Figure 3

Figure 4

Figure 5

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This invention relates to ordnance and more particularly to an improved mechanism for feeding the cartridges into a 50-caliber Browning machine gun.

One object of this invention is to simplify the procedure required to convert from right-hand feed to left-hand feed.

Another object of this invention is to provide a convertible feed mechanism which eliminates the need for the usual bolt switch heretofore used.

A still further object of this invention is to strengthen the bolt in one of its weak places.

Another object of this invention is to increase the rate of fire of a 50-caliber Browning machine gun.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings, wherein a preferred form of the present invention is clearly shown.

In the drawings:

Fig. 1 is a fragmentary elevational view, with parts broken away, so as to show the arrangement of my improved feed mechanism relative to the other parts of a conventional 50-caliber Browning machine gun;

Fig. 2 is a plan view of a bolt constructed in accordance with my invention;

Fig. 3 is a fragmentary view, with parts of the cover broken away, showing my improved belt feed lever mechanism mounted in a conventional gun;

Figs. 4 and 5 are sectional views showing the arrangement of the belt feed slide assembly for right-hand and left-hand feeding respectively;

Figs. 6 and 7 show various positions occupied by the belt feed lever mechanism when arranged to feed cartridges from the left side to the right side;

Figs. 8 and 9 show various positions occupied by the belt feed lever mechanism when arranged to feed cartridges from the right side to the left side;

Fig. 10 is a plan view of the belt feed lever base;

Fig. 11 is an elevational view of the belt feed lever base;

Figs. 12 and 13 show the construction of the base retaining key; and

Fig. 14 is a fragmentary sectional view taken on line 14—14 of Fig. 9.

Referring now to Fig. 1 of the drawings wherein I have shown a preferred embodiment of my invention applied to a conventional 50-caliber Browning machine gun, reference numeral 20 designates a conventional breech housing provided with the usual cover 22 which pivots about the pin 24. Reference numeral 26 designates the conventional cover latch which normally holds the cover in its down position. The cover construction has not been changed in any material manner and for that reason needs no further description. The belt feed slide assembly 28 which is also of conventional construction is slidably mounted in the guideways 30 provided in the cover. The belt feed slide assembly includes the conventional belt feed pawl 32, pawl arm 34 and spring 36, each of which is of conventional construction and needs no further description.

In the prior art bolt construction, the top surface of the bolt was provided with a pair of intersecting belt feed lever operating ways and included a bolt switch journaled within a recess provided in the upper surface of the bolt at the point of intersection of the two ways. As shown in Fig. 2, my improved bolt generally designated by the reference numeral 40 is provided with only the one way 42 constructed as shown. Thus, I have eliminated one of the ways and have eliminated the bolt switch. Again referring to Fig. 2, it is apparent that the upper surface of the bolt does not require a bearing for the bolt switch. It is also apparent that portions 44 and 46 of the upper bolt surface may be cut away so as to reduce the weight of the bolt. By reducing the weight of the bolt the rate of fire of the gun is increased and by eliminating the switch bearing aperture the bearing for the extractor which formerly was one of the weak points of the gun has been strengthened.

In order to facilitate changeover from right-hand to left-hand feed without the use of a bolt switch and a pair of intersecting ways, I have changed the construction of the belt feed lever so as to make it possible to change over from right-hand to left-hand feed merely by changing the belt feed lever mechanism which is carried by the cover and is easy to get at when the cover is raised.

Referring now to Figs. 6 through 9 of the drawings, it will be noted that the belt feed lever mechanism comprises a first lever 50 pivoted about the pin 52 and a second lever 54 which may be keyed to move with the lever 50 so as to pivot about the pin 52 or may be caused to pivot about the auxiliary pin 56. Thus, the two levers 50 and 54 may be operated as one single
liver in much the same manner as the prior art belt feed lever operated or the two levers may be operated as two separate levers geared to one another. The lever 59 is provided with a projection which extends into the way 42 and the lever 54 is provided with a projection which extends into one of the notches 57 provided in the slide 28. In order to make it possible to operate the two levers together as one lever or to operate the two levers as separate levers, a belt feed lever base 58 has been added which is provided with a solid bearing pin 59 and a hollow bearing pin which slips onto the pin so as to be rotatably supported on the pin 52. The pin 52 is carried by the cover 22 and is identical in construction with the corresponding pin used in the prior art gun.

