject of the Emperor of Austria-Hungary, residing at 85 Andrassy-út, VI, Budapest, Austria-Hungary, have invented certain new and useful Improvements in Engaging or Disengaging Devices for Automatic Railway-Carriage Couplings, of which the following is a full, clear, and exact specification.

My invention relates to improvements in engaging and disengaging devices for automatic railway-carriage couplings, by means of which the coupler is protected by its locking device, and each of the forms of automatic railway-coupling hereinafter described and contained in the coupling-head H or H' is provided with an engaging and disengaging device connected by suitable means with a coupling knuckle or tooth, the construction of which may vary. This engaging and disengaging device has three positions—viz., the first (middle) position, in which the coupling-head is ready for coupling; the second position, in which the knuckle is held engaged; the third position, in which the coupling is held disengaged and in which reengaging of the coupling is impossible.

In the form of construction of coupling-head and knuckle represented in Figures 1 to 4 a double-action safety-coupling may be employed, which is connected with the above-mentioned engaging and disengaging device in such a manner that in the second position the engaging and disengaging device operates the safety-coupling, while in the other two positions it puts the latter out of operation.

This automatic railway-coupling is hung loosely to the underframe of railway-cars and provided with springs in such a manner as to yield both under pressure and traction, and is further arranged in such a manner that the rods connecting the two coupling-heads can be suitably lengthened or shortened.

Figs. 1 and 4 are horizontal sections of the coupling-head. Fig. 2 is a vertical section, and Fig. 3 partially a vertical section thereof. Figs. 5^a and 5^b are details of the coupling-box.

The engaging and disengaging device for the coupling-head consists in the following parts: The plate A, with the opening A^y in it, which latter in Figs. 1 to 6 and on the right side of Figs. 7 and 8 is closed and on

the left side of Figs. 7 and 8 is open, the key B with the bit *b* turning in the opening A^y. The key B is held in the coupling-head H H' and can be turned either from both sides, as in Figs. 1 to 3 and 5 to 8, or from above, as in Fig. 4. In the latter case the key B is in a vertical position and the plate A horizontal. In Figs. 1 to 3 the key B is in a horizontal and the plate A in a vertical position.

The plate A on the right side of Figs. 1 and 2 is connected, by means of bars *a a*, provided with springs, with the coupling-knuckle K, which is in the form of an elbow-lever. The plate A on the left-hand side of Figs. 1 to 3 is connected with the coupling-knuckle K K' by means of the bars *a'*, which are held in position by the weight Q. In all these figures, as well as in all those hereinafter described, *d d* indicate a guide fixed to the coupling-head.

In Fig. 5 (left side) the plate *a* is fixed to one of the arms of the double-armed lever *a'''*, which moves vertically around the axle VI; the other arm of the lever being connected by means of the bolt 6 with the catch F of the coupling-knuckle E E'. The plate A on the right side of Figs. 5 and 6 is connected by means of the yielding bars *a* and the bolt 7 with the double-armed lever C C', which moves on the vertical axle V and the arm C of which forms the catch of the coupling-knuckle E E'.

The plate A on the right side of Figs. 7 and 8 is connected by means of the yielding rods *a a* with the catch *a^x*, while on the left side of the same figures the plate A is connected directly and rigidly with the catch F' in such a manner as to form one part with it.

The action of the engaging and disengaging device is as follows: On the right of Figs. 1 and 2 the key B, and consequently the key-bit *b*, are in such a position that by compression of the spiral springs the plate A and the bars *a* can be moved to the left until the right side of the opening A^y comes into contact with B and *b*. With the key B in this position it is possible for the coupling-tooth K to enter in consequence of the pressure produced in coupling of the coupling-teeth K K together into the coupling-head H and to draw both the plate A and the bar *a* from the left with it. When the two opposite coupling-

