

J. L. LEE.
 SPROCKET CHAIN.
 APPLICATION FILED JUNE 10, 1911.

1,021,786.

Patented Apr. 2, 1912.

Fig. 1.

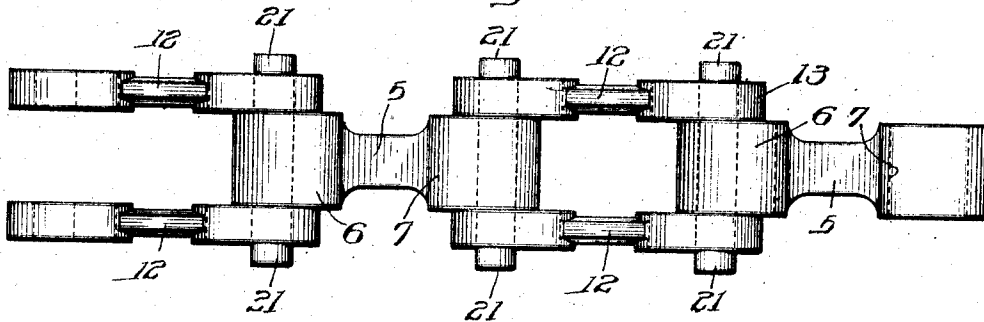


Fig. 2.

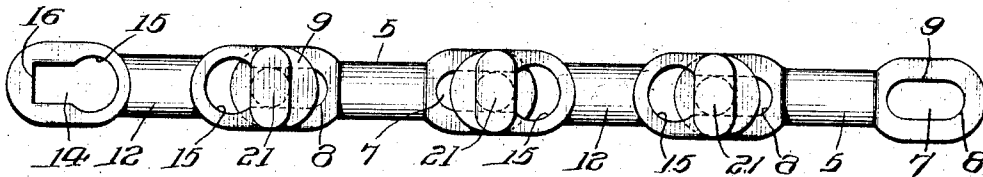


Fig. 3.

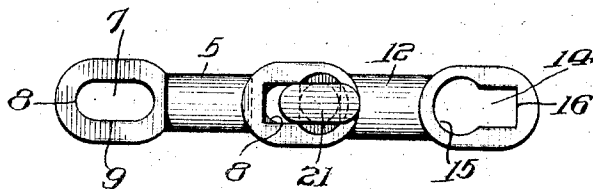
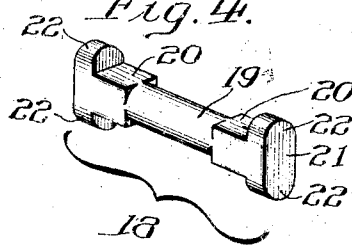


Fig. 4.



WITNESSES

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SPROCKET-CHAIN.

1,021,786.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH L. LEE, a citizen of the United States, and a resident of Carbondale, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Sprocket-Chains, whereof the following is a specification, reference being had to the accompanying drawing.

This invention particularly relates to driving or sprocket chains which are adapted to connect separated toothed wheels, and to impart a peripheral rotary movement to the driven wheel corresponding to the peripheral speed of the driving wheel.

The principal object of this invention is, to provide a sprocket chain with link-connecting pintles which permit the free relative oscillatory movement of the successive links, and which are readily removable and replaceable when the adjacent links are slightly shifted toward each other in their normal plane.

Other objects of this invention are, to provide said link-connecting pintles with means cooperative with the links of said chain, to prevent their accidental displacement when in operative position, without riveting; to provide said pintles with means cooperative with said links, to prevent their rotation when in operative position; and to provide pintles having a wearing surface of the smallest possible diameter to withstand the strain to which the chain may be subjected.

This invention further includes all of the various novel features of construction and arrangement hereinafter more definitely specified.

The form of this invention hereinafter described provides a chain comprising single links connected to alternately disposed double links by suitable pintles, the single links having elongated apertures or eyes whose end walls are semicylindriform; the double links being provided with elongated apertures or eyes having a cylindriform inner end wall merging into a rectangular outer end wall; and the pintle comprising elongated heads which are capable of being thrust through the apertures in the respective links when aligned, rectangular portions fitted in the rectangular portion of the aperture in the double links, and capable of being rotated within the cylindriform portion

of said apertures, and a cylindriform bar intermediate of the rectangular portions fitted to the semicylindriform outer wall of the apertures in the single links.

