

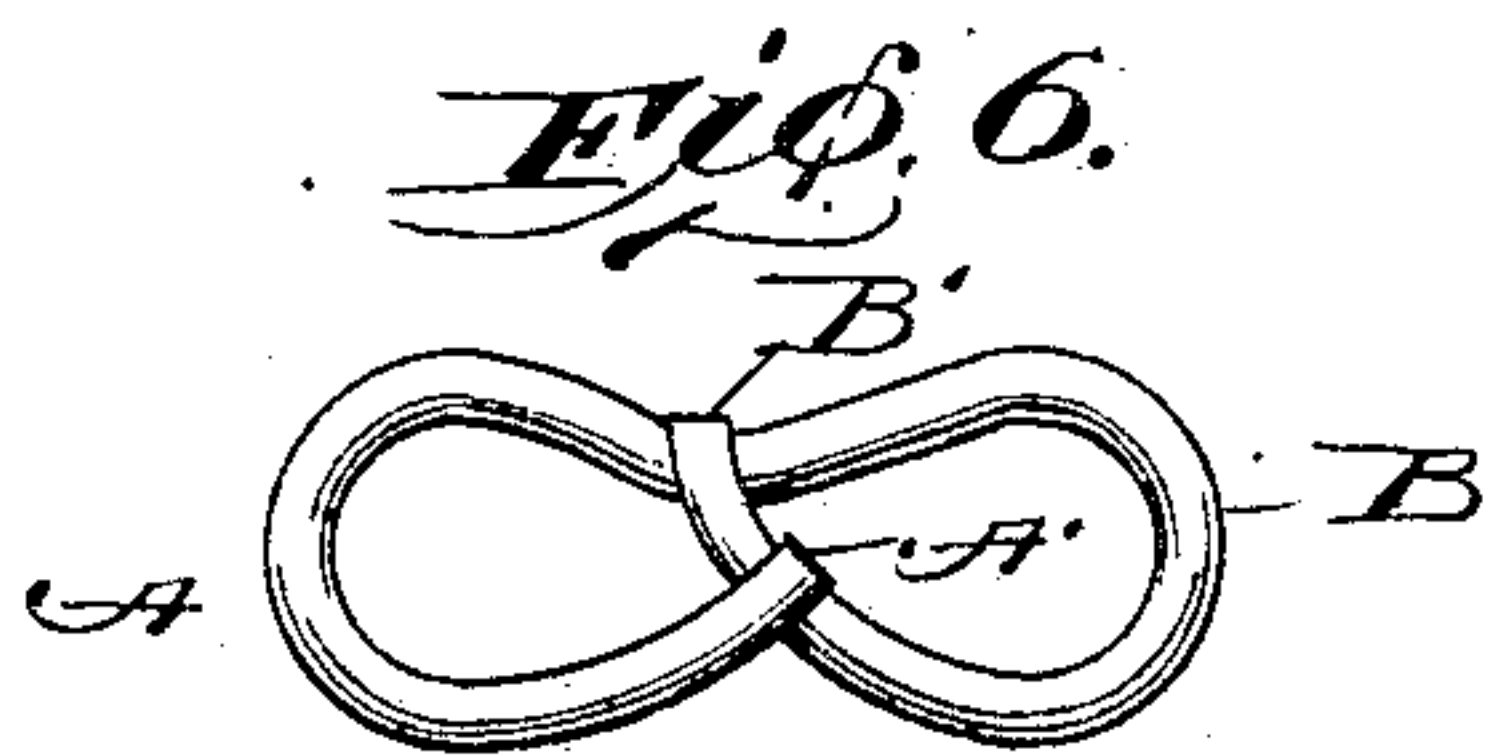
