Aug. 11, 1953 C. E. SIMPSON 2,648,258

CARTRIDGE LINK AND FEEDWHEEL FOR DISINTEGRATING BELTS

Filed June 21, 1948

Fig. 1.

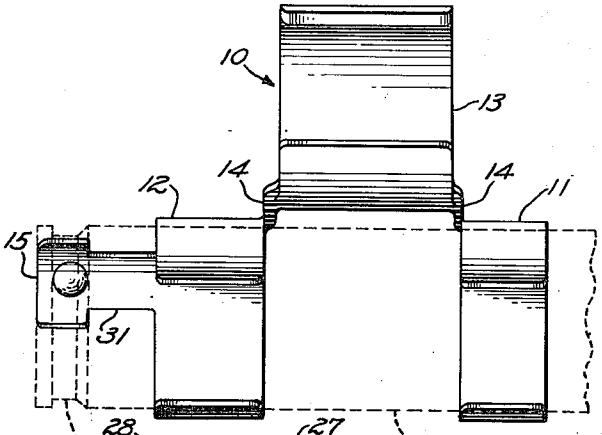


Fig. 2.

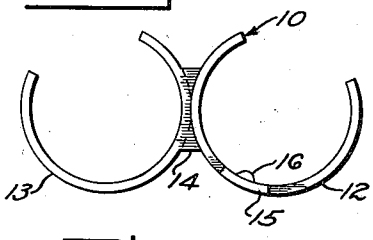


Fig. 3.

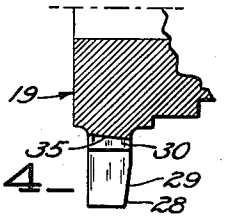


Fig. 4.

Fig. 5.

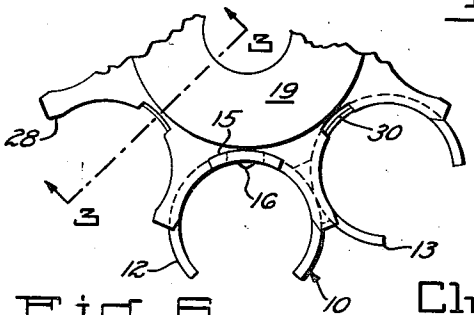


Fig. 7.

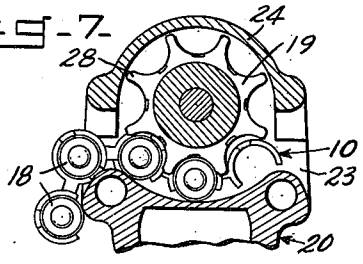
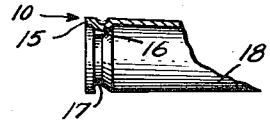


Fig. 6.



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UNITED STATES PATENT OFFICE

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CARTRIDGE LINK AND FEEDWHEEL FOR DISINTEGRATING BELTS

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Application June 21, 1948, Serial No. 34,232

12 Claims. (Cl. 89—33)

(Granted under Title 35, U. S. Code (1952), sec. 266)

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The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment to me of any royalty thereon.

This invention relates to an improved cartridge link and feedwheel for disintegrating cartridge belts for automatic firearms wherein the cartridge is pushed out of the belt.

In automatic firearms which utilize an action designed to push a cartridge out of a belt, an open type link is generally employed in order to permit the operating member of the firearm to pass through the link and chamber the cartridge. Prior art links for the most part have a common fault in that the link is not properly held as the operating member of the firearm pushes the cartridge out of the link.

This is particularly true when the firearm utilizes a feeding wheel to move the belt through the feedway. In a firearm of this type the cartridge generally is not aligned with the axis of the bore and hence must be fed angularly into the chamber. Therefore if the link is not positively secured or held as the cartridge is tipped to enter the chamber feeding jams will be inevitable.

Accordingly it is an object of this invention to provide an improved cartridge link for disintegrating cartridge belts for use with firearms utilizing a mechanism which pushes the cartridge out of the belt.

Another object of this invention is to provide an improved "push through type" cartridge link for automatic firearms utilizing a feedwheel for advancing the cartridge belt wherein the link is positively positioned and held.

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:

Fig. 1 is an enlarged top view of the cartridge link of this invention.

Fig. 2 is a left end view of Fig. 1.

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 5.

Fig. 4 is a fragmentary longitudinal sectional view of a firearm having a feedwheel for advancement of the cartridge belt which utilizes a cartridge link of this invention.

Fig. 5 is a detail fragmentary end view of a cartridge feedwheel showing the position of the cartridge link in such feedwheel.

Fig. 6 is a fragmentary detail view showing the detent of the tab on the cartridge link engaging the extractor groove of a cartridge.

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Fig. 7 is a sectional view taken along the line 7—7 of Fig. 4.

