Jan. 29, 1946. E. P. KINNE 2,393,914

COUPLER

Filed Oct. 1, 1943 2 Sheets-Sheet 1

Fig. 1

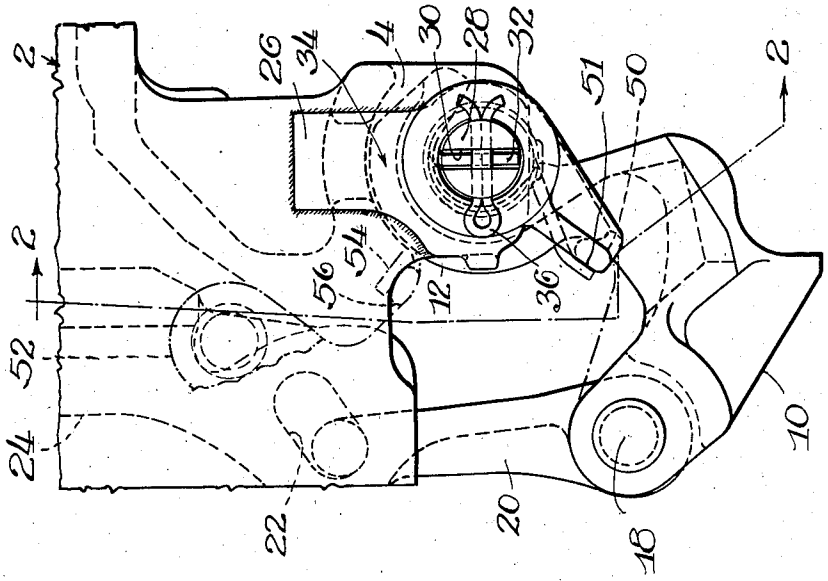
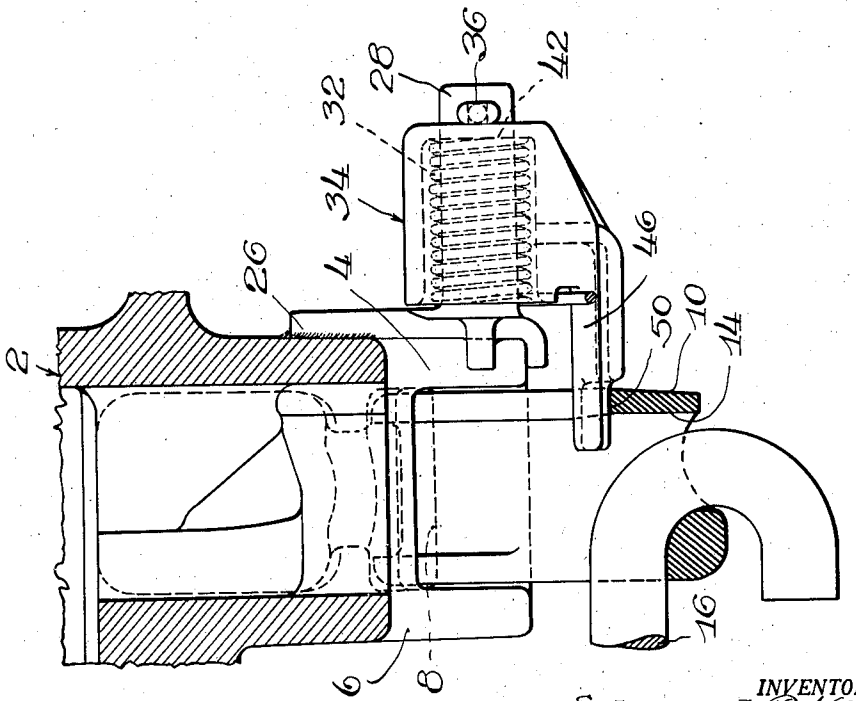


