

March 7, 1967

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3,307,452

ONE-PIECE CHUTING

Filed June 9, 1965

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Fig. 1

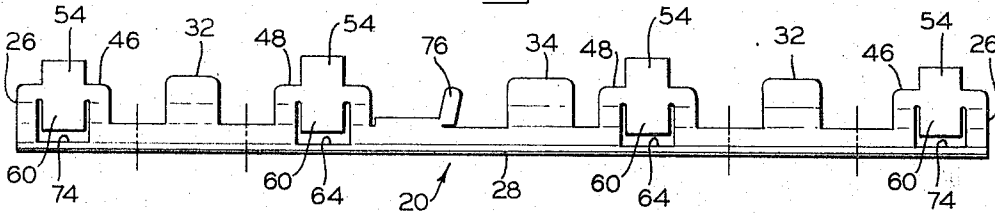


Fig. 2

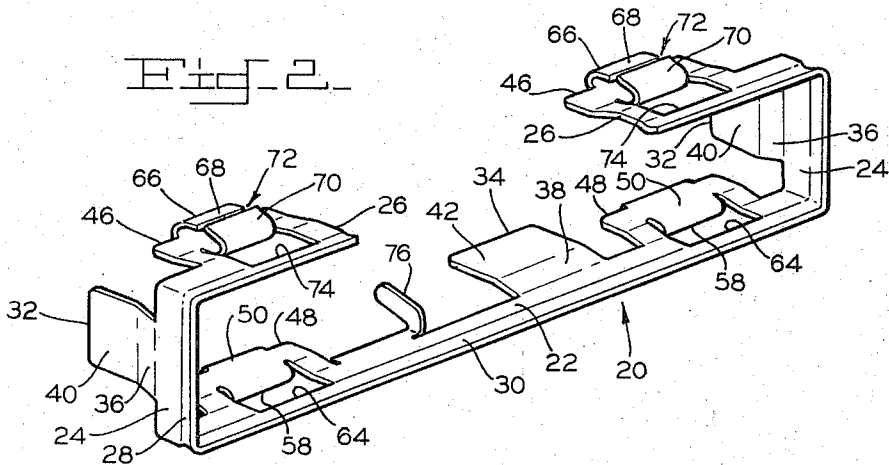
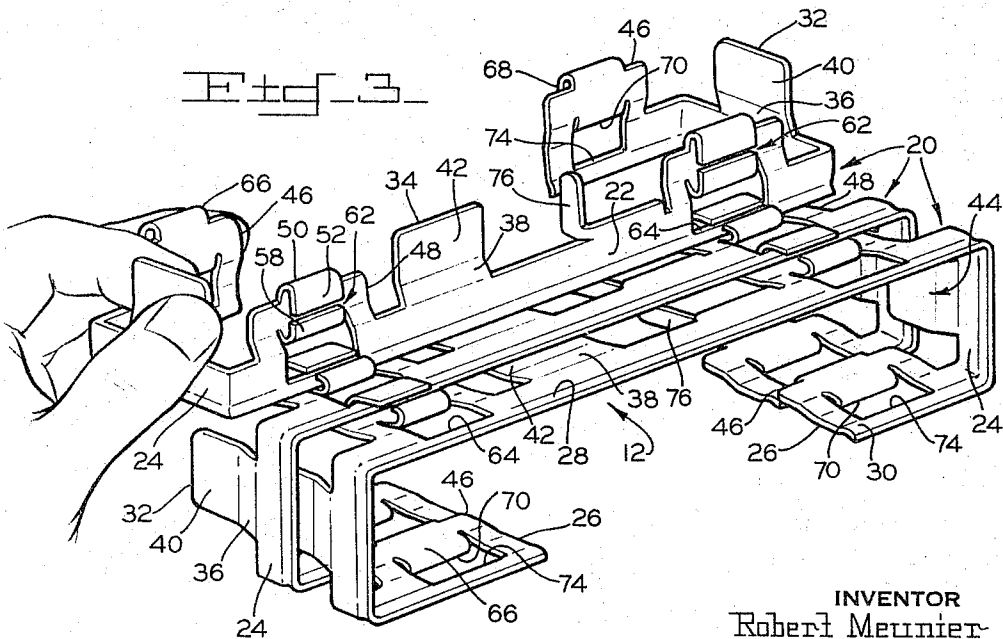


