United States Patent

[11] **3,549,022**

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[54] **AUTOMATIC CAR COUPLER**
14 Claims, 21 Drawing Figs.

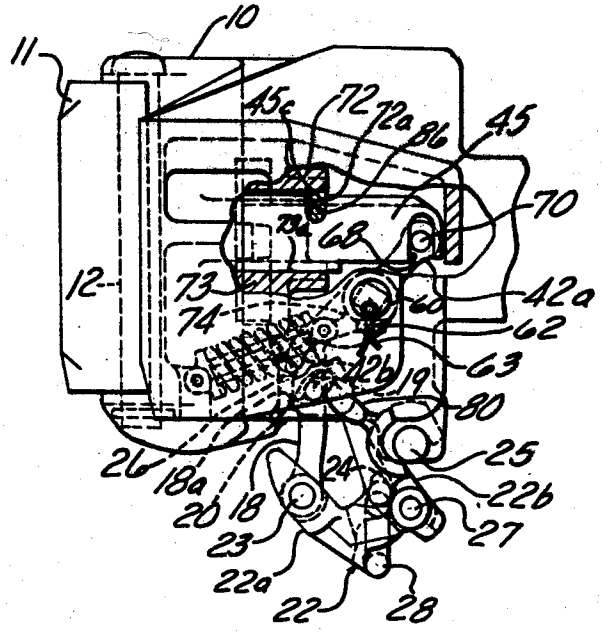
[52] **U.S. Cl.** **213/110,** 213/148
[51] **Int. Cl.** **B61g 3/00**
[50] **Field of Search** 213/110, 148, 116

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Primary Examiner—Drayton E. Hoffman
Attorneys—Henry Kozak and Woodrow W. Portz

ABSTRACT: A knuckle-type railway car coupler is provided with means for automatically unlocking and opening the knuckle when a mating coupler is uncoupled from the coupler. Means is provided in the coupler head for automatic engagement with a rotor lever of the coupler for actuation of the same to unlock knuckle and swing it to open position. The means is immobilized by the knuckle of an opposing coupler when the coupler is in coupled relation with the opposing coupler.