Fig. 2



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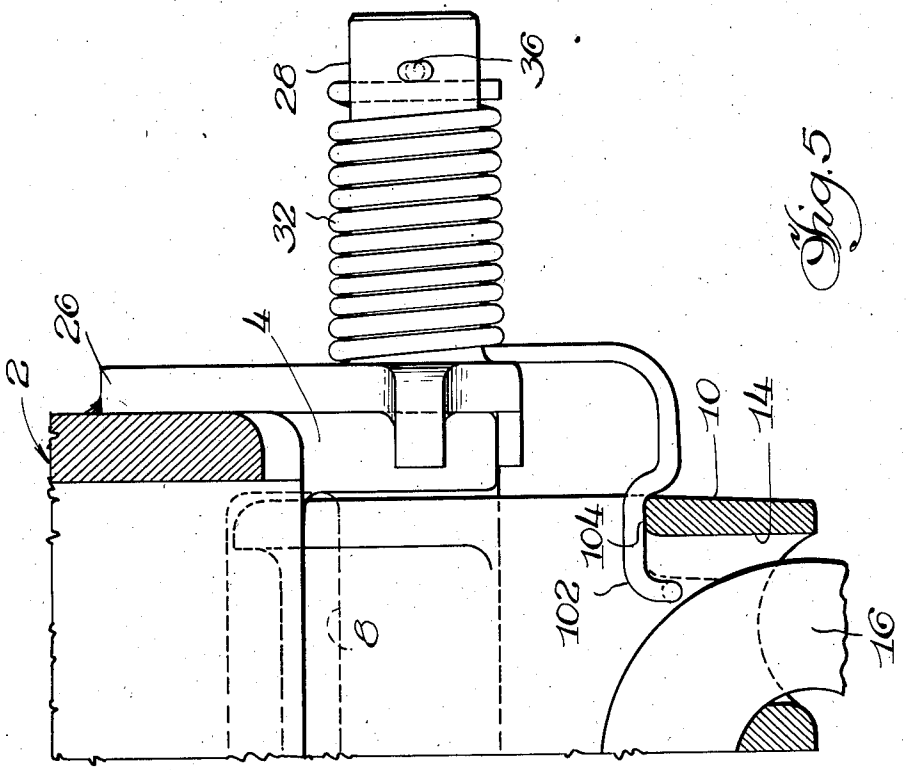


Fig. 5

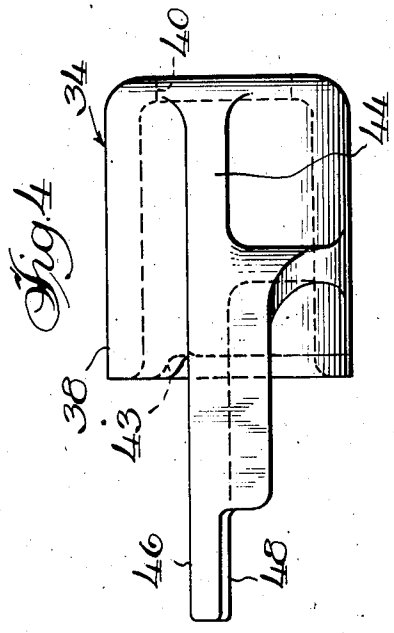


Fig. 4

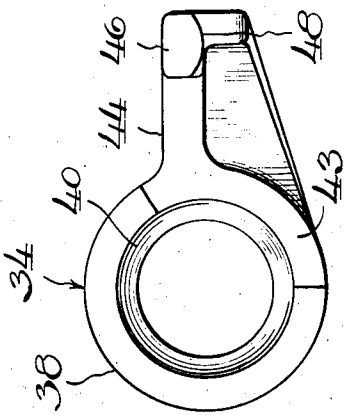


Fig. 3

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UNITED STATES PATENT OFFICE

2,393,914

COUPLER

Edmund P. Kinne, Alliance, Ohio, assignor to American Steel Foundries, Chicago, Ill., a corporation of New Jersey

Application October 1, 1943, Serial No. 504,547

14 Claims. (Cl. 213—148)

My invention relates to couplers and more particularly to a novel anticreep means for preventing the lock of the coupler from accidentally raising to unlocked position under service conditions. My invention is illustrated as applied to a coupler of well known form and adopted as the Standard E coupler by the American Association of Railroads; however, it will be understood that my invention may be utilized in any coupler to which it may be adapted.

The general object of my invention is to provide a resilient member reacting against a bracket on the coupler and against the lifter or rotor lever which is operatively connected to the lock in more or less conventional manner.

