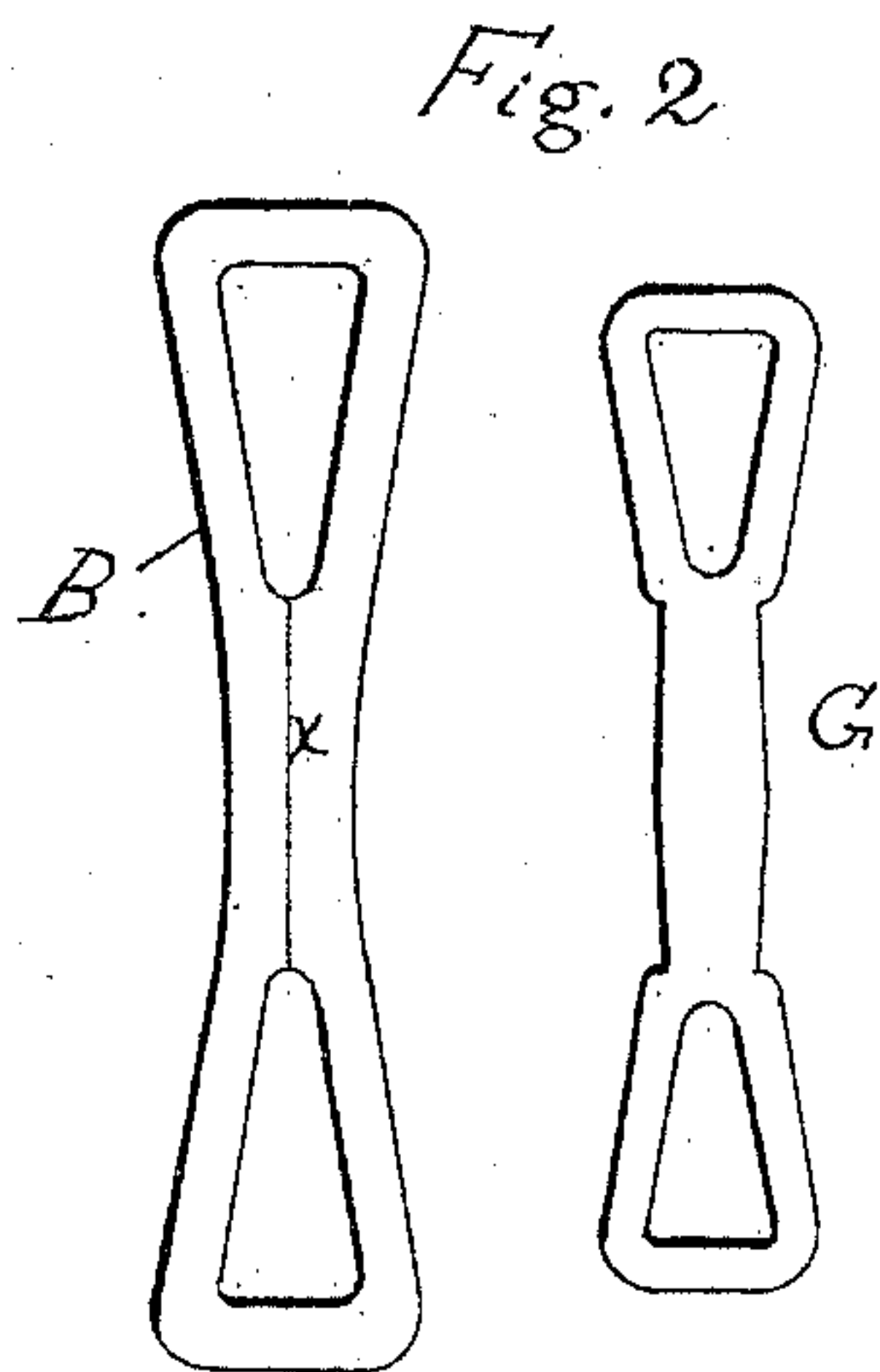
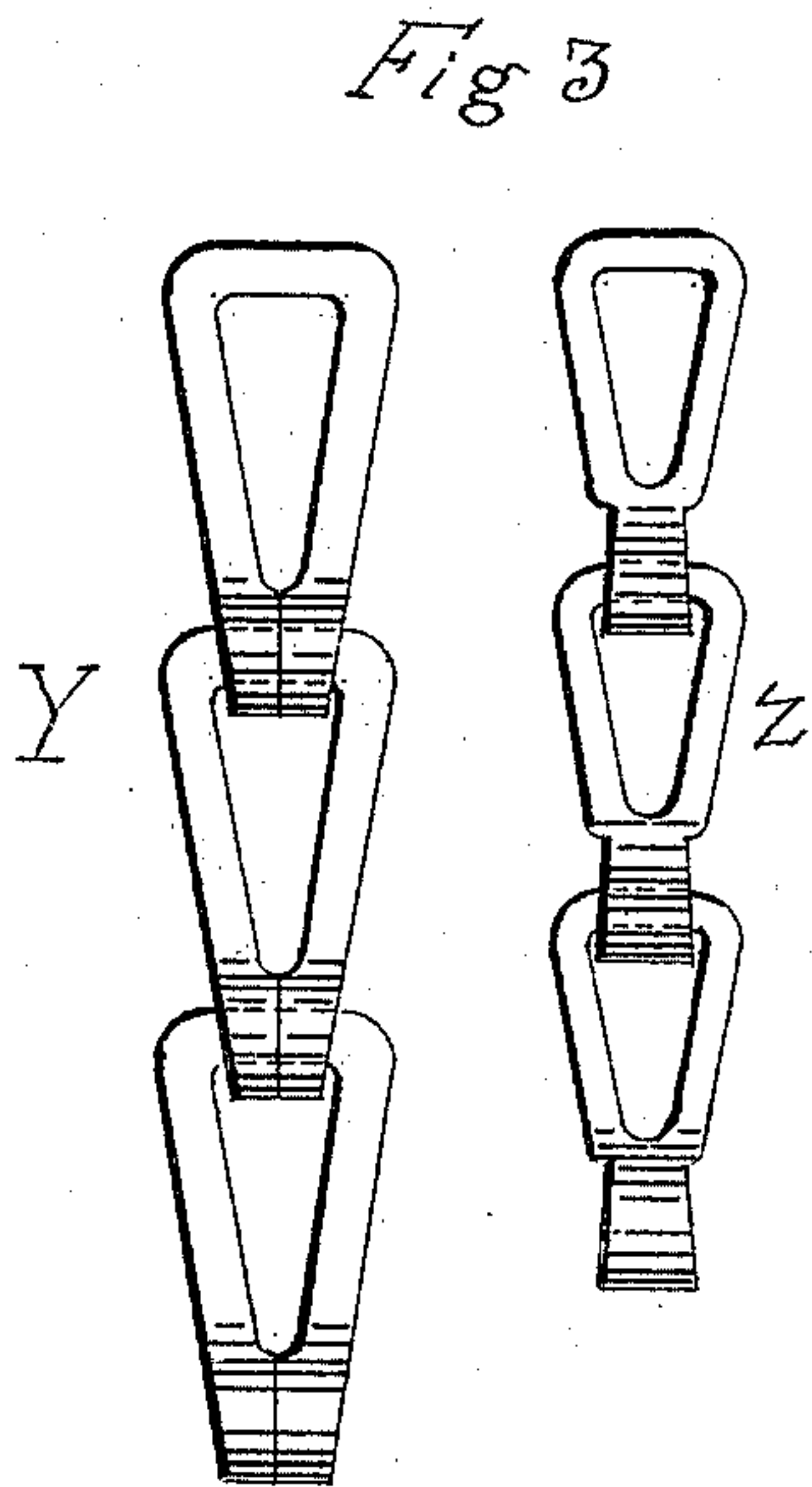