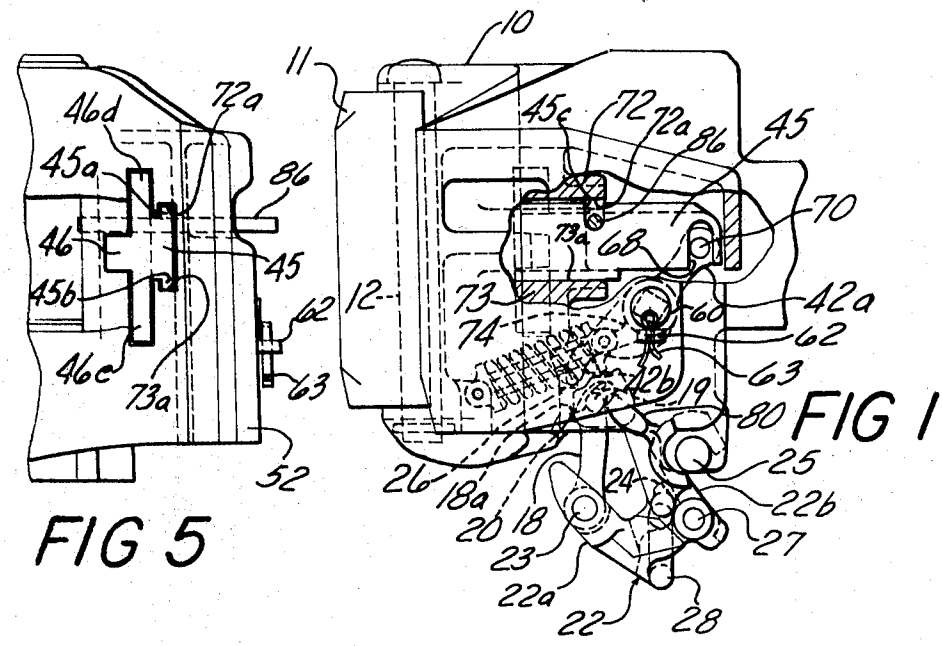


FIG 5

FIG 1

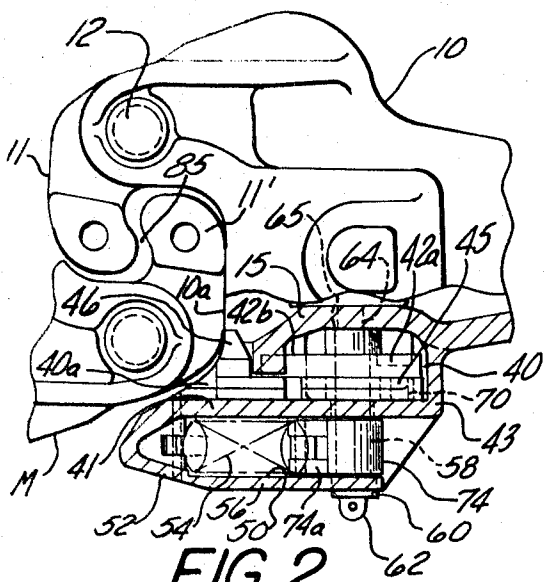


FIG 2

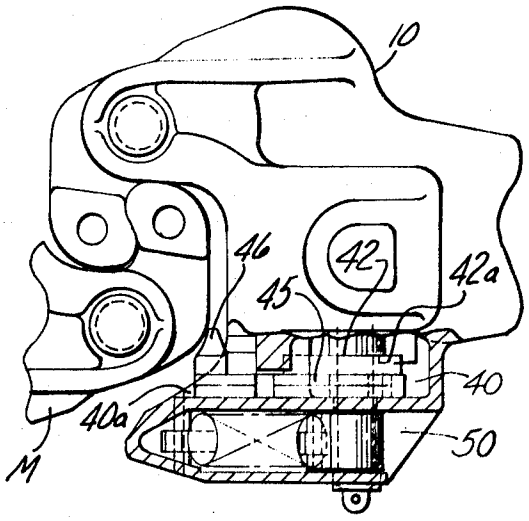


FIG 3

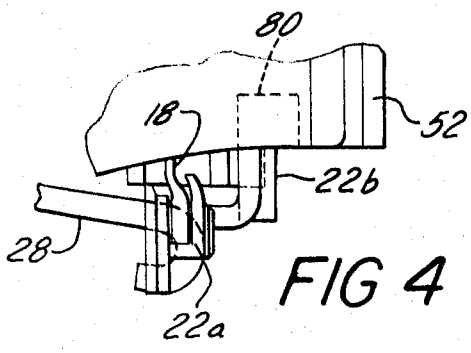


FIG 4

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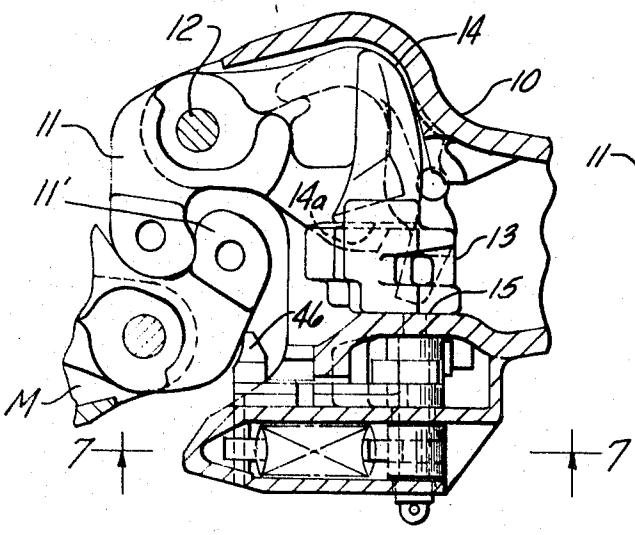