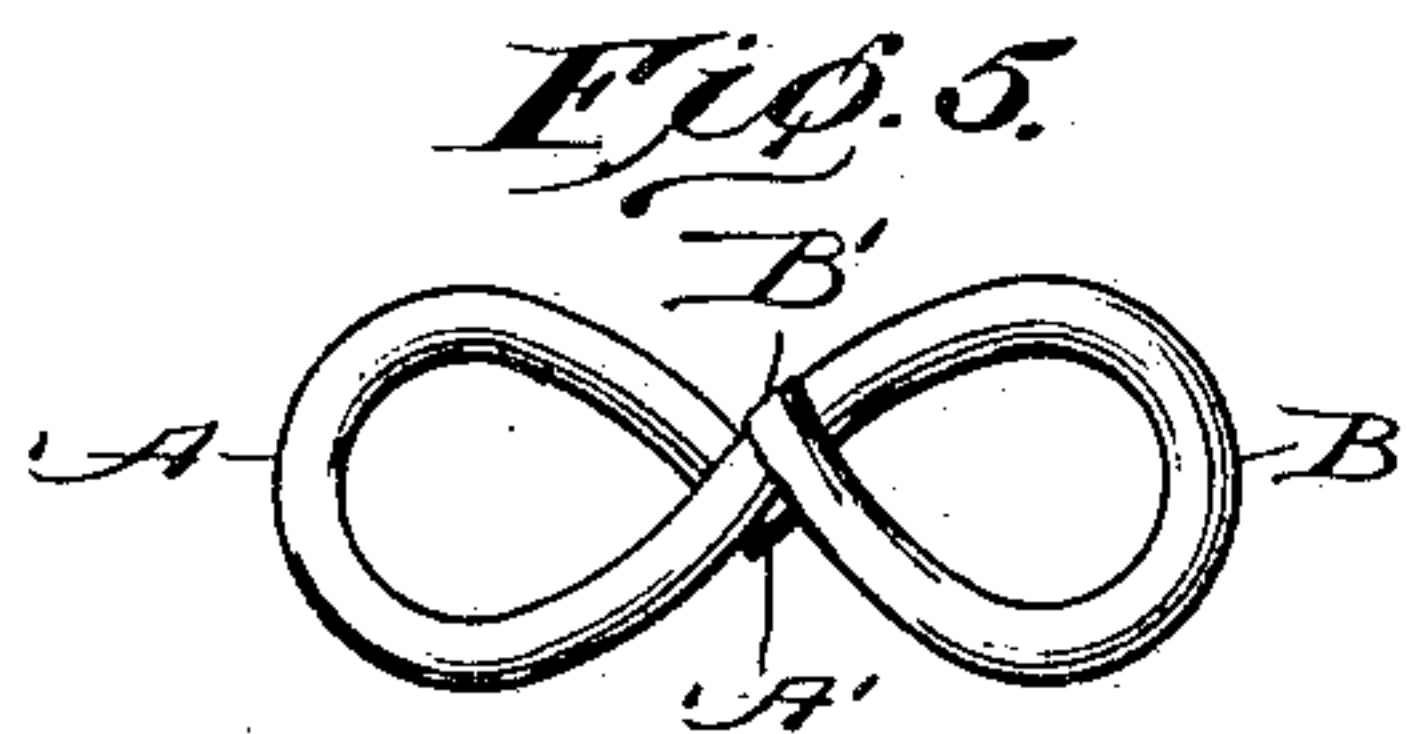
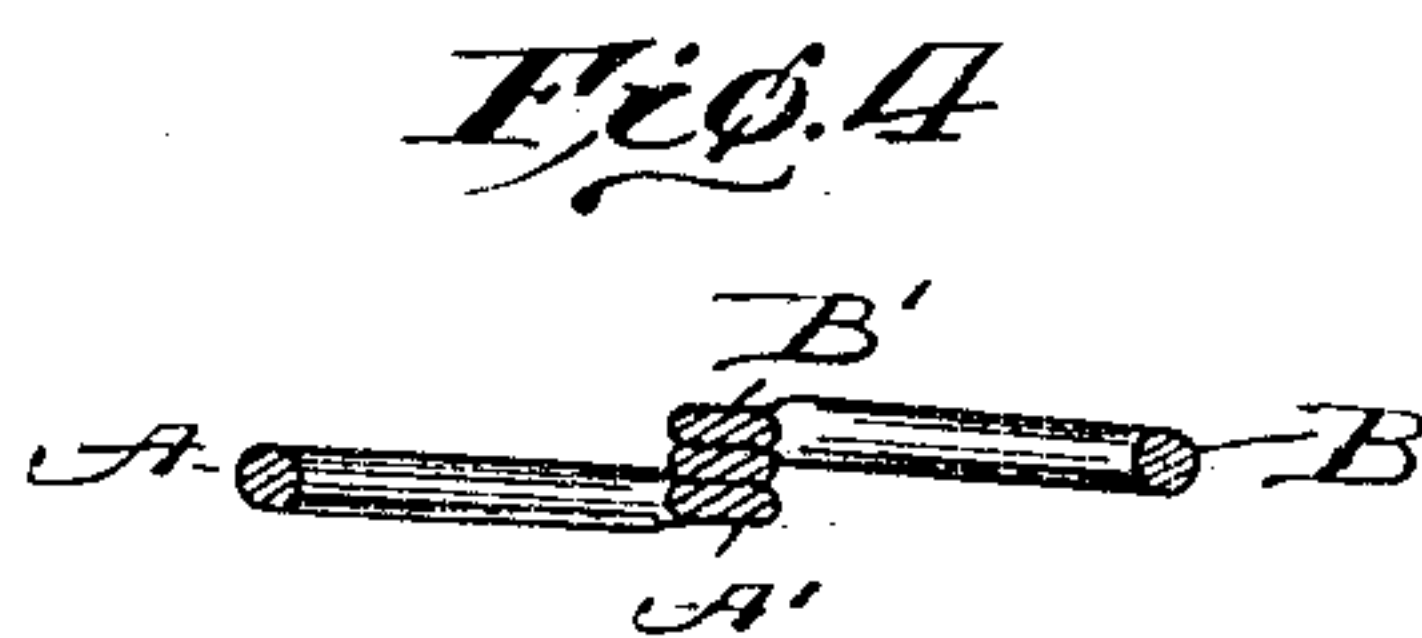
