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3,128,593

CHAINS FOR USE IN CONVEYOR SYSTEMS

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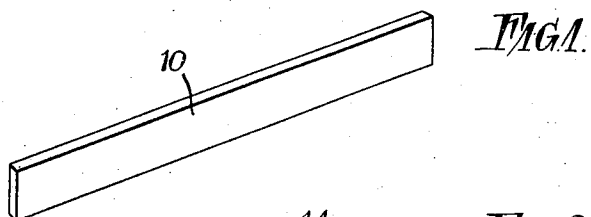


FIG. 1.

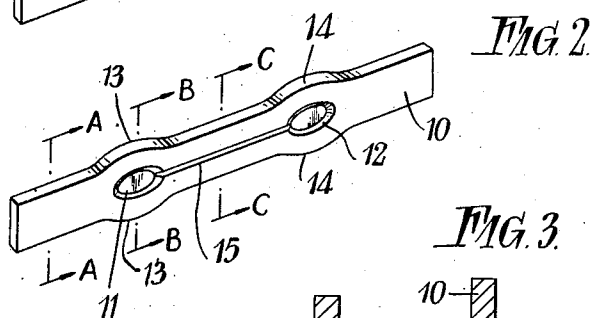


FIG. 2.

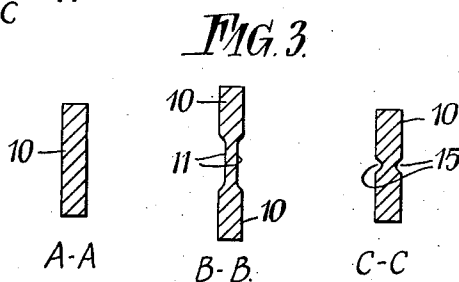


FIG. 3.

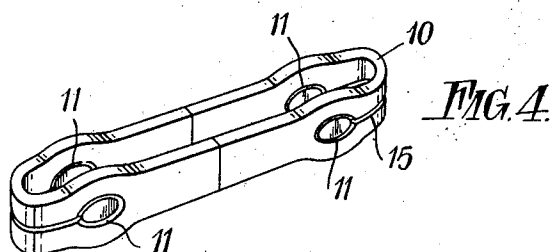


FIG. 4.

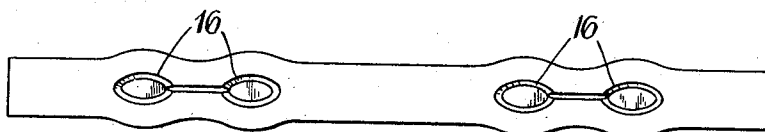


FIG. 5.

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5 Claims. (Cl. 59—35)

This invention relates to chains for use in conveyor systems and is concerned particularly with chains of the kind comprising a succession of so-called inner and outer links which are interconnected by means of connecting pins, each inner link being in the form of an elongated closed loop while each outer link comprises two link elements which are disposed in spaced parallel relation so as to accommodate between them the opposed end portions of the adjoining inner links.

It has been proposed to provide for a chain of the kind set forth an inner link comprising two complementary U or J shaped pieces which are appropriately butted together and welded to produce a link in the form of a closed elongated loop, each such U or J shaped piece being formed from a flat metal strip so shaped as to incorporate in each longitudinal edge two lateral protrusions or bulges which are spaced apart, each such protrusion or bulge on one edge being disposed opposite one on the other so that the strip will have two zones of increased width which on bending of the strip to the U or J shape will be located one in each limb opposite the other and in proximity to the bend. Up to the present the two shaped strips from which the requisite U or J shaped pieces are produced have been produced by stamping from a metal sheet and it has happened that as a result of the shearing which takes place during such process the edges of the strips have been scratched or scored. Such imperfections have been found to constitute stress raisers which tend to lead to cracks in the strips and thus to failure of the finished link when in use.

It is an object of the invention to evolve an improved method of producing the shaped strips employed for producing each inner link element.

It may be mentioned here that instead of forming each inner link of two shaped metal strips as outlined above it may be feasible to employ a single shaped strip which would be the equivalent of two of the afore-mentioned strips arranged end to end so that by appropriate bending of such single strip at two points to produce a closed loop and by welding the abutting ends an inner link of the requisite form will be produced.

According to the present invention it is proposed in the production of an inner link for a chain of the kind referred to, to utilise a single or two complementary shaped metal strips the or each such strip being produced by taking a plain rectangular or substantially rectangular metal strip and pressing into the latter at selected points or zones, recesses such as will result in a localised lateral flow or outward displacement of metal at such points or zones sufficient to produce bulges or rounded protrusions at spaced points along the longitudinal edges of the finished strip, the location of such bulges or protrusions being such that a finished link produced as a result of appropriate bending of a single shaped strip and welding of the abutting ends thereof or as a result of the butting and welding together of two shaped strips bent to a U or J shape, will incorporate at or adjacent each end thereof a zone of increased width.

