United States Patent [19]

Bechtel, Jr.

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[54] **WIRE MESH BELT**

[75] Inventor: **Alfred R. Bechtel, Jr.**, Portsmouth, R.I.

[73] Assignee: **Ashworth Bros., Inc.**, Fall River, Mass.

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[52] **U.S. Cl.** **198/194,** 74/239

[51] **Int. Cl.** **B65g 15/00**

[58] **Field of Search** 74/258, 239; 198/193, 194, 198/195,

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Primary Examiner—Manuel A. Antonakas
Assistant Examiner—Allan Russell Burke
Attorney, Agent, or Firm—Schuyler, Birch, Swindler, McKie & Beckett

[57] **ABSTRACT**

An improved means for connecting two end strands of two separate parts of a wire mesh belt having a plurality of interlocked zig zag strands which includes a first row of generally U-shaped connecting links each interlocked with one end strand and a second row of connecting links interlocked with the other end strand. The links have loops at their extremities which are axially aligned whereby a connector rod inserted therethrough connects the two rows and consequently the end strands together. In one embodiment the connector rod is straight throughout its main body portion and a hooked end connecting element is connected to each end thereof and interlocked with one of the end strands. In another embodiment the connector rod is comprised of two straight aligned segments having hooked outer ends interlocked with one of the end strands. The two segments may be joined by a connecting sleeve.