FIG 6

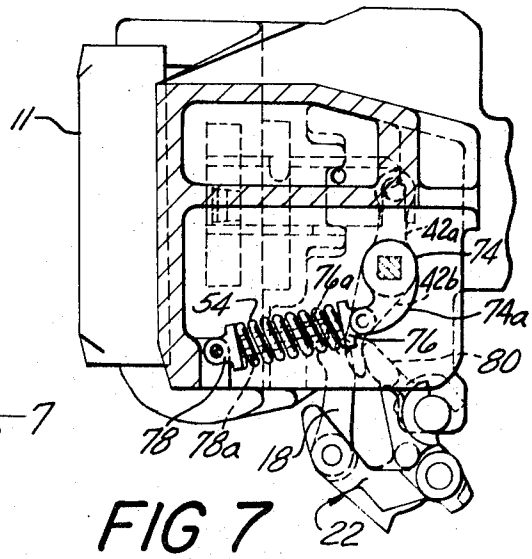


FIG 7

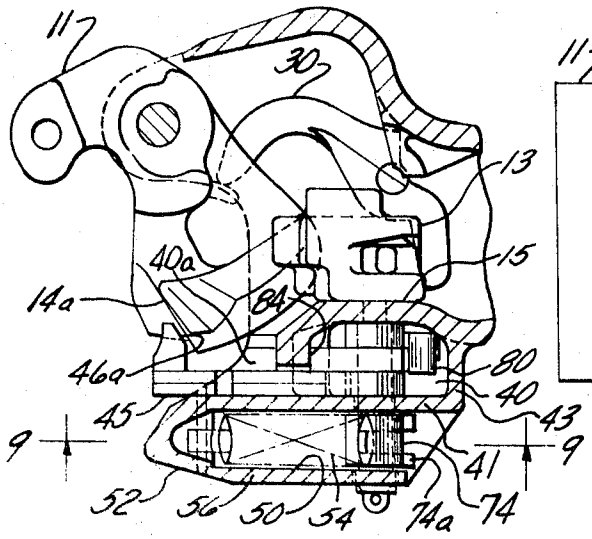


FIG 8

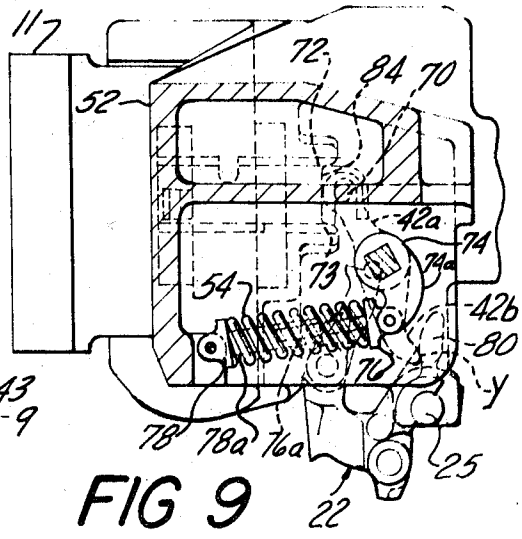


FIG 9

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FIG 10

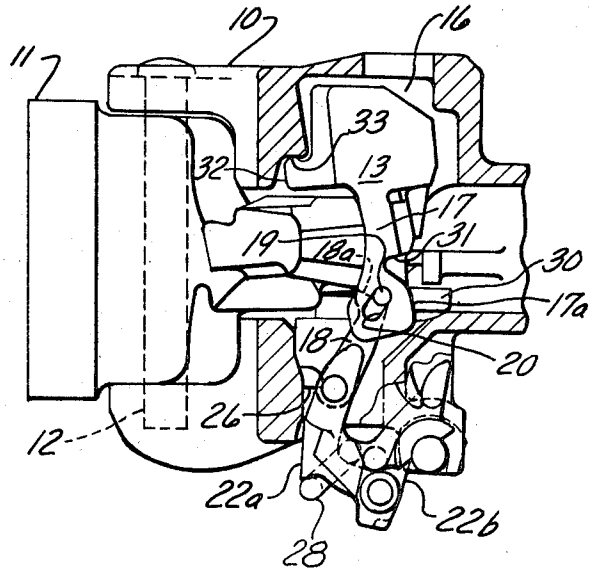


FIG 11

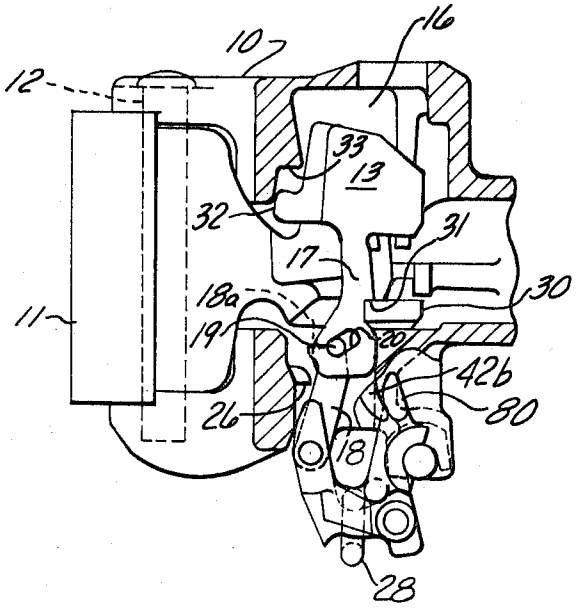
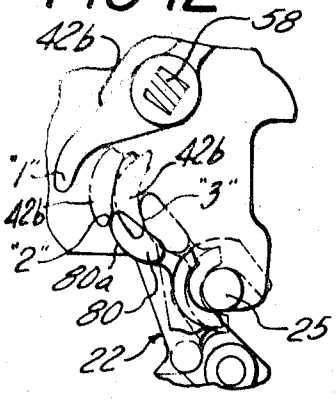


FIG 12



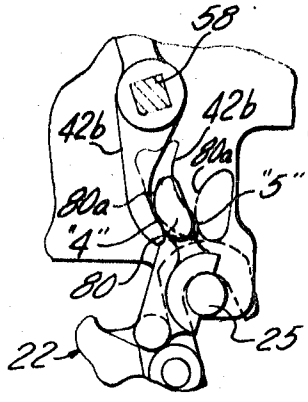


FIG 13

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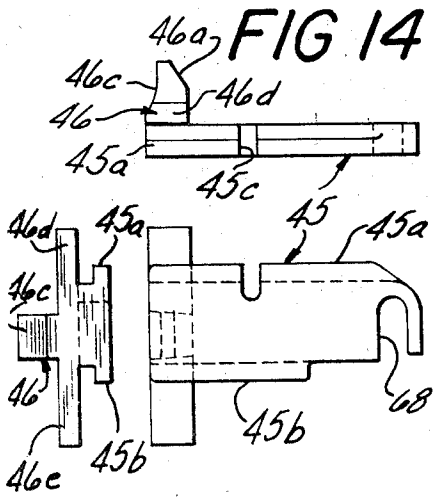