Fig. 3



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Fig. 4

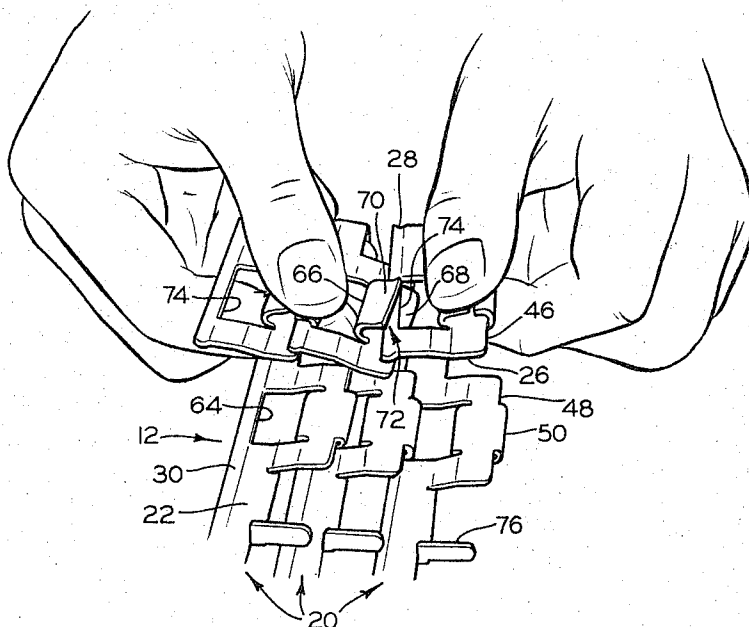
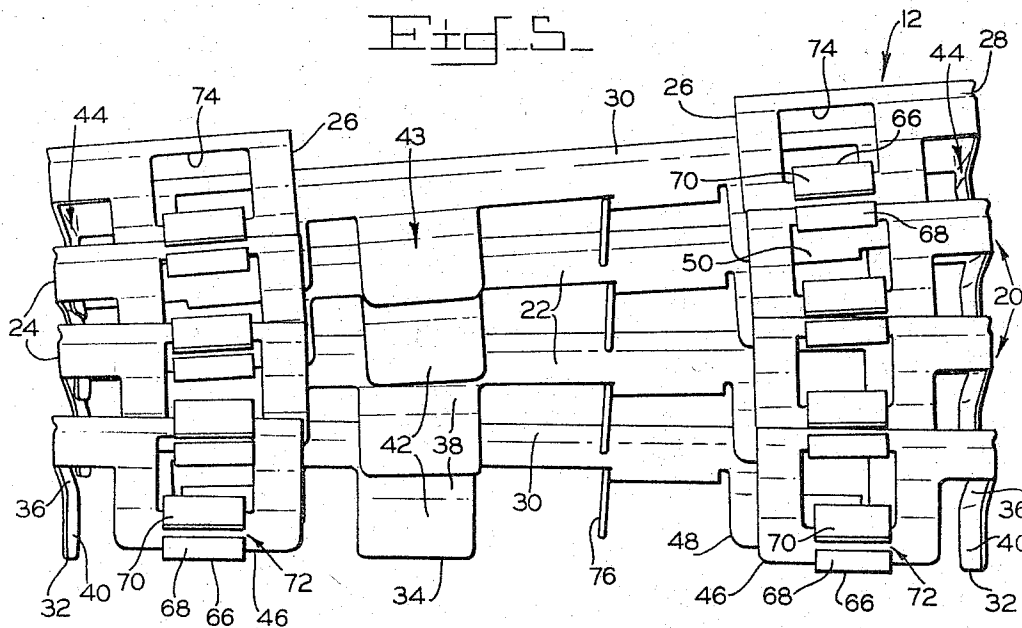