8 Claims, 4 Drawing Figures

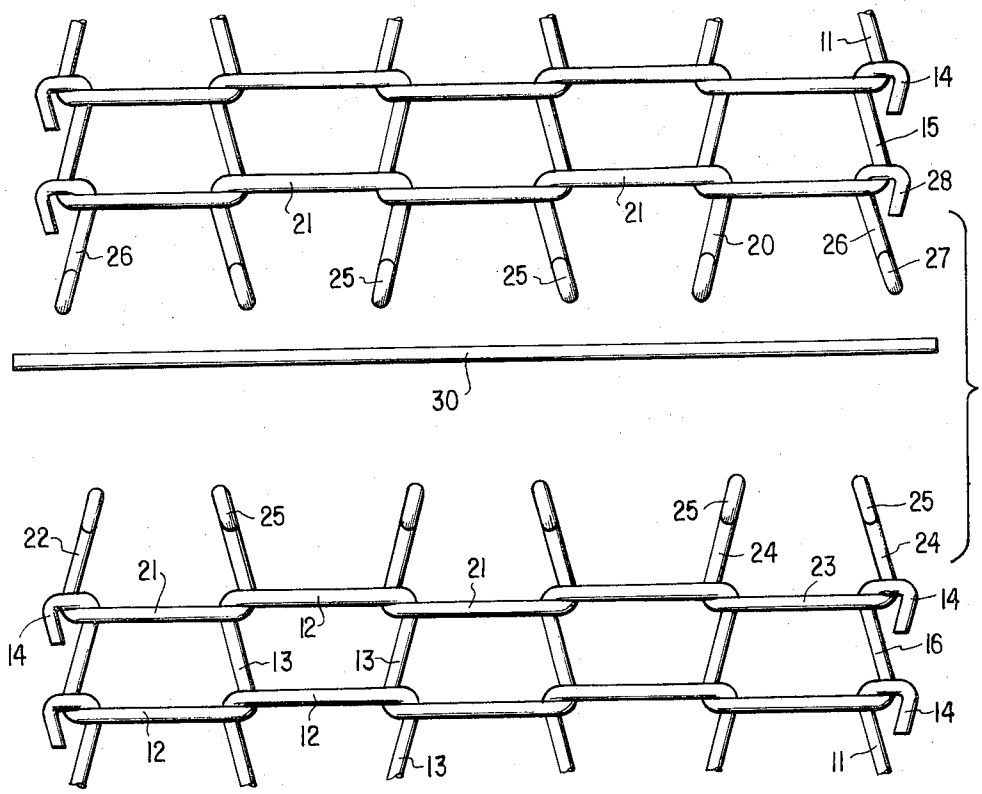

FIG. 1

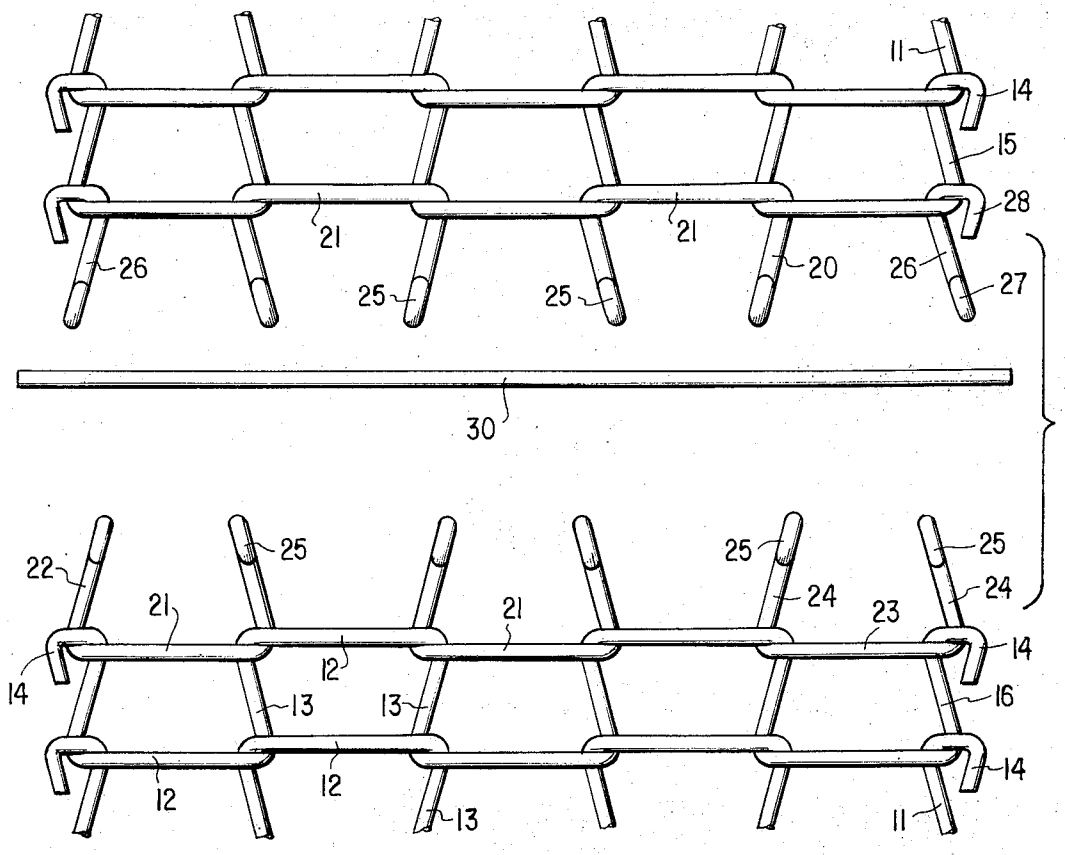
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FIG. 2

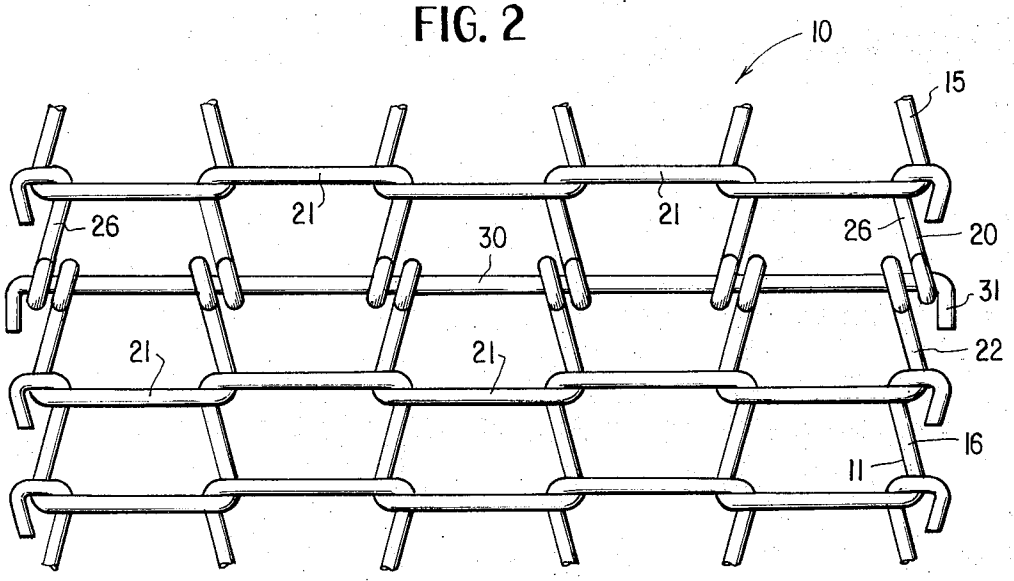
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FIG. 3

