Nov. 17, 1959 H. I. HAZZARD 2,913,023

SAW CHAIN WITH ALTERNATING LONG AND SHORT PITCH

Filed July 12, 1957

Fig. 1.

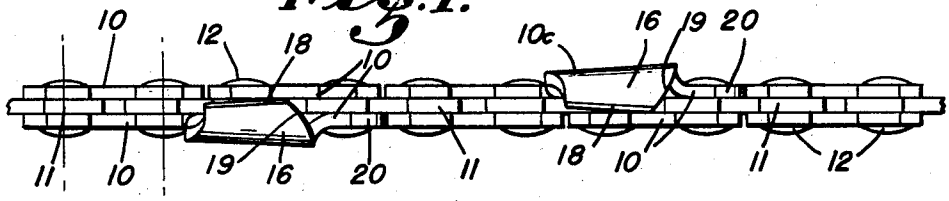


Fig. 2.

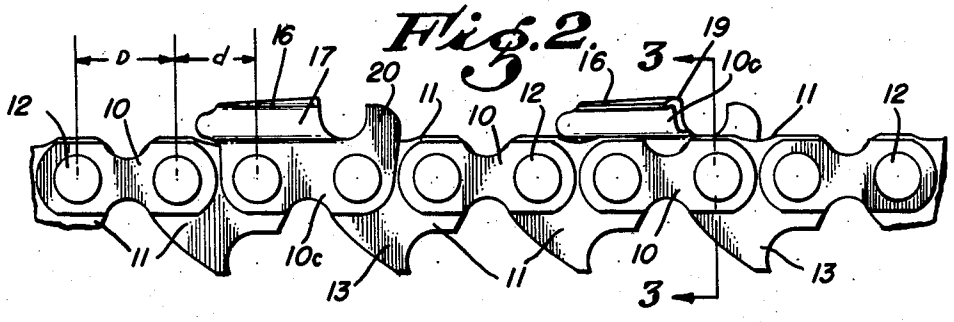


Fig. 4.

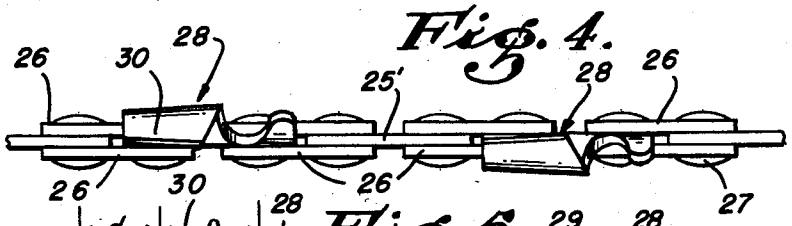


Fig. 5.

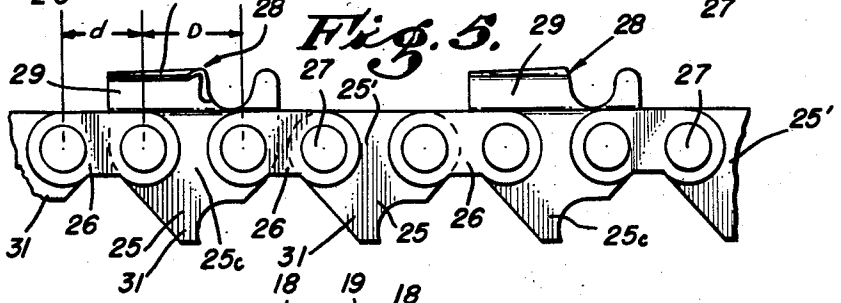
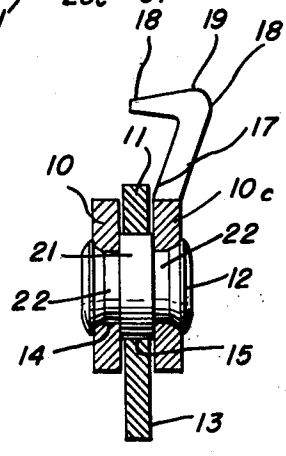


Fig. 3.



HARRY I. HAZZARD
INVENTOR.