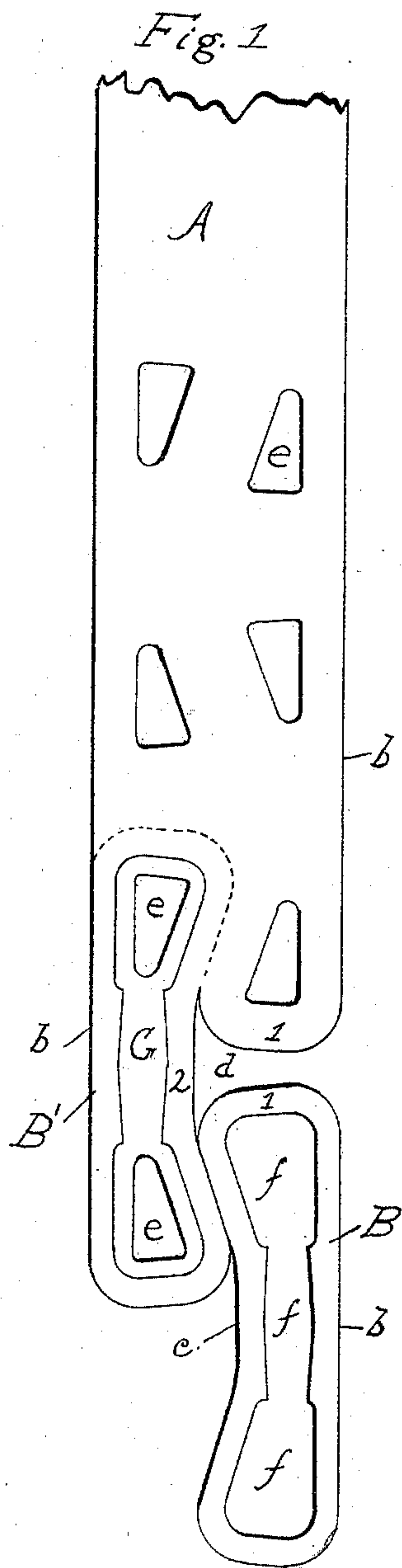