When it is desired to feed the cartridges into the gun from the left side, the levers 56 and 58 and the base 59 are keyed together in a manner to be explained more fully hereinafter so as to operate as a single lever pivoted on the pin 52 as shown in Figs. 3 and 2. Referring to Figs. 10 and 11 of the drawings, it will be noted that the upper surface of the base 58 is provided with a key slot 52 for the reception of a key surface of the base 59 shown in Figs. 13 and 15. Each of the levers 56 and 58 is provided with a key slot in its under side such as the key slot 50 illustrated in Fig. 14.

When it is desired to feed the cartridges into the gun from the right side, the key 50 is removed from the slot 52 so as to allow the levers to operate as separate levers and the key 52 is then inserted into a slot 59 provided in one edge of the base 59 (see Figs. 10 and 15) so as to lock the base 59 against movement about the pin 52. As a consequence of this change, rotation of the belt feed lever 50 in any one direction causes the lever 54 to rotate in the opposite direction about the pivot pin 52. Figs. 6 and 7 of the drawings show the operation of the levers when the base 58 is held against rotation by the key 64 whereas Figs. 8 and 9 show the operation of the levers when the key 64 is used to key the levers together.

The location of the key 52 may be changed by raising the cover 22 and moving the base 58 together with the associated parts from the pivot pin 52. Removable centre keys 90 and 11 (see Fig. 1) are used to hold the levers in assembled relationship.

Referring to Fig. 12 of the drawings, it will be noted that the key 52 is slightly tapered and that teeth or lugs 72 are provided adjacent the one end of the key which are adapted to mesh with the teeth or lugs 74 which have been provided on the base 58. The teeth serve to lock the key in any one of several positions on the slot 60. The purpose of the taper is to compensate for difference in the amount of clearance between the pin 52 and the side wall of the cover 22 in different guns.

By virtue of the above described arrangement, only one size key needs be used and the one key may be used to serve either of two purposes. No spare parts need be changed over from right-hand feed to left-hand feed and the parts are easily changed from the one arrangement to the other.

While the form of embodiment of the invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. In a belt feed mechanism for a rapid fire gun, a first element constituting a support for said mechanism, said support including a mounting pin, a second element constituting a belt feed lever base carried by said pin, said base having a slot provided in the one face thereof, a key within said slot having one edge arranged at a right angle to the opposite edge thereof, one of said edges being disposed in said slot and the other of said edges being disposed against said support, said key and one of said elements having interlocking lugs for holding said key against movement lengthwise of said slot.

2. In combination, a first element including a key slot having a plurality of fixed uniform equally spaced locking lugs adjacent thereto, a second element to be held in predetermined relationship with respect to said first element, a key adapted to be wedged between said elements, said key having a tapered portion and having a plurality of fixed uniform equally spaced locking lugs cooperating and interlocking with said first named locking lugs for holding said key against endwise movement in said slot, each of said locking lugs being in the form of a straight rack capable of interlocking with each other in a plurality of positions.

3. In a rapid fire machine gun, a breech housing, a cover for said housing, a reciprocating bolt within said housing, belt feed lever mechanism carried by said cover, said bolt having a belt feed lever guideway in its upper surface arranged in engagement with that belt feed lever mechanism, a belt feed slide assembly slidably carried by said base and arranged to be operated by said belt feed lever mechanism, a base for said belt feed lever mechanism pivotally mounted on the underside of said cover, means for locking said base against rotation when feeding of the belt in the one direction is desired, said last named means including a tapered key wedged between a portion of said base and a portion of said cover, said base having a pair of pivot pins, said belt feed lever mechanism including a pair of levers pivoted on said pins, said levers including intermeshing gear teeth whereby rotation of one of said levers about its pivot pin in one direction causes rotation of the other lever in the opposite direction when said base is locked against rotation, and means for preventing relative rotation of said levers whereby both levers and said base may pivot in unison when feeding of the belt in the other direction is desired.

