

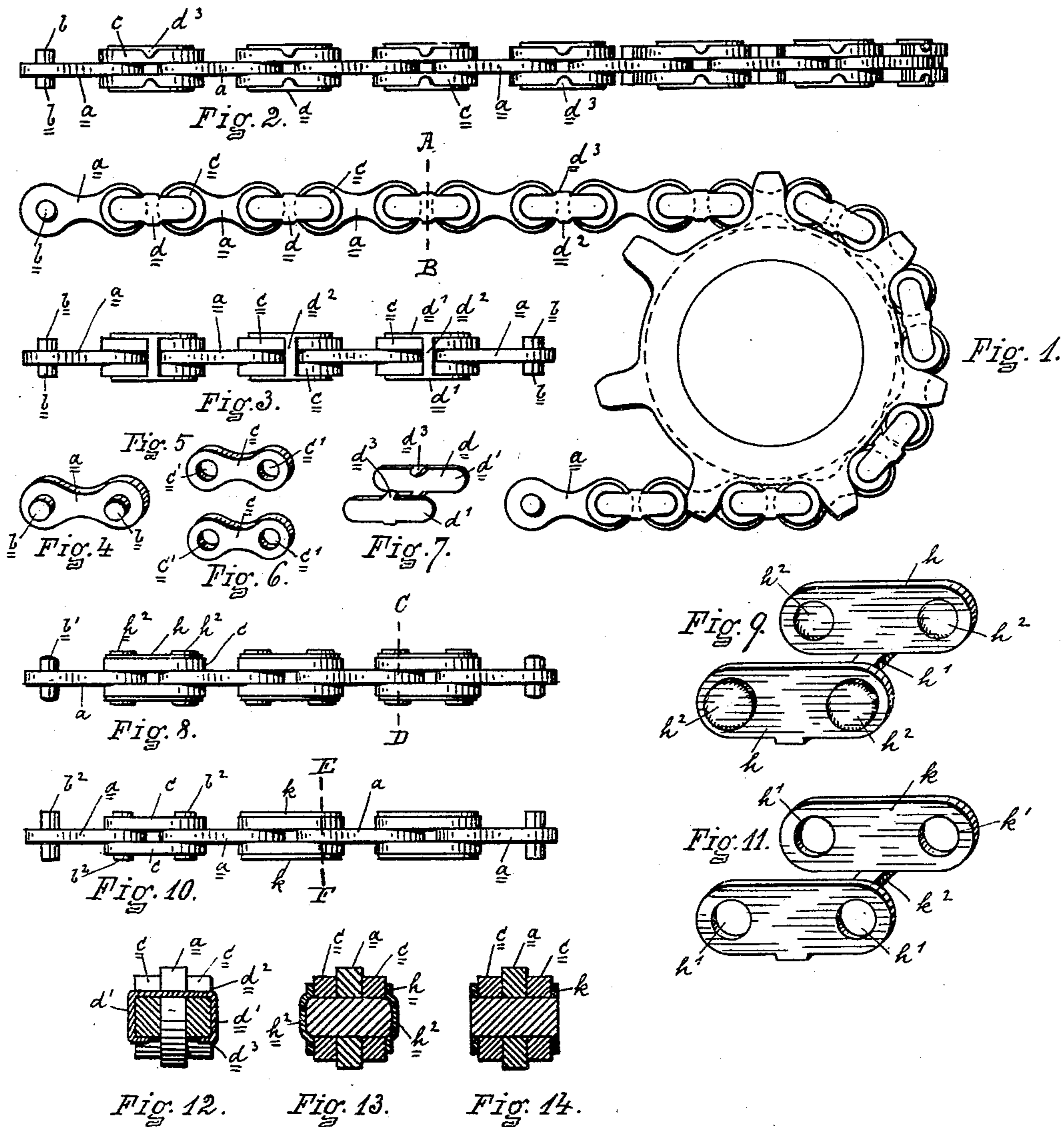
No. 630,978.

Patented Aug. 15, 1899.

E. D. FAKE.
CHAIN.

(Application filed Nov. 16, 1898.)

(No Model.)



WITNESSES
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CHAIN.

SPECIFICATION forming part of Letters Patent No. 630,978, dated August 15, 1899.

Application filed November 16, 1898. Serial No. 696,610. (No model.)

To all whom it may concern:

Be it known that I, EDWARD D. FAKE, of Ilion, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Chains; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

The main object of my invention is to provide a chain more particularly intended for bicycles, which may be readily and conveniently taken apart or put together at any point for the purpose of removing or introducing links or otherwise, and which is simple and strong in construction and free from objectionable features.

Figure 1 shows a side view of a portion of chain of my construction in connection with a sprocket-pinion. Fig. 2 shows an inner face view of a portion of the chain. Fig. 3 shows an outside or top view of a portion of the chain. Fig. 4 shows in perspective one of the middle links employed in the chain, including the pivotal or connecting pins. Figs. 5 and 6 are perspective views of a pair of side links employed in the chain. Fig. 7 shows in perspective the clamp or holder employed. Fig. 8 is a top view of a modified form of construction of chain. Fig. 9 shows, on an enlarged scale in perspective, the clamp employed in the modified form of construction shown by Fig. 8. Fig. 10 shows a top view of another modified form of construction of chain. Fig. 11 shows, on an enlarged scale in perspective, the clamp employed in the modified form of construction shown by Fig. 10. Fig. 12 is an enlarged cross-section taken on line A B of Fig. 1. Fig. 13 is an enlarged cross-section taken on line C D of Fig. 8. Fig. 14 is an enlarged cross-section taken on line E F of Fig. 10.