(No Model.)

A. SHEDLOCK.  
CHAIN AND THE MANUFACTURE THEREOF.

No. 492,439.

Patented Feb. 28, 1893.



Witnesses:  
Harry H. Starrett.  
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# UNITED STATES PATENT OFFICE.

ALFRED SHEDLOCK, OF JERSEY CITY, NEW JERSEY.

## CHAIN AND THE MANUFACTURE THEREOF.

SPECIFICATION forming part of Letters Patent No. 492,439, dated February 28, 1893.

Application filed June 7, 1892. Serial No. 435,913. (No model.)

### *To all whom it may concern:*

Be it known that I, ALFRED SHEDLOCK, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Sheet-Metal Chains and in the Manufacture of the Same, of which the following is a specification.

The object of my invention is to reduce the cost of manufacture of chains, the links of which are cut solid from sheet metal, and to this end the invention consists in an improved method or process of cutting the links or link-blanks from a sheet or strip of metal whereby a substantial saving of material results.

The invention further consists in an improved sheet metal chain-link and blank and the chain made therefrom. The improved method of cutting the links from the sheets and the chain made from said links are hereinafter particularly described and are illustrated in the accompanying drawings, in which—

Figure 1 is a plan view showing the manner in which the links or blanks are cut from a strip of sheet metal; Fig. 2 a detail view illustrating the two styles of chain link blanks that result from the method of cutting shown in Fig. 1 and Fig. 3 shows short lengths of two sizes of chain made from link-blanks such as shown in Fig. 2.

In chains of this class the link-blanks are narrowest at the middle and broad at the end portions in which the eyes are formed. The blanks are symmetrically shaped, that is, each side or edge inclines or curves from the outer end toward the middle as seen in Fig. 2 which illustrates two styles of link blanks. Ordinarily in cutting such blanks from a sheet of metal there is a waste of the material that is cut away from each side of the blank to give the required formation thereto. The object of the first part of my invention is to obviate this waste of material and to this end I cut the blanks from a strip of metal in a peculiar and novel manner.

In Fig. 1, A indicates a strip of metal of sufficient width to cut two series of blanks therefrom. The blanks are marked B B' and as cut from the strip are distorted or irregularly shaped and are subsequently bent or

reduced to the required symmetrical form, as shown, for instance in Fig. 2. Each straight edge *b* of the strip of metal forms a straight side or edge of one of the distorted link blanks and the opposite edge *c* of the blank is inclined or curved inwardly as shown, from both ends, but to a greater extent than is required in the completed blank. The adjoining ends 1, 1, of two blanks on one side of the metal strip lie opposite the middle portion 2 of a blank cut from the other side of the strip, and the curved or inclined side edges of the ends of the two first mentioned blanks follow the lines of the side edges of the end portions of the second mentioned blank. The material occupying the space *d* between the ends of two adjoining blanks is cut away and constitutes the only scrap or waste resulting from this method of cutting except the waste due to the cutting of the usual eyes, but in the event that another feature of my invention, presently described, is employed the loss due to the scrap or waste is further reduced. The distorted blanks thus formed are compressed or bent edgewise into the desired and usual symmetrical shape in which both side edges incline or curve from the outer ends toward the middle. This operation may be accomplished by means of any suitable apparatus. The waste due to the cutting out of the eyes is incidental to my method of cutting blanks as thus far described, as well as to the ordinary methods of cutting. The order of the steps performed in cutting blanks according to my method is not a material or essential part of the invention.

In addition to the above, however, I effect a further economy in material and form the blanks for two sizes of chain at the same time, and by so doing entirely avoid any waste on account of the eyes in the larger blanks. To accomplish this the blanks for the smaller chain are cut out of the central or interior portions of the large blanks leaving therein a correspondingly shaped opening *f*, (Fig. 1.) This part of my invention is shown in connection with the method of cutting the blanks already described, though it is not necessarily dependent upon it. As illustrated the small blanks *G* are distorted in shape conforming generally as they do to the shape of the larger blanks, and the smaller



blanks are therefore to be bent or compressed edgewise into the symmetrical shape seen in Fig. 2. In Fig. 1 at B the larger blank is shown with the smaller blank cut and re-  
 5 moved therefrom, and at B' the smaller blank is indicated as cut but still lying within the larger one. The result of this method of cutting the blanks is that as regards the large links there is no scrap or waste whatever, ex-  
 10 cept the material that is cut from between the ends of adjoining links, there being no waste whatever at the sides or on account of the eyes; and as regards the smaller links there is no waste except that due to the for-  
 15 mation of the eyes. The order in which the different operations are performed is not a material or essential part of the invention, though I should prefer to first cut in the strip A the apertures *e* which will ultimately form  
 20 the eyes of the smaller links. Any suitable apparatus may be employed.