4. In a rapid fire machine gun, a breech housing, a cover for said housing, a reciprocating bolt within said housing, belt feed lever mechanism carried by said cover, said bolt having a belt feed guideway in its upper surface arranged in engagement with that belt feed lever mechanism, a belt feed slide assembly slidably carried by said cover and arranged to be operated by said belt feed lever mechanism, a base for said belt feed lever mechanism pivotally mounted on the underside of said cover, means for locking said base against rotation when feeding of the belt in the one direction is desired, said last named means including a tapered key wedged between a portion of said base and a portion of said cover, said key and said base including interlocking lugs for holding said key in adjusted position, said base having a pair of pivot pins, said belt feed lever mechanism including a pair of levers pivoted on said pins, said levers including intermeshing gear teeth whereby rotation of
one of said levers about its pivot pin in one direction causes rotation of the other lever in the opposite direction when said base is locked against rotation, and means for preventing relative rotation of said levers whereby both levers and said base may pivot in unison when feeding of the belt in the other direction is desired.

5. In a rapid fire machine gun, a breech housing, a cover for said housing, a reciprocating bolt within said housing, belt feed lever mechanism carried by said cover, said bolt having a belt feed lever guideway in its upper surface arranged in engagement with that belt feed lever mechanism, a belt feed slide assembly slidably carried by said cover and arranged to be operated by said belt feed lever mechanism, a base for said belt feed lever mechanism mounted on the underside of said cover, said base having a pair of pivot pins, said belt feed lever mechanism including a pair of levers pivoted on said pins, said levers including intermeshing gear teeth, whereby rotation of one of said levers about its pivot pin in one direction causes rotation of the other lever in the opposite direction when said levers are free to rotate about their respective pivot pins, and means for interlocking said levers so as to cause said levers to operate as one lever whereby rotation of one of the levers about its pivot in the one direction causes rotation of the other lever in the same direction.

6. In a rapid fire machine gun, a breech housing, a cover for said housing, a bolt mounted for reciprocation within said housing, a belt feed slide assembly slidably mounted in said cover, a belt feed lever guideway provided on one surface of said reciprocating bolt, means for feeding a cartridge belt into said housing either from left to right or from right to left comprising a pair of belt feed levers, a first pivot for one of said levers carried by said cover, a second pivot for the other of said levers, said second pivot being spaced from said first pivot, a support for said second pivot, means for mounting said support so as to pivot about the axis of said first pivot, and key means selectively operable for locking together said first lever, said second lever and said support so as to oscillate together about the axis of said first pivot or for locking said support to said cover so as to prevent oscillation of said support.

7. In combination, a first element, a second element, a tapered wedge element adapted to fit between said elements, one of said elements being provided with a series of uniformly spaced fixed teeth in the form of a straight rack, another of said elements having a tooth fixed thereto adapted to alternatively engage any one of a plurality of the spaces between the teeth of said one element, said tapered wedge element being one of the toothed elements and being locked in any one of a plurality of positions between the first and second elements by the interengagement of the teeth in a plurality of alternative positions, said wedge element having a plane wedging face in contact with a plane face of the other toothed element.

8. A mechanism for changing motion including a pivot, a first member pivotally mounted upon said pivot, two lever members individually pivoted to said first member, the adjacent portions of said lever members being provided with an interfitting connection to cause the movement of one of the lever members to follow the movement of the other, and means for locking the two levers together to cause all the members to pivot upon said pivot.

9. A mechanism for changing motion including a pivot, a first member pivotally mounted upon said pivot, two lever members individually pivoted to said first member, the adjacent portions of said lever members being provided with an interfitting connection to cause the movement of one of the lever members to follow the movement of the other, locking means movable to one position for locking said first member to said pivot and movable to a second position to lock said levers together.

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