BY

Attorney

United States Patent Office 2,913,023 Patented Nov. 17, 1959

2,913,023

SAW CHAIN WITH ALTERNATING LONG AND SHORT PITCH

Harry I. Hazzard, Los Angeles, Calif., assignor to McCulloch Corporation, Los Angeles, Calif., a corporation of Wisconsin

Application July 12, 1957, Serial No. 671,490

4 Claims. (Cl. 143—135)

This invention relates to saw chains of the character employed for the cutting of wood. These saw chains consist of links connected by pintles, some of the links having cutting elements projecting therefrom, so that as the saw chain is caused to travel along a supporting member, such as a saw bar, the cutters will cut a kerf in the object being sawed.

It is an object of the invention to generally improve these saw chains so that they will give better performance and will have longer useful life.

It is an object of the invention to provide a saw chain consisting of long links and short links connected by hinge means disposed on transverse axes, the long links having their hinge axes spaced apart at a greater distance than the spacing of the hinge axes of the short links. In the ordinary practice of the invention, the hinge means consist of pintles which extend through pintle openings disposed near the ends of the links. The pintle openings of the long links are spaced apart a greater distance than the pintle openings of the short links, thereby providing definite advantages and improvements in the saw chain. Among these advantages are the following: reduced rearback of the cutters because they are mounted on the long links, use of larger pintles and more metal around the pintles giving greater strength, lower polar moment of inertia, and improved tooth form in the sprockets over which the chain is run.

An important object of the invention is to provide a long tooth body, permitting greater cutter length and many additional sharpenings and, therefore, longer life.

Further objects and advantages of the invention may be brought out in the following part of the specification where small details of construction have been described for the purpose of disclosure without intending, however, to limit the scope of the invention which is defined by the appended claims.

Referring to the accompanying drawings which are for illustrative purposes only:

Fig. 1 is a plan view of a preferred embodiment of the invention;

Fig. 2 is a side view of the chain shown in Fig. 1;

Fig. 3 is an enlarged sectional view taken as indicated by the line 3—3 of Fig. 2;

Fig. 4 is a plan view of a chain of alternative form; and

Fig. 5 is a face view of the chain shown in Fig. 4.

Referring to the form of the invention shown in Figs. 1, 2 and 3, the chain includes long links **10** and short links **11** connected by pintles **12**. The long links **10** are side links and the short links **11** are center links having sprocket engaging bodies **13** projecting downwardly therefrom. The terms "long" and "short" refer to the spacing of the axes of the pintle openings **14** and **15** in the respective parts **10** and **11**. The openings **14** of the long links **10** are spaced so that the axes thereof are separated by a distance D, and the openings **15** of the short links are disposed on axes separated by a distance *d* which is less than the distance D.

Selected long links **10** specifically designated by the numerals **10***c* have cutters **16** projecting therefrom, each of these cutters **16** having a plate or shank portion **17** which extends outwardly from the body of the link **10** and a chisel or toe portion **18** extending transversely from the outer end of the shank portion **17**. The cutter **16** is sharpened at its forward end to provide a cutting edge **19**. On each selected long link, which may be referred to as a cutter link **10***c*, a gauge **20** is disposed ahead of the cutter **16**.

The spacing of the cutters **16** along the length of the chain is determined by conditions under which the chain is to be used. For example, if the chain is to be used for cutting extremely soft wood so that large chips are formed, then the cutters must be spaced further apart so as to provide sufficient chip carrying space between consecutive cutters. Also, if the chain is to be operated at high speed, as in chain saw devices having direct drives so that the chain driving sprocket revolves at the same speed as the engine crankshaft, it may be desirable to space the cutters **10***c* further apart.

The chain shown in Figs. 1 and 2 may be regarded as having its links arranged in units, each unit consisting of a pair of side links **10** and an adjacent center link **11**. For each of theses units there is only one sprocket-engaging body **13**, namely, that which projects downwardly from the center or short link of the unit. From Fig. 3 it will be perceived that the pintle openings **14** in the side links **10** are smaller than the pintle openings **15** in the center links **11** and that each pintle **12** has a cylindrical body portion **21** which rotates in an opening **15** of a center link **11**. The pintle **12** has stems **22** which extend outwardly from the opposite faces of the body portion **21** through the openings **14**, the outer ends of the stems **22** being riveted over so as to clamp the respective side links **10** firmly against the side faces of the body portion **21**.