FIG 14

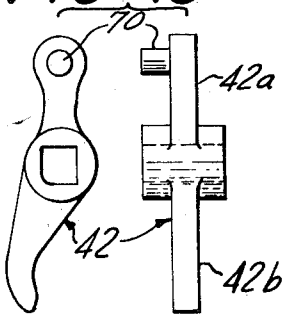


FIG 15

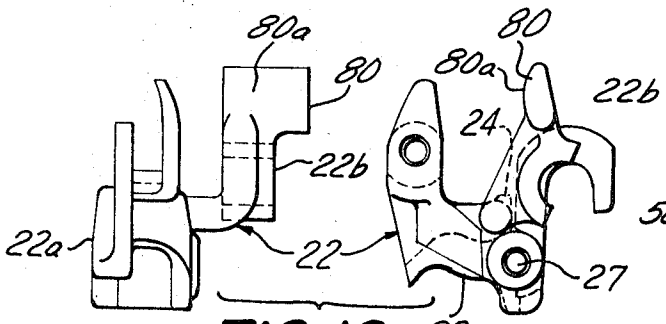


FIG 16

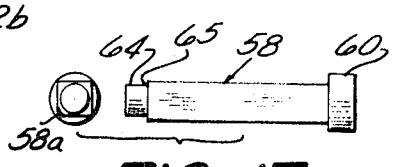


FIG 17

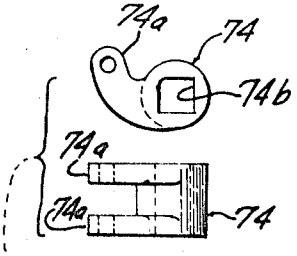


FIG 18

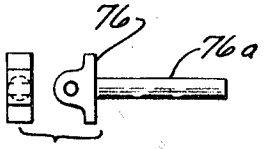


FIG 19

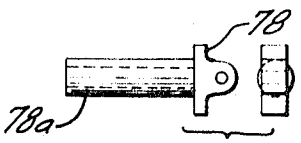


FIG 20

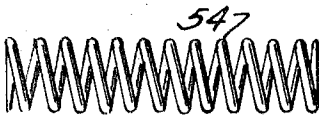


FIG 21

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AUTOMATIC CAR COUPLER

This invention is an improvement over that disclosed in my prior copending application Ser. No. 731,063, filed May 22, 1968, now U.S. Pat. No. 3,549,021, issued Dec. 22, 1970. In the earlier application separate energized means is employed to move the coupler lock to unlocking position and to open the knuckle. In the present invention both movement of the lock to unlocking position and opening of the knuckle are effected through the use of single energized means.

BACKGROUND OF THE INVENTION

The Association of American Railroads Standard Coupler in use in the United States for over 50 years has been referred to as an automatic coupler, but this coupler is not in fact fully automatic because it is not always ready for coupling. It is automatic to the extent that when the knuckle of at least one of two opposing couplers is in open position, the couplers will couple upon impact as they come together. Two couplers whose knuckles are in closed position cannot be coupled, and therefore in order to be coupled, one of the couplers must be prepared for coupling; that is, its knuckle must be unlocked and swung to open position by actuation of the usual uncoupling rod. When two coupled cars are desired to be separated, the usual practice is for a trainman to lock-set one of the couplers by means of the uncoupling rod. This unlocks the knuckle and permits it to swing open when a pulling force is applied to the couplers. Upon separation of these couplers during the uncoupling operation, one knuckle will be in open position upon completion of the operation while the other knuckle will remain closed and locked.

The present invention assures that the coupler will always be ready for coupling when the coupler is free, because its knuckle will be automatically disposed in open position. The invention provides for automatic unlocking and opening of the knuckle of a coupler as it is uncoupled from a mating coupler. Thus, upon separation of the couplers the knuckle of each coupler will be disposed in open position, and therefore each coupler will be ready for coupling with another coupler without further preparation of the coupler.

SUMMARY OF THE INVENTION

The main object of the invention is to provide a knuckle-type car coupler that is always ready to couple, i.e., its knuckle is disposed in open position.

Another object is to provide a knuckle coupler whose knuckle will automatically open during an uncoupling operation as the knuckle of a mating coupler swings to open position.

A further object is to provide a knuckle coupler in which, in addition to the usual means for manual unlocking of the knuckle, there is means for automatically unlocking and opening the knuckle as a mating coupler is being uncoupled from the coupler.

A still further object is to provide a knuckle coupler having knuckle unlocking and opening means which is inactive when the coupler is coupled to a mating coupler but which automatically unlocks and opens the knuckle as a mating coupler is uncoupled from the coupler.

Another object is to provide a knuckle coupler having a rotor lever which in addition to being manually actuatable by an uncoupling rod is also actuatable by automatic means to effect unlocking of the knuckle and movement thereof to open position during an uncoupling operation with a mating coupler whose knuckle had been unlocked prior to the operation.

A further object is to provide an A.A.R. Standard coupler having means which automatically unlocks and opens the knuckle when the coupler is uncoupled from a mating coupler which had been placed in unlocked or lock-set condition prior to the uncoupling operation.

Another object is to provide a knuckle coupler having means including an energized coil spring for effecting unlocking and opening of the knuckle during an uncoupling operation.

A more specific object is to provide a knuckle coupler embodying means for automatic actuation of the rotor lever thereof to a position in which the knuckle is fully opened when the coupler is uncoupled from a mating coupler which had been lock-set prior to the uncoupling operation.

The invention comprises novel spring-actuated means within the head of a knuckle-type railway car coupler adapted to actuate the rotor lever thereof to effect opening of the knuckle. The means comprises a lever and plunger arrangement mounted in the coupler head and actuated by spring means to automatically rotate the rotor lever of the coupler the extent necessary to swing open the knuckle. The spring means is in the form of a coil spring which is energized through compression thereof and whose force actuates the lever which in turn actuates the rotor lever. When the coupler is in coupled relationship with a mating coupler, the plunger is engaged by the opposing coupler to immobilize the lever against the force of the spring which had been compressed during the coupling operation. In this coupled condition of the coupler, the lever is out of contact with the rotor lever. During an uncoupling operation in which the knuckle of the mating coupler had been previously unlocked, the plunger moves outwardly of its coupler in response to separation of the couplers. This allows the lever to move into engagement with the rotor lever under the force of the spring, causing the rotor lever to rotate. As the separation of the couplers proceeds, the rotor lever continues to be rotated until the knuckle has been unlocked and swung to open position. Upon completion of the uncoupling operation, the knuckle of each coupler will be in open position.

The foregoing and other objects and advantages of the invention will be apparent from the following detailed description taken in conjunction with the accompanying drawings.

FIG. 1 is a side elevational view partly in section of a car coupler embodying the invention.

FIG. 2 is a plan view partly in horizontal section of the coupler shown in FIG. 1 coupled to an opposing mating coupler. The couplers are shown in buffed condition.

FIG. 3 is a view similar to FIG. 2 but showing the couplers under a pulling load.

FIG. 4 is a front view of the lower portion of the coupler shown in FIG. 1.

FIG. 5 is a fragmentary front view of the coupler shown in FIG. 1.

