(Model.)

W. J. PERKINS.

DRIVE CHAIN.

No. 359,029. Patented Mar. 8, 1887.

Fig. 1.

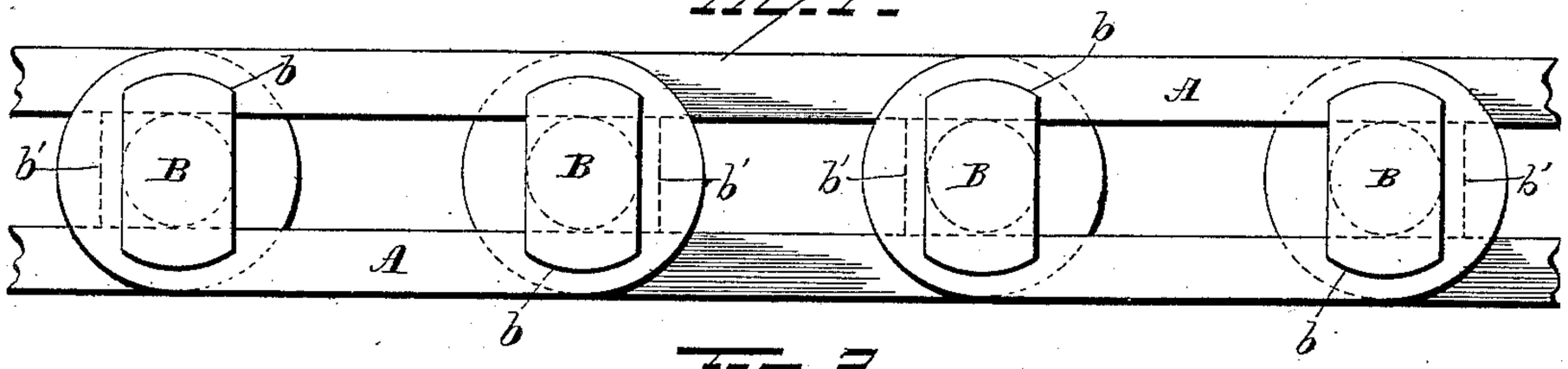


Fig. 2.

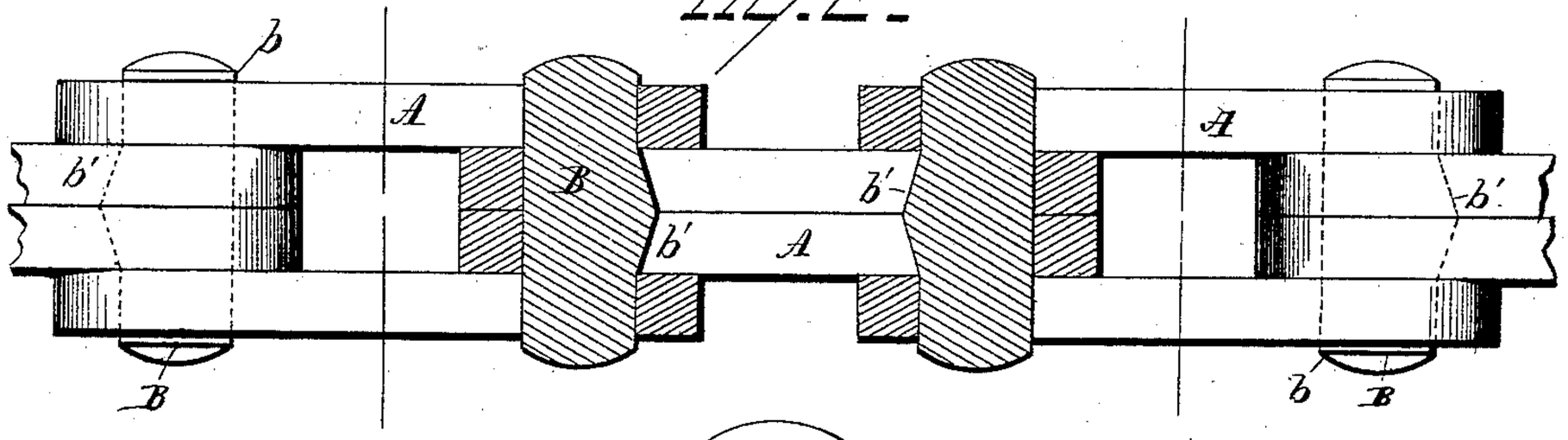


Fig. 3.