A different object of my invention is to provide resilient means operable to supplement the force of gravity in urging the lock downwardly to locked position during a coupling operation.

A specific object of my invention is to design an arrangement such as above described in which a torsion spring is interlocked at one end thereof with the coupler bracket and is provided with means for interlocking the opposite end thereof with the lifter or rotor lever. In one embodiment of my invention the torsion spring is interlocked with the lifter lever by means of a special spring cap, and in another embodiment of my invention the spring is interlocked with the lifter lever by means of a hook portion integrally formed with the spring.

My invention comprehends a spring cap member of novel form, said member having a cylindrical portion for the reception of the torsion spring and having an arm formed on a side of said cylindrical portion, the extremity of said arm extending generally parallel to the longitudinal axis of said cylindrical portion and projecting beyond the adjacent end thereof for engagement with the lifter lever.

In the drawings,

Figure 1 is a fragmentary side elevation of a coupler embodying my invention, the lower end only of said coupler being illustrated inasmuch as the rest thereof is of conventional form.

Figure 2 is a fragmentary sectional view taken in the planes indicated by the line 2—2 of Figure 1.

Figures 3 and 4 are respectively an end elevation and a side elevation of my novel spring cap member.

Figure 5 is a fragmentary sectional view comparable to Figure 2 but illustrating a modification of my invention.

Describing my invention in detail and referring first to the embodiment thereof illustrated in Figures 1 to 4 inclusive, the coupler head fragmentarily indicated at 2 is of conventional Standard E design and comprises the spaced depending trunnion lugs 4 and 6 with the trunnion 8 extending therebetween. The lifter or rotor lever 10 comprises a bearing portion 12 at one end thereof journaled on the trunnion 8, and said lifter lever comprises an eye portion 14 intermediate its ends for the reception of the hook portion of an associated operating rod, fragmentarily indicated at 16 (Figure 2). The lifter lever 10 is pivoted at its other end as at 18 (Figure 1) to a link 20 which is interlocked at 22 in conventional manner with the lock 24 of standard construction.

A bracket 26 is welded or formed on the lug 4, and said bracket comprises a pin 28 having a slot 30 in the end thereof for the reception of one end of a torsion coil spring 32 sleeved over the pin 28. A spring cap 34 is sleeved over the spring 32, and both the cap 34 and the spring 32 are retained in position on the pin 28 by means of a cotter pin 36.

The spring cap is shown in detail in Figures 3 and 4 and comprises a cylindrical portion 38 for the reception of the before-mentioned spring 32, said portion having an annular inturned flange 40 at one end thereof affording a seat as at 42 (Figure 2) for the spring 32, and the opposite end of the cylindrical portion 38 is relieved or recessed at 43 to afford clearance for the adjacent end of the spring 32 which projects from the cylindrical portion 38 for a purpose hereinafter described. Integrally formed with the cylindrical portion 38 is an arm 44, the extremity 46 of which extends generally parallel to the longitudinal axis of the cylindrical portion 38 and projects therebeyond, said extremity 46 being formed with an arcuate bearing surface 48 for engagement at 50 (Figures 1 and 2) with the lifter lever 10 intermediate the ends thereof. The outer end of the spring 32 projects from the cylindrical portion 38 of the spring cap 34 and engages the arm 46, as best seen at 51 (Figure 1).

The spring 32, as illustrated in solid lines in Figure 1, is under an initial torsion preferably of about 60° exerting a pressure of approximately 10 lbs. on the arm 46 of the spring cap 34. Under these conditions, the lock 24 is in its lowest or locked position with respect to the associated knuckle of the coupler 2, as will be readily understood by those skilled in the art. When the lifter is rotated about the trunnion 8 during a knuckle throwing operation to the highest point

illustrated in dot and dash lines at 52 (Figure 1), the outer end of the spring assumes the position illustrated in dot and dash lines at 54, and under these conditions, the spring exerts a pressure of approximately 23 lbs. against the spring cap arm illustrated in dot and dash lines at 56. Thus it will be understood that although the spring 32 permits the rotor or lifter arm 10 to be raised to its highest position during a knuckle throwing operation, said spring is operable to place a substantial load on the lifter lever 10 in its lowest position when the lock 27 is in locked position with respect to the associated knuckle. It will be understood that in order for a bouncing movement of the coupler to cause the lock 24 to accidentally raise to unlocked position, the resistance of the spring 32 must be overcome, and it has been found under service conditions that the spring is operable to prevent such accidental raising of the lock.