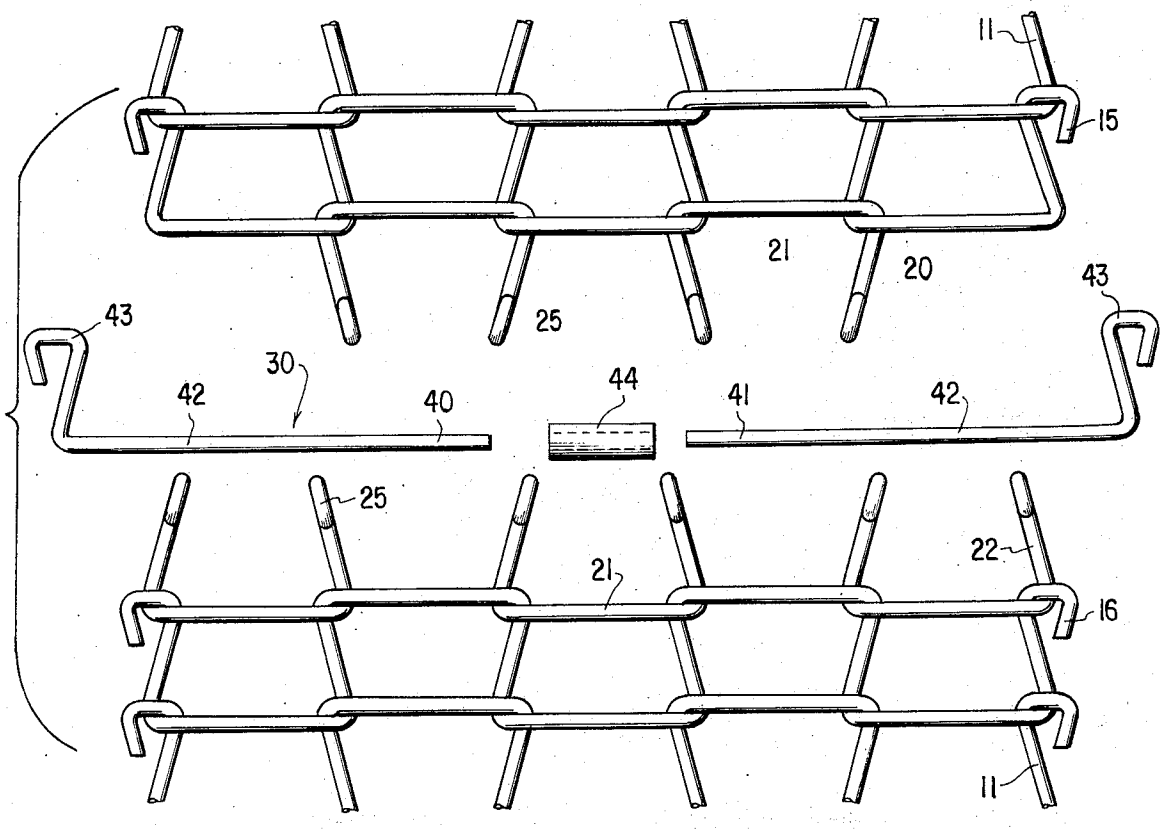
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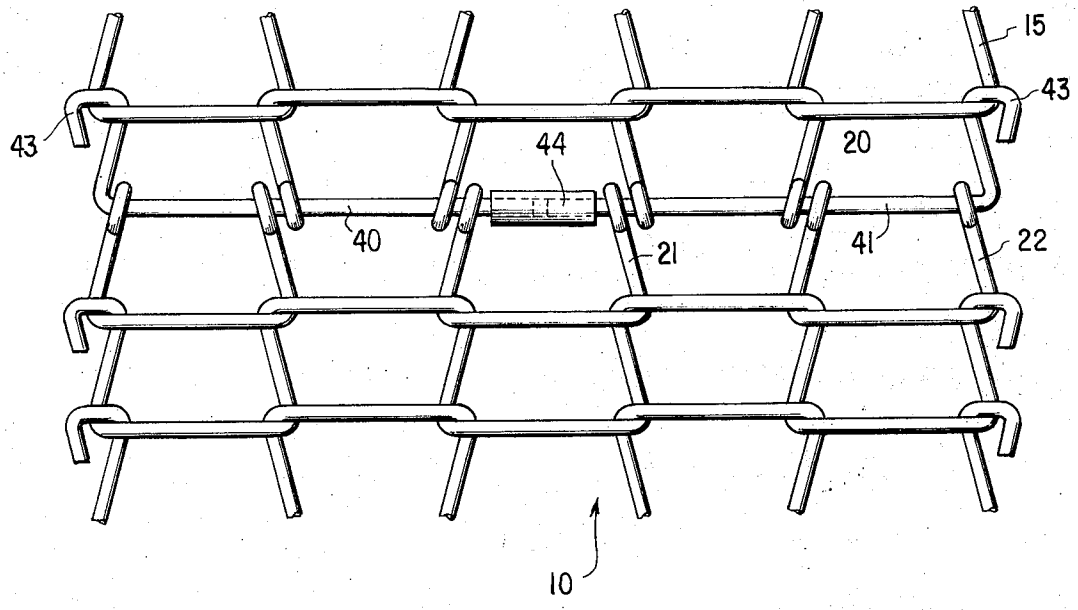
FIG. 4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WIRE MESH BELT

