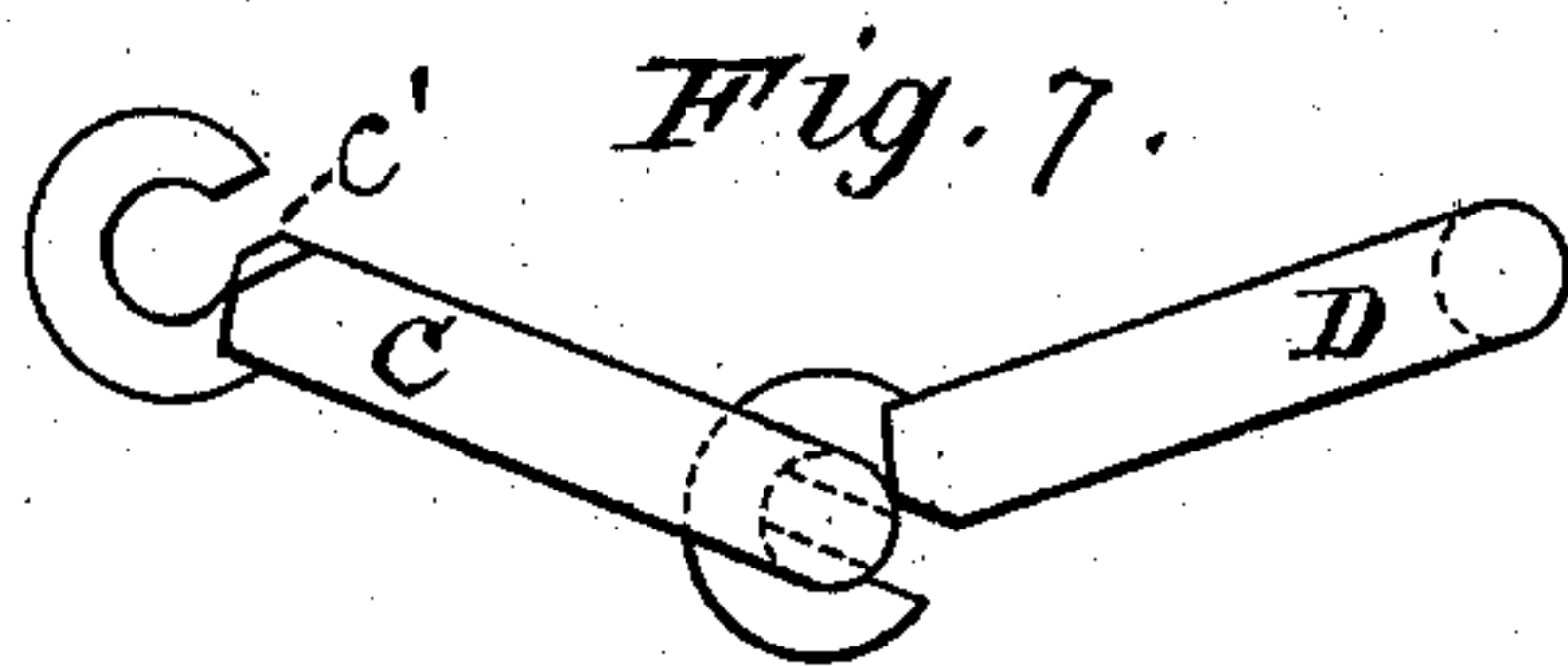
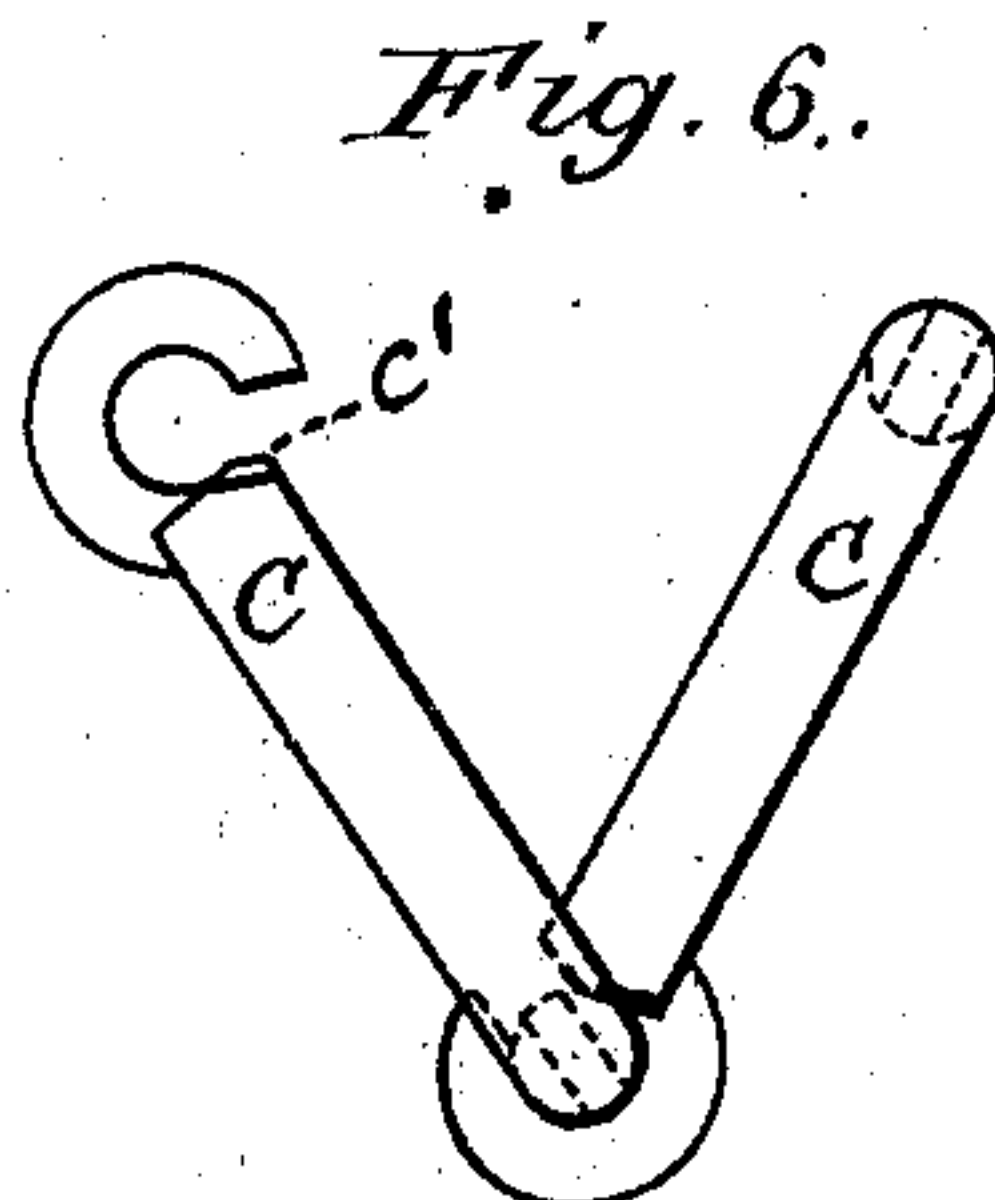
