

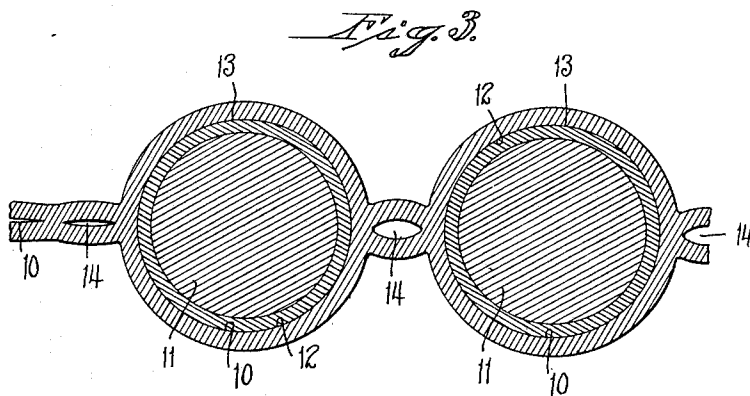
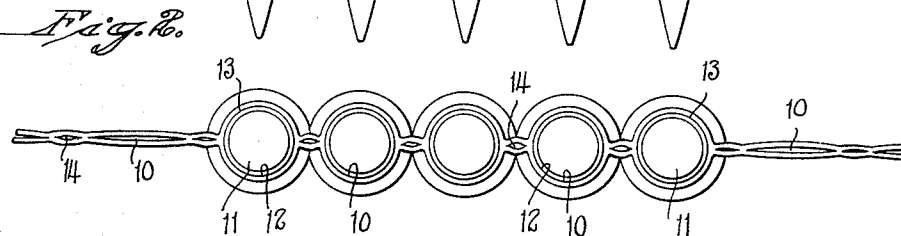
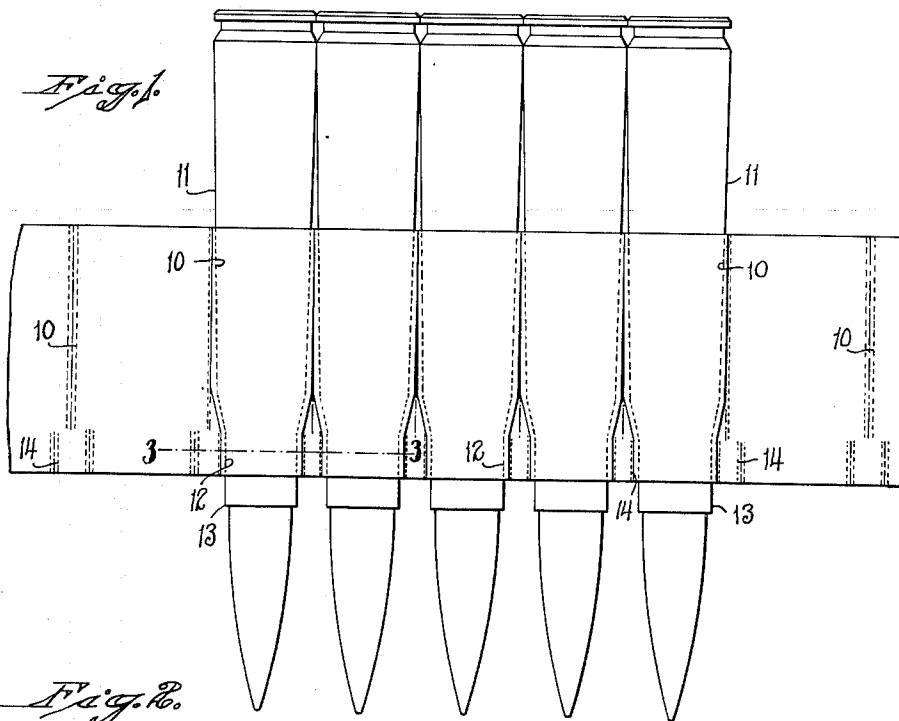
Nov. 17, 1936.

