(No Model.)

F. W. BARKER & VAN DYKE CRUSER.

SPROCKET CHAIN.

No. 586,956. Patented July 27, 1897.

Fig. 1.

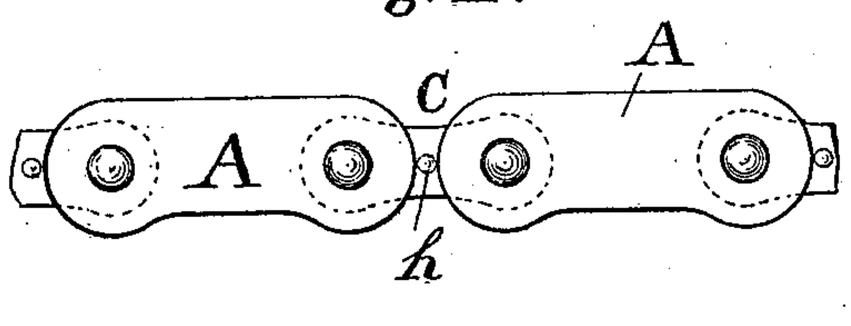


Fig. 2.

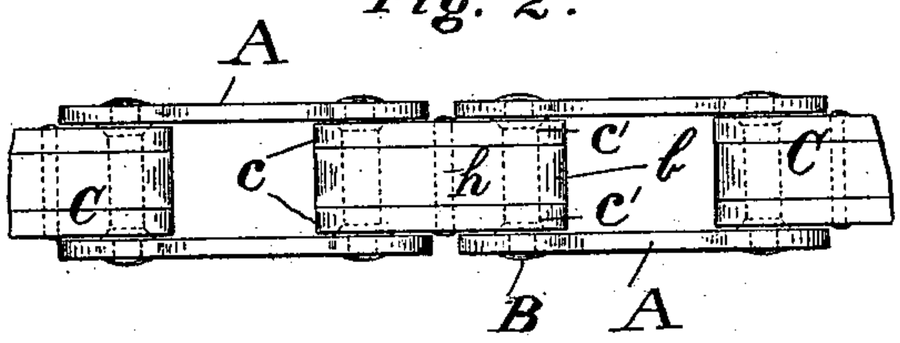


Fig. 3.

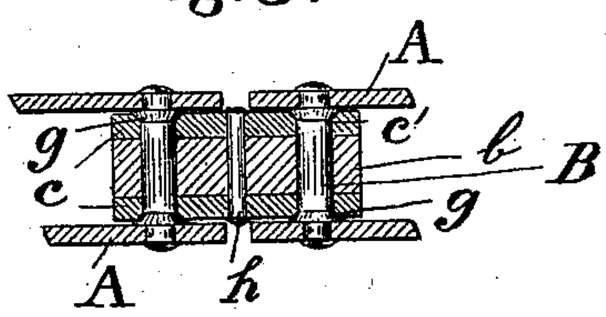


Fig. 4.

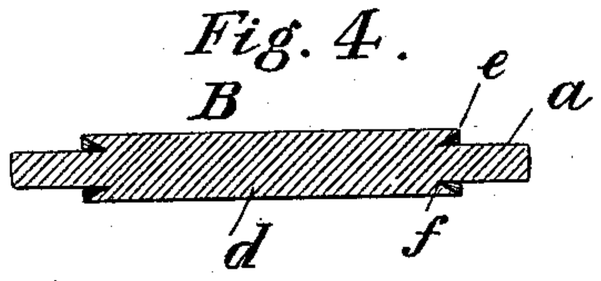


Fig. 6.