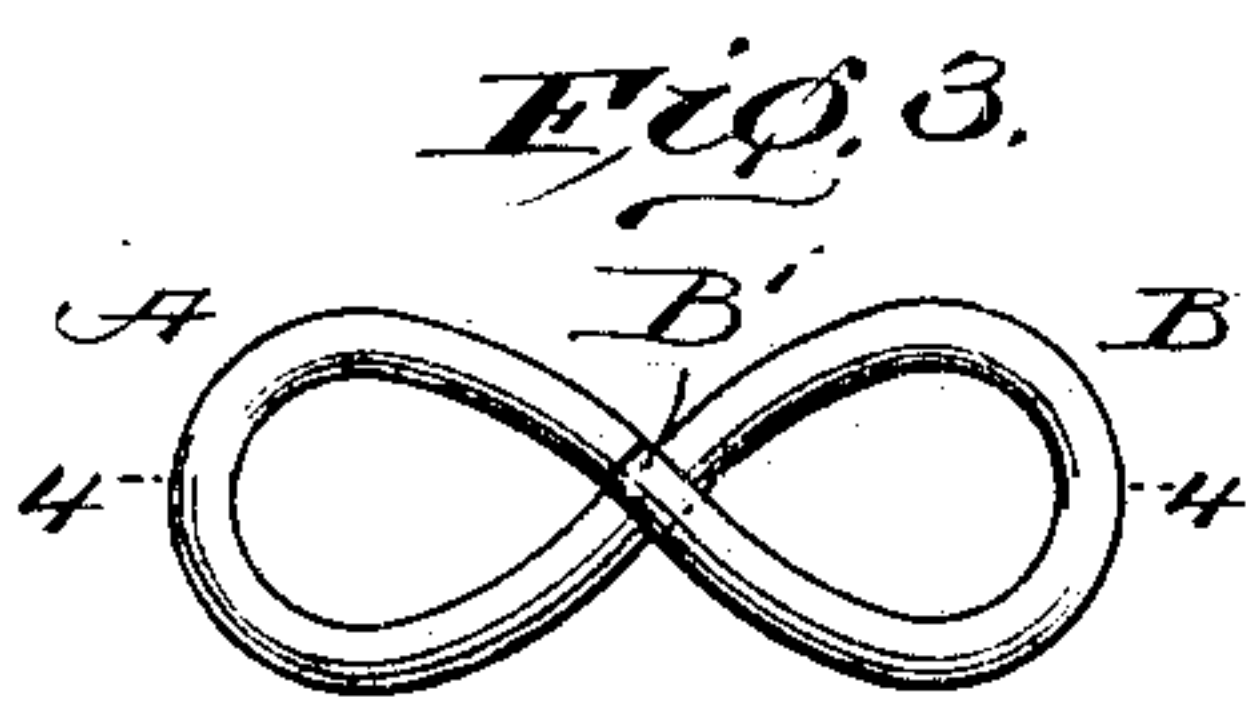
