AMMUNITION CHUTE.

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Application January 31, 1945, Serial No. 575,496.

5 Claims. (Cl. 193—2)

1. The present invention relates to ordnance and more particularly to an improved ammunition chute for conveying a feed belt from an ammunition box to a machine gun.

It has heretofore been the general practice to construct ammunition chutes of formed or bent sheet metal. Actual experience in the use of these prior type sheet metal chutes has revealed that they possess several inherent disadvantages, particularly in that they are relatively heavy for the light load to which they are subjected and they do not permit of ready accessibility to the ammunition belt in the event it becomes jammed. Other ammunition chutes of both rigid and flexible types have been constructed and used but they have each met with objections either in their manufacture or use. Many of these prior-type chutes have also been found objectionable from the standpoint of the invisibility of the ammunition belt within the chute and the lack of structural adaptability of the chute to the formation of fastening means to the ammunition box, the gun, and to other intermediate supporting structures. These previous difficulties and objections have been overcome by the present invention, which comprises essentially an openwork chute of stiff wire elements rigidly secured as by brazing or spotwelding, the construction being such that the longitudinal wire elements serve as relatively friction-free guide means for the ammunition which passes through the chute.

It is accordingly a major object of the present invention to provide an improved ammunition chute which is relatively light in weight, of simpler more readily built construction and economical in cost. Another object is the provision of a relatively friction-free guide for the ammunition, and one which is readily bent or restored to its original shape after being damaged. Another object comprises the provision of an openwork chute of stiff wire elements which provide full visibility of the ammunition passing through the chute and is less vulnerable to gun fire than previous types. It is a further object to provide an improved ammunition chute in which ready access can be had to the ammunition belt in the event it becomes jammed at one or more points and in which the points of jamming are readily ascertained by virtue of the aforementioned visibility of the ammunition belt at all times.

A further object of the present invention resides in the provision of an ammunition chute which is structurally adaptable to the formation of fastening means for the attachment of the chute to the ammunition box, the gun, or to other intermediate supporting structures. A still further object has envisaged a construction using but two stock wires, both the same in diameter or cross-section of materials suited to their actual use either as in contact with the ammunition or as a support for the contacting wires, thereby reducing the use of strategic material to a minimum. Other objects and advantages of the present invention will become apparent to those skilled in the art after reading the present specification, taken together with the accompanying drawings, forming a part hereof, in which:

Fig. 1 is a side elevational view of a fragmentary portion of a length of a cartridge belt within the improved ammunition chute of the present invention;

Fig. 2 is an end elevational view of the ammunition belt and chute shown in Fig. 1; and

Fig. 3 is a perspective view of a fragmentary length of the chute without any ammunition.

The present ammunition chute is adapted for use with various calibers of standard belt type ammunition as shown in Figs. 1 and 2 in which the cartridges are provided with conventional shells or casings; a rimmed base or firing end; and the usual bullets portions having an exposed nose portion of ogive shape meeting in the point at 8. A plurality or train of cartridges are articulated or interconnected in a manner well known in the art by the clips or links 10 to thereby form an ammunition feed belt as fragmentarily shown in Fig. 1.

The ammunition chute guide structure comprises a plurality of longitudinal wires and in the modification shown, which has been selected for the purpose of the present description, comprises seven (7) such wires, namely, 11, 12, 13, 14, 15, 16 and 17. These longitudinal wires are preferably of the same gauge, circular cross-section or diameter, and are continuous throughout the length of the chute. The longitudinal wires are secured to the inner surfaces of the stiffening structure of the chute comprising a plurality of transverse wire groups 18 and 19 which encircle and serve to maintain the seven (7) longitudinal wires in their proper relative positions. As indicated in Figs. 1 and 3 every third wire, namely, 11, 13, 16 and 17 forms a continuous or complete loop completely enclosing the seven longitudinal wires; whereas the intermediate loops, namely 18, 12, 15 and 19 are preferably interrupted between the longitudinal wires 12 and 14 on the same side of the ammunition chute. The inner surfaces of the longitudinal wires are accordingly uninterrupted throughout their length and serve
as contacting slides for guiding the cartridges of the ammunition belt. For this reason they are preferably made of a material which suitably withstands the abrasive action of the sliding cartridges, whereas the loops 18 and 19 may be of softer non-strategic material, being brazed, spot-welded or cemented together.

Reference to Fig. 2 will indicate that the upper wire 11 engages or is closely contiguous to the grooved or base end of the cartridge shells, the wires 12 and 13 are closely contiguous to the opposite sides of the shells, and that the wires 14 and 15 are similarly closely spaced with respect to the opposite sides of the ogive portion 8 of the bullet. The longitudinal wires 16 and 17 also lie contiguous with respect to the profile of the ammunition and in addition to being attached to the encircling loops 18 and 19 these wires are spot fastened to each other to provide a guide groove engaged by the nose of the bullet at its point 9.

The transverse endless loops 18 are formed as shown in Fig. 2, in the general shape of the profile of one of the cartridges, while at the same time being bulged outwardly midway of each of their sides to accommodate the links 10 of the cartridge belt. The transverse cutaway loops 19 are similar to loops formed when they are bulged at one side while being cut away between the wires 12 and 14 at the other side as indicated above to provide access to the belt for convenience in loading, or for other purposes. Every third loop 18 is preferably a complete loop and the remaining intermediate loops are cut away to form the C-shaped loops 19. The particular arrangement or ratio of complete and cut away loops may, of course, be varied to suit the individual requirements of the caliber of the ammunition or a given installation.

