

No. 607,752.

Patented July 19, 1898.

L. C. KRUMMEL.
BICYCLE CHAIN.

(Application filed June 29, 1896. Renewed Apr. 11, 1898.)

(No Model.)

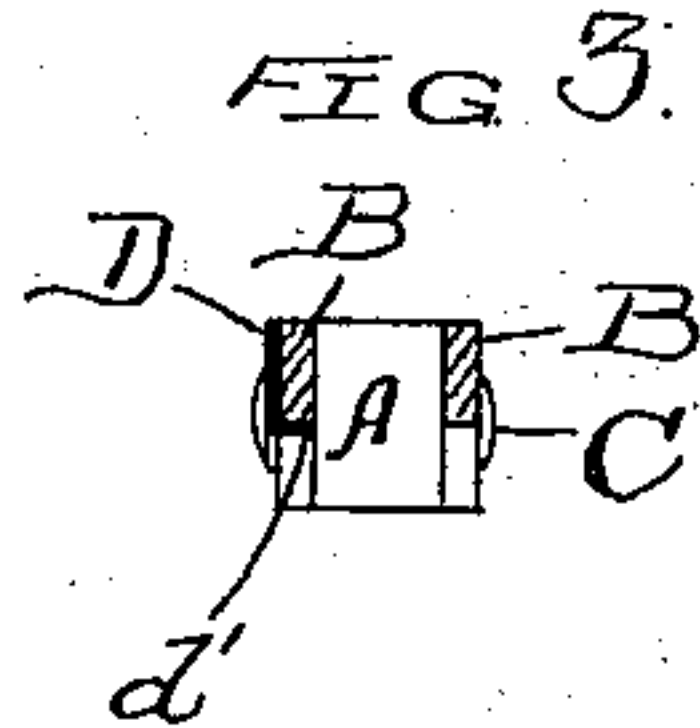
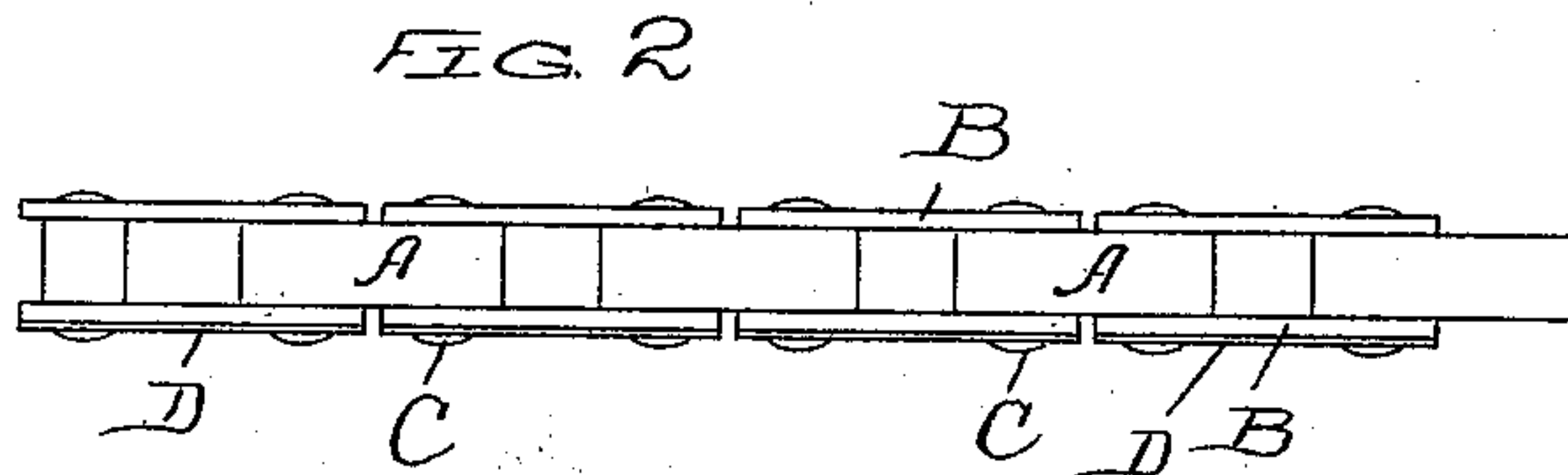
