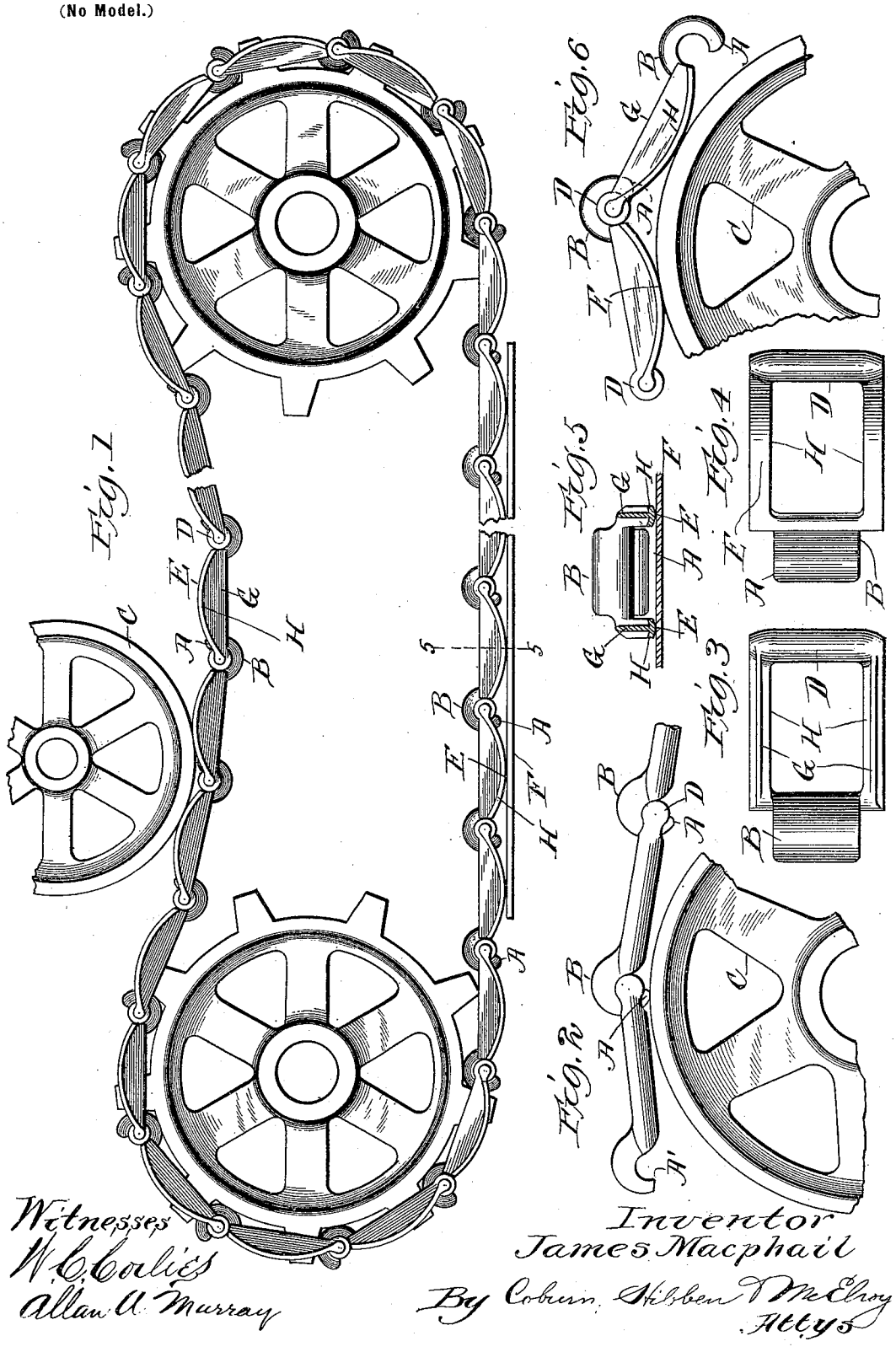
No. 635,790. Patented Oct. 31, 1899.

J. MACPHAIL.

CHAIN.

(Application filed Jan. 9, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

JAMES MACPHAIL, OF BLUE ISLAND, ILLINOIS, ASSIGNOR TO THE PLANO MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS.

CHAIN.

SPECIFICATION forming part of Letters Patent No. 635,790, dated October 31, 1899.

Application filed January 9, 1899. Serial No. 701,592. (No model.)

To all whom it may concern:

Be it known that I, JAMES MACPHAIL, a citizen of the United States, residing at Blue Island, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Chains, of which the following is a specification.

