Feb. 18, 1941. H. A. LAYSTROM 2,232,071

METHOD OF MANUFACTURING METALLIC CARTRIDGE BELT LINKS

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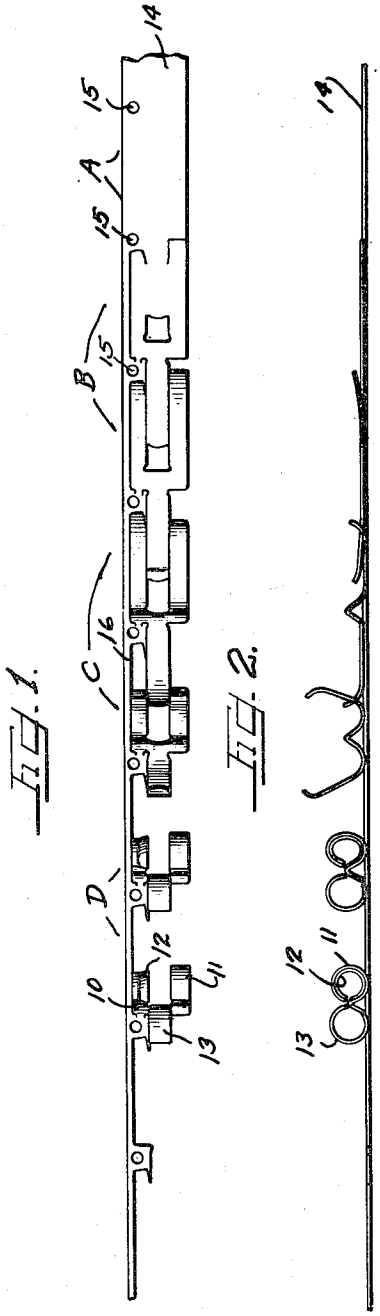


Fig. 1.

Fig. 2.

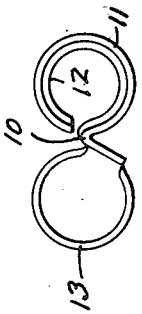


Fig. 4.

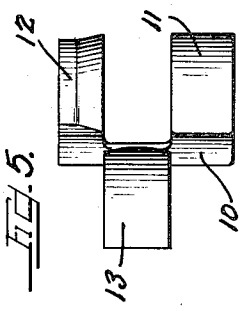


Fig. 5.

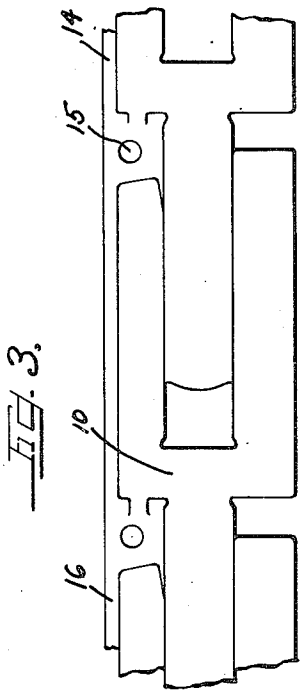


Fig. 3.