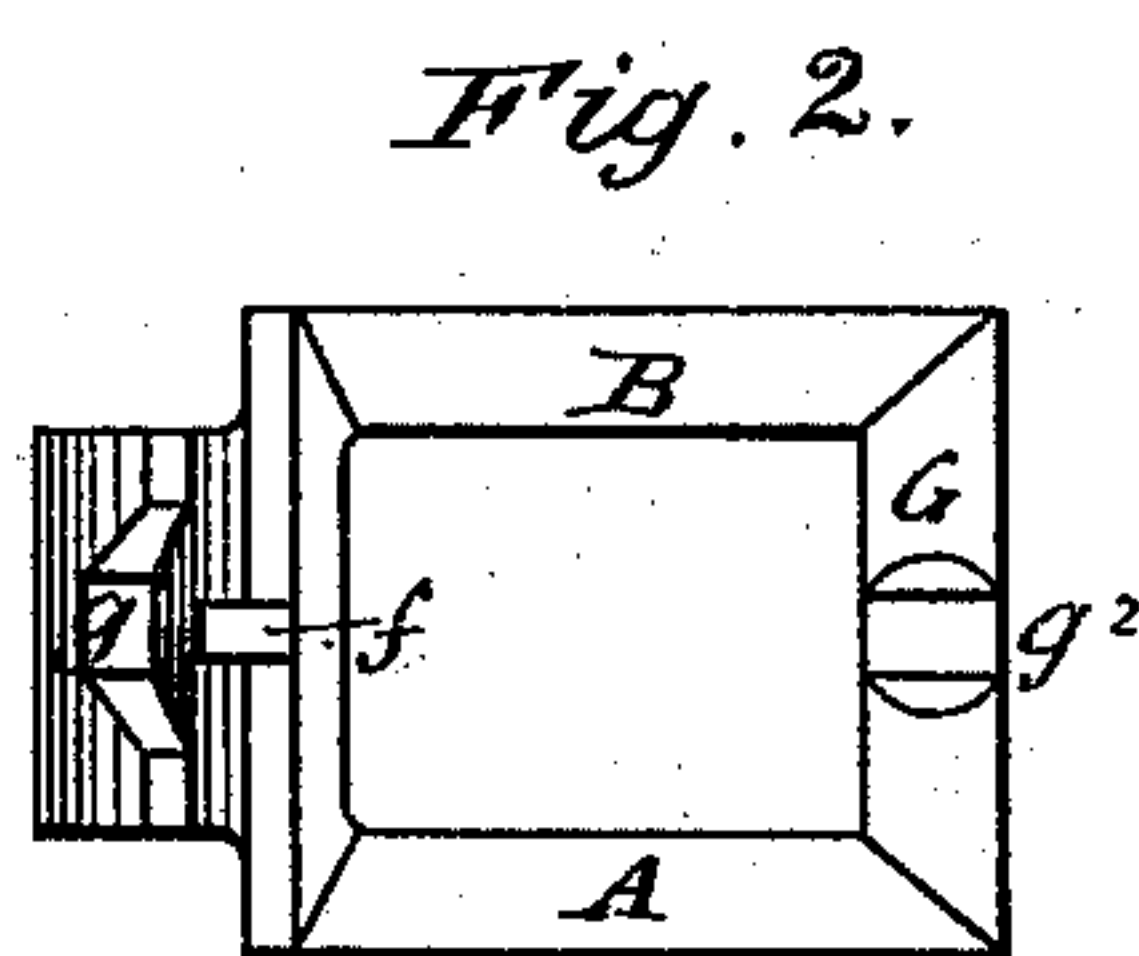