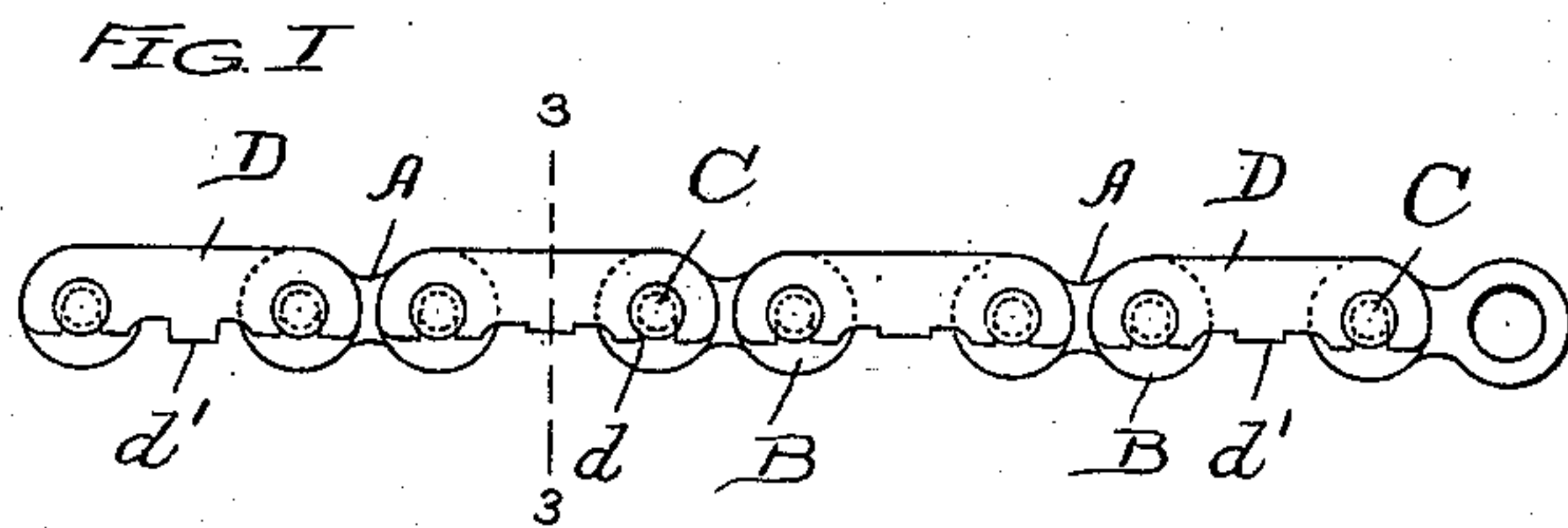
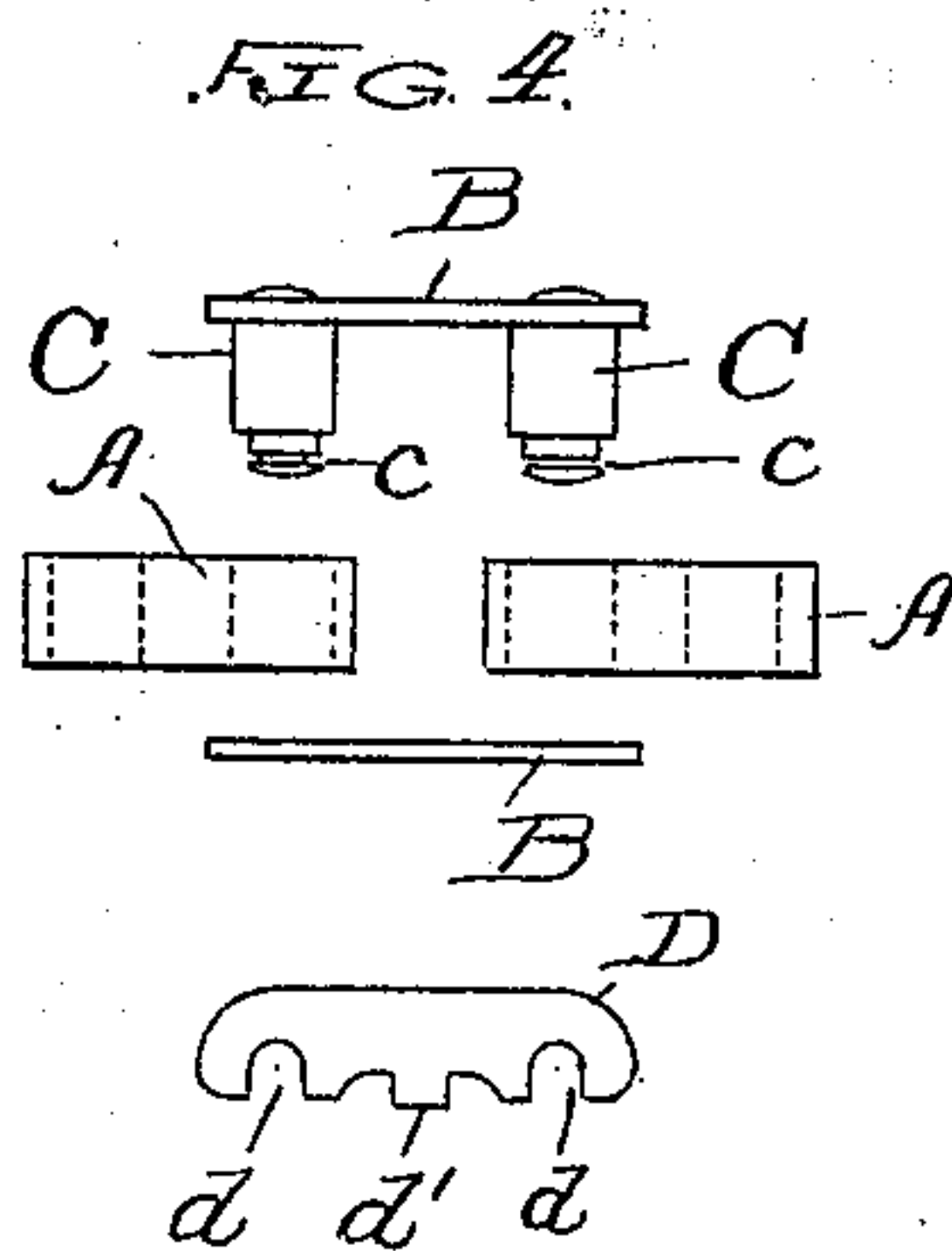
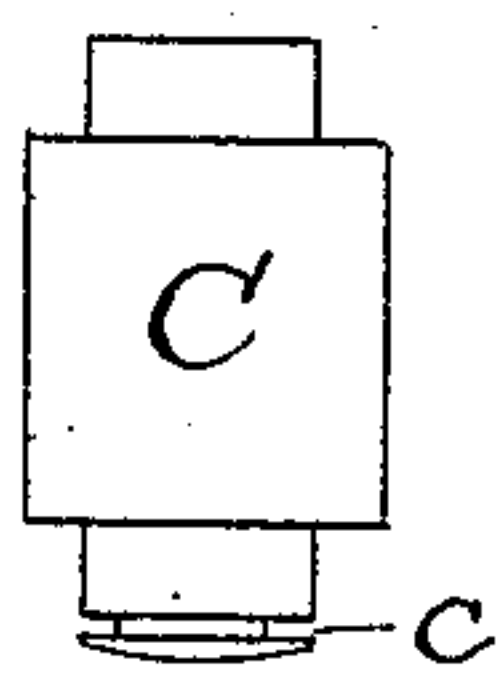