J. A. HENDLEY

2,061,072

CARTRIDGE BELT FOR MACHINE GUNS AND THE LIKE

Original Filed May 26, 1933 2 Sheets-Sheet 1



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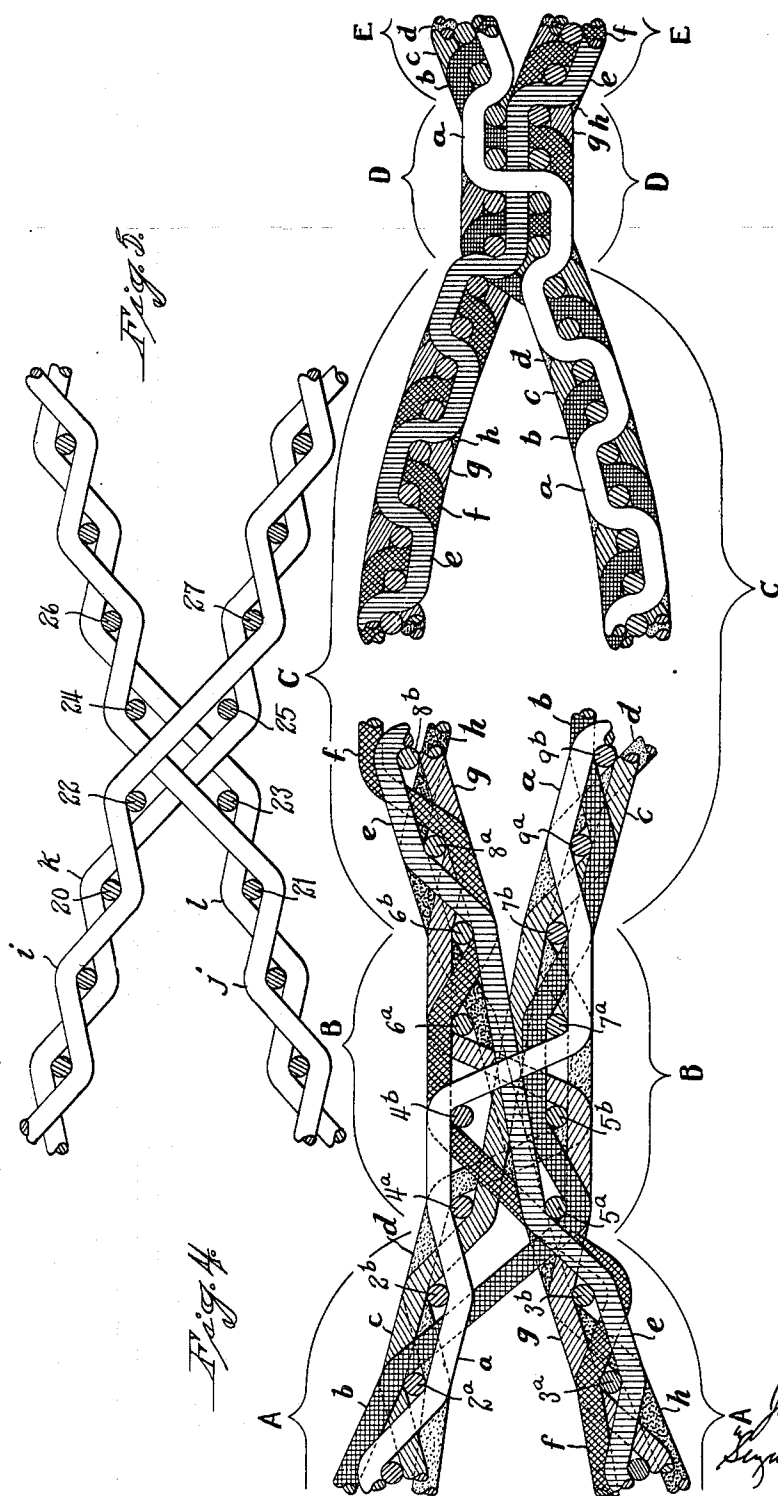
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CARTRIDGE BELT FOR MACHINE GUNS AND THE LIKE

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UNITED STATES PATENT OFFICE

2,061,072

CARTRIDGE BELT FOR MACHINE GUNS
AND THE LIKEJames A. Hendley, Middletown, Conn., assignor
to The Russell Manufacturing Company, Mid-
dletown, Conn., a corporationApplication May 26, 1933, Serial No. 672,938
Renewed May 28, 1936

7 Claims. (Cl. 139—390)

This invention relates to an improvement in cartridge belts and particularly to cartridge belts for machine guns of the type shown in United States Patent No. 1,168,876, dated January 18, 1916.

