July 16, 1929. E. B. NICHOLS 1,720,852

DRIVE CHAIN

Original Filed Aug. 20, 1926

FIG. 1.

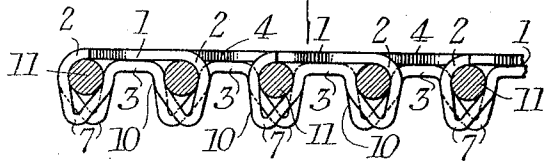


FIG. 2.

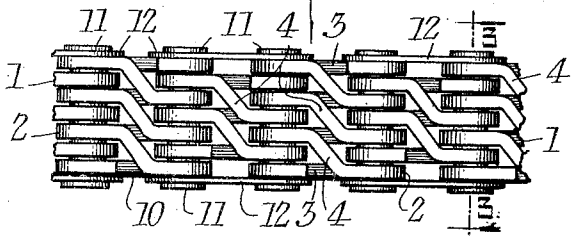


FIG. 3.

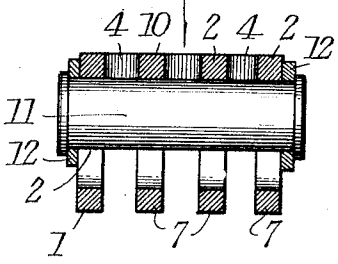


FIG. 4.

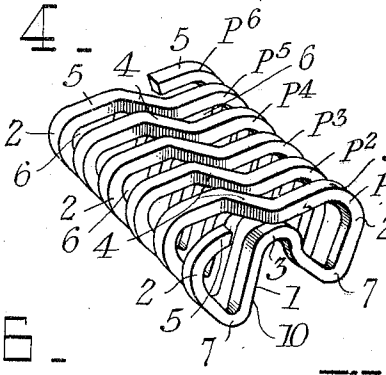


FIG. 5.

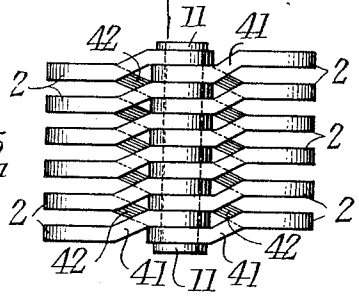


FIG. 6.

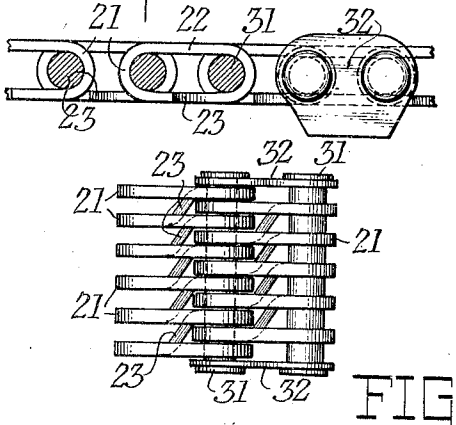
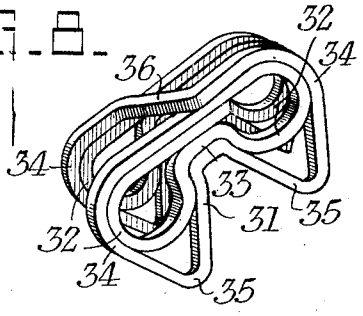


FIG. 7.

FIG. 8.



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Patented July 16, 1929. 1,720,852

UNITED STATES PATENT OFFICE.

EDGAR B. NICHOLS, OF MOORESTOWN, NEW JERSEY.

DRIVE CHAIN.

Application filed August 20, 1926, Serial No. 130,529. Renewed January 28, 1929.

This invention relates to chains and particularly to drive chains. One object of my invention is to provide a chain in which the link elements are each composed of an integral folded metal strip having a plurality of pin loops. Another object is to provide a chain having link elements which are strong relative to their weight. Another object is to provide a link element which greatly facilitates assembling a chain. Another object is to provide a chain built up of link elements, each of which have a parallel row of spaced pin engaging loops which are integrally connected. Another object is to provide a link element having a plurality of parallel pin loops which may be interengaged with similar link elements. Other objects will appear from the following specification, the novel features being particularly pointed out in the claims at the end thereof.

Coming now to the drawings wherein like reference characters denote like parts throughout:

Fig. 1 shows a side elevation partly in section of a chain illustrating, and constructed in accordance with, one embodiment of my invention;

Fig. 2 is a plan view of a chain section as shown in Fig. 1;

Fig. 3 is an enlarged fragmentary section of a chain taken on line 3—3 of Fig. 2;

Fig. 4 is a perspective view of a link element before assembling into a chain;

Fig. 5 is a plan view of a chain illustrating another embodiment of my invention;

Fig. 6 is a part side elevation and part section of a chain illustrating still another embodiment of my invention;

Fig. 7 is a fragmentary plan view of a portion of the chain shown in Fig. 6, and

Fig. 8 is a perspective of a link element forming still another embodiment of my invention.