Referring to the reference characters in a more particular description of the chain, *a a* indicate the middle links of the chain, which are flat and preferably provided with enlarged and rounded ends, as shown, and have rigidly secured in their ends the cross pins or pivots *b*

b. Although it is not essential that these pins should be rigidly secured in the ends of the links, it is much preferable that they should be so secured. The links *a a* are connected by pairs of links *c c*, which are located on either side of the links *a a* and are provided with openings *c' c'* for receiving the projecting portions of the pins or pivots *b*. The links *c* are preferably rounded at their ends and reduced at the middle portion, as shown, and made flat to fit against the sides of the links *a a*. It will be observed that the ends of the cross pins or pivots *b* are not headed, so that the side connecting-links *c* can be readily placed on and removed from the pivots. These links are held in place in pairs by the clamp or holder *d*. The clamp or holder *d* consists of two plate-like ends *d' d'*, of thin sheet metal, connected by a spring-strap *d²* and provided with inwardly-turned projections or ears *d³*. After the side connecting-links *c c* are placed in position the clamp or holder is then applied, so as to take the position shown in the drawings. In placing or removing the clamp or holder *d* the spring-strap *d²* is sprung out of normal shape, so as to allow the ears *d³* to pass down by the sides of the link until they are enabled to take position under the under side of the link and secure the clamp in position on the chain. In this position the clamp holds the side links in position on the links *a* and completes the chain. The plate-like ends *d'* cover the ends of the pins or pivots *b*, and in case pins not rigidly secured in the link *a* are employed to prevent their displacement. The plates *d'* also serve to conceal the ends of the pivots whether loose or fixed in the links *a* and give a finished appearance to the chain. It is evident, however, that the projecting ends of the plates *d'* may be omitted and the clamp employed not having the projecting ends, particularly when the pivots or pins *b* are rigidly secured in the links *a*.

To remove the clamp or holder *d*, a knife-blade or screw-driver may be wedged between the sides of the link and the plates *d'* until the clamp is sprung sufficiently to disengage the ears *d³* from the under side of the link, when the clamp may be removed and the side links removed. The clamp may be removed

without any tools whatever, but not as conveniently as with a knife-blade or screw-driver or some similar tool. It is obvious that the chain can thus be readily taken apart to
 5 remove links either defective or otherwise and to replace links either to take the place of defective ones or to lengthen the chain or otherwise.

In the modified form of construction shown
 10 in Figs. 8 and 9 the pins or pivots b' are somewhat lengthened, so that their ends will project through the connecting side links c , and the ends of the pivots are preferably rounded. The clamp or holder of this modi-
 15 fied form of construction consists of plate-like ends h , connected by a cross-strap h' and all preferably formed of thin sheet metal tempered so that the strap h' in particular be-
 20 comes a spring. The plates h are provided with indentations h^2 , which receive the projecting ends of the pivots b and inclose them, and the clamp or holder is held in position by snapping over the projecting ends of the pivots b' . I prefer to use this construction with
 25 the strap h' crossing the chain on the inner or under side, whereby better provision is made for withstanding the tendency of the centrifugal force to throw off the clamp as the links pass around the sprocket-pinions. It is
 30 obvious that the previously-described construction can be used in the same manner.

In the form of construction shown in Figs. 10, 11, and 14 the cross pin or pivot b^2 is extended so as to project beyond the outer faces
 35 of the links c when in position, and the clamp or holder k of this form of construction is provided with plate-like ends having openings k' , which receive the projecting ends of the pins or pivots b , whereby the clamp or
 40 holder is secured in position on the chain. The connecting-strap k^2 is of elastic material, whereby it will yield in springing the clamp in placing it on or removing it from the chain. In this form of construction the pivotal pins
 45 b^2 should be secured in links. It is evident that other modifications and changes than

those herein described may be made without departing from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination in a chain of links having fixed, pivotal projections, pairs of removable side links engaging with said projections, and a holder or clamp extending across and securing the links of each pair of side links,
 55 substantially as set forth.

2. The combination in a chain of links having pivotal pins or projections secured therein, pairs of removable side links engaging on said pins or projections, a holder or clamp en-
 60 gaging with both links of each pair for securing said side links in position, and means engaging with the side links for securing the clamp in position, substantially as set forth.

3. The combination in a chain of middle
 65 links, pairs of side links, pivotal pins connecting the middle and side links and a clamp or holder engaging with both side links of each pair for securing the side links on the pivotal pins, substantially as set forth.

4. In a chain, the combination of middle
 70 links straight and smooth pivotal cross-pins, removable side links, and a clamp engaging with and securing the side links upon the projecting portions of said pins, substantially as
 75 set forth.

5. In a chain, the combination of links a , having cross-pins b , b , independent, removable side links c , c , having pivotal openings
 80 c' , c' , and a clamp d having ears d^3 , substantially as set forth.

6. In a chain, middle links having pivotal pins, removable connecting side links and a link-clamp, combined, substantially as set
 85 forth.

In witness whereof I have affixed my signature, in presence of two witnesses, this 9th day of November, 1898.

EDWARD D. FAKE.

Witnesses:

H. N. BRADLEY,
 A. C. SHEPARD.