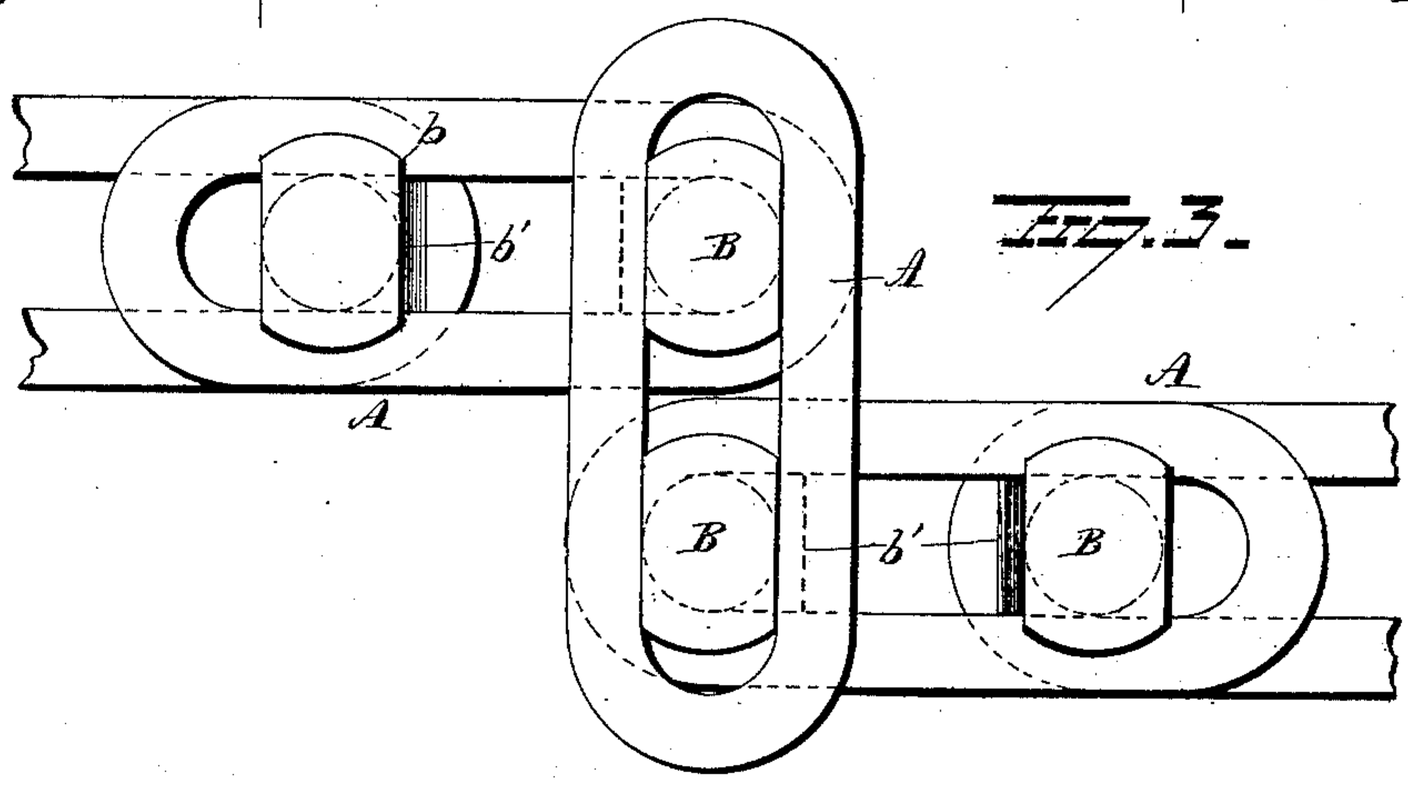


Fig. 4.