The drive chain shown in the first four figures preferably consists of a plurality of strip metal link elements which may consist of a pair of pin loops 2 formed from the metal strip 1, and made to lie in a plurality of laterally offset parallel planes designated at P_1, P_2, P_3, P_4 and P_6 in Fig. 4. Each link element is preferably made of one piece of strip metal. The pin loops 2 are connected by the fold 3, and the fold 4 is bent at an angle to the plane of the pin loops forming a connecting member for the parallel units 5 which go to make up the link element.

The spaces 6 between the units 5 are of sufficient width to receive units of another link element, so that a chain may be readily built up from a plurality of these link elements designated broadly as 10, and pins 11. If desired, the usual side plates 12 may also be employed.

I prefer to form a chain with the link elements 10 approximately as wide as the chain, but for certain purposes it is best to build up the width of a chain with a number of link elements.

In the chain shown in the first four figures I have shown the various units of the link element formed so that there is a driving tooth 7 formed with each pin loop 2. This construction is useful for medium and light weight driving chains. Where a heavy duty chain is required, the link element may be built up of a lesser number of units, say two as shown in Fig. 8, where each unit is composed of several laminations of metal.

In the link element of Fig. 8 a metal strip 31 is folded at 32 into pin loops which are connected by the strip at 33, a second convolution of metal 34 partially surrounding the pin loops and being shaped to form driving teeth 35. The angularly disposed strip 36 connects the two units and spaces them to receive other link units, from which a chain of the desired dimensions may be built up.

In Fig. 5 I have shown a modification of the chain link element shown in Fig. 1, the side elevation of the link being the same in both instances; that is pin loops 2 are formed from a strip of metal 1. But the Fig. 5 link differs from the above described element in that no two pin loops of the same element lie in the same plane, there being connecting folds 41 at the top and 42 beneath the top to join the laterally offset loops 2. In some cases this construction is an advantage, as the chain may be bent more sharply than other forms and it is particularly adapted for use with pins 11 without the usual side plates.

In Figs. 6 and 7 a very simple type chain is shown, the pin loops 21 being bent from a metal strip 22 and connected by pins 31, preferably using side plates 32. The pin loops are connected by an offset or angularly disposed metal fold 23.

As will appear obvious from the specifi-

cation and drawings, there are a great many possible modifications which may be made in making chains in accordance with my invention. The link elements may consist of only two offset pin loops, or any number such as four, six, or more. I, therefore, want it understood that as there are so many variations which may be made, that I contemplate as within the scope of my invention all such changes as may come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a drive chain, the combination with a plurality of link elements, of pins connecting the link elements, each link element comprising a plurality of pin loops lying in parallel planes, and angularly disposed connecting strips between the pin loops, each of said connecting strips extending between a pair of pin loops lying in offset planes.

2. In a drive chain, the combination with a plurality of link elements, of pins connecting the link elements, each link element including a single strip of metal bent into a plurality of pin loops lying in parallel planes, at least one pair of pin loops lying in the same plane, a portion of the strip metal being offset from the plane of one pair of pin loops to the plane of another pair of pin loops whereby the pairs of pin loops are held in spaced relation.

3. In a drive chain, the combination with a plurality of link elements, of pins connecting the link elements, each link element including a series of pairs of pin loops lying in parallel planes and connecting members for the pin loops, one connecting member lying in the plane of a pair of pin loops and the other connecting member lying at an angle thereto whereby pin loops of different planes are connected.

4. In a drive chain, the combination with a plurality of link elements, of pins connecting the link elements, each link element including a series of pairs of pin loops lying in offset parallel planes, connecting members joining the offset pin loops, and connecting members joining the pairs of pin loops lying in the same plane, the last mentioned connecting members being bent from the pin loops into driving teeth.

5. In a drive chain, the combination with a plurality of link elements, pins connecting the link elements, each link element including pairs of pin loops lying in the same plane, and pairs of pin loops lying in planes spaced from and parallel to the other pairs of link elements and connecting members joining the pairs of pin loops in different planes, each pin loop including driving teeth bent from the pin loops and lying in the same plane therewith.

6. In a drive chain, the combination with a plurality of link elements, of each link element including a plurality of spaced parallel connected pin loops, and a driving tooth associated with each pin loop.

7. In a drive chain, the combination with a plurality of link elements, each link element including a plurality of parallel connected pin loops, each pin loop being formed away from the pin loop into a driving tooth.

8. In a drive chain, the combination with a plurality of link elements, of each link element including a plurality of parallel connected pin loops folded from strip material, said strip material being also folded from the pin loops into driving teeth.

9. In a drive chain, the combination with a plurality of link elements, of each link element comprising a plurality of spaced parallel connected pin loops and a plurality of driving teeth integral with the pin loops.

Signed at Rochester, N. Y., this 18 day of August, 1926.

EDGAR B. NICHOLS.