

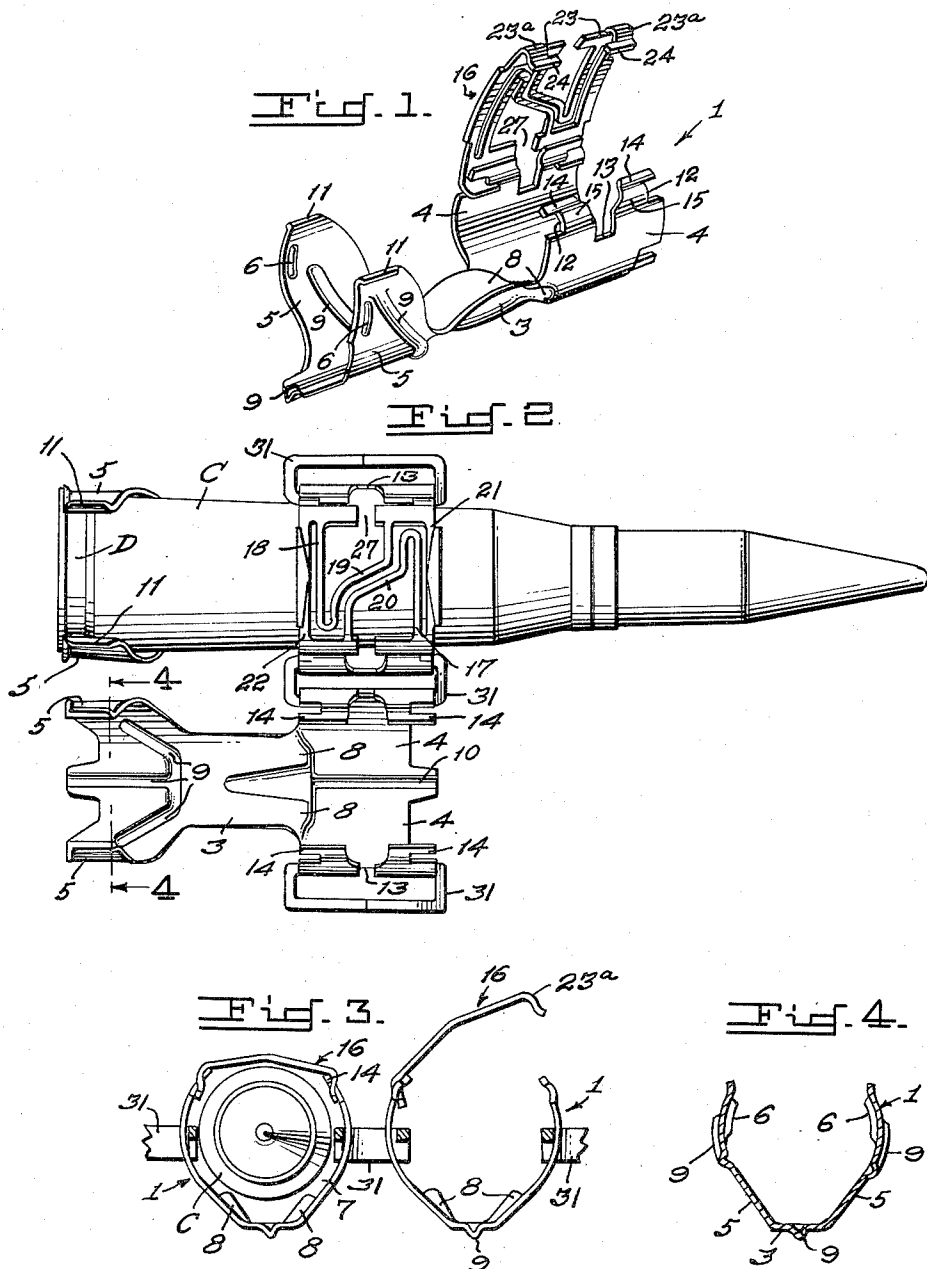
Sept. 3, 1957

P. H. DIXON
CLOSED CARTRIDGE BELT LINK CONVERTIBLE TO AN
OPEN SIDE STRIPPING STRUCTURE

2,804,807

Filed Sept. 29, 1954

2 Sheets-Sheet 1



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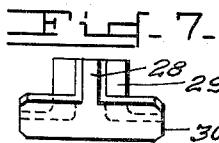
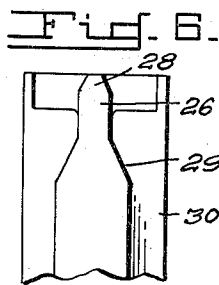
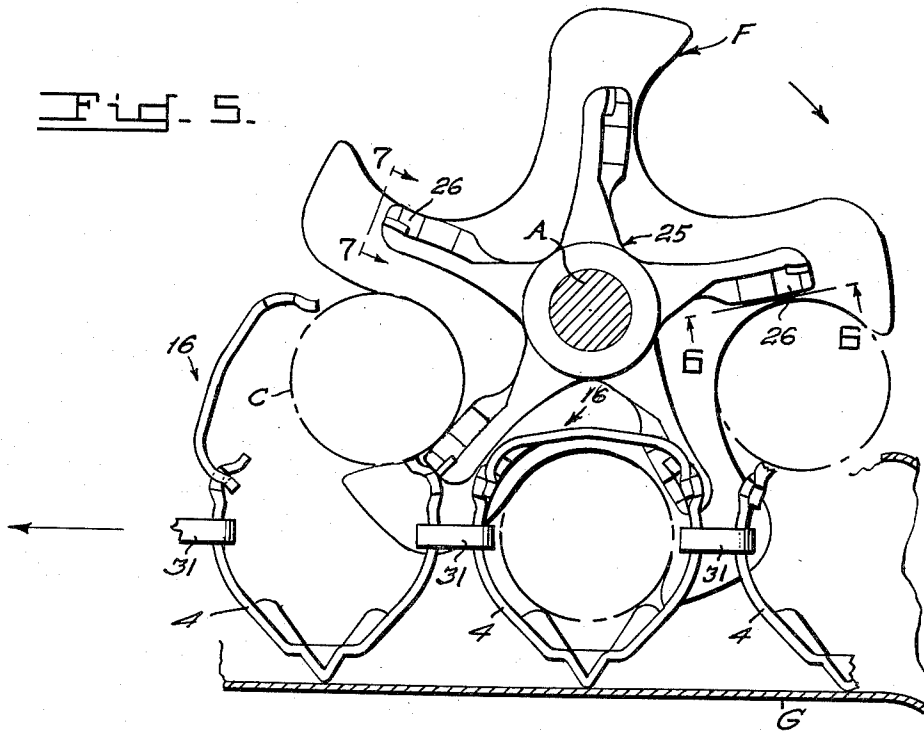
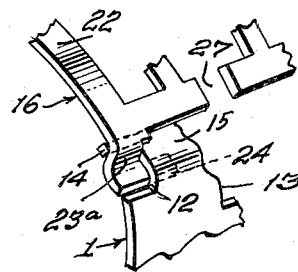


Fig. 8.



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CLOSED CARTRIDGE BELT LINK CONVERTIBLE TO AN OPEN SIDE STRIPPING STRUCTURE

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Application September 29, 1954, Serial No. 459,220

10 Claims. (Cl. 89—35)

This invention relates to a cartridge belt link for 20/60 mm. caliber ammunition, and more particularly to a link of the side stripping type designed to be completely closed during belt pull. Side stripping links have definite advantages in automatic gun mechanisms in that they permit higher cyclic rates. A so-called closed link, where the supporting ring encompassing the round is unbroken however, has the optimum strength to withstand heavy pull. Heretofore a closed link had to be a ram-through link, i. e. one where the round is withdrawn lengthwise before ramming in the barrel. Side-stripping links are usually opened-sided and, in order to get the equivalent belt pull strength, they must necessarily be made of heavy metal.

The present invention will eliminate those disadvantages by providing a link having a latch member adapted to be pivoted or opened at one or the other of its sides.

It is therefor a primary object of the invention to provide a cartridge belt link having the lightness and strength of a closed link yet having the advantages of a side stripping link.

Another object of the invention is the provision of a link having a latch to complete the encircling of a round that may be unlatched at either end thereof so that the ammunition may be fed into either the right or left side of the weapon.

A further object of the invention is to provide a link light in weight yet having a belt pull strength comparable to a closed link.

The specific nature of the invention as well as other objects and advantages thereof, will clearly appear from a description of a preferred embodiment as shown in the accompanying drawings in which:

Figure 1 is a perspective view of a cartridge link constructed in accordance with the invention, illustrating the latch member open at one side,

Figure 2 is a top plan view illustrating two links, one with the latch in locked position and encircling a round,

Figure 3 is a front view of a pair of links illustrating one link having its latch locked.