In the form of the invention shown in Figs. 4 and 5, I provide long links **25** and short links **26** connected by pintles **27** in alternating order. In this form of the invention the long links **25** are center links and the short links **26** are side links. The long links are so called because their pintle openings are arranged with their axes spaced apart a distance D which is greater than the distance *d* at which the axes of the openings of the short links **26** are spaced apart. From selected long links **25***c*, which may be referred to as the cutter links of the chain, cutters **28** extend outwardly, these cutters **28** each comprising a shank portion **29** and a toe portion **30**. The cutters **28** are of essentially the same form as the cutters **16** shown in Figs. 1–3, but they are formed and extend outwardly from center links 25C instead of from side links of the chain. The center links **25** have sprocket-engaging bodies **31** projecting inwardly therefrom.

In the form of the chain, shown in Figs. 4 and 5, alternate long links **25** are selected as cutter links **25***c* so that between adjacent cutter links **25***c* there are two pairs of side links **26** and a single center link **25**, specifically indicated by the numeral **25'** which merely serves as a spacer link. It will be understood that the cutter links **25***c* may be arranged at suitable distances apart in accordance with the conditions of operation for which the chain has been designed.

I claim:

1. In a saw chain: long side links and short center links alternately connected by hinge means disposed on transverse hinge axes, the hinge axes of said long links being spaced apart a greater distance than the hinge axes of said short links, and cutter elements extending from selected said long links for cutting a kerf in the material to be sawed, said cutter elements comprising shank portions which extend outwardly from and for a substantial portion of the length of said selected long links and toe

portions which extend from the outer edge of said shank portions.

2. In a saw chain: long side links and short center links having pintle openings adjacent the ends thereof, the pintle openings of said long links being spaced apart a distance greater than the distance between the pintle openings of said short lengths, pintles in said openings providing hinges between alternately connected long links and short links, and cutter elements extending from selected said long links for cutting a kerf in the material to be sawed, said cutter elements comprising shank portions which extend outwardly from and for a substantial portion of the length of said selected long links and toe portions which extend from the outer edge of said shank portions.

3. In a saw chain: long side links and short center links alternately connected by hinge means disposed on transverse hinge axes, the hinge axes of said long links being spaced apart a greater distance than the hinge axes of said short links; cutter elements extending from selected long side links positioned on opposite sides of the chain for cutting a kerf in the material to be sawed, said cutter elements comprising shank portions which extend outwardly from and for a substantial portion of the length of said selected long side links and toe portions which extend from the outer edge of said shank portions toward the longitudinal center plane of said chain, the successive toe portions along said chain extending in opposite transverse directions relative to said center plane; and projections carried by said short center links for engaging a driving sprocket, said projections extending inwardly from said short center links.

4. In a saw chain: long side links and short center links alternately connected by hinge means disposed on transverse hinge axes, the hinge axes of said long side links being spaced apart a greater distance than the hinge axes of said short center links; cutter elements extending from selected long side links positioned on opposite sides of the chain for cutting a kerf in the material to be sawed, said cutter elements comprising shank portions which extend outwardly from and for a substantial portion of the length of said selected long links and toe portions which extend from the outer edge of said shank portions, each of the successive toe portions along said chain extending in opposite transverse directions toward a long side link on the opposite side of said chain, a depth gauge on each said selected long side links disposed forwardly of the cutter element on such links; and projections carried by said short center links extending inwardly therefrom for engaging a driving sprocket.

References Cited in the file of this patent

UNITED STATES PATENTS

Re. 24,129	Hassler	Mar. 13, 1956
2,558,678	Garrett	June 26, 1951
2,622,636	Cox	Dec. 23, 1952

FOREIGN PATENTS

518,137	Canada	Nov. 8, 1955
885,478	Germany	Aug. 6, 1953
1,102,721	France	May 11, 1955