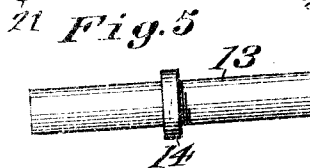
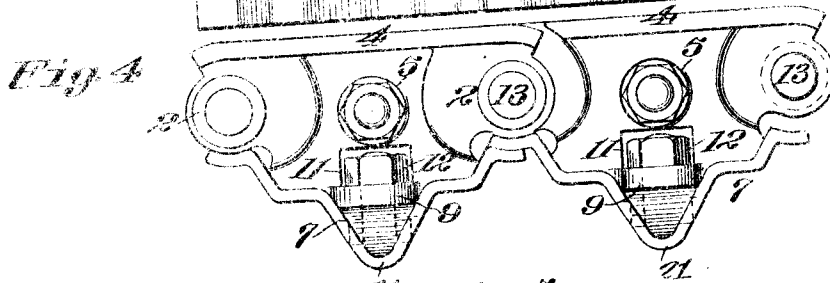
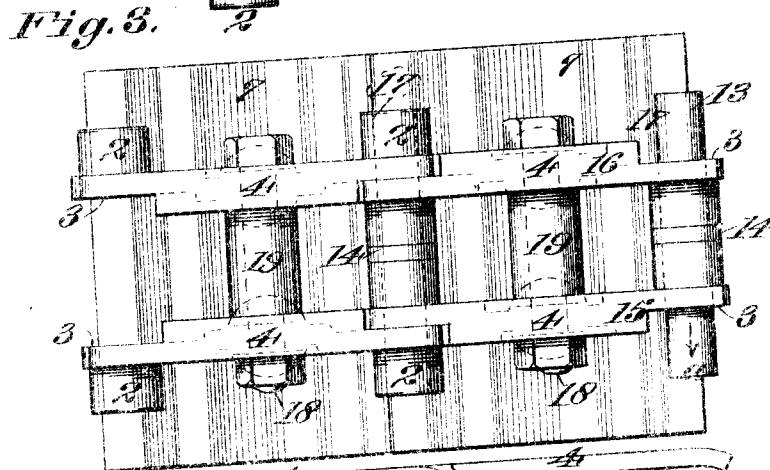
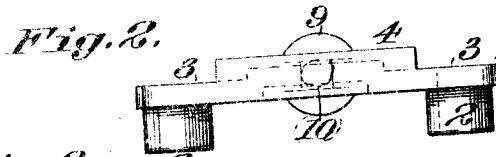
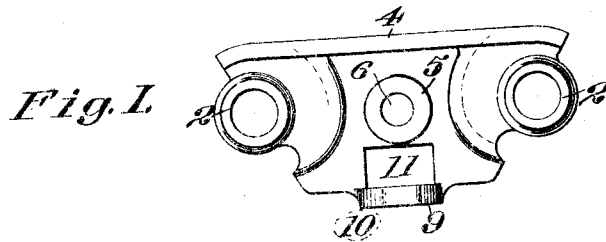


1,194,635.

A. C. JOHNSON.  
CHAIN.  
APPLICATION FILED MAY 25, 1915.

Patented Aug. 15, 1916.



WITNESSES:  
*Charles Rickles*  
*Thos. Eastberg*

INVENTOR  
*Alfred C. Johnson.*  
BY *E. H. Strong,*  
ATTORNEY

# UNITED STATES PATENT OFFICE.

ALFRED C. JOHNSON, OF WINTERS, CALIFORNIA.

## CHAIN.

1,194,635.

Specification of Letters Patent. Patented Aug. 15, 1916.

Application filed May 25, 1915. Serial No. 30,327.

*To all whom it may concern:*

Be it known that I, ALFRED C. JOHNSON, a citizen of the United States, residing at Winters, in the county of Yolo and State of California, have invented new and useful Improvements in Chains, of which the following is a specification.

This invention relates to a chain, and particularly to a track chain such as is used on track laying traction engines.

One of the objects of the present invention is to provide a simple, substantial, easily assembled chain of the character described which is so constructed that the links in the chain may be reversed or interchanged to be used on one side or the other.

Another object is to provide links with bearings having a large wearing surface and strength, together with a novel form of pin, and means for retaining same against endwise movement without the use of cotter pins or like means now in common use.