Fig. 5



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Fig. 6

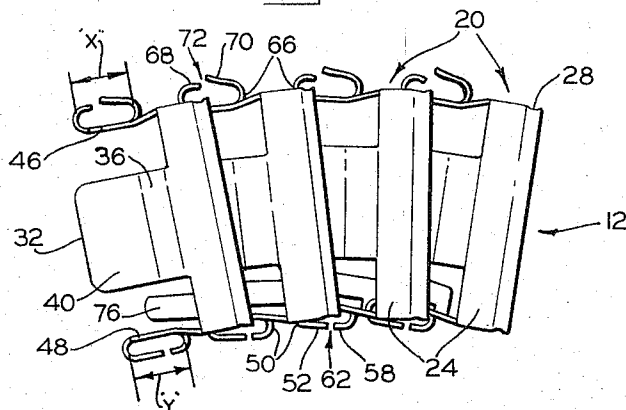
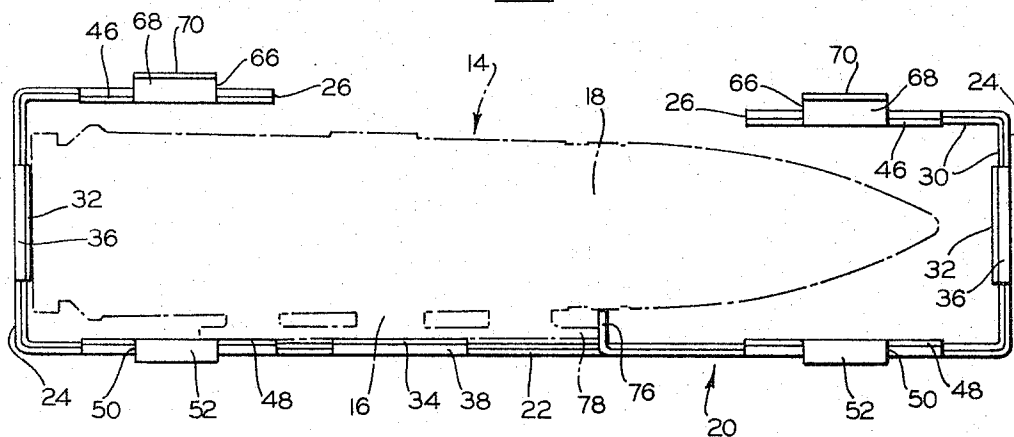


Fig. 7



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## ONE-PIECE CHUTING

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6 Claims. (Cl. 89—33)

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 machine guns and pertains more particularly to chuting for guiding an ammunition belt thereto.

In modern weapons systems containing a machine gun fed with cartridges from a storage container by means of a linked ammunition belt, chuting is required for guiding supporting the ammunition belt to the gun because of the high degree of flexibility of the belt and the oftentimes circuitous routing required thereof.

The chuting, because of this circuitous routing, must have limited flexibility but must also be sufficiently rigid at the limits of the flexible range to slidably support the ammunition belt passing therethrough. The chuting must also be formed so as to sufficiently inclose the belt to protect the cartridges while being moved to the gun, and it must be designed so that it can be readily shortened or lengthened for application in various systems and so that damaged units can be replaced.

Previously, the chuting which has been available has consisted of several different components for each section, which makes it very expensive to manufacture and very complicated for the connection and disconnection of the sections.

Also, cartridges have been introduced into modern ordnance having projectiles with very sensitive nose sections. All present chuting guides the ammunition belt by contact of the nose sections of the cartridges therein with the related side of the chuting, which is not possible with sensitive nose cartridges.

It is therefore one object of this invention to provide for machine gun systems a chuting which consists of a single piece unit which is easily connected and disconnected to others thereof and which is easily fabricated by conventional press methods in one piece.

It is a further object of this invention to provide chuting which cooperates with the link member of an ammunition belt for guiding the belt through the chuting so that the nose sections of the projectiles will not contact the related side thereof.

Further objects and advantages of the invention will be apparent from the following specification and the accompanying drawings which are for the purpose of illustration only and in which:

FIG. 1 is a reduced top view showing how the chuting unit of this invention is cut out in one piece from sheet steel before being pressed into its final configuration;

FIG. 2 is a perspective view of the unit after being pressed into its final configuration;

FIG. 3 is a perspective view of the chuting showing the initial step in connecting another unit thereto;

FIG. 4 is a perspective view showing the second and final step in the operation of connecting the additional unit to the chuting;

FIG. 5 is a top view showing the relationship of the units when the chuting is fanned;

FIG. 6 is an end view of the chuting as shown in FIG. 5; and

FIG. 7 is an end view of the ammunition belt in the chuting showing the position of the linked cartridge as

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controlled by contact of the link with the guide projection of the chuting unit.