The cartridge belt of the prior patent above referred to consisted of two virtually-distinct layers of fabric, each including a complete set of warp strands interwoven with a set of weft or filling strands. At regularly-spaced intervals, it was proposed to cross each set of warp strands from one face of the composite fabric to the other and back again, to provide cartridge-receiving pockets. It was found in practice, however, that only about half of each set of warp strands could be crossed as proposed, owing to the fact that if more than half were crossed, they would be so crowded at the point of crossing as to make the lateral edges of the belt of objectionable undulated form. Therefore, it became necessary to stitch in place such of the warp strands of each set as it was found infeasible to cross through the fabric, with the result that the pockets of the cartridge belt were not as strong and rugged as might be desired to withstand the hard usage to which such belts are subjected in use.

Other objections are inherent in the cartridge belts of the prior patent referred to, among which may be mentioned the failure to firmly grip the cartridges, an objection which has become more and more serious as the machine gun cartridges increase in calibre.

One of the main objects of the present invention is to provide a cartridge belt of superior strength and cartridge-gripping power.

A further object is to provide a cartridge belt of superior flexibility.

Another object is to provide a cartridge-belt construction whereby a great majority (preferably substantially all) of the warp strands may be crossed from one face of the belt to the other without undue distortion of the belt and to thus produce cartridge-receiving pockets of maximum strength.

Other objects and advantages will appear to those skilled in the art from the following, taken in conjunction with the accompanying drawings and appended claims.

In the accompanying drawings:

Fig. 1 is a face view of a machine gun cartridge belt embodying the present invention and shown as partially loaded with cartridges;

Fig. 2 is an edge view thereof;

Fig. 3 is a broken longitudinal sectional view,

taken on the line 3—3 of Fig. 1, but on a larger scale;

Fig. 4 is a schematic view in longitudinal section, illustrating the staggering of the crossing warp strands, which latter are shown as cross-hatched or otherwise marked, to distinguish them one from another and assist in tracing their respective crosses through the fabric; and

Fig. 5 is a similar view illustrating another mode of crossing the sets of warp strands.

The machine-gun cartridge belt herein chosen for illustration includes a series of closely-abutting cartridge-receiving pockets 10 extending laterally across the belt from edge to edge and each adapted to receive a cartridge 11 in the usual manner of such belts. Adjacent one edge of the belt the pockets 10 are contracted as at 12 to snugly fit the tapered and contracted bullet-ends 13 of the respective cartridges 11.

Between the contracted portions 12 of the adjacent cartridge pockets 10 the belt is preferably formed with relatively-narrow recesses 14 which serve to permit a greater degree of flexibility to the belt than would be the case were the fabric to be woven solidly in these areas.

Cartridge belts embodying the present invention may be woven in a wide variety of manners, such for instance as herringbone weave, twill weave, etc., etc., provided only that the warp strands are crossed in the novel manner herein exemplified.

In Fig. 4 is schematically shown a preferred weave involving repeated cycles of eight warp strands or two four-strand sets each. One set of warp strands includes the strands marked *a*, *b*, *c*, *d* and the complementary set includes strands marked *e*, *f*, *g*, *h*. For convenience of description, certain of the weft or filling picks at and adjacent the crossing points of the warp strands have been marked with the reference characters 2^a to 9^b inclusive, with the even-numbered picks forming part of the upper layer of the belt and the odd-numbered picks forming part of the lower layer of the belt as viewed in the drawings.

The weave illustrated in Fig. 4 is preferably produced on a double-shuttle loom, each shuttle of which operates alternately and lays in two such filling picks to form one reach of the weave at each operation. For instance, the filling picks 2^a, 2^b will be laid in by the top shuttle and then the two filling picks 3^a and 3^b by the bottom shuttle to be followed by the laying-in of the picks 4^a and 4^b by the top shuttle and so on.

By reference to Fig. 4 it will be seen that the set of warp strands *a*, *b*, *c* and *d* form part of the

upper face or layer of the fabric roughly comprehended in the zone marked A. These warp strands then cross the fabric through the zone B and become part of the under layer or face of the fabric throughout the zone marked C. The set of warp strands *a, b, c, d* then cross through the belt in the zone D and again emerge upon the upper face of the fabric to form part of the upper layer or face thereof in the zone E.

Similarly, but oppositely, the set of warp strands marked *e, f, g, h* are interwoven with the filling picks of the bottom layer of the fabric within the zone A and cross through the fabric in the zone B to appear upon the upper face thereof for interweaving with the upper set of filling picks in the zone C. The second set of warp strands *e, f, g, h* then cross downwardly through the fabric in the zone D and appear again on the under face of the fabric in the zone E.