Figure 4 is a section taken along line 4—4 of Figure 2,

Figure 5 illustrates a special feed sprocket attached to the shaft of a feeding mechanism and showing the manner in which the sprocket cooperates with the belt to unlatch successive links,

Figure 6 is a plan view looking toward the face of one of the fingers of the unlatching device, as indicated by line 6—6 of Figure 5,

Figure 7, is a view looking at the edge of one of the fingers as indicated by line 7—7 of Figure 5; and

Figure 8 is a detail perspective to an enlarged scale illustrating the interlocking of the latch and link.

Referring more particularly to the drawing wherein like reference characters designate like or corresponding parts throughout the different views, 1 designates the belt link in its entirety and comprises a substantially semi-cylindrical link member fabricated from a single piece of spring steel and formed to cradle a round of ammunition there-

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in. The link includes a longitudinal body portion provided with a pair of relatively wide inwardly curved arms 4 at the forward end thereof adapted to receive a cartridge C and of somewhat greater diameter. The rear end of the body portion of the link is provided with a pair of inwardly curved arms 5 which are spaced at a lesser diameter than the cartridge C to act as a spring clip to secure the round end therebetween, as is best seen in Figure 2. The link body portion is centrally cut away to form a bridge 3 between arms 4 and 5. Arms 5 are turned outwardly at the extremities thereof as at 11 and are provided with inwardly struck portions forming detents 6 adapted to be received in the extractor groove D of a cartridge, thus prevent dislodgment of such cartridge. Arms 4 are so formed as to leave a space 7 around the cartridge C as best seen in Figure 3. A pair of inwardly struck up portions 8 on bridge 3 provides support for the wall of the cartridge case at this point. Grooves 9 and 10 are provided to afford rigidity to the longitudinal body portion. The several pairs of arms 4 and 5 curve upwardly and inwardly to the same height.

The upper edges of arms 4 are notched along their outer margins as at 12 and are cut out centrally as at 13, as best seen in Figure 1. The cut 13 is substantially V-shaped at its upper portion thereof and forms a depending channel at the bottom to receive a spreader as will be later explained. A pair of outwardly disposed fingers 14 are thus formed in the arms 4, and the remaining portion 15 is curved outwardly for a purpose to be later described. A latch member is provided generally as indicated by reference character 16 and comprises a flat steel spring of arcuate form and bent backward upon itself at the respective ends. The ends of the member are divided as at 27 to receive a spreading tool and the member is made to be laterally resilient so that it will resume its normal shape after a spreading operation. Such resilience is attained by removing major portions of the surface so that the ends are connected by relatively thin bridging members 17, 21 and 18, 22 on respective sides. A diagonal connecting member formed of two thin strips 19, 20 connect the bridging members substantially as shown in Figure 2. It will be readily seen that respective corners of the latch are free to move laterally to a limited extent. The outer bent edges of the latch member are provided with cut out portions 23 forming a pair of inwardly disposed fingers 24. The material between finger 24 and the body of the member is curved outwardly as at 23^a. See Fig. 8. The fingers 14 and 24 are designed to mutually interlock and engage under curved portions 23^a and 15 respectively as is best shown in Figure 8. A spreading device (to be described later) is employed to spread the latch ends in order to disengage the fingers and open the latch. Since the two ends are mirror images of each other it will be readily seen that the latch may be pivoted or disengaged at their end thereof.

When the latch is interlocked at both of its ends a cartridge is completely encircled. The fingers will normally remain at the original position due to the resiliency of the latch.

In order to spread the fingers 24, a special structure is provided on the feeding sprocket of the gun feeding mechanism. This structure will be described in order to better understand how the latch is spread to open the fingers and disengage them from the link. In Figure 5, F represents generally a feed mechanism and G a feed guide chute through which ammunition is guided to the firing chamber of the gun. The link and latch will operate equally well if the ammunition is fed into either a right or a left hand feeding opening of a gun.

Reference character 25 represents an auxiliary sprocket mounted upon axle A of the feed mechanism. This

sprocket has as many arms as the feeding sprocket and each arm has faces milled to generate a projection 26 forming a tongue 28 adapted to enter the latch at point 27 where the end is divided by a slit. Due to the contour of the projection 26 which has the beveled tongue 28 and a wedge portion 29, the latch end will be spread to disengage fingers 24 out from under curved portions 15 and thus release the latch at one side when the divided end of the latch is entered by the tongue 28 and the same is moved forward to cam against the edges by slit 27. The latch will pivot at the other end. As the cartridge C continues toward the firing chamber the unlatched link will be supported by the web 30 of the sprocket 25 until it is stripped by the stripper (not shown).

