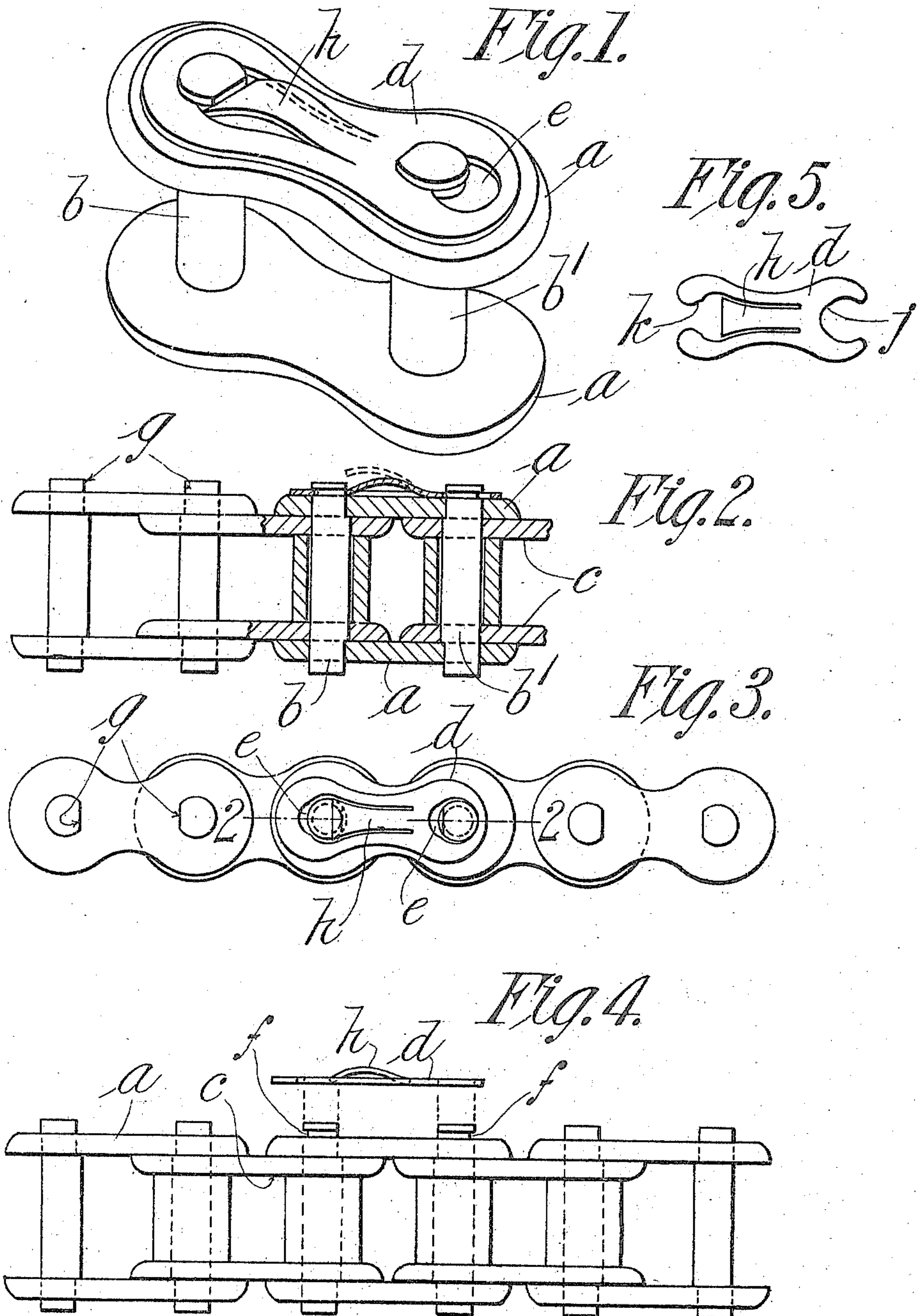


W. J. BELCHER.  
CLIP FOR DRIVE CHAINS.  
APPLICATION FILED OCT. 2, 1909.

951,555.