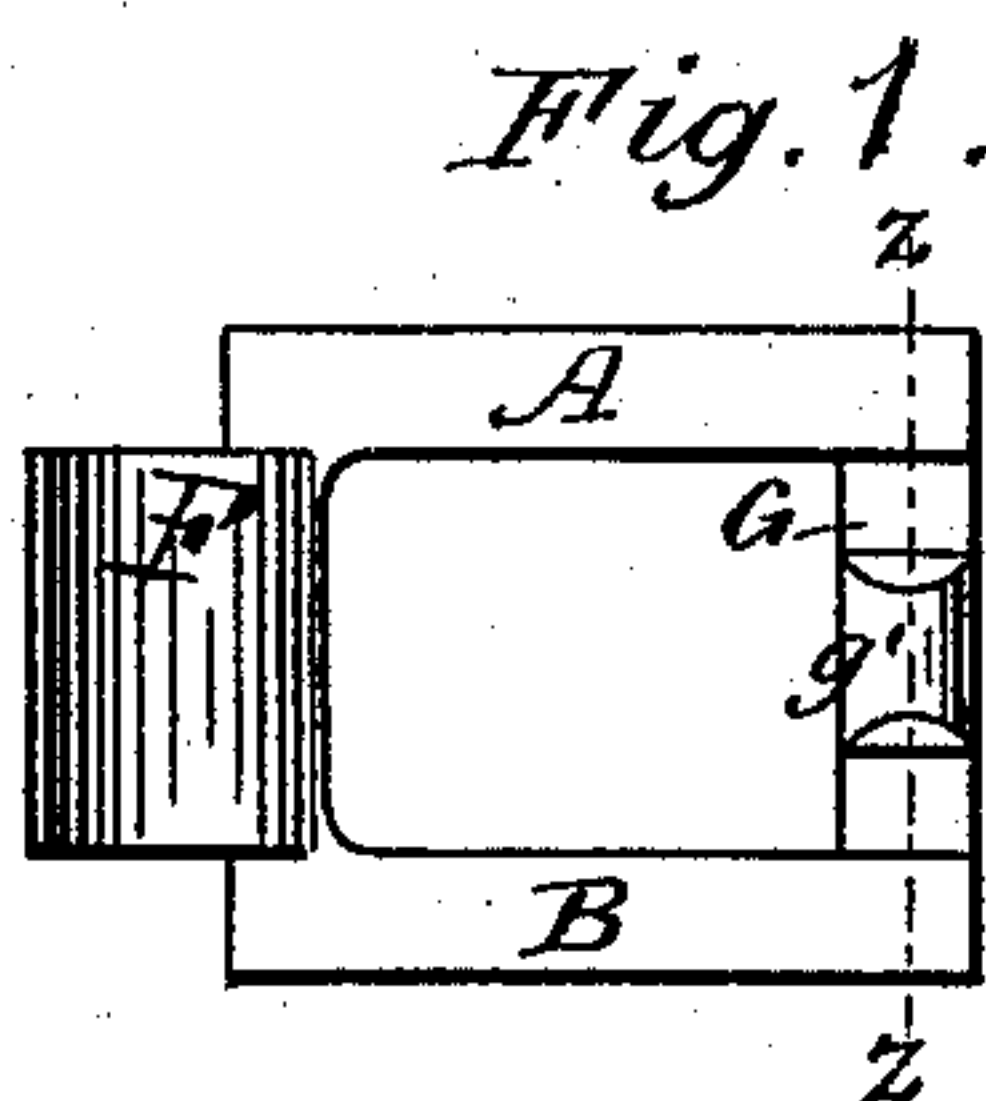
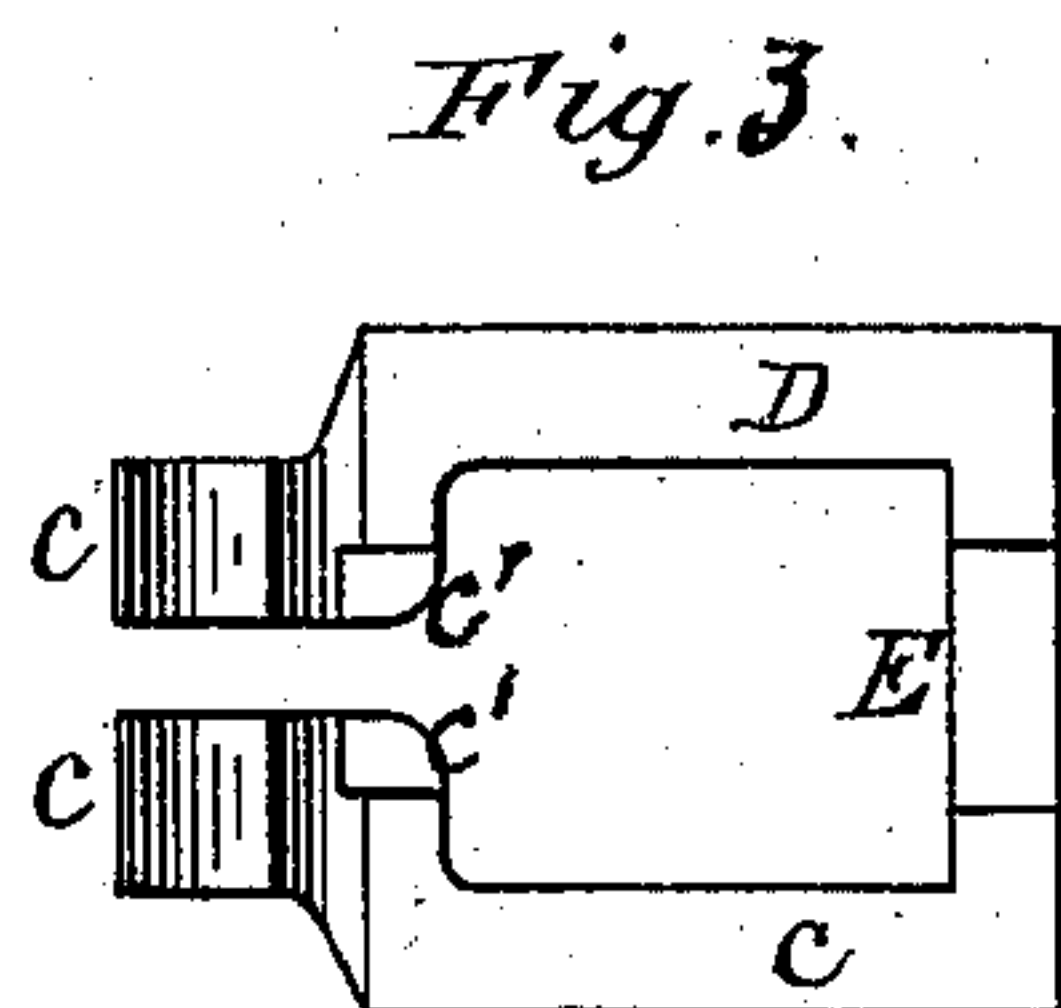