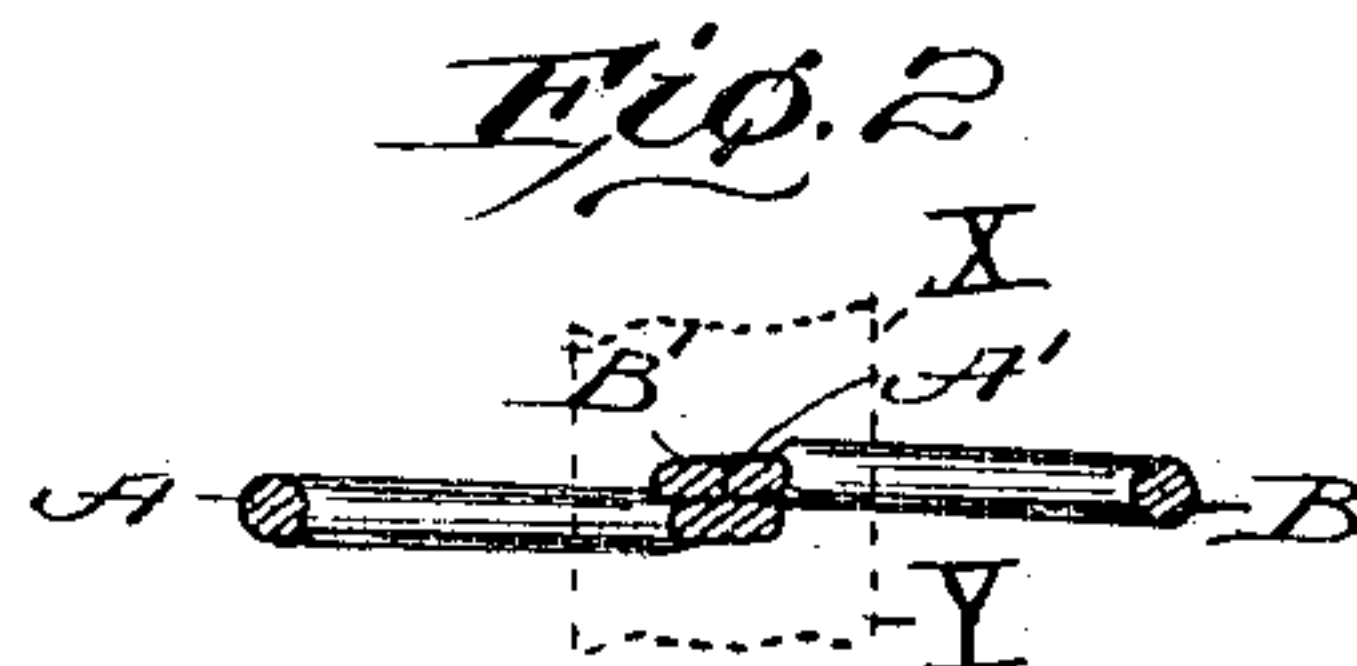