With regard to the second part of my invention last described, the strip of metal may of course be wider and permit the cutting of  
 25 more than one interior blank from each large blank. The larger blanks when their sides are compressed toward each other and they are bent edgewise into the symmetrical shape shown in Fig. 2 will be of the same shape as  
 30 that of standard sheet metal chain now on the market and will not be distinguished therefrom except by the central line *x* where the two inner edges of the middle portions of the blanks are brought together. The smaller  
 35 links are not distinguished from the links made in the ordinary manner.

In Fig. 3 I have shown a short section Y of chain formed from the larger blanks B, and also a section Z of chain formed from the  
 40 smaller blanks G, the blanks being doubled upon themselves to form the links as is well understood.

Where interior blanks are not cut from larger blanks the latter blanks may be cut  
 45 in the distorted shape indicated, but they will then only need to be bent edgewise to bring them to the proper form.

Of course if desired and where rendered desirable by reason of any peculiarity of a  
 50 metal from which the links are cut a small margin of waste may be left between the sides of the links B B'.

I claim as my invention—

1. The herein described method of cutting  
 55 and forming sheet-metal chain-link blanks, having like ends with eyes therein, from a sheet or strip of metal, which consists in cutting two lines or series of blanks from the strip, the outer edge of each blank in each se-  
 60 ries being straight, or substantially so, and the inner or adjacent edges of the blanks each inclined or curved from each end toward the middle portion thereof, and the adjoining ends of blanks in one series lying oppo-  
 65 site the middle portion of a blank in the opposite series, and then bending the distorted

blanks thus produced edgewise into the desired symmetrical shape, substantially as set forth.

2. The herein described method of cutting 70 sheet metal chain-link blanks having like ends with eyes therein, of two sizes from a sheet or strip of metal, which consists in cutting large blanks from the strip and smaller blanks from the interior or central 75 portions of the larger blanks, and then pressing the sides of the larger blanks inwardly or toward each other to give the blanks the desired symmetrical shape.

3. The herein described method of cutting 80 and forming two sizes of sheet metal chain-link blanks, having like ends with eyes therein, from a sheet or strip of metal, which consists in cutting large blanks from the strip and smaller blanks from the interior or cen- 85 tral portions of the larger blanks and then compressing the larger blanks edgewise to bring the inner edges of their middle portions together, substantially as set forth.

4. The herein described method of cutting 90 and forming sheet-metal chain-link blanks, having like ends with eyes therein, from a sheet or strip of metal, which consists in cutting two parallel lines or series of large blanks from the strip, the outer edge of each blank 95 in each series being straight or substantially so, and the inner adjacent edges of said blanks being each inclined or curved from each end toward the middle portion thereof, and the adjoining ends of blanks in one se- 100 ries lying opposite the middle portion of a blank in the opposite series, and cutting correspondingly shaped smaller blanks from the interior or central portions of the larger blanks, substantially as set forth. 105

5. The herein described method of cutting and forming sheet metal chain-link blanks, having like ends with eyes therein, from a sheet or strip of metal, which consists in cut- 110 ting two parallel lines or series of large blanks from the strip, the outer edge of each blank in each series being straight or substantially so, and the inner adjacent edges of said blanks being each inclined or curved from each end toward the middle portion thereof, and the 115 adjoining ends of blanks in one series lying opposite the middle portion of a blank in the opposite series and cutting correspondingly shaped smaller blanks from the interior or central portions of the larger blanks, and 120 then compressing and bending the larger links edgewise, and bending the smaller links edgewise into the desired symmetrical shape, substantially as set forth.

6. A sheet metal chain-link blank having 125 its central or interior portion cut out from end to end, and its middle portion compressed edgewise to bring its inner edges together or substantially so, the inner edges of the end portions being left open or separated to form 130 the eyes.

7. A sheet metal chain link having an open-



ing extending from end to end, and its middle portions brought together and folded to form the loop, the inner edges of the end portions being left open or separated to form the eyes.  
5

loop, the inner edges of the end portions being left open or separated to form the eyes.

In testimony whereof I have hereunto subscribed my name.

ALFRED SHEDLOCK.

Witnesses:

FRANK S. OBER,

EDWARD C. DAVIDSON.

8. A sheet metal chain composed of interlocked solid links each having an opening extending from end to end, and its middle portions brought together and folded to form the