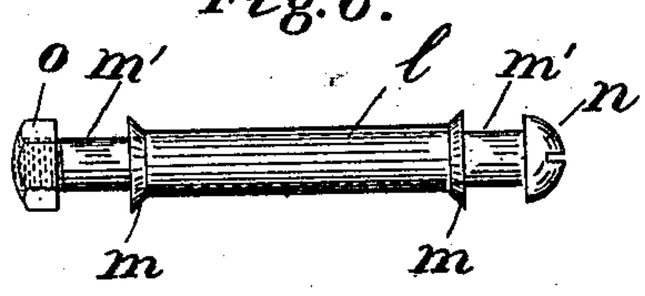
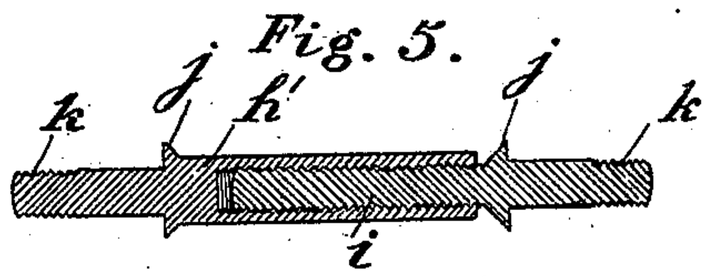


Fig. 5.



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UNITED STATES PATENT OFFICE.

FREDERICK W. BARKER, OF DUNELLEN, NEW JERSEY, AND VAN DYKE CRUSER, OF BROOKLYN, NEW YORK.

SPROCKET-CHAIN.

SPECIFICATION forming part of Letters Patent No. 586,956, dated July 27, 1897.

Application filed September 1, 1896. Serial No. 604,533. (No model.)

To all whom it may concern

Be it known that we, FREDERICK W. BARKER, a subject of the Queen of Great Britain and Ireland, residing at Dunellen, in the county of Middlesex and State of New Jersey, and VAN DYKE CRUSER, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Sprocket-Chains, of which the following is a full, clear, and exact specification.

This invention relates to sprocket-chains, such as are used for propelling bicycles and the like, and its main features may be summarized as follows: The employment and special construction of reinforce side plates upon center blocks of rawhide or other suitable antifriction substance, together with the special construction of pins or rivets to prevent said parts from spreading apart, affording an ample pivotal surface, and also providing against the binding of said compound center blocks against their pivotal surface.

In the drawings accompanying this specification, Figure 1 is a side elevation showing a portion of our improved chain. Fig. 2 is a plan view of Fig. 1. Fig. 3 is a horizontal sectional view of a center block with portions of its connecting side links and with the uniting and pivotal pins, the latter not being in section. Fig. 4 is a detail view of our preferred form of construction of pivotal connecting pin or rivet. Fig. 5 is a longitudinal sectional modified view of a form of chain-end-uniting pin, and Fig. 6 shows a chain-end-uniting rivet.

In said figures, A indicates the usual side links, arranged in pairs and having holes at both ends to receive the narrow ends *a* of pins B, the said ends being riveted to said links.

C indicates our improved compound center blocks, which are pivotally mounted on pins B. These center blocks are composed of the central portion *b*, having pivot-holes at both ends, said portion *b* consisting of rawhide, (preferably compressed,) and the reinforce side plates *c*, having pivot-holes *c'*. In the construction of what is known as a "quarter-inch" chain—viz., one in which the center blocks are a quarter of an inch in thickness—we preferably employ a central portion of rawhide approximating in thickness one-eighth of an inch, and each of the side plates *c* are approximately one-sixteenth of an inch in thickness. This rule is, however, by no means arbitrary and is merely intended here as a guide. The functions of the two materials of which the center block is composed being entirely different, it is necessary to equalize their respective qualities. Thus the rawhide, while capable of a certain amount of strain, is especially included to become the main pivotal bearing and to deaden the sound of the impact of the sprocket-teeth, whereas the reinforce side plates *c* are intended to receive the pulling strain upon the chain and also to protect the rawhide. The pivot-holes *c'* in plates *c* are countersunk at the outer sides of said plates for a purpose to be described hereinafter.