Shown in the drawings is a flexible chuting 12 for slidably guiding to a gun (not shown) an ammunition belt 14 comprising a plurality of connected links 16 with cartridges 18 therein. Chuting 12 consists of a plurality of single piece units 20 which are replacably joined together as hereinafter described for limited fanning and bending and which are complete in themselves without the requirement of additional components.

As shown in FIG. 1, unit 20 is cut in one piece from a flat sheet of steel having a high degree of resilience and strength, such as stainless steel 301, 1/2 hard, and which can be bent by conventional press methods to form the finished unit shown in FIG. 2. As shown in FIG. 2, unit 20 is essentially rectangular in configuration with a base 22, a pair of sides 24 extending upwardly at right angles from the ends thereof, and a pair of top sections 26 which extend towards each other from the upper ends of the sides in spaced relationship.

A corrugation 28 is formed around the front edge of unit 20 for stiffening purposes and is pressed inwardly to form a convex bearing surface 30 around the inside of the unit. A tab 32 extends rearwardly from each of the sides 24 and a bridge 34, similar to configuration to the tabs, extends rearwardly from base 22. Bridge 34 is positioned so as to be slidably contacted by links 16 as ammunition belt 14 passes through unit 20.

Tabs 32 and bridge 34 are provided with offset sections 36 and 38 and overlapping sections 40 and 42, respectively. Offset sections 36 and 38 offset overlapping sections 40 and 42, respectively, a distance equal to the depth of corrugation 28 so that the overlapping sections are insertable inside another unit 20. Overlapping sections 40 and 42 are also long enough to provide a bridge between connected units 20 and so form continuous sliding surfaces 43 and 44 along the base and sides of chuting 12, respectively. Tabs 32 moreover, serve to slidably maintain the connected units 20 against relative lateral displacement.

Extending rearwardly from each of the top sections 26 is a coupling 46 and extending rearwardly from base 22 directly opposite such couplings is a pair of couplings 48 which are similar to couplings 46 except as hereinafter noted. Couplings 46 and 48 are similar to tabs 32 and bridge 34 as to overall configuration with each including an offset section and an overlapping section to compensate for corrugation 28.

Couplings 48 are each provided with a connector 50 of C configuration which includes a lip 52 formed from an extension 54 to the respective coupling, which is bent forwardly, and another lip 58 which is formed by cutting a tongue 60 in the respective coupling up to corrugation 28, as noted in FIG. 1, and then bending the tongue rearwardly until the ends of the lips form an opening 62. The cut which forms tongue 60 also forms in base 22, a bar 64 which is essentially a section of corrugation 28.

A connector 66 is formed on each of the couplings 46 similar to the method of forming connectors 50 and each of the connectors includes a forwardly facing lip 68 and a rearwardly facing lip 70 with an opening 72 formed therebetween. Lip 70 is formed to flair outwardly and thereby be offset from lip 68, as is best shown in FIG. 6, to facilitate connecting and disconnecting pairs of units 20, as will be hereinafter explained. A bar 74 is also formed similar to bar 64 in each of the top sections 26 by the formation of lip 70.

Openings 62 are wide enough to pass bars 64 of another unit 20 into connectors 50 when the added unit is disposed at right angles to the end one of the chuting 12, as shown in FIG. 3, but the width of such bars is greater than the width of openings 62 so that the bars are pre-

vented from withdrawal from connectors 50 after the added unit 20 is swung into alignment with the end units of chuting 12.

Bars 74 are insertable through openings 72 into connectors 46, to complete the connection of the added unit 20 to chuting 12, by first swinging the added unit into alignment with chuting 20 and then grasping one of the top sections 26 of the end unit of the chuting between the thumb and curved index finger of one hand, so that the thumb can press downwardly on coupling 46 therein, and similarly grasping the corresponding top section of the added unit with the opposite hand, as shown in FIG. 4, so that the thumb thereof can press downwardly against bar 74. By twisting the grasped top sections 26 and pressing downwardly on bar 74 and the associated coupling 46 the bar can be inserted into one corner of opening 72 and then the remainder of the bar can be easily pressed through the opening into the connector. The passage of bar 74 through opening 72 is facilitated by the offset relationship of the lips 68 and 70 and the arcuate configuration of the bar which is a section of corrugation 28. The other top sections 26 of the added unit 20 and the end unit of chuting 12 are similarly joined to complete the connection of the added unit to the chuting.