teeth \bar{K} and K have passed each other, the coupling-tooth K is forced by the action of the spiral spring around the rod a out of the coupling-head, and on the coupling being effected the coupling-tooth K , the rods a , and the plate A assume the position shown on the right side of Figs. 1 and 2. If the key B is then turned ninety degrees to the right, the key-bit b will lie horizontally in the lower part of the opening A^x , and thus fix the coupling-tooth in the position in which it effects the coupling. If, however, the key is not turned to the right, but turned ninety degrees to the left, the key-bit b will push the plate A and the rods a to the left, and will thereby draw the coupling-tooth K into the coupling-head and fix it there. The coupling is thus disengaged and the coupling-tooth fixed in such a position that recoupling is impossible. When recoupling is to be made possible, the key B must be brought into the position shown in Figs. 1 and 2 on the right. The key B is turned by means of double cranks $M M$, provided at each side of the car and either rigidly fixed to the key or by means of a universal joint.

To fix the key B in its three positions, the device shown in Figs. 5^a, 5^b may be employed. In Figs. 5^a, 5^b one of the adjusting-boxes m^2 , fixed to the key B , instead of the coupling-boxes m , is flattened on three sides, one of which flat sides is at the bottom in each of the positions of the key. In Fig. 5^a, in which the bearing of the key B widens slightly toward the top, the surface of the box m' , which is at the bottom, rests upon a flat lug m'' of the coupling-head H . In Fig. 5^b this surface rests upon a spring r , fixed to the flat lug m''' of the coupling-head H . In Fig. 5^a the key is held in position by its own weight, in Fig. 5^b by the spring r .

In Figs. 1 to 3 (left side) and Figs. 4 to 8, the latter of which represent variations in the construction of the engaging and disengaging device or in the combination of same with other parts, the engaging and disengaging device is identical with that hereinbefore described, as far as principle and operation are concerned, and the following will serve for further elucidation:

In Figs. 1 and 2 (left side) the key B , with the key-bit b , is shown in the position in which the coupling-knuckle $K K'$ is fixed when engaged. The dotted line in Fig. 2 indicated that position of the key-bit b in which it is possible to couple uncoupled cars, with the key B and the key-bit b in the position shown in Fig. 3, the key B and the key-bit b have been turned into the coupling-head and fixed there. The coupling-knuckle $K K'$ consists in this case also of an elbow-lever moving on the axle I , and the coupling-knuckle K' revolving on the axle II transmits the pressure partly to the coupling-head and partly to the axle I , thereby relieving the latter to a certain extent. It may further be mentioned that instead of spiral springs around the rods

a an elbow-lever a'' , revolving on the axle IV and weighted with the weight Q , is provided.

In Fig. 4 the coupler is a tooth G , moving vertically backward and forward across the longitudinal axis of the coupling and connected by means of the elbow-lever L , revolving on the axle III with the rods a , which are provided with springs and with the plate A , the latter being in a horizontal and the key B in a vertical position. The key B can be turned from the platform or from the roof of the car. With the key-bit b in the position shown in Fig. 4 it is possible to couple the cars. If b is turned ninety degrees to the left, the key will fix the parts after coupling has been effected. If the key is turned ninety degrees in the other direction, the coupling will be disengaged and the coupling-tooth fixed in a position in which recoupling cannot take place.

In Figs. 5 to 8 the engaging and disengaging device is shown in combination with American coupling-knuckles, which do not catch until the moment of coupling, but before coupling hang loosely out of the coupling-head. These operate in the following manner: The coupling-knuckles $E E'$ form elbow-levers, which on the coupling being disengaged—that is to say, on the catches hereinafter mentioned being disengaged—swing out of the coupling-head and can be held in the position they then assume by means of a spring. With the coupling in the position shown in Figs. 5 to 8, however, the knuckles swing into the coupling-head and the arm E of the knuckle $E E'$ hooks into the catch, which is indicated in Figs. 5 and 6 on the right by C , on the left by F , and in Figs. 7 and 8 on the right by a^x and on the left by F' . The catches are disengaged and the coupling locked by means of the engaging and disengaging device in the following manner: In Fig. 5 (at the left) the double-armed lever $a''' a'''$ can be made to revolve on its axle VI by turning the key B , and thereby the catch F is lifted or fixed in the position shown in Fig. 5. When the key-bit b is in the position indicated in Figs. 5 and 6, (on the left,) the arm E' of the knuckle can in passing into the coupling-head lift up the catch F , which is provided for the purpose with a slanting surface. When after the arm E' has passed—that is to say, when the coupling has been effected the catch F has sunk in consequence of its own weight into the position shown in Fig. 6, (on the left,)—the coupling can be locked by turning the key B in such a manner that the key-bit b will assume the position indicated in Fig. 6, (on the left,) by the dotted line, in consequence of which both a''' and F —that is, the whole coupling—are locked. If, however, B is turned in such a manner that the key-bit b is turned downward, the lever $a''' a'''$ is made to revolve in such a manner that the right arm (according to the drawings) will move upward and lift the catch F , whereby the