Connecting straps 31 are provided to join the links and form a belt. These straps are essentially of the ring type and pass through the space 7 between the wide arms 4 and the cartridge.

It is apparent from the foregoing, that a unique yet practical belt link has been devised. The links can be reused since they are not normally damaged. However the latch and link being separate pieces can be replaced individually. The latches can be stamped out with a single operation effecting a savings in manufacture.

While a preferred form of the invention has been shown and described, various modifications and substitutions of equivalents will occur to those skilled in the art after a study of the foregoing disclosure. Hence the disclosure should be taken in an illustrative rather than a limiting sense; and it is the desire and intention to reserve all modifications within the scope of the subjoined claims.

I claim:

1. A cartridge link comprising a longitudinally extending body portion adapted to receive a cartridge therein, means at the rear end of said body portion for releasably gripping the rear end of the cartridge, an upwardly projecting arcuate arm on either side of said body portion adjacent the forward end thereof for encircling the front end of the cartridge, and a latch member having a transversely projecting finger at each corner of either end thereof, said arms having recess means at the terminal ends for engaging said fingers in releasable interlocking relation whereby said latch member connects said arms to complete the encirclement of the cartridge, said fingers and said recess means forming a pivotal connection at either end of said latch member upon release of the opposite end thereof from engagement with said respective arm.

2. A cartridge link comprising a longitudinally extending body portion of generally semicylindrical configuration adapted to receive a cartridge therein, detent means on the rear end of said body portion for releasably gripping the rear end of the cartridge, said body portion having an arcuately formed arm projecting upwardly from either side adjacent the forward end thereof for receiving the front end of the cartridge therebetween, an arcuate latch member formed as an arc of a cylinder having a radius substantially equal to the radius of said arms and having an inwardly turned longitudinal edge at the opposite ends thereof, a transversely projecting finger formed at each corner of said inwardly turned edges, and means on the terminal end of each arcuate arm for releasably interlocking with the corresponding one of said fingers on said latch member, said interlocking engagement forming a pivotal connection at either end of said latch member upon release of the opposite end thereof from the end of said arm in engagement therewith.

3. The invention defined in claim 2 wherein the opposite ends of said latch member are split apart to receive an arcuately moving wedge therebetween for urging said fingers thereon out of interlocking engagement with the respective ends of said arms to permit the pivotal movement of said latch member about one end thereof whereby the cartridge is freed for removal from between said arms.

4. The invention as set forth in claim 2 including a connecting strap to join successive body portions and form a belt.

5. A cartridge link comprising a longitudinally extending body portion of generally semicylindrical configuration adapted to receive a cartridge therein, detent means at the rear end of said body portion for engaging in the extractor groove of the cartridge to effect releasable gripping thereof, said body portion having an arcuately formed cartridge encircling portion at the forward end thereof, said body portion being centrally cut away to form a bridge portion between said cartridge gripping and encircling portions, and an arcuate latch member of substantially the same width as said cartridge encircling portion and formed as an arc of a cylinder having a radius substantially equal to the radius of said cartridge encircling portion, said latch member and said cartridge encircling portion each having a inwardly turned longitudinal edge on the terminal ends thereof and a transversely projecting finger formed at each corner of said edges, said latch member fingers being directed toward one another and said cartridge encircling portion fingers being directed away from one another, said latch member and said cartridge encircling portion each having recess means for receiving said fingers on the other to form an interlocking releasable engagement therebetween for connecting said latch member to said cartridge encircling portion to complete the encirclement of the cartridge, said latch member ends being vertically split apart to receive a moving wedge therebetween whereby said fingers thereon are spread apart to withdraw from said engagement with said recess means in said cartridge encircling portion to permit said latch member to pivot about the other end thereof and free the cartridge for removal from said longitudinal body portion.

6. In a cartridge belt link, a generally semicylindrical longitudinally extending body of resilient sheet material adapted to receive a cartridge therein and partially encircle the front end thereof, and a longitudinally arcuate latch member connecting the opposite sides of said body at the forward end thereof to complete the encirclement of the cartridge, said latch member and said cartridge encircling portion of said body having releasable interlocking means on the respective opposite ends thereof for effecting pivotal engagement therebetween at either end of said latch member upon release of the opposite end thereof from said body, said latch member being transversely resilient to permit separation of said interlocking means at one end thereof whereby pivotal movement about the opposite end as a fulcrum unblocks the cartridge for subsequent removal from said body portion.