Patented Mar. 8, 1910.



WITNESSES:

*H. L. Sprague*

*Harry W. Brown*

INVENTOR,

*Warren J. Belcher*

BY

*Chapman & Co.*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

WARREN J. BELCHER, OF HARTFORD, CONNECTICUT, ASSIGNOR TO WHITNEY MANUFACTURING COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION.

## CLIP FOR DRIVE-CHAINS.

951,555.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed October 2, 1909. Serial No. 520,724.

*To all whom it may concern:*

Be it known that I, WARREN J. BELCHER, a citizen of the United States of America, residing at Hartford, in the county of Hartford and State of Connecticut, have invented new and useful Improvements in Clips for Drive-Chains, of which the following is a specification.

This invention relates to drive-chains and particularly to a clip for removably securing the side plate of a drive-chain to the ends of the transversely disposed pivot-pins of the chain.

Various devices have been used to removably secure the side-plates of a chain to the ends of the pivot-pins but so far as applicant is aware they have been found objectionable for various reasons. Generally they have been found difficult to remove, or have been so constructed as not to hold the side-plates in place when the chain was subjected to the vibration resulting from use in many places.

The object of the present invention is fully set forth in the following specification, and the invention is clearly shown in the accompanying drawings, in which,—

Figure 1 is a perspective view of one link of a chain having the clip embodying the invention applied thereto. This figure is on a somewhat larger scale than the other figures of the drawing. Fig. 2 is a plan view of a part of a chain showing a portion thereof in section, the clip being shown in position on the ends of the pins. Fig. 3 is an edge view of the chain showing the clip in position above the ends of the pins. Fig. 4 is a plan view of a chain showing the clip in separated relation to the ends of the pin over which it is fitted, the purpose of this view being to show the relation of the clip and the spring tongue thereof to the ends of the pin in position to be applied thereto. Fig. 5 is a plan view of a modified construction of the clip showing the same made with open ends instead of as in Fig. 1.

In these various drawings, a roller-chain has been shown as having the clip applied thereto, but the latter is applicable to any type of chain which it is desired to put together in such manner as to permit of its separation at one or more places, without the use of tools.

Referring to the drawings, *a* indicates the side plates of a chain, and *b*, *b*<sup>1</sup>, the trans-

versely disposed pivot-pins which extend through these side-plates, and *c* the link-plates through which the pins also extend, the side-plates *a* overlapping the link-plates in the well known manner to pivotally connect said link-plates to constitute a chain.

The pins *b* and *b*<sup>1</sup> are secured to the side-plates *a* in all of the links, except at such points in the chain as it may be desired to disconnect the parts of the latter, and at these last named points these pins will be secured only in the side plate located opposite to that which has the clip *d* applied thereto.

The clip *d*, in which the invention resides, is made of thin spring steel and punched in each end thereof is a hole *e* of an exaggerated key-hole form, the larger diameter of which will pass over the end of the pins *b*, and *b*<sup>1</sup>, and that part of the key-hole having the smaller diameter will fit the diameter of the pins at the bottom of the slot *f* formed therein, as shown particularly in Figs. 2 and 4.

It will be observed that the continuous sides of the pins *b* and *b*<sup>1</sup> are slabbed off, as at *g*, this being primarily for the purpose of preventing the rotation of the pins in the side plates *a*. This feature will be referred to later in connection with a function of the clip. Extending from one of these holes *e* toward the other in the clip is a spring-tongue *h* also preferably punched out of the body of the clip, this being very clearly shown in the drawing. The length of the tongue *h*, after being bent to the curved form shown is such that the distance between its free end and the border of the hole *e* opposite to said free end will be less than the diameter of the end of the pin between those two points, at the bottom of the groove *f*. If now, the clip be applied to the ends of the pins *b* and *b*<sup>1</sup> in the position shown in Fig. 3, with the larger diameter of each of the holes *e* over the ends of the pins, the clip will drop freely over the end of the pin *b*<sup>1</sup> and the end of the spring-tongue *h* will lie on the end of the pin *b*, and by pushing the clip bodily toward the pin *b*<sup>1</sup> while pressing it toward the side-plate, that portion of the holes *e* having the smaller diameter will slide back into engagement with the grooves *f* in the pin, and the spring-tongue *h* will then snap down to a bearing against the slabbed off side of the



pin, and this tongue, when so adjusted, exerts a constant pressure to hold the clip to a seat in said grooves *f*.