FIG. 6 is a horizontal sectional view of the couplers shown in FIG. 3, with the mating coupler separated from the coupler a predetermined amount, as during an uncoupling operation.

FIG. 7 is a vertical sectional view taken along line 7–7 of FIG. 6.

FIG. 8 is a horizontal sectional view of the coupler after the mating coupler has been completely uncoupled and separated from the coupler.

FIG. 9 is a vertical sectional view taken along line 9–9 of FIG. 8.

FIG. 10 is a vertical sectional view of the coupler of FIG. 1, showing the coupler parts corresponding to the position they occupy upon actuation of the rotor lever to fully open the knuckle.

FIG. 11 is a vertical sectional view of the coupler of FIG. 1, showing the lock in unlocking or lock-set position, the knuckle being in closed position.

FIG. 12 is a fragmentary elevational view showing the lever and the rotor lever in various sequential positions during the functioning of the invention to effect opening of the knuckle.

FIG. 13 is a view similar to FIG. 12 but showing further sequential positions of the parts to effect opening of the knuckle.

FIG. 14 shows top, front and side view details of the plunger forming a part of the invention.

FIG. 15 shows side and rear view details of the lever.

FIG. 16 shows front and side view details of the rotor lever.

FIG. 17 shows end and side view details of the pin on which the lever is pivotally mounted in the coupler head.

FIG. 18 shows side and top view details of the rotor member.

FIG. 19 shows side and end view details of one of the spring seats.

FIG. 20 shows side and end view details of another of the spring seats.

FIG. 21 is a side view of the spring in free condition.

Referring to the drawing, there is shown an Association of American Railroads (A.A.R.) Standard E coupler to which the invention has been applied. The coupler head **10** has knuckle **11** pivoted thereto about a vertical pin **12**. The knuckle is swingable from closed position (FIGS. **1** and **2**) to fully opened position (FIGS. **8** and **9**). The knuckle is locked in closed position by a lock **13** which is interposed between the locking face **14***a* of the knuckle tail **14** and the vertical wall **15** in the head as in FIG. **6**. The lock is movable upwardly into chamber **16**, as in FIG. **10**, wherein the lock is out of locking relationship with the knuckle. The lock has a depending leg **17** which is operatively connected to a lock lifter link **18**, the upper end of which has a trunnion **19** received in slot **20** in the leg. The lower end of link **18** is pivotally connected to the forward element **22***a* of the articulated rotor lever **22** as at **23**. The rotor lever has a rearward element **22***b* having its hook-shaped portion pivotally mounted on trunnion **25** on the head. Elements **22***a* and **22***b* of the rotor lever are pivotally joined together by a pin or rivet **27** and rotate as a unit about trunnion **25** upon engagement of lug **24** with the opposing surface of element **22***b* during manual actuation of the lever by the usual uncoupling rod **28**. With the coupler knuckle closed and the lock in its locking position, rotor lever **22** and lock lifter link **18** assume the reposed position shown in FIG. **1**.

Upon rotation of the rotor lever **22** in a clockwise direction, as viewed in FIG. **1**, by means of uncoupling rod **28** connected to element **22***a*, the trunnion **19** of link **18** is caused to move to the upper end of slot **20** in the lock leg. This movement displaces the upper end of the link rearwardly so that abutment surface **18***a* on the link is moved out from under anticreep shoulder **26** in the coupler head to permit the lock to be raised upwardly to the position shown in FIG. **10**. Reference is made to W.J. Metzger U.S. Pat. No. 2,866,560 for a detailed description of the lock anticreep means and release thereof to permit unlocking of the coupler. During the lifting of the lock in response to rotation of lever **22** the fulcrum lug **32** on the lock engages the shoulder **33** on the coupler head. As the rotation of the rotor lever continues, the lock fulcrums about lug **32** in a rearward direction, causing surface **17***a* on lock leg **17** to engage the knuckle thrower **30** and apply a rearward force thereagainst. This actuates the knuckle thrower, which swings the knuckle **11** to fully open position, as shown in FIG. **10**.

When it is desired to uncouple two coupled couplers, a trainman will first place the lock of one of the couplers in lock-set position in the usual manner by manual actuation of the uncoupling rod **28**. In lock-set position, as shown in FIG. **11**, lock **13** has been raised out of locking relation with knuckle **11** and is supported on knuckle thrower **30** by means of a shoulder or ledge **31**. With the lock of one coupler in lock-set position, the knuckle of that coupler will be free to pivot to open position to permit the couplers to separate. It will be understood that the knuckle of the coupler whose lock was not placed in lock-set position will remain closed upon completion of the uncoupling operation, assuming the coupler does not embody the present invention. Thus, during uncoupling, the locked knuckle will pull open the knuckle of the coupler whose lock had been previously placed in lock-set position.