In the accompanying drawing, Figure 1 is a plan view of a chain constructed in accordance with this invention; Fig. 2 is a side elevation of the chain shown in Fig. 1; Fig. 3 is a side elevation of adjacent links shifted to aline their respective apertures, and showing the pintle rotated a quarter turn and ready to be shifted into alinement with said apertures to be withdrawn therefrom; and Fig. 4 is a perspective view of the pintle *per se*.

In said figures, the single links 5 are provided with bosses 6 having elongated apertures or eyes 7, the end walls 8 of which are preferably semicylindriform and merge into parallel plane walls 9. Said links 5 are connected by links 12 having bosses 13 disposed upon the opposite sides of the bosses 6 of the links 5, and provided with elongated apertures 14 comprising substantially semicylindriform inner walls 15 merging into rectangular outer end walls 16. The links 5 and 12 are held together in jointed relation by the pintles 18, which comprise the central cylindrical bar 19 merging into the rectangular portions 20 which adjoin the elongated heads 21.

As shown in the operative position in Figs. 1 and 2, the apertures in the respective links are out of alinement, to the extent that said apertures are in staggered relation, or out of registry, the outer end wall of the apertures in the links 5 engaging the cylindrical bars 19 of the pintles 18 in turning relation therewith, and the rectangular outer end walls 16 of the apertures 14 engaging the squared portions 20 of the pintles 18, to prevent their rotation, and thereby maintaining the overhanging flanges 22 of the heads 21 of said pintles in transverse relation to the apertures 7 and 14, with said overhanging flanges engaging the outside walls of the bosses 13 of the links 12, to prevent the lateral displacement of said pintles.

The chain above described may be readily taken apart by shifting any of the adjacent links in the direction of said chain slightly toward each other until their respective apertures register, as best shown in Fig. 3, whereupon the pintle may be

shifted out of engagement with the rectangular walls of the apertures 14 and rotated within the circular portion of said apertures, to shift the major axis of the heads 21 into a plane coincident with the major axis of the apertures 14, as shown in Fig. 3, whereupon said pintle may be shifted longitudinally of the chain, to register with the alined apertures, in which position it may be readily withdrawn therefrom through said alined apertures.

It will be readily seen that when the pintles 18 are in engagement with the outer walls of the respective apertures 7 and 14, as shown in the operative position in Fig. 2, the accidental displacement of said pintles is impossible, for the reason that they are prevented from lateral movement by the overhanging flanges 22, which cannot be turned so long as the squared portion 20 is retained in contact with the rectangular wall 16, in which position it is maintained by the tension of said chain.

A sprocket or conveyer chain constructed in accordance with this invention is advantageous, in that the links or pintles may be readily replaced by simply slacking the chain in the direction of its length to the extent of the apertures in its respective links, less the diameter of its pintles. Furthermore, it may be observed that a pintle constructed in accordance with this invention may be formed with its wearing surface of the smallest diameter necessary to withstand the tensional strain to which the chain may be subjected, whereby the relatively movable bearing surfaces are reduced to a minimum.

Although the pintle is shown with the cylindrical portion interposed between opposed squared portions, it is obvious that a reversal of the parts may effect equally good results, and therefore it is not desired to limit this invention to the precise details of construction and arrangement herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of the invention as defined in the appended claims.

Having thus described my invention, I claim:

1. A chain comprising links having elongated apertures, the outer walls of the apertures of the alternate links being substantially semicylindriform and polygonal respectively, and a pintle operative to connect said links and having elongated heads providing flanges arranged to be inserted through said apertures and to be turned transversely thereto, and having a polygonal portion arranged to be engaged with a portion of like contour in said links, to prevent the displacement of said pintle when in operative position.