coupling is disengaged. With the key B and the key-bit *b* in the position indicated in Figs. 5 and 6 (on the right) the arm *E'* of the knuckle *EE'* in passing into the coupling-head can push back the catch *c* on its axle 5. When the arm *E'* has passed the catch *C* and the latter has snapped into the position shown in Figs. 5 and 6, by reason of the springs around the rods *a* the coupling is effected and can be locked by moving the key-bit *b* into the position indicated by the dotted line in Fig. 6, (on the right.) If, however, the key B is turned so that the key-bit *b* is on the left side, the rods *a* will be pushed forward by means of the springs and *C* will be moved into a position in which the catch *C'* will no longer be opposite the arm *E'*. In this case the coupling is disengaged. In Figs. 7 and 8, (on the right,) *a^x* can be pushed back by turning the arm *E'* into the coupling-head when the key-bit *b* is in the position indicated in Fig. 8 by the dotted line. When *E'* has passed the catch *a^x* and *a^x* has snapped back, the coupling can be locked by causing the key-bit to assume the position shown in Fig. 6 in full lines—viz., to the left of the key. By turning the key so that the key-bit *b* will be on the right side the catch *a^x* is drawn back and the coupling disengaged. In Figs. 7 and 8, (on the left,) in which the plate *A* is integral with the catch *F'*, the latter can be lifted by the movement of the arm *E'*, provided the key-bit *b* is in a horizontal position, as shown in Figs. 7 and 8. If the coupling effected after the arm *E'* has passed the catch *F* is to be locked, the key B must be turned to the left, so that the key-bit will point downward, as indicated by the dotted line on the left of Fig. 6. If, on the other hand, the coupling is to be disengaged, the key B must be turned to the right until the key-bit *b* after lifting the plate *A*, and therefore also the catch *F'*, is pointing upward. It will be seen that in all these variations the key B or the key-bit *b* has three positions—viz., the middle position, in which coupling can be effected; a side position, in which the coupling after being effected is locked, and a second side position at an angle of one hundred and ninety degrees to the second position, in which the coupling is disengaged. In all these forms of construction if the key B remains in the third position, in which the coupling was disengaged, no recoupling can take place. The latter does not become possible until the key-bit *b* has been made to assume the middle position.

In order to provide in this automatic coupling system for the event of the main coupling being rendered useless by some circumstance or other, the engaging and disengaging device can be provided with a safety-coupling, as shown on one side of the main automatic coupling in Figs. 1, 1^a, 3, 4, and 4^a. Of course it is desirable when safety-couplings are used to provide one also on the other side of the main coupling corresponding to

the one in Figs. 1, 1^a, 3, 4, and 4^a. It is therefore advisable for an automatic coupling of this kind either to have symmetrical safety-couplings on both sides of the main coupling or to have none at all. The nature of the safety-coupling is as follows: The hock *P* is fixed to the pointed end *H^x* of the coupling-head *H*, either rigidly or so as to move around the axle 5, and hocks completely into a corresponding hole *S* in the opposite coupling-head when two coupling-heads have been pushed against each other and the automatic main coupling has thereby been operated. As shown in Fig. 1, (on the right,) the hock *P* does not in this position form a coupling, as it can be drawn out of the hole *S* in the same way that it was pushed in. The hock *P* does not become a coupling until the plate *R* (see right side of Figs. 1 and 3 and Fig. 1^a) has by means of the crank *n* and the rod *N* been brought into the position shown in Fig. 1^a through the same turn of the key which locks the main coupling. Then the plate *R* forms with the surface *H²*, Fig. 1^a, of the coupling-head *N* a closed chamber, in which the hock *P* can move somewhat, but from which it cannot be withdrawn as long as the main coupling is locked by the key B. With the key B in its other two positions the hock *P* remains ineffective. The arm *R^y* hooks around the key B and serves as guides for the plate *R*, which is integral with the latter.