From the foregoing it will be seen that each set of warp strands alternately shifts into opposite layers of the fabric, i. e., a given one of the said sets of warp strands forms part of the upper wall of a cartridge-receiving pocket at one point and crosses over to form part of the bottom wall of a similar cartridge pocket on each opposite side.

It will also be noted by reference to Fig. 4 that the individual warp strands of a given set thereof cross through the fabric as described at separate and distinct longitudinally-displaced points so as not to have the effect of building up the fabric laterally to an undue width in the cross-over zones B and D, for instance. In the particular weave now being discussed the respective warp strands cross over alternately from one set to another in the following order starting from the left-hand portion of Fig. 4:

First, the warp strand *a* crosses downwardly between the upper filling picks 4^b and 6^a and between the lower filling picks 5^b and 7^a to the lower side of the fabric. Next, the warp strand *c* passes between the lower filling picks 3^b and 5^a , thence diagonally upwardly between the upper filling picks 6^b and 8^a into the upper layer or face of the belt. Next in order is the warp strand *b* which extends downwardly between the upper filling strands 2^a and 2^b , thence between the lower filling strands 3^b and 5^a into the lower face of the fabric. The next strand to cross is the strand *f* which extends upwardly between the lower filling picks 3^b and 5^a , thence upwardly between the upper filling picks 4^a and 4^b into the upper face or layer of the fabric. The fifth thread to cross is that marked *c* which extends downwardly between the upper filling picks 2^b and 4^a , thence from left to right and downwardly through the gap between the lower filling picks 7^b and 9^a into the lower layer of the fabric. The warp strand *g* now crosses upwardly between the lower filling picks 5^b and 7^a , thence between the upper filling picks 4^b and 6^a into the upper layer of the fabric. Next comes the warp strand *d* marked by relatively light stippling which extends downwardly between the upper filling picks 4^a and 4^b , thence between the lower filling picks 5^a and 5^b into the lower face or layer of the fabric. Next and last in order of the series is the warp strand *h* marked with relatively heavy stippling and extending upwardly between the lower filling picks 3^a and 3^b , thence from left to right and through the gap between the upper filling picks 6^a and 6^b into the upper face of the fabric. Next succeeding the warp strand *h* in the weave would be a warp strand corresponding to the warp strand *a*, followed in order by warp strands respectively corresponding to the

strands *e, b, f, c, g, d* and *h* and so on in repeated groups of eight warp strands throughout all or a desired portion of the width of the fabric.

Thus, in the preferred embodiment of the present invention, the various warp strands are crossed through the fabric at three or more longitudinally-displaced points so that substantially all thereof may cross over to produce strong pockets without causing the belt to be unduly wide at the zones B and D. The preferred embodiment is an over-and-under-more-than-one-weft-strand weave which will be referred to more briefly in the claims as a "twill weave".

In Fig. 5 is shown a simpler weave embodying repeated cycles of four warp strands or two two-strand sets each. One set of warp strands includes the strands marked *i, k* and the complementary set includes the set marked *j, l*. In this figure also certain of the weft or filling picks are marked 20 to 27 inclusive with the even-numbered picks forming part of the upper layer of the belt and the odd-numbered picks forming part of the bottom layer thereof.

In Fig. 5 now being discussed and starting at the left thereof, the warp strand *i* passes diagonally downward between the filling picks 22 and 24 of the upper layer or face of the belt and between the filling picks 25 and 27 of the lower set thereof appear upon the bottom face of the fabric.

Next in order is the warp strand *j* which passes diagonally upward between the lower filling picks 21 and 23, thence between the upper filling picks 22 and 24 and on into the upper portion or layer of the belt. The warp strand *k* passes diagonally downward between the upper filling picks 20 and 22 and between the lower filling picks 23 and 25 and thence into the lower portion of the fabric. The warp strand *l* now passes next in order diagonally upwardly between the lower filling picks 23 and 25 and between the upper filling picks 24 and 26 into the upper face of the fabric.

The weave now repeats itself throughout all or such part as may be desired of the width of the fabric.

The weave illustrated in Fig. 5 has the same general characteristics as that shown in Fig. 4, inasmuch as certain of the warp strands are crossed through the fabric at adjacent but longitudinally-displaced points with respect to others so that one or more filling picks is interposed therebetween.