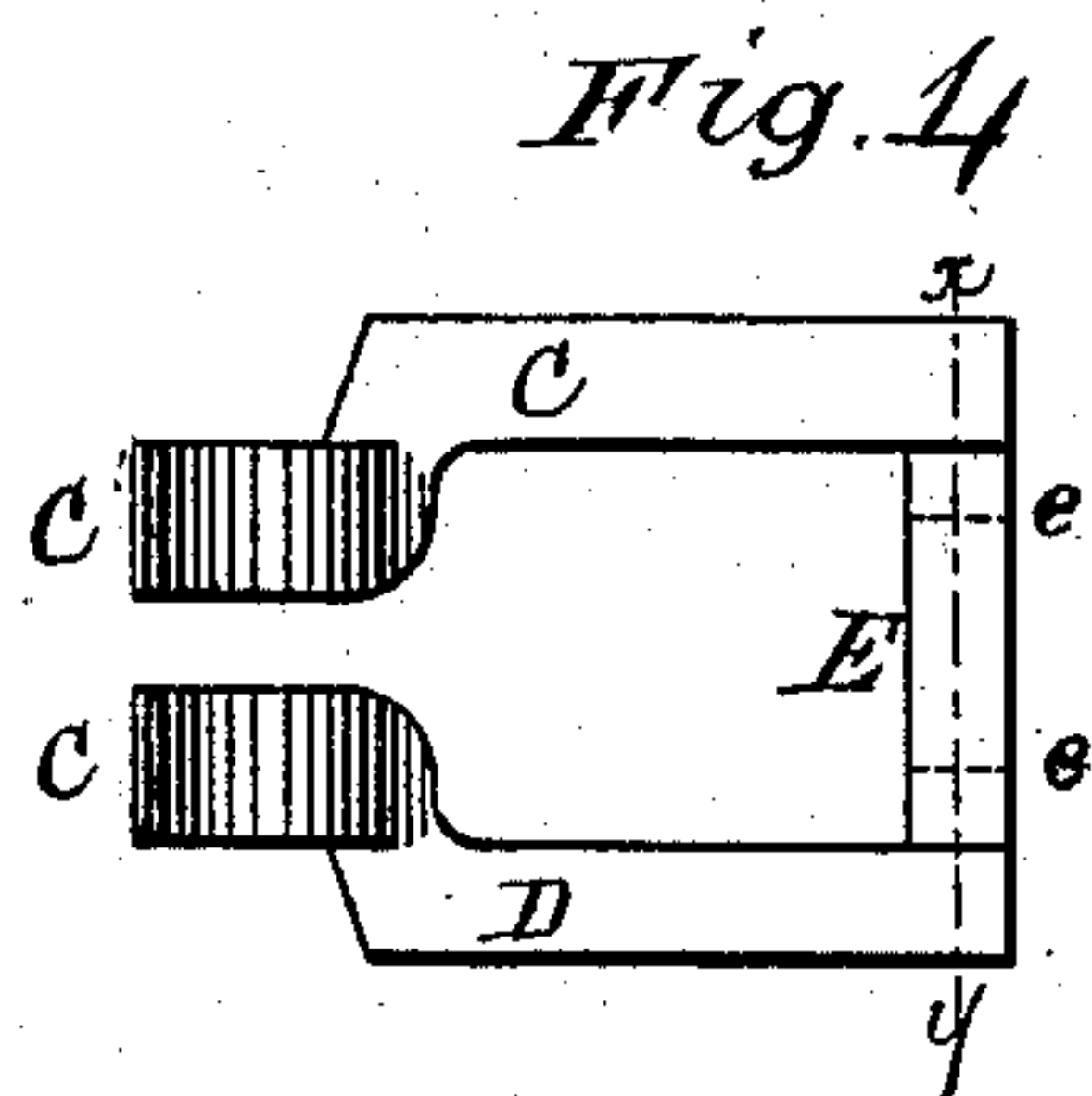