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METHOD OF MANUFACTURING METALLIC CARTRIDGE BELT LINKS

Filed Nov. 13, 1940 2 Sheets-Sheet 2

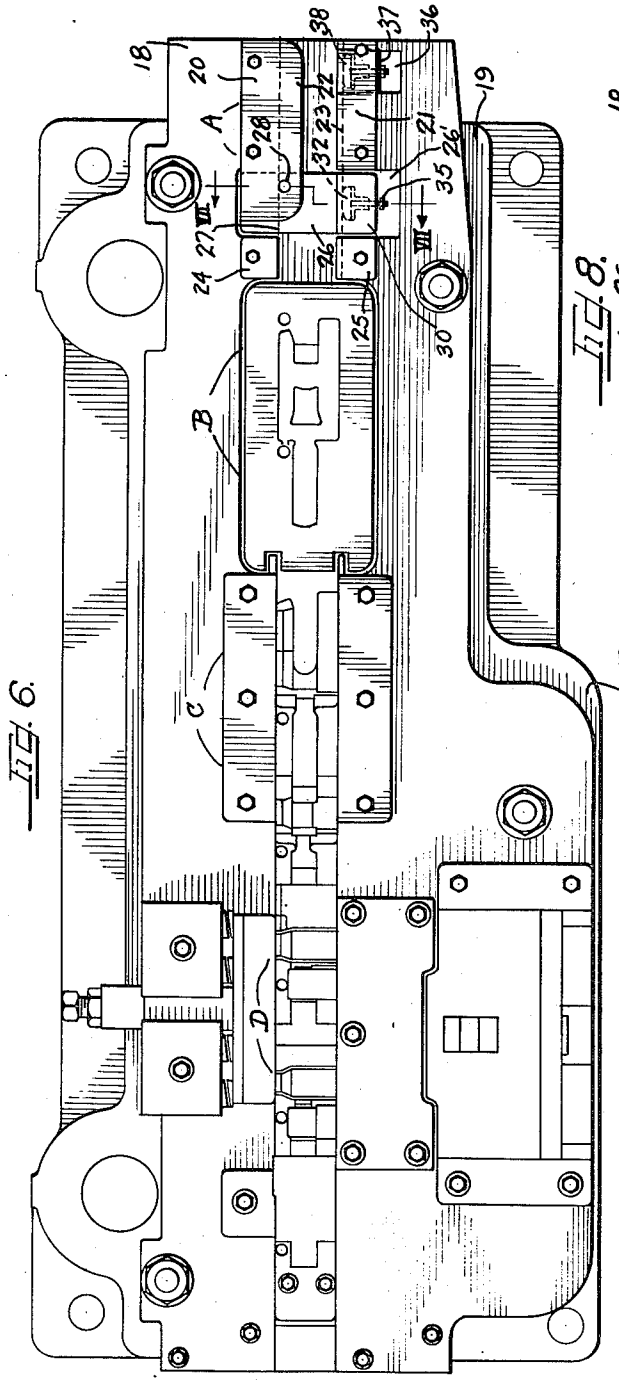


FIG. 6.

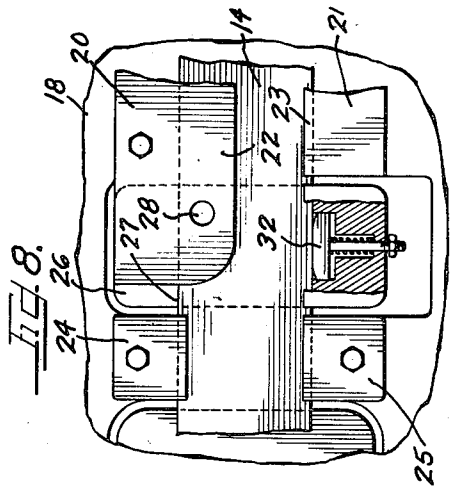


FIG. 8.

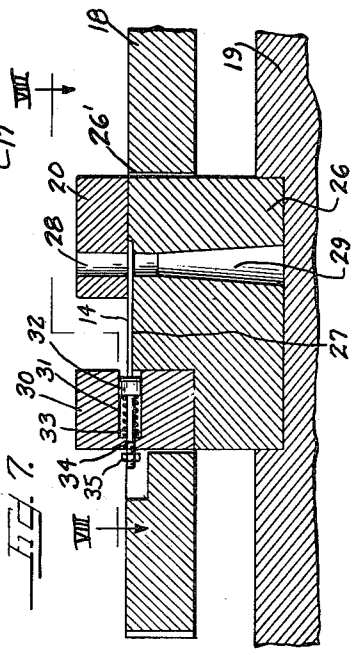


FIG. 7.

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UNITED STATES PATENT OFFICE

2,232,071

METHOD OF MANUFACTURING METALLIC CARTRIDGE BELT LINKS

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Application November 13, 1940, Serial No. 365,507

2 Claims. (Cl. 164—18)

This invention relates to the manufacture of links for metallic cartridge belts used with machine guns. In such belts, the cartridges function as link or hinge pins to join the links together to form the belt.