My invention relates to an improved construction for links for sprocket and similar chains; and it consists in making the body of the link of such a shape as will prevent the constant whipping of the chain upon the chain-tightener and also the wearing off of the nose of the hook of the links thereon, together with the tendency to cut into the sheathing sometimes employed in connection with such chains.

Referring to the drawings, in which the same letters of reference are used to designate identical parts in all the views, Figure 1 is a side elevation of a pair of sprocket-wheels connected by a chain embodying my improved construction and also showing the position of the chain-tightener and the sheathing beneath said chain. Fig. 2 is a side elevation showing a portion of the old-style chain as it is applied to a belt-tightener on the under side thereof. Figs. 3 and 4 are bottom and top plan views, respectively, of single links of the chain. Fig. 5 is a cross-section thereof on the line 5 5 of Fig. 1; and Fig. 6 is a view similar to Fig. 2, except that a portion of my improved chain is shown.

In almost all machinery in which sprocket or similar driving chains are employed some form of a chain-tightener is necessary, and it must be applied to the outside of the chain. As will be seen from the ordinary construction of the chain shown in Fig. 2, the nose A of the hook B comes directly in contact with the surface of the antifriction-roller or chain-tightener wheel C, and this causes considerable wear upon the nose in case the ordinary antifriction-roller tightening device is used and still greater wear in case a rigid or non-rotating frictional device is employed. This soon results in wearing off the nose, as seen in the link to the left in Fig. 2 at A'. As is well known, in the construction of this type of detachable links the interior surface of the hook comprises somewhat more than a semicircle, so that the greatest interior diameter of the hook is greater than the width of the opening thereof. In assembling these chains the links are turned to a position where the reduced portion D of the link can slip through the opening in the one abnormal position, while when they are moved to the normal position the links are securely connected. By referring again to the worn-off nose at A' in Fig. 2 it will be seen that when it is thus worn off the interior portion of the hook is reduced to substantially a semicircle, so that there is a possibility of the links parting in their normal position in case any whipping motion or slight disturbance should occur. Consequently with this old style of a hook and body of the chain the links soon become worn out. Another objection to this form of construction arises from the fact that at the time the nose of the hook is in contact with the friction-wheel of the chain-tightener the body of the link is at some distance therefrom; but as soon as it has advanced a little bit the body of the chain is swung down into contact with the friction-wheels, thus producing a continual whipping motion of the chain, which tends to wear out the bearings of the link and break it down, while any wear of these bearings increases the trouble pointed out in connection with the wearing off of the nose, as well as being annoying on account of the noise produced. My invention is designed to remedy both of these defects and at the same time to produce a light yet strong and substantial chain. This result I produce by forming the outer sides of the links with the curved surface E, which projects beyond the plane of the nose A, so that when the chain is running along on the surface of the sheathing F the nose is protected from any material contact therewith. Of course it will be understood that it is not necessary to have so great a clearance between the nose and the sheathing as represented in the drawings, the principle of the device being that the shape of the link shall be sufficient to protect the nose from wearing contact with the sheathing. The same principle and method of operation occurs in connection with the contact of the nose with the antifriction-rollers or chain-tighteners C, and by reference to Figs.

1 and 6 it will be seen that all the wear is completely prevented. This construction, it will be further observed, also prevents the whipping of the chain previously mentioned.

To prevent the reciprocal wear upon the chain-tightener and sheathing and upon the body portions E of the links becoming a serious matter by reason of the links being so shaped as to form a small contacting-surface at E, I form the cross-section of the chain as shown in Fig. 5, where the thin vertical web G is reinforced by the flanges H, which are of sufficient width to give additional strength and bearing-surface to the contacting portions of the chain.

In another application, Serial No. 691,864, filed September 26, 1898, the patent of which I expect to issue simultaneously herewith, I have shown and claimed, broadly, the use of the swelled or curved portions on the outer side of the links to protect the noses of the hooks, while in the present case I claim the particular construction of the side bars which may be conveniently employed in carrying out the aforesaid invention, although it will be understood that this particular construction may be employed, if desired, in other than detachable links.

While I have shown my invention as embodied in the form which I at present consider best adapted for the purposes in hand, it will be understood that I do not limit myself to the exact shape shown and described, but only to such construction as may be necessitated by the terms of the following claims.

I claim—

1. In a chain, a link having its side bars formed with thickened portions or flanges upon their outer side, substantially as and for the purpose described.

2. In a chain, a link having its side bars consisting of a thin vertical web G and the curved strengthening-flanges H, substantially as and for the purpose described.

JAMES MACPHAIL.

Witnesses:
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