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to wire mesh belts and, more particularly, to such belts adapted for use as conveyor belts travelling in an endless path and having improved means for joining two end strands of the belt together.

2. Description of the Prior Art

Reticulate wire mesh conveyor belts comprised of a plurality of interlocked zig zag strands have been known in the prior art and in use for many years. Such belts have found wide use in many different manufacturing processes and apparatus. In a typical application, this type of wire mesh belt is joined together at its ends to form an endless conveyor belt. Joining of two end strands of the wire mesh belt together has long presented a problem. One technique which has been commonly used is referred to as lacing wherein a single strand having a zig zag configuration similar to the individual zig zag strands of the belt is alternately laced through one and then the other of the two end strands to be joined. During this process great care must be taken not to unduly bend the lacing strand to the point where it becomes weakened. This lacing technique is a rather complicated process involving as much as ten different steps.

SUMMARY OF THE INVENTION

Among the objects of the present invention is to avoid the disadvantage of prior art wire mesh conveyor belts enumerated above. Another object of the present invention is to provide improved means for joining two end strands of wire mesh belt together. A further object of the invention is to provide an improved means for joining two end strands of a wire mesh belt together quickly and efficiently by use of individual connecting links joined together by a connecting rod which is straight throughout its main body portion.

According to the present invention, there is provided an improved means for joining two end strands of a wire mesh conveyor belt comprised of a plurality of individual zig zag strands wherein adjacent strands are interlocked in an interlinking manner. The improved joining means includes a first row of individual connecting links each interlocked in an interlinking manner with one of the end strands and a second row of individual connecting links each interlocked in an interlinking manner with the other of the end strands. The connecting links are generally U-shaped and are provided with connecting means in the form of loops on their extremities. The loops of the links of both the first and second row are then axially aligned and a connector rod having a straight main body portion is inserted through the loops to join the two rows and consequently the two end strands of the belt together.