It will also be understood that the spring 32 exerts a positive force supplementing the action of gravity in urging the lock 24 downwardly to locked position during a coupling operation.

A modification of my invention is illustrated in Figure 5 which is substantially identical with the arrangement illustrated in Figures 1 and 2 except that the spring cap 34 is omitted and one end of the spring 32 is provided with a hook-like extension 102 engaged as at 104 with the rotor or lifter lever 10 intermediate the ends thereof. The spring is thus interlocked with the lifter lever 10 by means of the extension 102 without the necessity of a spring cap, as illustrated in Figures 1 and 2.

It is to be understood that I do not wish to be limited by the exact embodiments of the device shown which are merely by way of illustration and not limitation as various and other forms of the device will, of course, be apparent to those skilled in the art without departing from the spirit of the invention or the scope of the claims.

I claim:

1. In a coupler, a coupler head, a lock therewithin, a lifter journaled at one end thereof on a trunnion formed on said head, a link pivoted to the opposite end of said lifter and connected to said lock, a bracket on said coupler head comprising a pin, a slot in said pin extending transversely thereof adjacent the end of said pin remote from said coupler head, a torsion spring sleeved on said pin and having one end thereof received within said slot, and an operative connection between the opposite end of said spring and said lifter, said operative connection comprising a spring cap affording bearing for said opposite end of said spring, said cap having an arm bearing against an intermediate portion of said lifter.

2. In a coupler, a coupler head, a lock therewithin, a lifter journaled at one end thereof on a trunnion formed on said head, a link pivoted to the opposite end of said lifter and connected to said lock, a bracket on said coupler head comprising a pin, a slot in said pin extending transversely thereof adjacent the end of said pin remote from said coupler head, a torsion spring sleeved on said pin and having one end thereof received within said slot, and an operative connection between the opposite end of said spring and said lifter, said operative connection comprising a spring cap affording bearing for said opposite end of said spring, said cap having an arm with an arcuate surface bearing against said lifter.

3. In a coupler, a coupler head, a lock therewithin, spaced depending lugs on said head and a trunnion extending therebetween, a lifter lever journaled at one end thereof on said trunnion, a link pivoted to the opposite end of said lifter and connected to said lock, a bracket secured to one of said lugs and comprising a pin disposed externally of said head, a slot in said pin extending transversely thereof adjacent the end of said pin remote from said coupler head, a torsion spring sleeved on said pin and having one end thereof received within said slot, and means interlocking the opposite end of said spring with said lifter lever intermediate the ends thereof.

4. In a coupler, a coupler head, a lock therewithin, spaced depending lugs on said head and a trunnion extending therebetween, a lifter lever journaled at one end thereof on said trunnion, a link pivoted to the opposite end of said lifter and connected to said lock, a bracket secured to one of said lugs and comprising a pin disposed externally of said head, a torsion spring sleeved on said pin, said spring having the end thereof remote from said coupler head removably interconnected with said pin, and means removably interconnecting the opposite end of said spring with said lifter lever intermediate the ends thereof, said spring being pretensioned whereby a load is placed on said lifter lever to resist upward movement thereof.

5. In a coupler, a coupler head, a lock therewithin, a lifter journaled at one end thereof on a trunnion formed on said head, a link pivoted to the opposite end of said lifter and connected to said lock, a bracket on said coupler head comprising a pin disposed externally of said head, a slot in said pin extending transversely thereof adjacent the end of said pin remote from said coupler head, a torsion spring sleeved on said pin and having one end thereof received within said slot, and an operative connection between the opposite end of said spring and said lifter, said operative connection comprising a hooked extremity on said spring engaging an intermediate portion of said lifter.