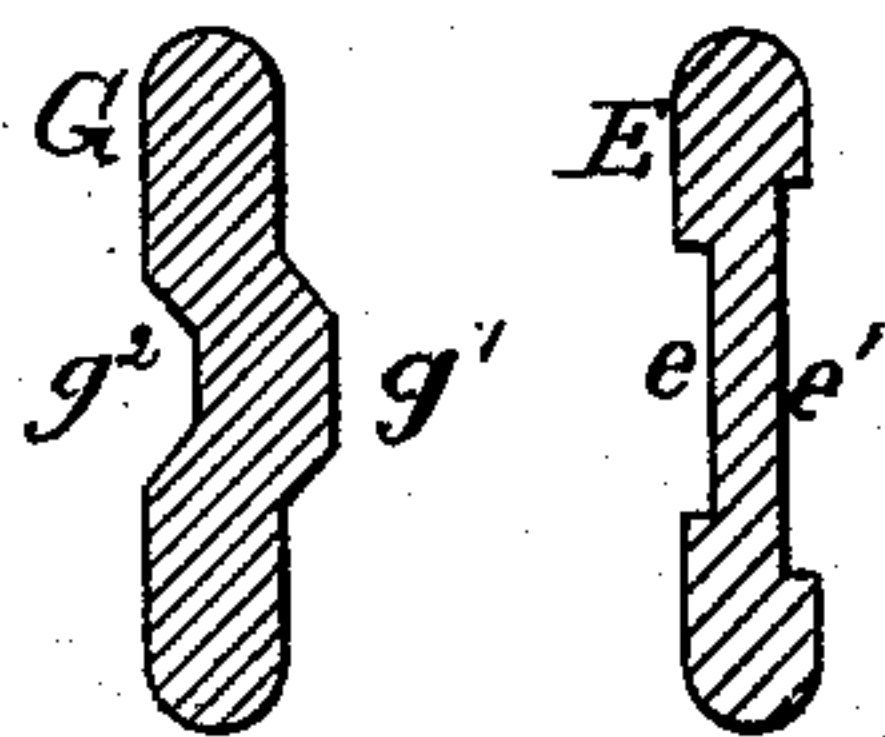
C. W. LEVALLEY.  
Chain-Links.