In Fig. 4 there is shown a fragmentary view of a firearm having a preferred type of cartridge feeding mechanism for use with a belt of cartridges comprised of links 10 constructed in accordance with this invention. Link 10 is preferably stamped from a blank and comprises a pair of spaced coaxial open rings 11 and 12. A single open ring 13 is joined to rings 11 and 12 by a connecting offset web portion 14 formed as shown in Fig. 1. Ring 13 is disposed opposite to the space between rings 11 and 12.

This arrangement is well known and permits the ring 13 to fit between the spaced rings 11 and 12 of an adjacent link so that a cartridge may be inserted through the aligned links to pivotally connect the links. Thus a belt of any desired length may be readily assembled. The opening in rings 11, 12 and 13, however, is disposed somewhat to the side, that is, such openings are angularly disposed upwardly and outwardly with respect to a vertical centerline through web portion 14 as shown in Fig. 2 in order to properly position the cartridges about a cylindrical feedwheel as will be later described. This is in contrast to the conventional link wherein the openings are straight up.

A rearwardly extending substantially T-shaped tab 15 is integrally formed with ring 12 and is disposed opposite to the opening in such ring. A detent 16 is provided near the end of tab 15 which engages an extractor groove 17 of a cartridge 18 as shown in Fig. 6.

Link 10 is preferably used in belted form with a firearm of the type shown in Fig. 4 which utilizes a feedwheel 19 to advance the belt of cartridges into the feedway. Such firearm comprises essentially a receiver 20, a bolt 21 reciprocally mounted in such receiver for movement between a breeched battery position and a recoil position, and a barrel 22 coaxially aligned with the bolt. A feedway 23 is provided in receiver 20 above bolt 21 to receive a belt of cartridges.

Feedwheel 19 is rotatably mounted in a housing 24 secured to the top of receiver 20 above feedway 23 by a driving rod 25. A ratchet drive 26 is provided on rod 25 which is engageable with corresponding teeth in feedwheel 19 to rotate such feedwheel in synchronization with the barrel to feed the cartridge belt through feedway 23.

Feedwheel 19 is provided with a sprocket 27 and a sprocket 28 on the forward end and on the rear end respectively, the scallops between each of the sprocket teeth being of suitable shape to receive the cartridge 18. The forward face 29

of each tooth of sprocket 28 is sloped rearwardly as shown for a purpose to appear later. In the bottom of each scallop of sprocket 28 there is provided a longitudinally disposed slot 30 to receive a neck portion 31 of tab 15 provided on link 10. The bottom of slot 30 is sloped as shown at 35 for a purpose to be presently described.

In the instant case the cartridge must be deflected considerably as shown in Fig. 4 before the cartridge can enter the chamber in the barrel. In such figure it is readily apparent that a conventional link could not be properly supported.

When cartridges 18 contained in belt form by links 10 are fed into feedway 23, a corresponding pair of scallops of sprocket 27 and 28 surround a cartridge 18 and as such feedwheel rotates, the sprockets move the belted cartridges through the feedway. In the preferred form of firearm shown, the belt of cartridges is fed into feedway 23 with the opening in the link rings facing downwardly or in other words with the belt feeding from the bottom of the feedwheel. It is desired to point out however that the belt may be fed from the top of the feedwheel under certain conditions or arrangement of the various elements that comprise the feeding mechanism. The side openings of the link rings permit the cartridges 18 to be properly positioned in the feedwheel. Neck portion 31 of tab 15 then fits within slot 30 while the cross member of such tab engages the rear face of sprocket 28. When bolt 21 is released, a vertically disposed lug 32 provided on top of the forward end of such bolt strikes the base of cartridge 18 thereby forcing such cartridge forwardly out of open link 10, detent 16 being disengaged from the extractor groove of cartridge 18.

As cartridge 18 moves forwardly out of link 10 such cartridge strikes a downwardly sloped ramp 33 provided in receiver 20 thus deflecting the cartridge downwardly into a chamber 34 of barrel 22. While this is taking place, tab 15 of link 10 retains such link so that cartridge 18 can be pushed out of the link without moving such link longitudinally. Thus feeding jams and related malfunctions due to movement of the link in the feedway are substantially eliminated.

In most prior art firearms the cartridge link rests against a link stripper contained in the feedway, thus the cartridges in the belt are properly positioned in the feedway with respect to the firearm bolt. When utilizing a feedwheel such as disclosed herein, no link stripper can be employed to position the cartridge belt in the feedway hence tab 15 is utilized to hold the link while bolt 21 pushes the cartridge through such link. As the cartridge 18 is deflected by ramp 33, link 10 pivots about neck portion 31 of tab 15. The sloped forward face 29 of sprocket 28 permits the link to swing downwardly without interference from such face while the sloped bottom 35 of slot 30 allows deflection of the cartridge without appreciable displacement of the link.

While only a preferred application of the link herein described has been shown, such link may be readily adapted for use with any push-through type of firearm feed having a feedwheel and utilizing belted ammunition which is fed into a firearm barrel chamber at an angle to the horizontal wherein similar link positioning difficulties are encountered.