The invention may be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the invention, and the present embodiments are therefore to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

I claim:

1. A strip-like woven cartridge belt comprising: a plurality of closely-spaced cartridge-receiving passages extending transversely through the belt and opening through the opposite side-edges thereof; the said belt having two sets of warp strands crossing each other at spaced-apart locations so as to alternately appear, first upon one face of the belt and then upon the other face to form the said cartridge-receiving passages; and weft or filling strands interwoven with each of the said sets of warp strands; corresponding portions of the two sets of warp strands adjacent one side-edge of the belt crossing each other at

double the number and different spaced-apart locations from the crossing locations of the remaining portions of the two sets of warp strands, said double number of crossing locations being arranged in pairs, the crossing locations of each pair being located near but at opposite sides of a crossing location of said remaining portions of the two sets of warp strands.

2. A strip-like woven cartridge belt comprising: a plurality of closely-spaced cartridge-receiving passages extending transversely through the belt and opening through the opposite side-edges thereof; the said belt having two sets of warp strands crossing each other at spaced-apart locations so as to alternately appear, first upon one face of the belt and then upon the other face to form the said cartridge-receiving passages; and weft or filling strands interwoven with each of the said sets of warp strands; corresponding portions of the two sets of warp strands adjacent one side-edge of the belt crossing each other at double the number and different spaced-apart locations from the crossing locations of the remaining portions of the two sets of warp strands, said double number of crossing locations being arranged in pairs, the crossing locations of each pair being located near but at opposite sides of a crossing location of said remaining portions of the two sets of warp strands, the said corresponding portions of the two sets of warp strands being unconnected with each other between the crossing locations of each said pair.

3. A strip-like woven cartridge belt comprising: a plurality of closely-spaced cartridge-receiving passages extending transversely through the belt and opening through the opposite side-edges thereof; the said belt having two sets of warp strands crossing each other at spaced-apart locations so as to alternately appear, first upon one face of the belt and then upon the other face to form the said cartridge-receiving passages; and weft or filling strands interwoven with each of the said sets of warp strands; corresponding portions of the two sets of warp strands adjacent one side-edge of the belt crossing each other at double the number and different spaced-apart locations from the crossing locations of the remaining portions of the two sets of warp strands, said double number of crossing locations being arranged in pairs, the crossing locations of each pair being parallel to each other and located near but at opposite sides of a crossing location of said remaining portions of the two sets of warp strands.

4. A strip-like woven cartridge belt comprising: a plurality of closely-spaced cartridge-receiving passages extending transversely through the belt and opening through the opposite side-edges thereof; the said belt having two sets of warp strands crossing each other at spaced-apart loca-

tions so as to alternately appear, first upon one face of the belt and then upon the other face to form the said cartridge-receiving passages; and weft or filling strands interwoven with each of the said sets of warp strands, the weave of said belt being a twill weave, which produces a firm, strong cartridge belt.

5. A strip-like woven cartridge belt comprising: a plurality of closely-spaced cartridge-receiving passages extending transversely through the belt and opening through the opposite side-edges thereof; the said belt having two sets of warp strands crossing each other at spaced-apart locations so as to alternately appear, first upon one face of the belt and then upon the other face to form the said cartridge-receiving passages; and weft or filling strands interwoven with each of the said sets of warp strands, the weave of said belt being a twill weave, which produces a firm, strong cartridge belt, and the crossing portions of certain of the warp strands, of each set of warp strands, crossing in different angular directions relative to one another in the same set of warp strands.

6. A strip-like woven cartridge belt comprising: a plurality of closely-spaced cartridge-receiving passages extending transversely through the belt and opening through the opposite side-edges thereof; the said belt having two sets of warp strands crossing each other at spaced-apart locations so as to alternately appear, first upon one face of the belt and then upon the other face to form the said cartridge-receiving passages; and weft or filling strands interwoven with each of the said sets of warp strands, the weave of said belt being a twill weave, which produces a firm, strong cartridge belt, and the crossing portions of certain of the warp strands, of each set of warp strands, extending substantially straight longitudinally over more than the number of weft strands in a reach of said weave.

7. A strip-like woven cartridge belt comprising: a plurality of closely-spaced cartridge-receiving passages extending transversely through the belt and opening through the opposite side-edges thereof; the said belt having two sets of warp strands crossing each other at spaced-apart locations so as to alternately appear, first upon one face of the belt and then upon the other face to form the said cartridge-receiving passages; and weft or filling strands interwoven with each of the said sets of warp strands the weave of said belt being a twill weave, which produces a firm, strong cartridge belt, and the crossing portions of certain of the warp strands, of each set of warp strands, extending substantially straight longitudinally over double the number of weft strands in a reach of said weave.

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