The coupler head **10** is modified to accommodate the mechanism for automatic unlocking of the knuckle by provision of an inner chamber **40** for receiving lever **42** and plunger **45**. Chamber **40** is defined in part by vertical sidewalls **15** and **41** which are joined by end wall **43** on the rearward side of the coupler head. The forward end of chamber **40** is open as at **40***a* for receiving plunger **45**. Adjacent chamber **40** is an outer chamber **50** formed in guard arm **52** for receiving the actuating spring **54** which is preferably in the form of a coil-type spring. Chamber **50** is bounded on its inner side by vertical wall **41** and on its outer side by vertical wall **56**. Lever **42** is mounted on horizontal shaft **58** which extends through wall **41** and has its ends pivotally supported in walls **15** and **56**. The outer end of shaft **58** has an enlarged cylindrical head **60** which is in bearing relation with a cylindrical opening in wall **56**. An ear **62** extends outwardly from wall **56** beneath head **60** and is adapted to receive a retainer such as a cotter key **63**, opposing head **60** to preclude displacement of shaft **58** from its operative position. The inner end **64** of the shaft is also cylindrical and is journaled in wall **15**. Intermediate its ends, shaft **58** is square in section. Lever **42** has a correspondingly shaped opening for receiving shaft **58** and is thereby keyed to the shaft. One corner of the shaft is rounded as at **58***a* and one corner of the opening in lever **42** is similarly rounded so as to permit mounting of lever in only one position relative to the shaft. Inner end **64** of shaft **58** is of smaller diameter than outer end **60** to provide shoulders **65** which position the shaft inwardly of the coupler through engagement of these shoulders with wall **15**. The opening in wall **41** is of sufficient size to receive the intermediate portion of shaft **58** with adequate clearance.

Lever **42** is mounted on shaft **58** for reciprocating pivotal movement and has an upper arm **42***a* and a lower arm **42***b*. Arm **42***a* is operatively connected to plunger **45** which is adapted for horizontal reciprocating movement within chamber **40**. Plunger **45** has an elongated vertical notch **68** at its rearward end for slidably and pivotally receiving horizontal trunnion **70** on the end of arm **42***a*. Notch **68** and trunnion **70** are so arranged that plunger **45** moves forwardly and rearwardly in response to pivotal to-and-fro movement of lever **42**. Plunger **45** is supported and guided by top and bottom walls **72** and **73**, respectively, of the coupler head.

Mounted on shaft **58** and keyed thereto is the rotor member **74** which is disposed in chamber **50**. Member **74** has a pair of spaced arms **74***a* to which is pivotally connected a seat element **76** which engages one end of spring **54**. A similar seat element **78** in engagement with the other end of spring **54** is pivotally mounted in the lower forward end of chamber **50**. Seat **76** is formed with a guide or stem **76***a* which is slidably received in a cylindrical guide tube **78***a* on seat **78**. Stem **76***a* and tube **78***a* extend through the central opening in spring **54** to preclude bowing of the spring as it compresses and expands in operation. Member **74** has a square shaped opening **74***b*, one corner of which is rounded to assure that the member will be mounted on shaft **58** in proper relationship with lever **42**. With knuckle **11** in closed position, as in FIGS. **1** and **2**, plunger **45** is in its extreme inward or rearward position, as spring **54** is in maximum compressed position. As will be seen in FIG. **1** arm **42***b* of lever **42** is spaced a substantial amount from cam arm **80** on rotor lever **22**. Arm **80** in accordance with the invention is adapted to be engaged by arm **42***b* in response to expansion of spring **54** to rotate lever **22** in clockwise direction and thereby effect unlocking and opening of the knuckle. Referring to FIG. **1** it will be seen that the line of force of spring **54** passes beneath the pivotal axis of shaft **58** so as to effect counterclockwise movement of lever **42** during functioning of the mechanism to automatically open the knuckle.

It will be observed that when the coupler is free, i.e., not coupled to a mating coupler, the coupler parts will be in the positions shown in FIGS. **8** and **9**. In these views spring **54** has caused actuation of lever **42** to the position in which arm **42***b* is in its rearwardmost position and engages the cam arm **80** at a point nearest to trunnion **25** as at *y* in FIG. **9**. Also the moment arm of the line of force of spring **54** relative to the axis of shaft **58** is at a maximum for effecting opening of knuckle **11**. Rotor lever **22** is in its extreme clockwise position of rotation and knuckle thrower **30** has rotated knuckle **11** to fully opened position. Spring **54** at this point remains under predetermined initial compression. Plunger **45** is in its forwardmost position, as clearly seen in FIG. **8**. Forward move-

ment of the plunger is limited by engagement of lever upper arm 42*a* with shoulder 84 in the coupler head, the plunger being tied to the lever by pin 70 of the lever in notch 68 of the plunger. The rearward side of lateral extension 46 on the plunger is beveled as at 46*a* to provide clearance between the opposing knuckle locking face 14*a* when the knuckle is in fully opened position, as in FIG. 8.

To illustrate the operation of the invention the coupler will first be assumed to be in free condition with its knuckle fully opened, as in FIGS. 8 and 9. It is now ready to be coupled with a mating coupler whose knuckle may be in open or closed position. As the couplers come together for coupling, the knuckle of the mating coupler will engage forward face of either the plunger proper or of extension 46 and cause the plunger to move rearwardly into its coupler against the resistance of spring 54. It will be seen that as the plunger moves inwardly it causes lever 42 to pivot in a clockwise direction, thereby causing rotor member 74 to swing clockwise also and compressing spring 54. As the coupling operation progresses, the plunger is moved further inwardly by the opposing knuckle and the consequent rotation of member 74 results in further compression of spring 54. When the couplers are fully coupled, locked and in buffed relationship, as in FIG. 2, plunger 45 has been forced to its inwardmost position and spring 54 is in maximum compressed or energized condition. Also, lower end of arm 42*b* of the lever is disposed in its forwardmost position and is spaced a substantial amount from cam arm 80 of the rotor lever, as seen in FIG. 1.