I claim:

1. In combination with a cartridge belt feedwheel having two spaced sprockets for receiving a cartridge having an extractor groove, a slot being provided between each of the teeth of the rearmost sprocket, a disintegrating cartridge belt link comprising a single open ring, a pair of rings comprising a coaxial open front and rear ring secured to and adjacent said single open ring, a substantially T-shaped tab on said rearmost coaxial ring pivotally engageable with said slot to longitudinally position said link relative to said feedwheel, and detent means on said tab engageable with the extractor groove of the cartridge whereby the cartridge is yieldingly positioned within said link.

2. The combination defined in claim 1 wherein the opening in said open rings is angularly offset with respect to the vertical axis of said rings whereby the cartridge in said link is aligned in said feedwheel sprockets.

3. In a feeding mechanism, the combination which comprises a feedwheel, said feedwheel being provided with a plurality of radially disposed teeth at the front and rear end thereof to receive cartridges, a slot being provided between each of said teeth on the rear end of said feedwheel, and a cartridge belt link comprising open rings adapted to hold a cartridge and a T-shaped tab on each end of said rings engageable with said slot whereby said link is held in position relative to said feedwheel.

4. In a feeding mechanism, the combination which comprises a rotatably mounted feedwheel, said feedwheel being provided with a plurality of radially disposed teeth at the front and rear end thereof to receive cartridges having an extractor groove, a slot being provided between each of said teeth on the rear end of said feedwheel and a disintegrating cartridge belt link comprising open front and rear rings for holding the cartridge, a T-shaped tab on said rear ring constructed and arranged to engage said slot for longitudinally positioning said link relative to said feedwheel, and detent means on said tab engageable with said extractor groove of the cartridge whereby the cartridge is yieldingly positioned within said link.

5. In a feeding mechanism, the combination which comprises a rotatably mounted feedwheel, said feedwheel being provided with a plurality of radially disposed teeth at the front and rear end thereof to receive cartridges having an extractor groove, a rearwardly downwardly inclined slot relative to the longitudinal axis being provided between each of said teeth on the rear end of said feedwheel, and a disintegrating cartridge belt link comprising a pair of spaced apart open rings coaxially aligned with a single open ring adjacent and attached thereto, a substantially T-shaped tab on said rearmost ring engageable with said slot to longitudinally position said link relative to said feedwheel, and detent means on said tab engageable with the extractor groove of the cartridge whereby the cartridge is yieldingly positioned within said link.

6. The combination defined in claim 5 wherein the opening in said rings is angularly offset with respect to the vertical axis of said rings whereby the cartridge in said link is aligned in said feedwheel.

7. The combination defined in claim 5 wherein said T-shaped tab comprises a narrow neck portion engageable with said slot and a head portion having a forward surface extending from each side of said neck portion engageable with the rear surface of adjacent teeth relative to said slot

whereby said link is held during the extraction of a cartridge therefrom.

8. In a firearm having a receiver and a bolt reciprocably mounted therein, a feedwheel rotatably mounted in the receiver, said feedwheel being provided with a plurality of radially disposed teeth at the front and rear end thereof to receive cartridges, a slot being provided between each of said teeth on the rear end of said feedwheel, and a cartridge belt link comprising open rings adapted to hold a cartridge, and a T-shaped tab on each end of said rings engageable with said slot whereby said link is held in position relative to said feedwheel when the bolt is extracting a cartridge therefrom.

9. In a firearm having a receiver and a bolt reciprocably mounted therein, a feedwheel rotatably mounted in the receiver, said feedwheel being provided with a plurality of radially disposed teeth at the front and rear end thereof to receive cartridges having an extractor groove, a rearwardly downwardly inclined slot relative to the longitudinal axis being provided between each of said teeth on the rear end of said feedwheel, and a disintegrating cartridge belt link comprising a pair of spaced apart open rings coaxially aligned with a single open ring adjacent and attached thereto, and a substantially T-shaped tab on said rearmost ring pivotally engageable with said slot whereby said link is held in position relative to said feedwheel when the bolt is obliquely extracting a cartridge therefrom.

10. The combination defined in claim 9 wherein the opening in said rings is angularly offset with respect to the vertical axis of said rings whereby the cartridge in said link is aligned in said feedwheel.

11. The combination defined in claim 9 wherein said T-shaped tab comprises a narrow neck portion engageable with said slot and a head portion having a forward surface extending from each side of said neck portion engageable with the rear surface of adjacent teeth relative to said slot whereby said link is held obliquely during the extraction of a cartridge therefrom.

12. The combination defined in claim 9 and detent means on said tab engageable with the extractor groove of the cartridge whereby the cartridge is yieldingly positioned within said link.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
448,841	Ritter	Mar. 24, 1891
577,485	Maxim	Feb. 23, 1897
2,022,685	Moore	Dec. 3, 1935
2,173,837	Gorton	Sept. 26, 1939
2,426,527	Sanford et al.	Aug. 26, 1947
2,453,786	Dixon	Nov. 16, 1948

FOREIGN PATENTS

Number	Country	Date
440,005	Great Britain	Dec. 18, 1935