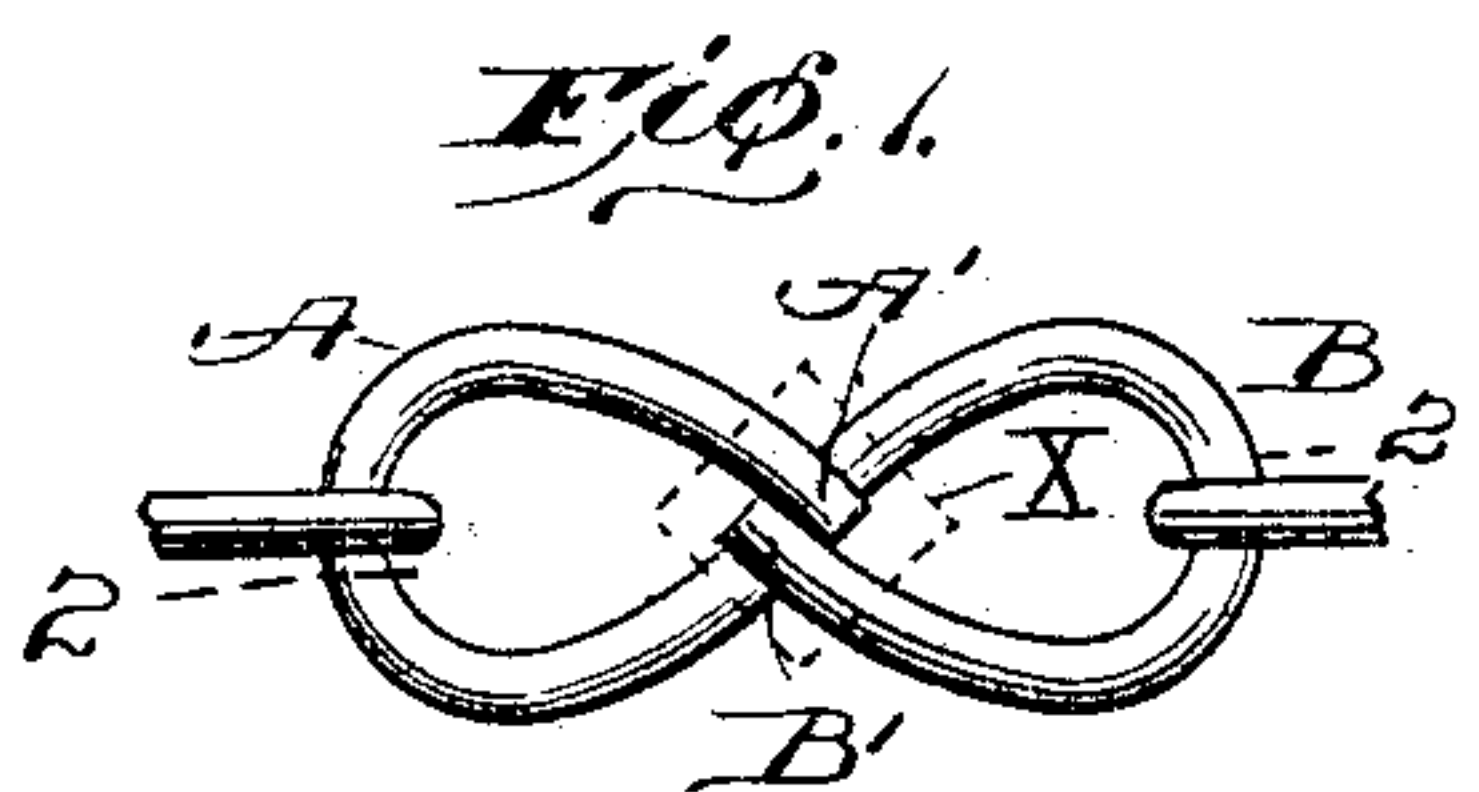
No. 758,802.

