

[54] **CARTRIDGE LADDER LINK**

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[51] Int. Cl. **F41f 9/02**

[58] Field of Search **89/35**

[56] **References Cited**

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[57] **ABSTRACT**

A cartridge ladder link which is lightweight and inexpensive. It is constructed as a continuous strip of thin metal formed from a pre-slitted blank. The slit strip is formed to provide alternately disposed loop members in each of similar successive sections. The loops of each section form a receptacle for an annumition cartridge such that a plurality of cartridges can be successively delivered to a predetermined loaded position in an automatic weapon. The ladder link can have all closed loops for use in weapons such as a linkless feed minigun or contain selected open loops for use in other types of weapons such as conventional machine guns.

2 Claims, 7 Drawing Figures

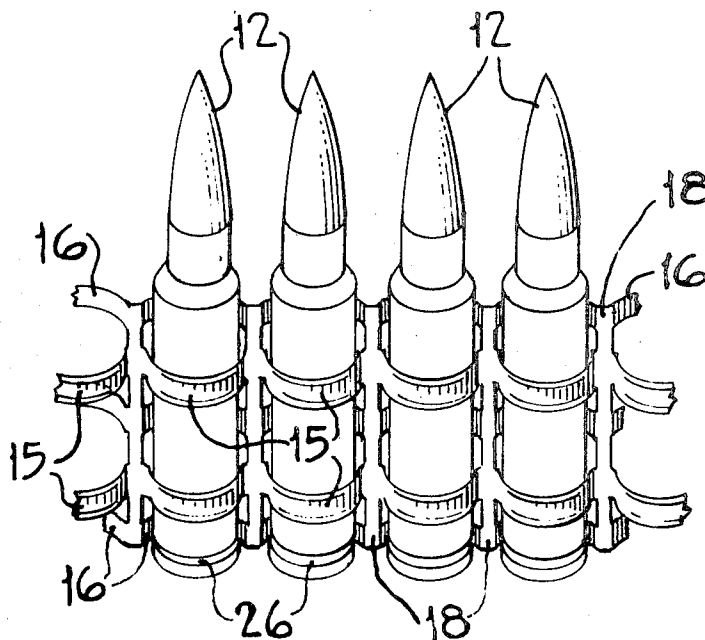


Fig. 1

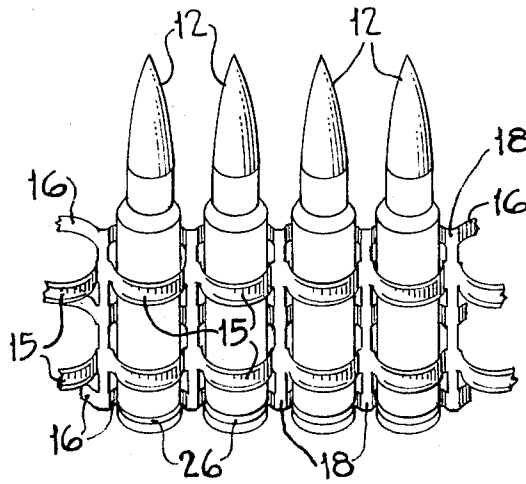


Fig. 2

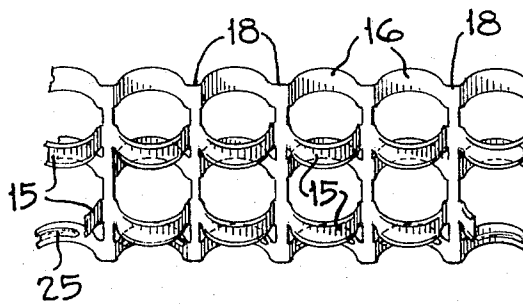
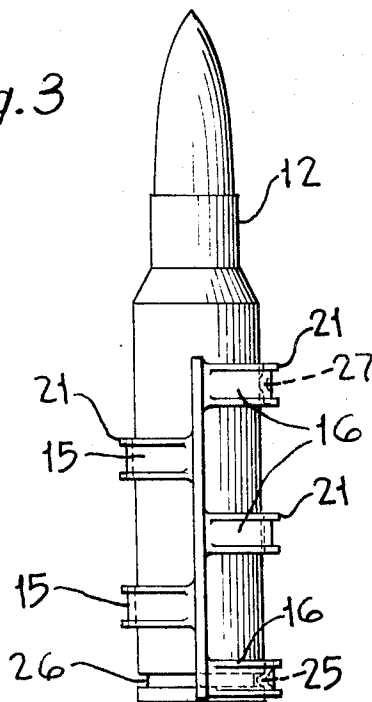