It has been stated that the contiguous sides of the pins *b* and *b*<sup>1</sup> are slabbed off or flattened to prevent the rotation of the pins in the side-plates *a*; and because of this characteristic, it permits the clip to be put onto the ends of the pins with the end of the tongue bearing against either of these pins, as may be desired.

It is not essential to the operativeness of the clip that the pins be flattened, as above described, for it will fit the ends of the pins quite as well if the latter are left round as in some types of chains.

Referring to Figs. 1, 2, and 4, it will be seen that when the tongue *h* is bent up to constitute a spring, the point of the tongue is bent down into the hole through the clip to the end that its corners may be protected so that they can not catch on anything and disengage the tongue from contact with the pin when the chain is being used.

It can readily be seen by a glance at Fig. 1, that it would be impossible to disengage the tongue *h* from the head of the pin *b* by any vibration, or by means of anything catching in the tongue since the highest point of the tongue is substantially in the plane of the ends of the pin, said highest point being the top of the curved spring-tongue. To remove the clip, however, it is only necessary to insert the finger nail, or a point of a knife, under the tongue *h* and spring the free end of it up to the level of the top of the pin and move the clip bodily toward the pin *b* until the larger end of the holes *e* comes into registration with the heads of the pin, whereby the clip may be easily removed.

As the clip may be applied so that the spring-tongue will bear against either the pin *b* or *b*<sup>1</sup>, it may always be put onto the chain so that the ends of the tongue which is integral with the clip shall always be the front end, relative to the direction of movement of the chain, and thereby make it impossible for anything to catch on the free end of the tongue, whereby its free end might be disengaged from its bearing against the pin.

Fig. 5 shows a modification of the clip as hereinbefore described, said modification

consisting in making the clip with forked or open ends instead of punching a hole through the body of the clip.

By referring to Fig. 5, it will be seen that when the spring-tongue *h* forces the clip in the direction of one of the pins to move it into locking engagement with the groove *f*, the bottom of the forked part, as *j*, will engage said groove and the part *k* at the other end of the clip will be drawn into the groove *f* of the other pin.

There would be no particular advantage in making the clip as shown in Fig. 5, except that resulting from a saving in stock.

What I claim, is:—

1. The combination with the pivot-pins and side plates of a drive-chain, of a clip to fit over the ends of the pins extending beyond the side-plates, said clip consisting of a sheet metal body having openings therein to receive the ends of the pins, and a spring tongue to bear against one side of one of the pins to move the clip endwise toward the other pin, and into locking engagement with a groove in said pin.

2. The combination with two pins, of a retaining clip to hold a member on said pins, consisting of a sheet metal body with recesses in the ends thereof to fit into transverse grooves in said pins, and a spring-tongue on the clip to bear against the side of one pin to move the clip endwise toward the other pin and into removably locking engagement with the groove in the pin.

3. The combination with two pins, of a retaining clip to hold a member on said pins, said clip consisting of a sheet metal body with recesses in the ends thereof to fit into transverse grooves in said pins, and a spring tongue on the clip to bear against the side of one pin to move the clip endwise toward the other pin and into removably locking engagement with the grooves in both of said pins.

4. A clip of the class described having openings in the extremities thereof and a spring-tongue to bear against an abutment to move and hold the clip in a removably locking engagement with a projection which extends through one of said openings.

WARREN J. BELCHER.

Witnesses:

GEORGE L. MARSH,  
JAS. W. GREEN.