6. In a coupler, a coupler head, a lock therewithin, a lifter journaled at one end thereof on a trunnion formed on said head, a link pivoted to the opposite end of said lifter and connected to said lock, a bracket on said coupler head comprising a pin disposed externally of said head, a slot in said pin extending transversely thereof adjacent the end of said pin remote from said coupler head, a torsion spring sleeved on said pin and having one end thereof received within said slot, and an operative connection between the opposite end of said spring and said lifter, said operative connection being formed and arranged to readily accommodate disassociation of said spring from said lifter.

7. In a coupler, a coupler head, a lock therewithin, a link connected to said lock, a lifter pivoted to said link and said head, a torsion spring supported from said head, said spring being interlocked at one end thereof with a member fixed on said head, and means for interlocking the opposite end of said spring with said lifter, said means comprising a spring cap sleeved over said spring and affording bearing for said opposite end thereof, said cap having a portion in abutment with said lifter intermediate the ends thereof.

8. In a coupler, a couper head, a lock therewithin, a link connected to said lock, a lifter pivoted to said link and said head, a torsion spring

supported from said head, said spring being interlocked at one end thereof with a member fixed on said head, and means for interlocking the opposite end of said spring with said lifter, said means comprising a spring cap sleeved over said spring and affording bearing for said opposite end thereof, said cap having an arcuate surface in abutment with said lifter intermediate the ends thereof.

9. In a spring cap for an anticreep spring, a cylinder for the reception of said spring, an inturned flange on one end of said cylinder affording a seat for said spring, a recess in the opposite end of said cylinder for accommodation of a projecting end of said spring, and an arm on said cylinder having an extremity extending generally parallel to the longitudinal axis thereof, said arm having a surface adjacent said recess affording bearing for said projecting end, and said extremity having an arcuate bearing surface for abutment with an associated member.

10. In a spring cap for an anticreep spring, a cylindrical portion adapted for the reception of said spring, an arm formed on the exterior of said cylindrical portion, said arm having an extremity extending generally parallel to the longitudinal axis of said cylindrical portion and projecting therebeyond, and an arcuate bearing surface on said extremity for abutment with an associated member.

11. In a coupler, a coupler head, a lock therewithin, a link connected to said lock, a lifter pivoted to said link and said head, and a torsion spring supported from said head externally thereof, said spring being interlocked at one end thereof with a member fixed on said head, and means for interlocking the opposite end of said spring with said lifter, the interlocking connections of said spring to said member and lifter, respectively, being formed and arranged to readily accommodate removal of said spring from said member and said lifter while they remain in normal assembled relationship with the head.

12. In a coupler, a coupler head, a lock therewithin, a link connected to said lock, a lifter pivoted to said link and said head, and a torsion spring supported from said head externally thereof, said spring being interlocked at one end thereof with a member fixed on said head, the opposite end of said spring bearing against said lifter, said spring being so formed and arranged as to be readily removable from said member and said lifter while they remain in normal assembled relationship with the head.

13. In anticreep means for a coupler having a coupler head, a knuckle pivoted therein, a lock movable into and out of locking engagement with said knuckle, and a lifter operatively connected to the lock and pivoted to the head; the combination of a pinlike member projecting laterally from said head at one side and externally thereof, a slot in said member adjacent the end of said member remote from said head, a torsion spring sleeved over said member and having one end received within said slot, readily removable means associated with said member for preventing movement of said spring axially of said member in the direction away from said head, and an operative connection between the other end of said spring and an adjacent portion of said lifter, said operative connection being formed and arranged to readily facilitate disconnection of said spring from said lifter, whereby upon removal of said means from said member said spring may be readily removed from the latter while said lifter remains in normal assembled relationship.

14. In anticreep means for a coupler including a coupler head, a knuckle pivoted thereto, a lock movable into and out of locking engagement with said knuckle, and a lever operatively connected to the lock and to the head; the combination of a pinlike member fixed to the head and projecting laterally thereof at one side and externally thereof, a slot in said member adjacent the end of said member remote from said head, a torsion spring sleeved over said member and having one end received within said slot, readily removable means extending through said member adjacent said end thereof for preventing accidental disassembly of said spring, and an operative connection between the other end of said spring and an adjacent portion of said lever, said operative connection being formed and arranged to readily facilitate disconnection of said spring from said lever, whereby upon removal of said means from said member said spring may be removed therefrom while said lever remains in normal assembled relationship with the head.

EDMUND P. KINNE.