In one embodiment of the invention the connector rod is comprised of a single straight piece of wire inserted through the loops. A hooked end connecting element is connected to each end of the connecting rod and interlocked with one of the end strands to give greater stability at the outside edges of the connecting means. In another embodiment of the invention, the connector rod is comprised of two straight aligned segments inserted through the loops from each side of the belt. The two segments are further provided with

hooked outer ends which are interlocked with one of the end strands to again provide greater stability to the connecting means at the edges of the belt. The two segments may be joined together at a point within one of the connecting links by a connecting sleeve which fits over each end of the aligned segments.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects and advantages of the invention will become apparent by reference to the more detailed description of the invention in the accompanying drawings which follow wherein:

FIG. 1 is a top plan view of two unjoined end strands of a wire mesh belt provided with rows of connecting elements according to the present invention;

FIG. 2 is a top plan view showing the two end strands of FIG. 1 joined by means of a connecting rod according to the present invention;

FIG. 3 is a top plan view showing two unjoined end strands of a wire mesh belt and a further embodiment of the connecting rod according to the present invention, and

FIG. 4 is a top plan view of the belt of FIG. 3 showing the end strands joined to form a wire mesh belt.

DESCRIPTION OF THE INVENTION

Referring to the drawings there is shown in FIG. 1 and 2, a reticulate wire mesh conveyor belt generally indicated by the numeral **10** comprised of a plurality of individual zig zag strands **11** wherein adjacent strands are interlocked in an interlinking manner. Each individual zig zag strand **11** is comprised of a plurality of straight portions **12** connected by bent portions **13.** The straight portions **12** extend generally transversely of the path of the belt while the bent portions **13** are almost at right angles to the straight portions wherein they extend generally parallel to the direction of travel of the belt. Each strand **11** is further provided with a hook **14** on each end thereof which is interlocked with the end of an adjacent strand to provide stability at the edges of the belt. As shown in FIGS. **1** and **2,** adjacent individual zig zag strands **11** are loosely interlocked.

Separate lengths of the wire mesh conveyor belt of the present invention may be joined together by suitable connecting means for joining the end strands of two sections of wire mesh belt together. In FIGS. **1** and **2,** the two end strands to be joined together are indicated by the numerals **15** and **16.**

The connecting means comprises a first row **20** of connecting links **21** interlocked in an interlinking manner with end strand **15** and a second row **22** of connecting links **21** interlocked in an interlinking manner with the other opposite end strand **16** to be joined. Each connecting link **21** is generally U-shaped in configuration, being provided with a base portion **23** and upstanding or outwardly extending legs **24.** The legs **24** are bent almost at right angles to the base **23.** Each leg **24** is provided with a loop or eyelet **25** at its outer extremity. Each individual connecting link **21** is interlocked in an interlinking manner at its base **23** with a zig zag portion of one of the end strands.

The first row **20** of connecting links also includes at each end an end connecting element or link **26.** Each such end connecting element is provided with a loop **27** at one end and a hook **28** at the opposite end. The hook **28** of each end connecting element **26** is interlocked with an extremity or edge of end strand **15.**

A connector rod **30** is provided for joining the two rows of connecting links and consequently the two portions of the wire mesh belt together. Connector rod **30** is straight throughout its main body portion.

To join two portions of the wire mesh belt together, such as, for example, when constructing an endless wire mesh conveyor belt, the two rows **20** and **22** of connecting links **21** are brought together. The loops **25** of the connecting links **21** and the loops **27** of end connecting elements **26** in the first row **20** are then brought in axial alignment with the loops **25** of each connecting link in the second row **22,** whereupon connector rod **30** is then inserted from one edge of the belt through all of the loops to join the two rows of connecting links as well as the two portions of the wire mesh belt together. After the connector rod **30** has been inserted through the loops, the outer ends of the connector rod are bent at approximately right angles to the main body portion of the connector rod to form bent ends **31** which secure the rod in place in the belt.

It is thus seen that the improved end connecting means according to the present invention provides a quick and convenient means of joining two end strands of two different lengths of wire mesh belt together. No complicated lacing technique is required, since it is only necessary to interlock the individual connecting links to each end strand and insert a connecting rod which is straight throughout its main portion through the loops at the ends of the connecting links. This may be accomplished readily and efficiently.

The embodiment of the invention shown in FIGS. **3** and **4** is the same as the embodiment of the invention shown in FIGS. **1** and **2** except that the connector rod is of different configuration as will be described more fully hereinafter.

