This invention relates to elevator links and to the method or process of forming such links.

In the handling of elevators as used in the hoisting of drill stems, casing and the like when drilling oil wells, great difficulties has been encountered due to spreading of the elevator links. It has heretofore been common practice to form these elevator links by welding the ends of the same together at the apex of the link. After the link has been welded together it has been common practice to forge the apex of the link to the shape desired. Under heavy strains these elevator links separate at the welded points, making it necessary to form the links a great deal heavier than necessary to support the load because of the weak section formed at the weld.

These elevator links are formed to support a load of many tons such, for example, as to support the load of a drill stem or casing which may be several thousand feet in length.

It is the object of this invention to provide a method of forming elevator links which includes the rolling from a solid ingot a substantially cylindrical body formed as a plurality of integral rings connected together by relatively thin webs, cutting the separate rings from the cylindrical body by cutting through the webs, heating the individual rings and shaping the heated rings to the form desired.

Another object of this invention is to provide a weldless elevator link formed as a continuous member shaped from an integral ring and flattened and pointed at its apex by forging.

Other objects and advantages of this invention it is believed will be apparent from the following detailed description of a preferred embodiment thereof as illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a diagrammatic elevation of an elevator illustrating the same as supporting a load.

Figure 2 is a front elevation of a weldless elevator link embodying this invention.

Figure 3 is a side elevation of a weldless elevator link embodying this invention.

Figure 4 is an elevation of a cylindrical member rolled from a solid ingot of steel embodying this invention.

Figure 5 is a sectional view thereof taken substantially on the line 5—5 of Figure 4.

Figure 6 is a top plan view thereof.

Figure 7 is a diagrammatic view of a forming tool for use in carrying out the process embodying this invention.

In carrying out the method embodying this invention, a solid ingot of steel is rolled to form a cylindrical body including a plurality of rings as illustrated in Figures 4, 5 and 6, separated by relatively thin webs 2. The individual rings 1 are then broken from the substantially cylindrical member by breaking through the webs.

The rings 1 are then treated separately by heating the same and then placing the same in a forming tool or machine and, while hot, forcing the same to the shape shown in Figure 2, wherein the sides of the ring are allowed to come together toward each other to the desired degree, preferably to a greater degree at the bottom end 3 than at the top end 4.

Any suitable or desirable form of forming tool may be employed such, for example, as is illustrated in Figure 7 by forming a pair of dies 9 and 10 to the curvature desired at the opposed ends 3 and 4 of the elevator link and connecting these dies together by means of a screw, jack or the like, 11, and placing the combined dies and jack within the periphery of the ring and expanding the two dies to the desired degree. This will force the ring to assume a form as indicated in Figure 2. After the rings have been formed to the shape indicated in Figure 2, they may again be heated, or while they are still hot, may be forged at the apex to form the flat surface 6 where a pair of links come together within the book 7. When using links in a pair, as in an elevator, 12, spider, or like construction, it is essential that this apex be formed substantially as illustrated in Figure 2.

The elevator link 8 thus formed is formed of a continuous portion of metal eliminating
the necessity of welding the ends of a bar of metal together as was heretofore the practice, and eliminates the weak section formed at such a weld. By forming the cylindrical body containing the plurality of rings, which is herein illustrated in Figure 4, which may be any particular member which would be most economically formed in a particular rolling mill, a multiplicity of rings are formed in one operation which may be forged to provide the desired pairs of elevator links. The process of forming the corrugated cylindrical body including the multiplicity of rings connected together by relatively thin webs is a great deal less expensive than it would be to form a single ring, and also insures that the pairs of links when formed will be of a uniform size and cross section.

Having fully described my invention, it is to be understood that I do not wish to be limited to the details herein set forth, but my invention is of the full scope of the appended claims.

I claim:

1. A method of forming weldless elevator links which includes forging a cylindrical body of steel having spaced rings connected by relatively thin webs, cutting the webs to form separate rings, and heating and bending the rings to form elevator links.

2. A method of forming weldless elevator links which includes forging a cylindrical body of steel from a single ingot to form a multiplicity of rings connected by relatively thin webs, cutting the webs to form separate rings, and heating and bending the separate rings to the shape of an elevator link and forging the apex of the elevator links.

Signed at Torrance, California, this 14th day of May, 1929.

BEN N. YOUNGKEN.