In the manufacture of such belt links, the usual procedure is to progressively feed a strip or ribbon of suitable material through a die structure for progressive passage of portions of the strip into die and forming fields for the progressive formation of these strip portions into finished links.

With prior methods, a considerable part of the metal of a blank strip did not go into the links formed out of the strip, and consequently there was considerable wastage of metal. The important object of my invention is therefore to provide a method and means for manufacture in which a narrower ribbon or strip could be used and the links formed therefrom in a manner to materially reduce the amount of unused metal and consequent wastage.

A further object of the invention is to provide simple means on the forming die structure for assuring accurate locationing and progressive travel of the strip through the die structure so that accurate formation of the links will be assured.

The various features of my invention are embodied in the structure disclosed on the drawings, in which drawings:

Figure 1 is a plan view of a portion of a strip showing the progressive formation of a link from the strip;

Figure 2 is a side elevation of the structure shown on Figure 1;

Figure 3 is an enlarged plan of a portion of the strip;

Figure 4 is an enlarged end view of a link;

Figure 5 is a plan view of a link;

Figure 6 is a plan view of the lower element of the die structure;

Figure 7 is an enlarged section on plane VII—VII of Figure 6; and

Figure 8 is a view on plane VIII—VIII of Figure 7.

Referring to Figures 4 and 5, a link which may be manufactured in accordance with my method is shown. This link comprises a supporting or body part 10 from one longitudinal edge of which extends a circular sleeve element 11 for receiving the firing end of a cartridge, and a circular sleeve element 12 for receiving the contracted or bullet end of the cartridge. Extending in the opposite direction from the body 10 is a circular element 13 of an axial width for engagement of the element between and in register with the elements 11 and 12 of an adjacent link so as to receive the middle portion of the cartridge, the cartridges thus forming the link or hinge pin for the successive links which build up the supporting belt.

Referring to Figures 1, 2, and 3, 14 indicates a blank ribbon or strip of suitable metal from which the links are to be formed by progressive die operations as the band is progressively fed through the die structure. When the end of a blank ribbon or strip enters the die structure, it is first punched to provide a hole 15 for receiving pins in the die structure for proper alignment of the strip as it progresses through the die for die operations on the strip in the various die fields.

After punching of the hole 15, which occurs when the end of the band is in the die field A, the strip is advanced in the die into the field B where the metal portions for the sleeves 11, 12, and 13 of a link are defined and partly cut and formed. The strip is then advanced into the field C where the sleeve elements are further formed, and then in the field D the sleeve portions are finally formed to produce a finished link, the finished link being then severed from the strip in the final die operation.

In some prior processes for manufacturing links of this type, the links were formed from metal portions entirely within the longitudinal edges of the blank strip and the embryo and finished links were supported by narrow longitudinal edge portions of the strip, both of which edge portions represented unused metal and therefore wastage.

In other prior art methods, the full width of the strip was maintained during part of the travel of the strip through the die structure and preliminary outlining and forming of the links, but thereafter the edge portion along one side of the strip was progressively cut off so that the links in their formulative and final stages were supported only by the edge portion along the other side of the strip until the finished links were severed from said other edge portion. Here again both edge portions of the strip represented unused metal and therefore wastage.

In accordance with my invention, allowance is made for a narrow portion along only one edge of the strip from which the embryo and finished links are supported during the entire progress of the strip through the die structure, so that a narrower width blank strip may be used and

fed into and through the die structure. With my improved process, therefore, for a certain size of link, a narrower blank strip can be used with a corresponding reduction in cost of the strip metal and minimum wastage.

Referring to Figures 1, 2, and 3, the strip blank 14 may be of a width only sufficiently greater than the axial width of the links to leave a narrow supporting portion 16 of strip metal only along one edge of the strip. With such narrow strip, it becomes important to provide improved means on the die structure for accurately guiding the strip into the die structure and therethrough for accurate engagement of the die members therewith for the various link formative steps.