Further objects will hereinafter appear.

The invention consists of the parts and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a side elevation of one of the side plates of which a link is constructed. Fig. 2 is a plan view of Fig. 1. Fig. 3 is a plan view of two assembled links. Fig. 4 is a side elevation of same. Fig. 5 is a detail view of the pin.

In traction engines of the so-called self-laying, endless, flexible track or platform wheel type, it is important that the flexible chain or track be strong, reliable, easily assembled and repaired, and that it be made as light as possible. It is also desirable to construct a chain or track of this character which is capable of presenting an effective traction area and at the same time accommodate itself to the ordinary unevenness of the field or road. The links employed in or forming the present chain are all alike and interchangeable, and each link is built up of two plate-shaped members, which in turn are alike, reversible and interchangeable.

Referring to Figs. 1 and 2, which are side and plan elevations respectively of the side plate, it will be seen that the plate is provided with a bearing extension 2 at each end and that an offset is made at each end of the plate, as indicated at 3, to permit alignment

of a plurality of connected plates, when the chain is assembled, as will hereinafter be described. Formed on the upper edge of the plate is a rail flange 4, and formed on each side of the plate is a circular-shaped boss 5, in which is centrally formed a bolt hole 6. The lower edge of the plate serves as a seat for a grouser or shoe, such as indicated at 7, and the edge of the plate is shaped to fit the inner contour of the shoe.

Each link in the chain consists of two connected side plates, such as indicated in Figs. 1 and 2, and the shoe is secured crosswise of said plates by means of two bolts, one for each plate in the link, and these bolts are secured to the plates in the following manner: The lower edge of each plate is enlarged, as at 9, and provided with a central bolt hole 10 which communicates with an opening 11 formed in each plate. The bolts pass through openings 10 and are secured by nuts 12 placed in openings 11. Each link, comprising two connected side plates, is connected with the succeeding link by a pin 13 on which is formed a centrally disposed collar 14, the function of which will be later described.

The chain as a whole is assembled as follows: A side plate is first placed in the position indicated at 15, in Fig. 3. Two pins 13, such as indicated in Fig. 5, are then inserted through the bearing extensions 2 in the direction of arrow *a* leaving the central collar section 14 flush with the outer face of the bearing extensions 2. A second side plate, such as indicated at 16, is then slipped on the extending ends 17 of the pins 13 and the two side plates are secured together by means of a bolt 18 passed through the bolt holes 6 and a sleeve 19. Said sleeve is held in spaced relation to the bolt as it is supported on the circular-shaped bosses 5; the sleeve being provided for the purpose of maintaining a fixed spaced relation between the plates. The succeeding link is formed or built up in a manner similar to that just described, with the exception that the side plates are reversed in position to bring the bearing extensions 2 exteriorly of the bearing extensions of plates 15 and 16. After the plates are applied, they are secured by means of the bolt 18 and the spacing sleeve. The annular shoulders 14 with which the pins are provided serve as a spacer between the bearing extensions

of the adjoining links. Male and female links are thus built up in successive order with pins 13 and spacing sleeves interposed to connect and space the links apart. After a suitable number of links has been assembled, it is possible to apply the grousers 7. This is accomplished by passing a bolt through the grouser and the bolt hole 10, and nut 12 is then placed in the opening 11 and screwed onto the inner end of the bolt. A second nut is then applied on the outer end of the bolt and the grouser or shoe is in this manner thoroughly secured; two bolts being provided for each shoe. Any suitable form of shoe may be provided in the present instance, but the most preferable form is a shoe that is provided with extensions or corrugations 21 of sufficient height to practically cover the outer nuts which secure the shoes on the links.

A simple, practical, flexible endless traction member for supporting and driving a traction engine is thus formed which is strong, durable and economical to manufacture, being easily assembled or taken apart for repair or other purposes. The provision of the annular shoulder 14 on the bearing pins is of considerable importance as it not only forms a spacer between the outer ends of the side plates, but also serves as a means for intermittently turning the several pins. This turning movement is transmitted when the chain passes over the driving sprocket (not here shown). The face of the collar, when sliding down the side of a tooth, causes the pin to turn. The intermittent turning of the pin constantly changes its position in the bearings 2, thereby preventing any one side of a pin from becoming worn or flattened out at any particular point. The central collar, furthermore, eliminates the need of cotter pins or like devices for securing it against dropping out endwise.