No. 215,469.

Patented May 20, 1879.



*Fig. 8.* *Fig. 5.*



Witnesses  
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# UNITED STATES PATENT OFFICE.

CHRISTOPHER W. LEVALLEY, OF ST. PAUL, MINNESOTA.

## IMPROVEMENT IN CHAIN-LINKS.

Specification forming part of Letters Patent No. **215,469**, dated May 20, 1879; application filed March 7, 1879.

*To all whom it may concern:*

Be it known that I, CHRISTOPHER W. LEVALLEY, of St. Paul, in the county of Ramsey and State of Minnesota, 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 letters of reference marked thereon, which form a part of this specification.

Figure 1 is a view of one form of link containing my invention. Fig. 2 is a reverse view of the same construction of link. Figs. 3 and 4 are views of another link containing the same invention. Fig. 5 is a section of the rear end of the link, taken on line *xy* of Fig. 4. Figs. 6 and 7 are side views, showing the links in different positions, illustrating the method of attaching and detaching them. Fig. 8 is a section taken on line *zz*, Fig. 1.

The object of this invention is to construct the hooks and those parts of the links which engage with said hooks in such manner that by reversing the position of one link in the series of which a chain is composed a change is made in the amount of slack that is required to connect or disconnect the ends of the chain, as will be fully explained.