A section of chuting 12 can be disconnected therefrom by reversing the above noted steps.

Couplings 48 and 46 are formed so that the long axis thereof, respectively noted at X and Y, are sufficiently greater than the widths of the related bars 64 and 74, to permit relative displacement between the connected units 20 for limited fanning and bending of chuting 12. When bars 64 and 74 are in contact with one of the ends of the related couplings 46 and 48, as chuting 12 is bent or fanned, the connected units 20 provide a firm guide for passage of ammunition belt therethrough. Fanning and bending are facilitated by the arcuate configuration of bearing surface 30 which minimizes the area of contact between the moving surfaces and provides rocking contact therebetween.

Integrally formed in each of the units 20 is a guide projection 76 which extends upwardly thereinto for sliding contact by a cooperating flange 78 on the front end of each of the links 16 during passage of ammunition belt 14 through chuting 12 thus, ammunition belt 14 is guided between the sliding contacts of the bases of the cartridges 18 therein with sides 24 and tabs 32 of units 20 and the sliding contact of the flanges 78 with the guide projections 76 to prevent axial displacement of cartridges 18, while passing through chuting 12.

Although a particular embodiment of the invention has been described in detail herein, it is evident that many variations may be devised within the spirit and scope thereof and the following claims are intended to include such variations.

#### I claim:

1. In combination with an ammunition belt composed of a plurality of connected links and cartridges carried thereby, a chuting unit formed in one piece from a single sheet of metal, said unit being essentially of rectangular configuration and including a base, a pair of sides extending at right angles from opposite ends of said base, a pair of top sections respectively extending towards each other in spaced relationship from said sides, a corrugation disposed to extend around said unit adjacent to one

edge in a manner to provide a convex bearing surface around the inside of said unit, and integral connector means for releasably connecting said unit to another said unit to form a flexible chuting for slidably guiding said ammunition belt between two stations, said connector means including a first pair of connectors rearwardly disposed in each of said top sections, a second pair of connectors rearwardly disposed in said base directly opposite said first pair of connectors, and four bars formed from sections of said corrugation for respective insertion into said first and second pair of connectors for releasably joining said unit to said another unit, said connectors and the respective ones of said bars cooperating to permit limited fanning and bending relationship between said unit and said another unit.

2. The invention as defined in claim 1 wherein said first and second pairs of connectors are each of a C configuration including a pair of lips with a space formed therebetween, wherein said space in each of said second pair of connectors and the respective ones of said bars are so arranged that said bars of said unit are insertable through the respective ones of said spaces of said another unit only when said unit and said another unit are disposed at right angles to each other, and wherein said pair of lips of said first pair of connectors are offset respective to each other to permit insertion of the respective ones of said bars through said space in said first pair of connectors only when the respective ones of said top sections in said unit and said another unit are each in an abnormal twisted configuration.

3. The invention as defined in claim 2 wherein said connectors are each formed on a rearwardly extending coupling in said unit, and wherein said coupling includes an overlapping section insertable into said another unit and an offset section offsetting said overlapping section to compensate for said bearing surface.

4. The invention as defined in claim 2 wherein each of said sides includes a rearwardly extending tab having an overlapping section insertable within said another unit, an offset portion offsetting said overlapping section to compensate for said bearing surface, and wherein said overlapping sections of said unit cooperate with said overlapping sections of said another unit when said unit is connected thereto to form a continuous sliding surface.

5. The invention as defined in claim 2 wherein said base includes a rearwardly extending bridge arranged for sliding contact by said links when passing through said unit, said bridge including an overlapping section insertable into said another unit and an offset set offsetting said overlapping section to compensate for said bearing surface.

6. The invention as defined in claim 2 wherein each of said bars is formed by the formation of one of said lips in each of said connectors.

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