The two longitudinal wires 16 and 17 serve to stiffen the frame of the openwork chute by reason of the overall double width of the longitudinal track assembly 20 which they cooperatively form and provide a longitudinal slide groove for the pointed nose of the bullet. The wires 16 and 17 together with the wires 12, 13, 14 and 15 prevent the bullet nose from slipping laterally and riding along the outside edge of this compound track 20. In the event the latter misalignment were to occur, the bullet nose 9 would strike against the transverse loops at those points where the longitudinal wires are fastened to the elements 16 or 17 of the track 20 and would develop a substantial frictional engagement with the outer surfaces of the track. Such misalignment is more likely to occur where only one wire is used or substituted for the element 20, and the frictional retardation and obstruction to the progress of the ammunition belt becomes substantial when some bullet noses slip to one side and others slip to the opposite side of such a single wire. The play between the wires 14 and 15 and the profile of the bullet 8 is made insufficient to permit the bullet nose point 9 from moving laterally far enough to slip outwardly against the outside faces of wires 16 and 17.

A distinct advantage in making the compound track member 20 of two longitudinal wires instead of sheet stock resides in the fact that these individual wires being round and of identical material and cross-section can be formed or bent into any plane or compound curve with equal ease and without wastage of material. The ammunition chutes of the present invention are accordingly capable of being made with longitudinal bends in all longitudinal planes in arcuate and spiral curves between the ammunition box and the gun depending upon the requirements of the particular installation.

To produce these curves the longitudinal wires are first bent to the desired form and the loops are then spot fastened to them. While certain of the advantages of the double wire guide track 16-17-20 is obtained by the substitution of a flat strip of metal, the disadvantages result in requiring that two different kinds of stock are required to make the chute, and the ribbon cross-section will warp and wrinkle when bent to produce a curved chute. The ends of the wires 14 and 15, or 13 and 16, may preferably be bent so that they also offer advantages in engagement with any suitable mating device on the ammunition box or gun by which the end of the chute may be secured to the box or the gun.

It will accordingly be noted from the above description and the accompanying drawings that an ammunition chute providing a number of distinct advantages is obtained. Among these advantages might be stated the accessibility to the ammunition which is conveniently made throughout the entire length of the chute within which they are secured to the ends of the cartridge belt. The construction of the chute is relatively light in weight, and friction is reduced to a minimum by providing substantial point contact between the ammunition and the longitudinal guide members of the chute. The present chute construction also permits the reduction in the use of strategic and expensive materials inasmuch as they are used for the actual guiding members only, and non-strategic materials are preferably used for those members not subject to abrasion by contact with the ammunition.

Among the other advantages of the present type chute construction it might be stated, as indicated above, that the guiding members of round section can be formed in any plane or combination of planes prior to assembly with equal ease, and that chutes of the present open type frame is not susceptible of damage from gun-fire in view of the minimum of chute area which is exposed. A further advantage lies in the ability to readily repair any damage which might occur as a result of the bending of the wire of which the chute is constructed, and which can readily be straightened. The present type chute construction also offers the manufacturing standpoint in that it can be rapidly fabricated with a minimum amount of tooling, and stocking and inventory problems are greatly reduced and simplified where but one size of wire and but two materials are to be handled. The round wires may also be of hexagonal, octagonal, square or similar symmetrical rod-like cross sections.

Other forms and advantages of the present invention which may occur to those skilled in the art after reading the present description are intended to come within the scope and spirit of the present invention as more particularly set forth in the appended claims.

The invention claimed is as follows:

1. In a chute for belted ammunition comprising a plurality of articulated cartridges having nose portions; said chute constructed of a plurality of longitudinal elements arranged for the guiding of ammunition therethrough; a guide track for said nose portions comprising a pair of longitudinal rod-like elements fastened to each
other to form a groove for guiding said nose portions.

2. A chute for belted ammunition consisting of a series of articulated cartridges having nose portions, said chute comprising a plurality of longitudinal elements arranged to define a profile closely contiguous to the cross-sectional outline of said cartridges and adapted to oppose movement of said cartridges in any lateral direction, each of said longitudinal elements being of substantially the same rounded cross-section whereby bending of said chute into curved formations is facilitated, a contiguous pair of said longitudinal elements arranged to form a guide for said cartridge nose portions, and spaced transverse elements enclosing and maintaining the said contiguous relationship of said longitudinal elements with respect to the profile about said cartridges, the longitudinal and lateral spacings of said transverse and longitudinal elements being such that the ammunition is at all times visible from all of the exterior sides of said chute.

3. In an ammunition chute for cartridges having relatively pointed nose portions; said chute including a plurality of longitudinally extending rounded elements for guiding cartridges therethrough; a contiguous pair of said elements arranged to form a longitudinal recess for guiding said nose portions; said chute including means arranged to maintain the contiguous relationship of said recess-forming elements.

4. In a chute for cartridge ammunition having nose portions, said chute including a plurality of longitudinal elements arranged for the guiding of said cartridge ammunition, an adjacent pair of said longitudinal elements contiguously disposed to form a longitudinal recess for guiding said nose portions, and longitudinally spaced transverse encircling means arranged to maintain the relationship of said guide-forming longitudinal elements.

5. In an ammunition chute for cartridges having pointed nose portions, said chute including a plurality of longitudinally extending elements arranged for guiding said cartridges, a contiguous pair of longitudinal elements arranged to form a guiding recess for said cartridge nose portions and a plurality of transverse encircling elements arranged to maintain the relationship of said longitudinally extending elements, certain of said transverse elements completely encircling said longitudinal elements and other transverse elements being generally C-shaped to provide access to said ammunition through a side of said chute.

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