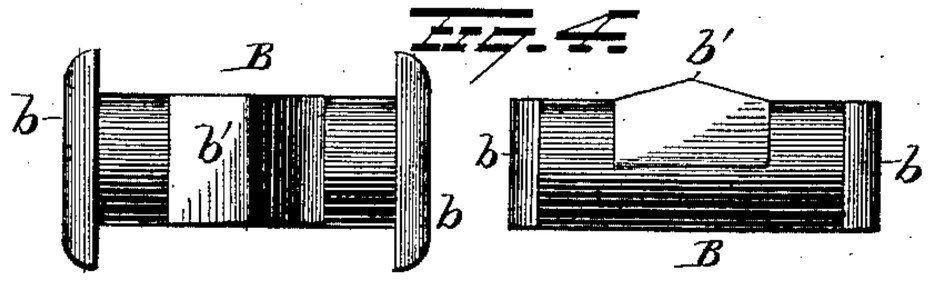
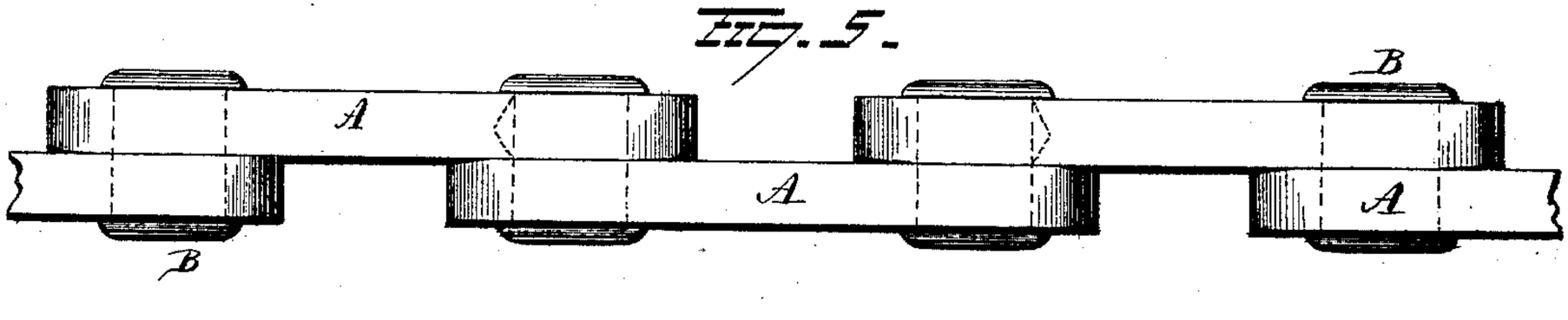


Fig. 5.



WITNESSES

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WILLIS J. PERKINS, OF GRAND RAPIDS, MICHIGAN.

DRIVE-CHAIN.

SPECIFICATION forming part of Letters Patent No. 359,029, dated March 8, 1887.

Application filed November 18, 1884. Serial No. 148,239. (Model.)

To all whom it may concern:

Be it known that I, WILLIS J. PERKINS, of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Drive-Chains; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in drive-chains.

Hitherto it has been customary to construct drive-chains consisting of single and double links arranged alternately, the single links being provided with bosses or studs formed integral therewith, and the double links provided with slots adapted to receive the studs and assist in locking the links together, and also to construct chains having single and double links arranged alternately and of a peculiar construction adapted to co operate with pins in locking the whole together; but the construction of the links and locking devices has not been such as to admit of their being advantageously made of wrought-iron and capable of sustaining the same amount of strain at every point.

The object of my present invention is to provide a drive chain in which the links may be constructed substantially of the same form and weight, and to provide a pin for locking the links together which shall embody in itself the complete locking devices proper.

With these ends in view my invention consists in certain features of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view of the chain in side elevation. Fig. 2 is a plan view, partly in section. Fig. 3 represents the links in position for coupling or uncoupling, and Fig. 4 represents the pin in two positions. Fig. 5 is a modification.