The right sides of Fig. 4 and Fig. 4^a represent another form of construction of the safety-coupling, in which a segment *D*, turning on the axle 10, is provided between the hock *P* and the plate *R*. In the position shown in Fig. 4 *D* and *P* are ineffective, but in the position shown in Fig. 4^a (into which position *D* is brought by the same turn of the key B which locks the main coupling and has been described hereinbefore) *D* and the surface *H²* of the coupling-head (see Figs. 4 and 4^a) form a closed chamber, in which *P* can be moved upward and downward, but from which it cannot be withdrawn as long as the key B or the key-bit *b* of the latter keeps the main coupling locked. In the other two positions of the key B the hock *P* remains ineffective also in this case. If an automatic coupling-head provided with a safety-coupling is to be coupled with a similar coupling-head not provided with safety-coupling, the latter coupling-head must at least have a hole *S* in its surface *H^y* for the hock *P* of the safety-coupling to pass into. A similar safety-coupling can be employed with the forms of construction shown in Figs. 5 and 8.

Of course the form of the various parts may differ from that shown in the drawings as long as they fulfil the purpose required. It is equally plain that the forms of construction here represented may be reversed.

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

1. In an automatic coupling having hooks

adapted to engage automatically when the draw-bars meet, the combination of a sliding bar connected to and moved by the rotation of the coupling-hook, means for normally and yieldingly retaining said bar in the position to keep the hooks coupled when engaged, and means operated by hand for positively locking said sliding bar in the coupled or uncoupled position of the hooks and for allowing the said bar and hook free movement when the locking mechanism is in the central position between the positive locking positions substantially as described.

2. In a coupling of the automatic class having movable hooks to engage each other when the draw-bar ends meet, the combination of a sliding bar in engagement with and adapted to be moved by the rotation of the said hook on its pivot and a key operated by hand for positively locking the said bar to retain the hook in its coupled or uncoupled position and for releasing the parts when the key is in its intermediate position substantially as described.

3. In an automatic coupling having self-engaging hooks, the combination of a sliding bar in engagement with and moved by the rotation of the coupling-hook and a key in engagement with said bar for positively locking the said bar in either of its end positions, and for allowing it free movement when the said key is in its intermediate position, and means for normally holding the said bar in the coupled position when the key is in the position to release the same in the manner and for the purpose substantially as described.

4. In an automatic coupling having self-engaging hooks as specified, the combination of a sliding bar and means for moving the same by the rotation of the coupling-hook on its pivot to effect the coupling or release the same, an orifice formed in the said bar, a key hav-

ing a bit to lie in the said orifice and means for actuating the said key by hand from the outside of the coupling, the said bit and orifice being adapted to lock the said bar in either of its end positions and to release it when the bit is in its central position substantially as described.

5. In an automatic coupling having self-engaging hooks, the combination of a sliding bar and means for moving it when the hook is rotated on its pivot, a cam-orifice formed in the said bar, a key operated by hand and having a bit to lie in said orifice and adapted to lock the said bar when turned, in either of its end positions and release the same when in its central position and means for normally retaining the said bar and coupling-hook in the engaged position but yieldingly, when the said bar is released by the key-bit in the manner and for the purpose substantially as described.

6. In an automatic coupling having self-engaging hooks, the combination of locking mechanism positively operable from the outside of the coupling and adapted to lock the said coupling-hooks in the coupled or uncoupled position or allow the same free play when the locking mechanism is in its intermediate position, an auxiliary coupling adapted to engage simultaneously with the main coupling and means controlled by the said locking mechanism to engage positively the said auxiliary coupling when the main coupling is positively locked substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

CAJETÁN BANOVITS.

Witnesses:

KALMARFURUL,
RAYMOND TOUNY.