Fig. 3



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Fig. 4

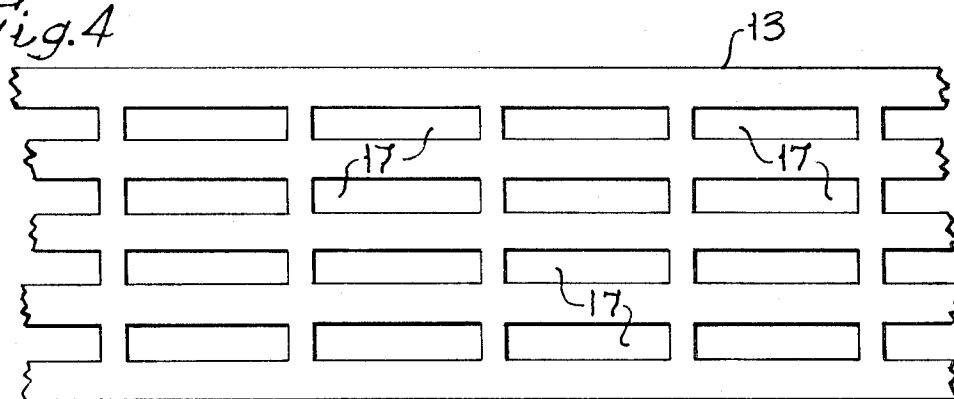


Fig. 5

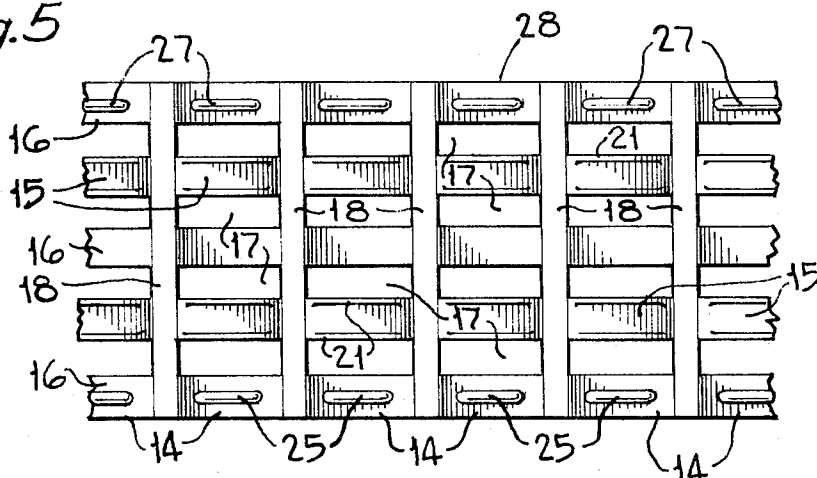


Fig. 6

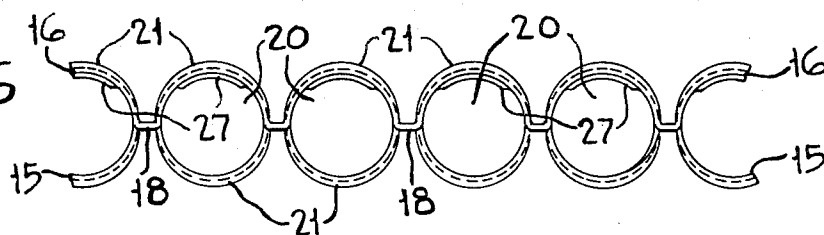
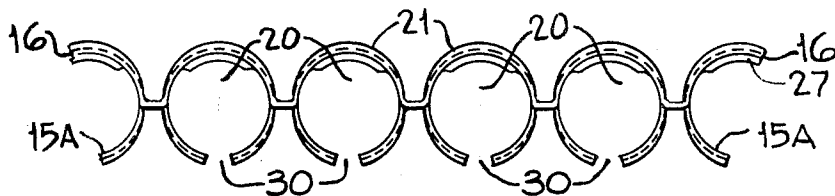


Fig. 7



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CARTRIDGE LADDER LINK

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

This invention relates to cartridge links, and more particularly, to a cartridge ladder link that is used to deliver ammunition rounds successively to a predetermined loaded position for firing in an automatic weapon.

A severe shortage of cartridge links used with ammunition in fast firing linkless feed miniguns was experienced, which prompted investigation of other possible ways to link the ammunition.

One of the objects of the invention is to provide a cartridge link arrangement which is lightweight and inexpensive.

Another object of the invention is to provide such an arrangement that eliminates the need to manufacture single cartridge links and transport the individual links to loading areas.

These and other objects, features and advantages will become more apparent from the following description and accompanying drawings in which:

FIG. 1 is an elevational perspective view of a cartridge ladder link arrangement which embodies the principle of the invention.

FIG. 2 is an elevational perspective view of a similar ladder link as in FIG. 1 with cartridges omitted.

FIG. 3 is an end view of the FIG. 1 arrangement.

FIG. 4 is an elevational view broken away of a pre-slitted blank from which the FIG. 1 ladder link is constructed.

FIG. 5 is a similar view of the FIG. 4 blank which has been die-formed.