7. In a cartridge belt link, a generally semicylindrical longitudinally extending body of resilient sheet material adapted to receive a cartridge therein, an upwardly projecting arcuate arm on either side of said body adjacent the forward end thereof for encircling the forward end of the cartridge, a longitudinally arcuate latch member connecting said arms to complete the encirclement of the cartridge, and means integral with each free end of said latch member and of said arcuate arms for effecting releasable interlocking engagement therebetween, said latch member having split ends and being transversely resilient to permit separation of said interlocking means whereby said latch member is pivotable about one end thereof upon the release of the other end thereof from said corresponding arm on said link body and thereby frees the cartridge for the removal therefrom.

8. In a cartridge belt link, a generally semicylindrical longitudinally extending body of resilient sheet material adapted to receive a cartridge therein, said body having an opposed pair of upwardly projecting arcuate arms at the forward end thereof for encircling the forward end of the cartridge, and a longitudinally arcuate latch member connecting the opposite ends of said arms to complete the encirclement of the cartridge, said latch member and said

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arms being turned inwardly at the respective ends thereof, said latch member having oppositely disposed recess means at each end thereof forming pairs of oppositely directed transverse fingers, said arms each having oppositely disposed recess means formed into the upwardly extending edges thereof to form a transverse finger at each corner projecting outwardly away from one another, said fingers on said latch member being arranged to engage behind the inwardly turned ends of said arms and said fingers on said arms being arranged to engage behind the inwardly turned ends of said latch member to form an interlocking connection therebetween, said latch member having divided end portions adapted to be spread apart in opposite directions for withdrawing said fingers from the corresponding ends of said arms, said latch having openings therein to provide the lateral resiliency necessary to permit the spreading apart of said fingers thereon.

9. In a cartridge belt link, a generally semicylindrical longitudinally extending body of resilient sheet material adapted to receive a cartridge therein, said body having an opposed pair of upwardly projecting arcuately formed arms on the forward end thereof for encircling the forward end of the cartridge, and a longitudinally arcuate latch member connecting the opposite ends of said arms to complete the encirclement of the cartridge, said latch member and said arms being turned inwardly at the respective ends thereof, said inwardly turned ends of said latch member having a T-shaped recess therein forming oppositely extending longitudinal fingers, each inwardly turned end of said arms having a substantially rectangular recess extending into the opposite vertical edges thereof to form a transverse finger at each corner projecting outwardly in opposite directions, said fingers and said inwardly turned ends on said latch member and said cartridge encircling arms forming an interlocking engagement when said T-shaped recess on said latch member is disposed in transverse alignment with said rectangular recesses in said arms whereby said latch is pivotable about one of said arms when the opposite end thereof is released from the other of said arms, said latch member having a longitudinal slit at either end thereof in communication with said T-shaped recess therein to provide entry for a wedge member whereby said divided portions on either side of said slit are spread apart to withdraw said latch fingers from engagement with said arms and thereby free one end of said latch member for the

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subsequent removal of the cartridge from said cartridge encircling portion, said latch having portions cut away from the interior thereof to provide lateral resiliency for effecting the spreading apart of said fingers thereon, each of said arms having a V-shaped notch in the end thereof to provide a passage for the wedge member.

10. In combination, a cartridge belt formed by a plurality of successively interconnected cartridge carrying links, each of said links comprising a longitudinal generally semicylindrical body of resilient sheet material having a cartridge gripping portion at the rear end thereof and a cartridge encircling portion at the forward end thereof, said cartridge encircling portion being formed by an upwardly projecting arcuate arm on either side of said body, an arcuate latch member connecting the ends of said arms to complete the encirclement of the cartridge, said latch member and said cartridge encircling arms having projecting fingers at each corner substantially parallel to the longitudinal axis of said link body, said fingers on each end of said latch member extending in opposite directions toward one another and said fingers on each end of said arcuate arm extending in opposite directions away from one another, means on the ends of said latch member and said arcuate arms for interlocking with said corresponding fingers, said latch member having divided ends and cutaway central portions to provide the resiliency necessary to create and terminate said interlocking engagement, and cartridge belt feed means comprising a feeding sprocket having radially disposed arms for receiving individual linked cartridges therebetween, an auxiliary sprocket coaxially mounted to said feeding sprocket and having radially disposed arms co-extensive therewith, each of said arms of said auxiliary sprocket having a projecting wedge at the extreme end thereof for entering between said divided portions of said latch member on the trailing end thereof during the feeding movement imparted to the cartridge belt by said feeding sprocket whereby said latch member fingers are spread apart to withdraw from engagement with the ends of said cartridge encircling arms and thereby unblock the cartridge therein for subsequent lateral removal from said link body.

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