FIG. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

LOUIS C. KRUMMEL, OF CHICAGO, ILLINOIS.

BICYCLE-CHAIN.

SPECIFICATION forming part of Letters Patent No. 607,752, dated July 19, 1898.

Application filed June 29, 1896. Renewed April 11, 1898. Serial No. 677,245. (No model.)

To all whom it may concern:

Be it known that I, LOUIS C. KRUMMEL, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Bicycle-Chains, of which the following is a specification.

This invention is intended to obviate a serious source of trouble and annoyance to bicycle-riders. When a breakage of the chain occurs, the rider is rarely within easy distance of a repair-shop and usually does not carry the means whereby he may repair the chain himself.

By my invention I so construct the chain that any one may take it apart, remove any broken links and replace them with new ones, and reconnect the chain in a few minutes time and without the employment of either strength or special skill.

The invention relates to the special features of the chain whereby the rider is enabled to thus mend the broken chain easily and quickly; and it consists of a chain having a removable plate upon one side and provided with open sockets, whereby it may sit down over and enter grooves in the ends of the rivets, these plates acting as retainers to keep the side links upon the rivets and to hold the rivets themselves in position. The retaining-plates are also provided with a lip or tongue, which may be bent down over the side link with which it is used and serve to hold it against displacement or loss.

The nature of my invention will be more fully understood from the accompanying drawings, in which—

Figure 1 is a side elevation of my improved chain. Fig. 2 is a plan view thereof. Fig. 3 is a section on the line 3 3 of Fig. 1. Fig. 4 shows the parts of the chain detached, but ready to be put together; and Fig. 5 shows one of the rivets detached and enlarged.

In said drawings, A A represent the blocks, B B the side links of the chain, and C C are the rivets for securing them together. The rivets may be headed in the usual manner at one end, and at the other end instead of the head I provide my removable fastening, which consists of a thin plate of metal D, corresponding in length to the side links and hav-

ing two sockets *d*, open at the bottom and adapted to be positioned over the rivets and to engage the grooves *c* in the latter. These plates are of course placed outside of the side links, and when they engage the rivets they act not only to hold the side links in place, but also to prevent the rivets from slipping out. Upon the under edge of the retaining or fastening plate D, I form one or more tongues *d'*, which after the parts are assembled may be bent under the side link, and thus be made to hold the plate against loss or displacement. This tongue is shown thus bent under the side link in Fig. 3 and also in the case of the three right-hand plates in Fig. 1. It will be understood that the rivets lock the plate D against either endwise or downward movement, while the tongues *d'* lock them against movement upwardly.

With my improved chain when a break or injury of the chain occurs the user has only to bend up the tongue *d* of one or two of the plates D to enable him to remove the necessary retaining plate or plates and then to detach the broken or injured link. The chain may be disconnected and removed from the machine in a similar manner.

I prefer that the rivets be rigidly secured in one of the side links, so they will be prevented from turning, and they are so secured at the headed end in the construction shown; but if it is so desired they may be grooved at both ends and held in place by retaining-plates upon both sides. The construction above set forth may be considerably varied without departing from the spirit of the invention.

The rivets shown are of two diameters, the central portion, which enters the solid link, being of large diameter, while the ends, which pass through the side links, are reduced. The shoulders thus formed upon the rivets are adapted, by making the large-diameter portion slightly longer than the width of the solid links, to keep the side links out of contact with the solid links, and thus prevent friction between them and render the chain more flexible than it would be if such friction were present. This feature is not shown in the drawings, because the shoulders of the rivets need to stand beyond the sides of the solid

links so very slightly as to be incapable of practical illustration.

I claim—

5 In a drive-chain, the combination with a link removable from its supporting transverse pins or rivets C C, such pins having grooves c, of a retaining-plate made of soft metal and located outside said links and ex-

tending over and entering the grooves in the pins, and provided with a tongue which may be bent under said link after the plate is positioned, substantially as specified.

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Witnesses:

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