A represents one of the links. It is made either with an open center, and of any desired size which the purpose to which it is to be put demands, or with oblong holes in its ends. It is not notched, slotted, or otherwise weakened by fitting, but consists substantially of an endless bar or rod in the form of an elongated loop having semicircular ends or a double elongated loop, the single loops being separated by a cross-bar. Two of these links are placed side by side in contact with each other, and, for convenience, will be termed the "inside" links, and the two next following links are separated by the width of the two inside links and lap past them on the outside a distance sufficient to admit the key or pin B.

The pin B consists of a cylindrical bar provided with elongated heads *b* and having a V-shaped lug, *b'*, formed on the central portion of the bar at right angles to the longest axis of the head, the lug being constructed about the thickness of the opening between the sides of a link and having a width equal to the combined width of the two inside links.

The links are united to form the chain in the following manner: Pins B are inserted in two pairs of inside links by placing two pins with their elongated heads *b* in the same direction and slipping links over their corresponding ends into the position of outside links and then turning each of the pins one-fourth of a revolution, bringing the lugs *b'* toward one another and sliding the links into contact with each other at the center of the pins. The lugs *b'* now lying between the sides of the links, it is evident that the pins cannot be rotated relatively thereto. The inside links thus put together form the alternate links of the chain, and are connected by placing one set above its corresponding set the distance of the length of an opening in one of the links apart and slipping the outside links over the heads of the pins *b*, which heads will now have their longest axes in the same line. When drawn out straight, the outside links will lie at right angles to the longest axes of the heads *b*, and will be securely locked on the pins thereby. The outside links will also, when in position, prevent the inside links from a lateral displacement, and hence prevent the pins *b* from turning relatively to the outside links, excepting as they turn with the inside links.

The following are some of the important advantages obtained from my improved construction:

The links, being substantially of the same form and size, may be manufactured at a less expense than links of varied forms and sizes, and the form in the present instance is such that the links may be made of wrought-iron and forged in the simplest manner, while the

pins may be constructed by a drop-forge and a die.

Again, it is of great importance that a chain should have a uniform strength throughout, so that when a given strength is required for a particular purpose there may be no necessity for using a chain of greater weight than is absolutely necessary to do the work. The chain above described is capable of being constructed of equal strength throughout without any extra labor or expense, since the successive links of the chain consist of two similar links each, and by constructing the pins *b* of such size that the area of a cross-section at the bearing shall equal twice the area of a cross-section of one of the links there can be no weak point and no superfluous metal employed.

In Fig. 5 the chain is shown constructed of a single series of links. In this form the lug *b'* is formed on one end of the pin B, and the elongated heads made heavy to withstand the lateral strain.

My invention is also susceptible of other modifications without departing from its spirit and scope. For example, in the place of the two inside links a single link equivalent to the two in strength might be substituted, the lug *b'* being modified to admit of the pin being inserted therein, and the two inside links may be separated and held a convenient distance apart by an enlarged portion of the pin or other means; or, instead of two single-bar links being employed to form a link-section, the number may be increased to three or more until a flexible chain of any desired width and strength is obtained, the pin in this case being modified to admit of the adjustment of the links, the lug *b'*, for example, being formed in close proximity to the head link, or the body of the pin enlarged where it passes through the middle links and lug *b'* formed on the enlarged portion; or, again, the link in each link-section, except the outside links in each alternate link-section, may be connected rigidly together, forming double-bar, treble-bar, &c., links; hence I do not wish to limit myself strictly to the construction herein set forth; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a drive-chain, the combination, with a series of links, of removable pins connecting the links and provided at opposite ends with elongated heads, and at a point between said heads with a projection adapted to engage one or more of the links for the purpose of preventing the pins from turning.

2. In a drive-chain, the combination, with a series of links arranged in pairs, the inner faces of each alternate pair of links resting against the outer faces of the intermediate links, of removable pins having elongated heads at opposite ends, and provided between said heads with a projection adapted to engage one or more of said links for the purpose of preventing the pin from turning, substantially as set forth.

3. In a drive-chain, the combination, with a series of links arranged in pairs, the inner faces of each alternate pair of links resting against the outer faces of the inner or intermediate links, of the removable pins, each having elongated heads at opposite ends and a projection adapted to engage the inner links and prevent the pins from turning, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIS J. PERKINS.

Witnesses:

EDWARD TAGGART,

FRED N. STEVENS.