PATENTED MAY 3, 1904.

W. E. WILLIAMS.  
CHAIN LINK.

APPLICATION FILED MAR. 12, 1903.

NO MODEL.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

WILLIAM ERASTUS WILLIAMS, OF CHICAGO, ILLINOIS.

## CHAIN-LINK.

SPECIFICATION forming part of Letters Patent No. 758,802, dated May 3, 1904.

Application filed March 12, 1903. Serial No. 147,453. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM ERASTUS WILLIAMS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Chain-Links; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide a strong inexpensive chain of desirable form, which can be made rapidly from commercial rods or wires of various sizes and with such uniformity that there may be practically no weakest link. With this object in view each link is formed by bending a rod into approximately 8-like form in such manner that the ends may overlap each other near the middle of the link and so that one or both may also overlap the middle portion of the rod and by welding or brazing all overlapped parts so that the link may have continuous metal at all points. If desired, any length of such chain may be welded after all the links have been shaped and interlocked, the overlapped parts of the successive links being subjected in rapid succession to the uniting process. As the overlapped parts are very near together in each link, all may be united at a single operation, requiring no more time than uniting a single overlapped end to the part upon which it rests.

In the drawings, Figure 1 is a plan view of the preferred form of link with parts of the adjacent links of a chain. Fig. 2 is a section on the line 2 2, Fig. 1. Figs. 3 and 4 are views similar to Figs. 1 and 2, showing a slightly-modified link. Figs. 5 and 6 are views similar to Figs. 1 and 3, showing further modifications.

The link of Figs. 1 and 2 is formed by bending the end portions of a round wire oppositely in approximately the same plane to form two loops A and B, with the wire ends A' B' overlapping each other and lying side by side upon the middle portion of the wire without extending around or materially beyond it and by then welding said ends to the middle por-

tion and to each other by pressing them while heated between compressing-dies X Y, which may themselves carry the heating-current furnished by any suitable electric generator.

Figs. 3, 4 show the wire ends upon opposite sides of the middle portion of the wire and both in a plane perpendicular to the general plane of the link. Fig. 5 shows a similar arrangement, but with the wire ends upon opposite sides of such perpendicular plane.

In the form illustrated in Fig. 6 the end portions of the wire are bent in the same direction instead of oppositely, forming two loops, the first having its end B' overlapping the middle portion of the wire and the second having its end A' overlapping the first near the junction of the latter with the middle portion of the wire, and, as in the other cases, all overlapping parts are integrally united.

In all the forms we have lap-welding only. In all the laps are close together, so that they may be welded or brazed at a single operation. In all the rods are of uniform cross-section, and the contact-surfaces at the welding-points are identical, and hence the conditions are precisely the same and the welding is uniformly perfect. It is also important that since the parts are subjected to mere transverse compression in welding there is no upsetting of inaccurately-cut abutting ends and no shortening or distortion of the link, and hence the links of every chain are precisely uniform in shape and length. It is further to be noted that there is here no need of gripping the parts to be united.

For convenience the union of the overlapped portions of the wire or rod is hereinbefore referred to as "welding;" but obviously the invention does not depend upon the particular metal or metals of which the rod may be composed, upon whether the rod be coated with a metal or alloy differing from the interior portion, nor upon the presence or absence of a different metal between the overlapped portions, and in using the term "welded" and the like it is not intended to exclude any uniting that may be made in substantially the manner set forth, whether or not such uniting might properly be called "brazing" or "soldering."



The phrase "integrally united" is therefore used in the claims as covering all such unions.

What I claim is—

1. A chain-link consisting of a rod having  
5 each end portion bent back approximately to  
its middle and, while kept upon the same side  
of the general plane of the link, overlapped  
upon and integrally united with that portion  
of the rod which is there transverse to the  
10 path of such end portion.

2. A chain-link of 8-like form consisting of  
a single wire having its halves bent oppositely  
with each terminal portion approximately par-  
allel to the plane of the link and overlapped

upon and integrally united with the rod's mid- 15  
dle portion.

3. A link of 8-like form consisting of a sin-  
gle wire having its halves bent oppositely and  
its end portions lying side by side upon the  
middle portion and integrally united there- 20  
with and with each other.

In testimony whereof I affix my signature in  
presence of two witnesses.

WILLIAM ERASTUS WILLIAMS.

Witnesses:

WALLACE GREENE,  
EDWIN S. CLARKSON.