FIG. 6 is a plan view of a broken away portion of the FIG. 3 ladder link.

FIG. 7 is a view similar to FIG. 6 of a modified ladder link.

The ladder link shown generally at 11 (FIG. 1) can be formed to accommodate any predetermined number of cartridges 12, dependent upon initially selected length of the pre-slitted blank 13 (FIG. 4) or continuous strip of thin metal (preferably corrosion resistant steel) which is to be die-formed to produce a series of lengthwise ladder link sections 14 (FIG. 5). Each ladder section is identical to and integral with those adjacent and includes a group of alternately disposed arcuate loops 15, 16 that are laterally spaced an amount dependent on the width of the longitudinally extending blank slits 17 that existed on either side of an intermediate loop prior to forming. The alternate loop members 15, 16 of each adjacent section 14 extend lengthwise of the ladder, although of somewhat arcuate contour, and are integral with a common connecting portion 18 (FIG. 5). The loops 15, 16 of each section are constructed and arranged to cooperatively form a corresponding laterally extending receptacle 20 (FIG. 6) for an insertably ammunition cartridge 12. During the die-forming operation, each loop 15, 16 preferably is provided with a U-shaped channel construction as defined by its peripheral strengthening ribs 21. It is contemplated that similar recessed contours may be provided each connecting portion 18 so as to increase the strength of the ladder link. Also, the corresponding section loops 16 along one peripheral edge 24 of the metal strips 13 are provided with a detent formation 25

(FIGS. 3, 5) which is of sufficient size and depth to engage in an extractor groove 26 of its respective cartridge. Somewhat smaller detents or recesses 27 are formed in the respective section loops 16 located along the opposite peripheral edge 28 of the strip. Detents 27 closely accommodate the adjacent profile of an inserted cartridge. End sections of a pair of similar ladder links can be joined by a common inserted cartridge.

The FIG. 2 ladder link is similar to that of the FIG. 1 arrangement, except that the smaller detents 27 have not been provided and certain loops 16 have less width due to increase in width of the slits in the pre-slitted blank.

The FIG. 6 form of ladder link is of the closed loop type described above in connection with FIGS. 1, 3 and 5. This is a preferred ladder link construction for use in successively loading ammunition rounds in the ammunition pod of a gatling type of minigun.

For use in other weapons such as a conventional machine gun, an open loop type of ladder link (FIG. 7) is provided in which the loops 15 A on one side of the ladder link have similar slots 30 extending transversely there across to define a bolt clearance along each inserted cartridge, such that the ladder link can load ammunition rounds directly into position to receive bolt action in operation of the weapon.

In each form and use of the ladder link, upon completed delivery of the cartridges carried thereby, the empty lightweight and inexpensive ladder link can be discarded or disposed of, if so desired.

While each of longitudinally adjacent ladder link loops have been formed to arcuately bend outwardly in the same direction, they can be formed to bend reversely with every other loop extending in the same outward direction. In joining sections having such staggered longitudinal loops one link may have to be inverted, prior to cartridge insertion into the overlapping sections, with the large detents being substantially seated or accommodated by the slightly smaller recess or detent.

Various modifications, changes or alterations may be resorted to without departing from the scope of the invention as defined in the appended claims.

I claim:

1. A lightweight disposable ladder link for use with ammunition rounds comprising,
 - a continuous strip of thin metal formed from a pre-slitted blank and having a plurality of integral lengthwise ladder link and similar sections,
 - each ladder link section being identical to an adjacent section and having a predetermined number of longitudinally extending slits defining laterally spaced die-formed alternately disposed loop members,
 - each adjacent pair of said sections being integral with a common connecting portion of said strip that extends the full width thereof,
 - said alternate loop members of each section extending longitudinally and being constructed and arranged to cooperatively form a laterally extending receptacle for an ammunition cartridge whereby a plurality of cartridges can be successively delivered to a predetermined loaded position in an automatic weapon,
 - said loop members having longitudinally extending die-formed strengthening ribs defining outwardly opening U-shaped channel constructions,

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corresponding ones of said loops adjacent a first peripheral edge of each section of said strip each having a first inwardly directed detent formation for engagement in an extractor groove of its respective cartridge,

respective ones of said loops adjacent a second peripheral edge of each section of said strip each having a second inwardly directed detent, said first detent formations being larger than said second detents,

selected ones of said loop members of each section extending outwardly from a face of said strip to one side thereof, said selected ones being of arcuate contour and closed loop formation, and

others of said loop members being disposed alternately to said selected loops in each section, said

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other loop members each extending outwardly from an opposite face of said strip to the other side thereof, said other loop members being of substantially arcuate contour and containing a transversely extending slot, each of said loop member slots in each corresponding section being in alignment with each other.

2. The structure according to claim 1 wherein end loop members in each section of said closed loop formation members contain respective ones of said first and second detents, and all of said loop members in each section disposed alternately to said end loop members contain one of said transversely extending slots.

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