Referring now to Figs. 1 and 2, A and B represent, respectively, the side bars of the link. F is a hook attached to one end of the link, the end of this hook being provided with a notch, *g*, (see Fig. 2,) the opposite side of the throat of the hook being provided with a spur, *f*. The bar which forms the opposite end, G, of this link is notched upon one side, as at *g*<sup>2</sup>, Fig. 2, this notch being in such position that the spur *f* of the corresponding link passes through the notch when the links are being attached to each other. Upon the opposite side of the bar G is a projection, *g*<sup>1</sup>, in such position as to pass through the notch *g* when the links are being connected.

In Figs. 3 and 4 the links are constructed of two side bars, C D, each provided at one end with a hook, and the throat of each hook is constructed with a projection, *e*<sup>1</sup>, which makes one part of the throat narrower than the re-

maining portion. The bar E, which forms the opposite end of each of these links, Figs. 3 and 4, is also constructed to correspond with these differences in the widths of the throats of the hooks—that is to say, one side of said bar is cut away or recessed at *e*, the length of the recesses corresponding substantially to the throat formed by the projections *e*<sup>1</sup> on the hook, while the opposite side of the bar is provided with a longer recess, *e*<sup>2</sup>, wide enough to receive the full width of the hooks from outside to outside.

From an examination of these drawings it will be readily understood that when the links are in the chain, as in Fig. 6—that is, with the hooks of both links turned in the same direction—the links can only be detached by moving them into the position shown, that being the only position in which the ends of the hooks can pass through the recesses *e*<sup>2</sup>; whereas, if the links be placed in the position shown in Fig. 7—that is, with the hooks turned in opposite directions—the link can only be detached when the links are placed in the position indicated in that figure, because that is the only position in which the end of the hook will pass the bar E.

From the above description it will be seen that, although there is a considerable difference in the construction of these links, yet they both have the same object in view, and both accomplish that object by substantially the same means—that is to say, by means of an irregular-shaped throat in the hook and an irregular-shaped link which engages with the hook.

These chains are intended more especially for use upon harvesting-machines, where the parts connected by the chains sometimes need to be adjusted, or where, for other reasons, a slight variation in the length of chain is required, while at the same time it is desirable that the links should be readily detached, but should not be liable to be accidentally disconnected.

Now, suppose that under one adjustment of parts the utmost slack that can exist will only allow two links to be deflected, as indicated in Fig. 7, it is apparent that the chain will not be liable to be detached by the ordinary vibration or motion produced by service, but yet



it can be unhooked when it is necessary; but if the slack were such under another adjustment that the links could easily assume nearly the position shown in Fig. 6, and could unhook, as in Fig. 7, they would frequently do so while passing the latter position; but by reversing the position of one hook I necessitate the links being deflected, as in Fig. 6, and thus require all the slack that can be had thereby by insuring that they shall not be accidentally unhooked.

Although the link shown in Figs. 3 and 4 is composed of two side bars, each provided at one end with a hook, yet, so far as this invention is concerned, the space between the two hooks might be filled with metal; hence, when I use the word "throat," I refer to the opening or space between the ends of the hook or hooks and the portion of the link which is in immediate juxtaposition thereto, the form of which, together with the form of the bar which passes through this throat, determines the angle at which the links must be placed before they can be hooked or unhooked.

It will be seen that in both forms of my invention one side of the throat is bounded by a broken line, the break being produced by a central projecting spur or nib, or by a notch or depression. Thus I provide for a much greater change in the relation of the connected pulleys or sprocket-wheels, without danger of

accidental unhooking, while permitting an intentional disconnecting.

It is also apparent that the links illustrated in Figs. 1 and 2 would operate in substantially the same manner were the hooks made without the notch  $g$ , and the bar  $G$  made without the projection  $g^1$ , and that the links shown in the other figures would operate in substantially the same manner as they now do with the bars  $C D$  united by a continuous hook, the throat of which is narrowed at or near its center by the nibs  $c'$ .

What I claim is—

1. A chain-link provided with a hook having a throat one side of which is constructed with a central projection or depression, whereby said link is adapted to engage with a correspondingly-shaped bar, substantially as and for the purpose set forth.

2. A chain-link provided with the notched hook  $F$  and spur  $f$ , whereby said hook is adapted to engage in different positions with a bar,  $G$ , provided with a projection,  $g^1$ , and notch  $g^2$ , substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

CHRISTOPHER W. LEVALLEY.

Witnesses:

NELLY P. LEVALLEY,  
A. P. WILKES.