The functioning of the invention during an uncoupling operation will next be described. It will be assumed that the coupler is in coupled relationship with a mating coupler M that does not embody the present invention. The knuckle of the mating coupler will first be unlocked by placing its lock in lock-set position as shown in FIG. 11. Lock-setting a coupler is the usual procedure followed by a trainman prior to an uncoupling operation and is accomplished by actuation of uncoupling rod 28 to rotate rotor lever 22 in a clockwise direction when viewing the coupler as in FIG. 11. At the start of the uncoupling operation the two couplers will be in the position shown in FIG. 2, with the mating coupler M at the left. The knuckle 11′ of the mating knuckle is in engagement with the buffing face 10*a* of the coupler as well as with lateral extension 46 of the plunger. As the couplers start to move apart the knuckle noses will move into contact to take up the contour clearance 85, and simultaneously plunger 45 will be moved forwardly of the coupler a corresponding amount under the action of spring 54 as in FIG. 3. Thereafter, upon further separation of the couplers, the knuckle 11′ of mating coupler will be pulled toward open position by knuckle 11 which is still closed and locked. As opening of the mating knuckle proceeds, plunger 45 moves forwardly in response to the separation of the couplers. FIGS. 6 and 7 show the relative position of the couplers at an intermediate stage in the uncoupling operation wherein the plunger has moved forwardly an amount such that lever arm 42*b* has moved rearwardly into engagement with cam arm 80 on the rotor lever 22. In this position knuckle 11 is still held in closed position by lock 13. Moreover, the lock anticreep provided by surface 18*a* on link 18 and shoulder 26 is still effective to preclude upward movement of the lock to unlocking position. Upon further separation of the couplers, the knuckle 11′ of the mating coupler M continues to be pulled toward open position by knuckle 11; and simultaneously, plunger 45 moves further outwardly of the coupler in response to the force of spring 54. As plunger 45 moves outwardly, lever arm 42*b* acting against cam arm 80 actuates the rotor lever in a clockwise direction, until the lock has been raised to the unlocking position corresponding to that shown in FIG. 11. When the couplers have separated sufficiently so that the mating knuckle has been fully opened and is out of contact with plunger 45, the latter is in its forwardmost position, which has permitted lever arm 42*b* through the force of spring 54 acting against rotor member 74, to actuate rotor lever 22 the amount necessary to fully open knuckle 11, as seen in FIGS. 8 and 9.

It will be apparent that upon completion of the above described uncoupling operation, the knuckle of each coupler will be disposed in fully opened position and each coupler will be ready for coupling with another coupler without further preparation prior to coupling. If each of two coupled couplers is provided with the invention, the uncoupling procedure will be the same as aforedescribed. One of the couplers will first be placed in lcok-set position (FIG. 11) by actuation of the uncoupling rod in the usual manner. Thereafter, the uncoupling operation will proceed the same as before; and at the conclusion thereof, the knuckle of each coupler will be in open position.

Referring to FIGS. 12 and 13 there are shown the various positions occupied by lever arm 42*b* and cam arm 80 of the rotor lever during the aforedescribed uncoupling operation. In position 1 arm 42*b* is out of contact with arm 80, both lever 42 and rotor lever 22 being shown in the position each occupies when the coupler knuckle is closed and locked, as in FIG. 1. Position 2 shows arm 42*b* at the point it initially contacts cam arm 80 and it will be noted that arm 42*b* swings about its pivot 58 through a substantial arc before it engages arm 80. Thus, before position 2 can be reached, considerable movement of plunger 45 outwardly of the coupler must occur. This provides effective protection against undesired unlocking of the knuckle when the coupler is coupled to a mating coupler. Position 3 illustrates the parts when the lock anticreep has been released, i.e., surface 18*a* on link 18 is out from under anticreep shoulder 26. Therefore, arm 42*b* must move from position 1 to position 3 before the lock may be moved upwardly to unlocking relationship with the knuckle. Position 4 in FIG. 13 shows arm 42*b* and arm 80 when the lock has been moved upwardly by link 18 to lock-set position (FIG. 11). As arm 42*b* swings the rotor lever to position 5, the knuckle thrower 30 is actuated by the lock leg 17 to throw open the knuckle. Thus when the parts are in position 5 the knuckle 11 has been fully opened, as in FIGS. 8 and 9.

The surface 80*a* of cam arm 80 is convexly curved and is so disposed relative to arm 42*b* that a combined rolling and sliding action occurs between the rounded end of arm 42*b* and surface 80*a* as rotor lever 22 is actuated from position 2 to position 5 of FIGS. 12 and 13. In addition these contacting surfaces are so arranged that the force exerted by arm 42*b* against surface 80—*a* from position 3 to position 5 is substantially tangent to the arc of rotation of cam arm 80 as it pivots about trunnion 25, to assure application of maximum torque to the rotor lever for the knuckle-opening operation.

A feature of the invention resides in the provision on plunger 45 of upward and downward projections 46*d* and 46*e*, respectively, on lateral extension 46, to assure that the plunger will be actuated by the knuckle of an opposing mating coupler despite substantial differences in the coupler heights above the rail, as may occur in service. Such differences in coupler heights may occur when an empty car is coupled to a fully loaded car and especially when such cars pass over the hump of a classification yard. It will be clear that the lower end of the forward face of a coupler knuckle must not move above the opposing projection 46*d* nor should the upper end of the knuckle forward face move below the opposing lower projection 46*e*, otherwise the plunger 45 would be free to move outwardly of the coupler under the force of spring 54, causing the lock to be moved to unlocking or lock-set position (FIG. 11). The projecting plunger would interfere with the return of the knuckles to their previous levels, and could result in damage to the plungers. The vertical extent of projections 46*d* and 46*e* is such as to remain in contact with the front face of an opposing knuckle for the maximum vertical displacement of couplers that may be expected in service.