As shown in FIGS. **3** and **4,** the connector rod **30** in that embodiment is comprised of two segments or halves **40** and **41.** Each segment is comprised of a straight main body portion **42** and a hooked outer end portion **43.** The two segments **40** and **41** are adapted to be joined together at their inner ends by means of a sleeve or connecting tube **44.** With the hooked end portions **43** of each segment, it is not necessary to use individual end connecting elements or links such as those indicated by the numeral **26** in the embodiment of FIGS. **1** and **2.**

To join together two separate portions of a wire mesh belt by the connecting means shown in FIGS. **3** and **4,** the two portions of the wire mesh belt are brought together whereby the loops **25** of the connecting links of the first row **20** are axially aligned with the loops **25** of the second row **22** of connecting links. One of the connecting rod segments **40** is then inserted through the loops from one edge of the belt until the inner end of the segment **40** reaches an intermediate connecting link **21** whereupon the inner end of segment **40** is inserted through one end of the connecting sleeve **44** positioned between the two loops **25** of the intermediate connecting link. The second segment **41** of the connecting rod is then inserted through the loops **25** of the connecting links from the opposite edge of the belt whereupon the inner end of the segment **41** is inserted in the opposite end of the connecting sleeve **44,** until the inner ends of the two segments **40** and **41** are positioned adjacent each other within the sleeve. It is important to note that the sleeve or coupling **44** is positioned between the loops **25** of one of the connecting links **21** and is of a length at least greater than one half of the width of the connecting link **21.** By making the sleeve **44** longer than at least one half the width of the connecting link, the sleeve will remain in place holding the two ends of the connecting rod segments **40** and **41** within the sleeve, since the sleeve will not be able to slide all the way down on one end of one of the segments to permit the inner end of the other segment to come out of the sleeve.

As each segment **40** and **41** is inserted through the loops, the hooked end portion **43** of each segment is interlocked with the outer extremity of end strand **15.**

While the embodiment of FIGS. **3** and **4** shows a sleeve or connecting tube **44** for connecting the inner ends of two segments of the connecting rod together, the invention further contemplates that the connecting rod segments **40** and **41** may be employed alone without the use of any other connecting means such as the sleeve **44.**

As in the case with the embodiment shown in FIGS. **1** and **2,** the embodiment of FIGS. **3** and **4** provides an improved means for efficiently and quickly connecting together the end strands of two separate portions of a wire mesh belt. Since the main body portions of each connecting rod segment **40** and **41** are straight, the segments may be simply inserted through the loops of the connecting links without any complicated lacing technique being required.

Although the present invention has been illustrated and described with reference to a specific embodiment, it will be understood that various modifications may be made by persons skilled in the art without departing from the spirit of the invention which is defined solely by the appended claims.

I claim:

1. In a wire mesh belt comprised of a plurality of individual zig zag strands wherein adjacent strands are interlocked in an interlinking manner, an improved means for joining two end strands together comprising

a first row of individual connecting links, each interlocked in an interlinking manner with one of said end strands,

a second row of individual connecting links, each interlocked in an interlinking manner with the other of said end strands,

connecting means on each of said links, and

a connecting rod inserted through said connecting means on each of said links to join said end strands together.

2. A wire mesh belt according to claim **1** wherein each of said links is generally U-shaped having a base portion and upstanding leg portions.

3. A wire mesh belt according to claim **2** wherein said connecting means on each of said links comprises loops formed on the extremities of said leg portions.

4. A wire mesh belt according to claim **3** wherein said connecting rod is straight throughout its main body portion and said means for connecting said strands further comprises an end connecting element mounted on each end of said rod, each said element having a loop at one end through which said rod passes and a hook at the other end interlocked with one of said end strands.

5. A wire mesh belt according to claim **3** wherein said connecting rod is comprised of two separate segments, each said segment including a main body portion

straight throughout its length extending through said loops of said links from one side of said belt.

6. A wire mesh belt according to claim **5** wherein each of said segments further includes a hooked outer end portion interlocked with one of said end strands.

7. A wire mesh belt according to claim **6** wherein the inner ends of said straight main body portions of said segments are connected together by a sleeve.

8. A wire mesh belt according to claim **7** wherein both said inner ends of said segments and said sleeve are positioned within one of said links and said sleeve has a length at least more than half the width of said one link.

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