We have found in the course of extensive experimenting that the result of the sprocket-teeth striking upon our aforesaid compound center block is to cause the central rawhide portion to expand laterally somewhat, thereby forcing the reinforce-plates against the side links, in consequence of which the chain has become stiff and unworkable. We now avoid this difficulty in the following manner: We employ pins, as B, having the thick central portion *d* and narrow ends *a*. At the shoulder *e* we form an inclined depression or recess *f*, and when the compound center blocks C are mounted upon portion *d* of the pins the recessed shoulder *e f* is turned over by means of a hollow punch or otherwise, forming a burr or collar *g*, which is adapted to fit pivotally within the countersunk portion of pivot-hole *c'* in plates *c*. In this manner the compound center blocks are prevented from binding against the side links, and at the same time their frictional bearing is limited to the contact between collars *g* and countersunk holes *c'*. The parts *b* and *c* may also be united by a pin *h*, passed therethrough and riveted at both its ends at the outer side of plates *c*, and said rivet may be used alone or in addition to the antispreading devices herein referred to.

In Fig. 5 will be seen a special form of connecting-pin used in place of a rivet for join-

ing the chain. Said pin consists of the hollow interiorly-threaded portion h' and the solid threaded portion i, said portions h' and i being adapted to screw together and to form the pivot for the center block C. Each of said portions h' and i has a collar j to fit pivotally within the countersunk hole c', and said portions are provided each with a screw end k to receive a nut.

As will be clearly seen, the part between the shoulders j serves as the pivotal surface for the center block C, and the portions k', between shoulders j and thread k, which may have a squared or rounded surface, support the side link A.

Fig. 6 shows a modified form of chain-uniting pin, wherein l indicates a tubular piece having the shoulders m, which are formed at each end after said piece l has been passed through the center block C, the said shoulders being turned down by a punch or otherwise to form a bearing in the holes c' of plates c where countersunk. m' indicates a bolt passed through said tubular piece l and having a screw-head n at one end and a thread with nut o at its other end. The links A are mounted upon said bolt m' at the points between the screw-head n and shoulder m and between the nut o and shoulder m.

While we have described special means of confining the rawhide and metal parts of our compound center block, we are aware that various other means may be employed for the same purpose, and we therefore do not wish to be limited to the exact construction shown, but desire to cover, broadly, all modifications which would naturally come within the scope and spirit of our invention.

Having now described our invention, we declare that what we claim is—

1. In a sprocket-chain, in combination, pairs of side links arranged in parallel lines, center blocks arranged end to end in a single line between said side links, and forming spaces to receive sprocket-teeth, said center blocks consisting each of a central portion of rawhide, reinforce metallic side plates, together with pins riveted to said side links and being passed through pivotal holes in the center blocks, the holes in the reinforce-plates being countersunk, and the pins having collars to pivotally fit therein, substantially as and for the purpose set forth.

2. A sprocket-chain including pairs of side links arranged end to end, and center blocks uniting adjacent pairs of side links, said center blocks each consisting of a central portion of rawhide having reinforce metallic side plates, and means preventing said center blocks from spreading laterally by the impact of sprocket-teeth, substantially as set forth.

3. In a sprocket-chain, a pair of side links, and a compound center block between said links, said center block consisting of an inner portion of rawhide and side plates of metal, there being holes through said side links, rawhide, and side plates, the holes in said side plates being countersunk, and a pin connecting said parts together through said holes, said pin having collars which fit pivotally in the countersunk holes in said side plates, and said pin being secured to said side links, substantially as set forth.

4. A sprocket-chain-uniting pin, consisting of a hollow portion serving as a pivotal bearing for a center block, an annular shoulder at both ends of said hollow portion to locate the center block, and bearings extending outwardly from said annular shoulders to support the usual side links, together with means for securing said side links upon their bearings, substantially as set forth.

5. A sprocket-chain-uniting pin consisting of a hollow piece having an interior screw-thread, and a solid threaded portion, said portions arranged to screw together to form a pivotal bearing, and a collar upon each of said portions, near their outer ends, together with a screw-thread upon each of said portions, to receive nuts, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 14th day of August, 1896.

F. W. BARKER.
V. D. CRUSER.

Witnesses:
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JAMES B. MARLOW.