2. A sprocket chain comprising alternate

single and double links having elongated apertures, the outer walls of the apertures of the adjacent links being substantially semicylindriform and rectangular respectively, and a pintle operative to connect said links and having elongated heads providing overhanging flanges which are insertible through said apertures when alined, and arranged to be turned transverse thereto, to prevent the accidental displacement of said pintle when in operative position, and having a rectangular portion operative to engage the rectangular wall in said links to prevent its rotation.

3. A sprocket chain comprising link having elongated apertures connected by links having similarly elongated aperture comprising a substantially semicylindrical portion and a polygonal portion, and a pintle having elongated heads providing overhanging flanges arranged to be inserted through said apertures when in registry and having a polygonal portion rotatable within a cylindrical portion of said aperture and arranged to be slipped into engagement with the walls of the polygonal portion of said aperture, with the major axis of said heads disposed transverse to the major axis of said apertures, said flanges preventing the lateral displacement of said pintle, and the polygonal portion preventing its rotation.

4. A sprocket chain comprising center links having elongated apertures, side links connecting said center links and having elongated apertures, one end of which substantially semicircular and the other end polygonal, and a pintle having elongated heads providing overhanging flanges insertible through said apertures when alined, and having polygonal portions rotatable in the semicircular portion of the apertures to shift said heads transverse to said apertures, said polygonal portions being engageable with the walls of the polygonal portions of said apertures, to prevent rotation of said pintle.

5. A sprocket chain comprising links having elongated apertures, links connecting the first mentioned links and having elongated apertures, one end of which is larger than the other end and a pintle having elongated heads providing overhanging flanges which are insertible through said apertures when alined, and having squared portions which are rotatable in the larger portions of said apertures to permit turning of said heads transverse to said apertures, thus preventing the lateral displacement of said pintle, and said squared portions being engageable with the walls of the smaller portion of said apertures to prevent the rotation of said pintle.

6. A sprocket chain comprising links provided with apertures elongated in the

resection of their length, and a pintle connecting said links and comprising elongated heads providing overhanging flanges which are insertible through said apertures when alined, and having a squared portion engageable with the walls of the outer end of the aperture in one of said links, to prevent its rotation, the alinement of said apertures being effected by relative movement of said links in the direction of their length.

7. A sprocket chain comprising links provided with elongated apertures, links connecting the first mentioned links and having apertures which are larger at one end than at the other, and a pintle comprising elongated heads providing overhanging flanges substantially conforming to the apertures in the first mentioned links, and insertible through the apertures of the adjacent links when alined, and a squared portion rotatable in the larger end of said apertures to permit the heads of said pintles to be turned transverse to said apertures, and to engage the overhanging flanges of said heads with said links, but coöperative with the smaller end of said apertures to prevent the rotation of said pintles.

8. A sprocket chain comprising links provided with elongated apertures, the outer end walls of the apertures of the alternate links being substantially semicylindrical and rectangular, respectively, and a pintle connecting said links, comprising a cylindrical portion and a rectangular portion respectively fitted to the outer walls of the apertures of like contour, and having elongated heads providing overhanging flanges which are insertible through said apertures when alined, and which may be turned transverse thereto, and prevented from rotation

by engagement with the rectangular aperture.

9. A sprocket chain comprising alternately disposed single and double links, said single links being provided with elongated apertures having substantially semicylindrical ends, and the double links being provided with apertures having one end substantially cylindrical and the other end polygonal, and pintles for connecting said links and comprising a cylindrical portion, polygonal portions and elongated heads, providing overhanging flanges, said pintles being insertible through said apertures when alined and rotatable within the semicylindrical ends of said apertures, said flanges being operative to prevent accidental displacement of said pintles, and said polygonal portions being operative to prevent rotation of said pintles when in operative position.

10. A sprocket chain comprising links provided with apertures elongated in the direction of their length, and a pintle connecting said links and having elongated overhanging flanges which are insertible through said apertures when in registry and having a polygonal portion engageable with the walls of the outer end of the apertures in one of said links, to prevent its rotation, the registry of said apertures being effected by opposite movement of said links with respect to said pintle in the direction of their length.

In witness whereof, I have hereunto set my hand this 7th day of June, A. D. 1911.

JOSEPH L. LEE.

Witnesses:

JOHN MATTHEWS,
C. E. BARNIGHT.