As lateral extension 46 and projections 46*d* and 46*e* may tend to cause plunger 45 to tip sideways toward the center of the coupler, longitudinal guide flanges 45*a* and 45*b* are provided on the top and bottom of the plunger. These flanges are received in corresponding recesses 72*a* and 73*a* in walls 72 and 73 of the coupler head and serve to maintain plunger 45 in upright position.

It will be observed that upper side of plunger **45** is notched as at **45***c* for receiving a retaining rod **86** (FIGS. **1** and **5**) which is applied through suitable openings in the side of the coupler head. Rod **86** when in place in notch **45***c* serves to hold plunger **45** in its rearward position, as in FIG. **1**. This permits removal of the knuckle **11**, lock **13**, and knuckle thrower **30** in usual manner, as the automatic knuckle opening parts are held inactive by rod **86**.

It will be noted that the automatic knuckle-opening mechanism is contained within chambers **40** and **50** and is thereby sheltered from the elements such as sleet, ice and snow, as well as foreign matter such as falling coal, ore, scrap, etc., encountered in service.

The invention provides a coupler whose knuckle will automatically open upon completion of an uncoupling operation involving a mating coupler whose knuckle had been unlocked by placing its lock in lock-set position prior to the uncoupling operation. While two couplers are in coupled condition, the automatic knuckle opening mechanism is inactive and the couplers remain safely coupled. Whenever it is desired to uncouple the couplers, the knuckle-unlocking and opening mechanism is automatically activated when the mating coupler is uncoupled therefrom. Thus, all that needs to be done preliminary to the uncoupling operation is to lock-set the mating coupler as by means of the usual uncoupling rod. While the invention has been shown applied to an A.A.R. Standard E coupler, it is to be understood that the invention is applicable to other types of A.A.R. Standard knuckle couplers as well as to nonstandard knuckle couplers, without departing from the spirit of the invention.

I claim:

1. In a car coupler having a head, a knuckle pivoted to said head and swingable from closed to open position, a lock for said knuckle, a rotor lever pivotally connected to said head, a knuckle thrower in said head, means in said head operatively connected to said rotor lever and operative upon actuation of said rotor lever to move said lock out of locking relationship with said knuckle and to actuate said thrower to swing said knuckle from closed to open position, and means for automatic actuation of said rotor lever to open said knuckle, said means comprising a lever member pivotally mounted in said head and engageable with said rotor lever to actuate the rotor lever, arm means in said head in fixed relation with said lever member for pivotal movement therewith, and force exerting means within said head acting against said arm means to effect pivotal movement of said lever member.

2. A car coupler according to claim **1** in which a movable plunger member is operatively connected to said lever member, said plunger member being engageable by an opposing mating coupler to hold said lever member out of engagement with said rotor lever when the couplers are in coupled relationship.

3. A car coupler according to claim **2** in which said plunger member is provided at its forward end with vertical extensions adapted for engagement with an opposing coupler.

4. A car coupler according to claim **2** in which guide means is provided on said plunger member and on said head.

5. A car coupler according to claim **4** in which said guide means is in the form of longitudinal flanges and the coupler head is formed with recesses for receiving said flanges.

6. A car coupler according to claim **2** in which said plunger is notched for receiving a retaining tool extending through openings in said head for holding said plunger in inactive position.

7. A car coupler according to claim **1** in which said lever member and said arm means are keyed to a rotatable shaft.

8. A car coupler according to claim **1** in which said force exerting means comprises a compression spring reacting against said arm means.

9. A car coupler according to claim **8** in which said spring means comprises a coil spring, reacting between the coupler head and said arm means.

10. A car coupler according to claim **9** in which a pivotally mounted spring seat is provided in said head for one end of said spring and another pivotally mounted spring seat is provided on said arm means for the other end of said spring.

11. A car coupler according to claim **10** in which telescoping guide means for said spring is provided on said spring seats.

12. A car coupler having a head, a knuckle pivoted to said head and swingable from closed to open position, said head having a guard arm with a chamber therein, a rotor lever pivoted to said head, means in said head operatively connected with said rotor lever whereby actuation of said rotor lever effects opening of said knuckle, and means in said head for automatic actuation of said rotor lever during an uncoupling operation, said means comprising pivotal means mounted in said chamber and engageable with said rotor lever to actuate the rotor lever, and a spring in said chamber reacting against said pivotal means for actuating said second-named means.

13. A rotor lever for pivotal mounting on a knuckle-type car coupler, said lever being adapted for actuation by an uncoupling rod, said lever comprising a hook-shaped portion for mounting said lever on the coupler and another portion for pivotal connection to an associated lock lifter link, said lever having a cam-shaped arm adapted for engagement by as associated lever on the coupler for actuation of the rotor lever, said arm having an elongated convexly curved bearing surface.

14. A knuckle-type car coupler having a head, a knuckle pivoted to said head, a rotor lever pivoted to said head, means in said head operatively connected to said rotor lever whereby actuation of said rotor lever effects opening of said knuckle, an uncoupling rod connected to said rotor lever for manual actuation of the rotor lever, and automatic means in said head for actuation of said rotor lever comprising a pivotally mounted shaft member in said head, a lever member keyed to said shaft member and having an arm adapted to engage said rotor lever to actuate the same, a spring-actuated rotor member keyed to said shaft, and a plunger member operatively connected to said lever member, said plunger member being adapted for engagement by an opposing coupler during a coupling operation to move said plunger member to a position in which said lever arm is held out of rotor lever engaging relationship.