The present form of shoe provided not only elevates the pivotal connections of the chain to a certain extent above the ground surface where they are kept comparatively clean, but the corrugations or projections 21 formed on the face of the shoes all act, particularly in soft or sandy ground, to give a maximum tractive efficiency and at the same time protects the nuts of the securing bolts from injury and wear. The side plates from which the links of the chain are constructed are not only reversible and interchangeable, but may also be used to form either the male or female links of the chain.

The materials and finish of the several parts of the device are such as the experience and judgment of the manufacturer may dictate.

I wish it understood that various changes in form, proportions and minor details of construction may be resorted to within the

scope of the appended claims, and that I do not wish to limit myself to the specific design and construction here shown.

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

1. A chain link consisting of two separable side plates, a bearing member formed on each end of each plate, a pin having a roller centrally formed thereon extending through each set of bearing members, said roller forming a spacer between the bearing members on the opposite plates, and means for securing the plates together.

2. A chain link consisting of two separable side plates, a bearing member formed on each end of each plate, a pin having a roller centrally formed thereon extending through each set of bearing members, said roller forming a spacer between the bearing members on the opposite plates, means for securing the plates together, said means comprising a bolt extending through the side plates of the link, and a spacing sleeve interposed between the plates and surrounding the bolt.

3. A track chain link comprising two separable reversible side plates, a rail flange formed on the upper edge of each plate, a bearing member formed on each end of each plate, a pin having a roller centrally formed thereon extending through each set of bearing members, said roller forming a spacer between the bearing members, and means for securing the plates together.

4. A track chain link comprising two separable side plates, a rail flange formed on the upper edge of each plate, a bearing member formed on each end of each plate, a pin having a roller centrally formed thereon extending through each set of bearing members, said roller forming a spacer between the bearing members, means for securing the plates together, and a corrugated shoe secured to the plates of the link.

5. A track chain link comprising two separable side plates, a rail flange formed on the upper edge of each plate, a bearing member formed on each end of each plate, a pin having a roller centrally formed thereon extending through each set of bearing members, said roller forming a spacer between the bearing members, means for securing the plates together, a shoe mounted crosswise of each set of plates forming a link, a seat formed on the lower edge of each plate to support the shoe, and a bolt extending through the seat on each plate and the shoe to secure the shoe.

6. In a track chain, a freely rotatable bearing pin, and a roller secured on the pin midway of its ends and adapted to effect rotation of the pin when riding a tooth of a supporting sprocket.

7. In a track chain, a link plate having

an offset formed at each end and in alignment with the body of the plate, and a bearing extension on each offset section on the other side.

5 8. In a track chain, a link consisting of two side plates, said plates being reversible to form alternate male and female links, means for securing each pair of side plates together, said means comprising a bolt extending through each set of plates, a sleeve interposed between the plates and surrounding the bolt to maintain a fixed spaced relation between the plates, and means for retaining the sleeve in spaced relation to the bolt.

9. In a track chain, a link plate having an offset formed at each end, a bearing extension on each offset section, a rail flange on the upper edge of the plate between the offset ends of the plate, and a seat on the lower edge of the plate, said seat having a central opening formed therein.

10. The combination with a pair of link plates offset at each end and provided with a bearing extension on each end, of a pin extending through the bearing members, having an enlarged central circular shoulder formed thereon to space the bearing

members apart and to turn the pin, and a bolt centrally disposed between the bearing members, to secure the plates together.

11. In a track chain, a link plate having an opening therethrough, a seat on the lower edge of the plate provided with an opening communicating with the plate opening, a shoe engaged on the seat, and a fastener for the shoe passing through the seat opening and including a nut arranged within the first opening of the plate.

12. In a track chain, a link comprising a pair of side plates provided with openings in their ends, a pin freely rotatable in the plate opening and adapted to couple adjacent links together, said plates being free for separable movement on the pin, a roller fixed on the pin between the side plates, and means spaced from the pin for holding the plates thereon against separation.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALFRED C. JOHNSON.

Witnesses:

L. D. HOBACK,

J. H. McCOLLOUGH, Jr.