Referring to Figures 6, 7, and 8, there is shown the lower member of a die structure of the type usually employed in the manufacture of cartridge belt links, into which die structure I have shown my improved guiding and aligning means applied. Such aligning and guide means are in the field A, in which the guide holes 15 are punched through the strip. The lower die element 17 shown has the upper wall 18 and a lower or base wall 19. At the outer end of the wall 18 are secured opposed longitudinally extending guide plates 20 and 21 which, with the top of the wall 18, provide a guide channel for a fed-in blank strip from which the links are to be formed, the plates having the overhanging portions 22 and 23 respectively for partially overhanging the die channel to hold the strip in the channel. A distance inwardly of the plates 20 and 21, opposed plates 24 and 25 are secured to the wall with the upper side of which wall they form a continuation of the channel between the plates 20 and 21 and also partially overhang the channel to hold the strip lengths in the channel.

Between the outer and inner guide plates, there is an opening 26' in the wall 18 into which projects a die block 26 which is firmly seated in the lower wall 19 of the die element. The top of this die block has the channel 27 forming a continuation of the guide channel formed by the guide plates 20—21 and 24—25, and the guide plate 20 at its inner end extends over the die block and the channel 27 therein, and the plate has the die opening 28 which is above and close to the inner edge of the strip blank fed into the die between the guide plates. The die block 26 has the passageway 29 therethrough in axial alignment with the die passage 28, and when the upper die member is brought down to the lower die structure 17, a punch (not shown) on the upper die member will pass through the die passage 28 to cut a hole 15 in the strip. In order to hold the entering end of the strip accurately in the guide channel with its rear edge held snugly against the rear guide plates 20 and 24, I provide spring pressed means for engaging with the front edge of the strip to hold the strip accurately aligned for punching of the hole 15.

Referring to Figures 7 and 8, an abutment block 30 is mounted on the die block 26, the abutment block having a recess or pocket 31 in alignment with the front part of the channel 27, and in this recess there is an abutment head 32 urged outwardly by the spring 33 into engagement with the front edge of the strip 14 passing through the channel. The abutment head may have a guide stem 34 projecting outwardly through the front side of the abutment block, and a nut 35 may be provided on the stem and adjustable thereon for normally holding the abutment head so that a strip may be inserted into the guide channel past the head for the hole punching operation. As shown on Figure 8, the head 32 may be elongated and parallel with the strip edge and bevelled at its edges, so that the strip can readily cam the head aside when the strip is inserted into the die structure. When the strip has been inserted, the abutment head 32 will be forced by the spring against the outer edge of the strip, and the strip will be yieldably forced rearwardly with its rear edge against the guide plates 20 and 24 and will be so held while the punch operates through the die passage 28 for punching of the hole 15.

A spring pressure abutment is also preferably provided at the entrance end of the channel between the guide plates 20 and 21. For this purpose, a recess 36 may be provided in the wall 18 for an abutment block 37 for supporting an abutment head 38 spring pressed against the outer edge of the strip. Then, with the spring pressed abutments engaging against the front edge of the strip, the rear edge of the strip will be snugly held against the rear edge of the guide channel against the guide plates 20 and 24 for accurate locationing of the hole 15 by the die punch.

As the strip, after the hole punching operation, progresses into the die field B and then to the other die fields C and D, aligning pins on the upper die member will pass through the aligning holes 15 to hold the strip accurately while the link forming operations take place.

I thus provide a simple and efficient method and means whereby a metal strip of minimum width for a certain size of links may be used and accurately guided into and through the forming die structure, with a maximum portion of the strip metal used in the links and wastage reduced to a minimum.

I claim as my invention:

1. The method of progressively die forming links for metallic cartridge belts which consists in progressively feeding through suitable die structure a blank metal strip which retains its original width through entire passage thereof through the die structure, die cutting the strip to form the links and leaving only a narrow portion of the strip along one edge thereof for support of the links during formation thereof.

2. The method of manufacturing links for metallic cartridge belts which consists in progressively feeding through suitable die structure a metal strip whose normal width remains unchanged during its passage through the die structure, and applying the die structure to the strip during formation of the links to leave a narrow portion along only one edge of the strip for supporting the links with the edges of the free ends of the links in the vertical plane of the other edge of the strip.

HILDING A. LAYSTROM.