In order that the nature of the invention may be more fully understood reference will now be made to the accompanying drawing in which:

FIGURE 1 is a perspective view of a metal strip to be employed in the production of an inner link element,

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FIGURE 2 is a perspective view of the strip when finished,

FIGURE 3 shows sectional views on the lines A—A, B—B, C—C of FIGURE 2,

FIGURE 4 is a perspective view of a complete inner link,

FIGURE 5 illustrates a modification.

Referring to the drawings there is shown in FIGURE 1 a plain rectangular metal strip 10 which is to be employed in the production of an inner link. In order to produce the required finished shape indicated in FIGURE 2, recesses 11 and 12 are pressed into each face of the strip thereby to cause a lateral flow or outward displacement of metal such as will result in the formation of the two lateral protrusions or bulges 13 and 14 at each longitudinal edge of the strip 10. In the embodiment illustrated an oil groove 15 is also pressed into each face of the strip but such an additional feature while being advantageous, is not absolutely necessary. Subsequent to the formation of the strip as indicated in FIGURE 2 it will be bent to a U or substantially U shape so that each limb of the U will incorporate a pair of protrusions or bulges 13, 13 and 14, 14 respectively which will be aligned with those on the other limb.

In order to form a complete inner link two shaped strips of the form shown in FIGURE 2 and each bent to a U or a substantially U shape, will be butted together open end to open end and welded to produce a closed elongated loop or link such as is illustrated in FIGURE 4 which when viewed in side elevation will be of generally rectangular form but will have adjacent each end thereof a portion of increased width due to the existence of two round humps disposed one at the upper and the other at the lower edge thereof.

Instead of forming an inner link of two shaped metal strips as indicated above it may be feasible to employ a single strip as indicated in FIGURE 5. Such a strip, which would be substantially double the length of the strip 10, would as indicated at 16, have four appropriately spaced recesses pressed into each face thereof, thereby to provide a single or one piece finished strip which would be equivalent in shape to two of the strips shown in FIGURE 2 butted end to end. Such a shaped single strip would be bent twice at appropriate points to produce a substantially C shape whereafter the two ends would be butt welded together to produce a closed loop or link element of substantially the same form as that shown in FIGURE 4. It will be appreciated, however, that by adopting such a process the finished link will incorporate a single weld as opposed to two in the link described with reference to FIGURES 1—4.

By forming the strips which are to be employed in the production of inner links in the manner outlined above the possibility of there being scratches or imperfections on the edges thereof will be obviated since no operation is performed on said edges and they will be left clean and unmarked in any way. Thus the possibility of introducing stress raisers such as will lead to cracks and thus to failure of the finished links will be avoided.

I claim:

1. A method of forming an inner link for a chain, comprising: locally compressing a rectangular strip having parallel longitudinal edges at a pair of spaced locations to form recesses of curved shape in the strip to cause bulging of the strips in the longitudinal edges at said spaced locations along a curve substantially corresponding to the curvature of the recesses and bending said strip midway between the recesses to form two substantially parallel legs wherein the bulges are substantially aligned with one another in a direction transverse of the legs.

2. A method of forming an inner link of a chain in which the link is provided with a portion of increased

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extent, the method comprising: locally forming recesses in a flat rectangular metal strip having substantially straight edges at spaced locations in the strip to form bulges in the edges of the strip at the recesses and bending the strip with the bulges formed therein into substantially U-shape whereby a pair of strips may be abutted in end relation and joined to form a link of continuous extent.

3. A method of forming an inner link for a chain in which the link is provided with a portion of increased extent, the method comprising: forming a rectangular strip having parallel longitudinal edges, locally compressing the strips at a pair of spaced locations, to form recesses of elliptical shape on the strip to cause bulging of the strips in the longitudinal edges at said spaced locations and bending the strip at a location between the recesses to form a strip of substantially U-shape and wherein the bulges are substantially symmetrically formed in the thusly formed U-shaped strip.

4. A method of forming a link for a chain, the method comprising: locally compressing a rectangular strip having parallel longitudinal edges and opposite ends at two pairs of spaced locations to form recesses of elliptical shape in the strip to cause bulging of the strips in the longitudinal edges at said spaced locations along a curve substantially corresponding to the curvature of the recesses, bending said strip midway between each of the recesses of the pair thereof to form two substantially

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parallel legs wherein one of the legs includes the ends of the strips in abutting relation and each of the bulges is substantially aligned with another bulge in a direction transverse of the legs, and joining together said ends which abut one another to form a closed link.

5. In a method of forming an inner link for a chain, comprising: locally compressing a rectangular strip having parallel longitudinal edges at a pair of spaced locations to form recesses of elliptical shape on the strip to cause free bulging of the strips in the longitudinal edges at said spaced locations along a curve substantially corresponding to the curvature of the recesses, locally compressing the strip along a straight line substantially parallel to the edges of the strip to form a straight recess extending from one elliptically shaped recess to the other, and bending said strip midway between the recesses to form two substantially parallel legs wherein the bulges are substantially aligned with one another in a direction transverse of the legs.

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