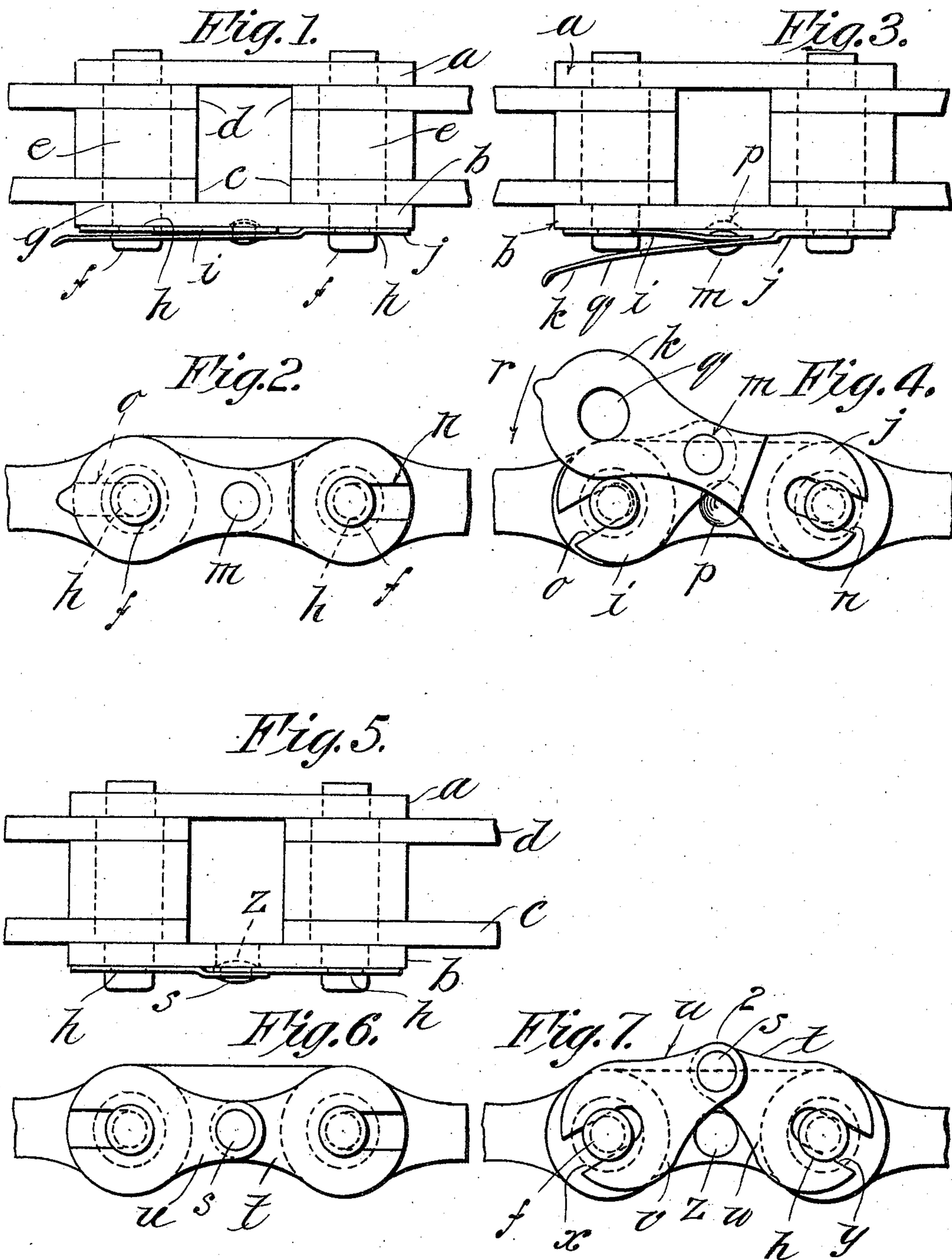


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W. M. BUTLER.
DRIVE CHAIN.

APPLICATION FILED OCT. 27, 1906.



Witnesses:
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UNITED STATES PATENT OFFICE.

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DRIVE-CHAIN.

No. 847,235.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM M. BUTLER, 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 Drive-Chains, of which the following is a specification.

This invention relates to improvements in securing means for sprocket-chains, and particularly in means for readily connecting and disconnecting the terminal links of the same.

The invention, broadly stated, consists in providing toggle-link pieces for engaging the ends of the two terminal pins and having means for locking the link-pieces in their extended position, at the same time firmly forcing the same against said pins.

The invention is especially adapted for connecting and disconnecting bicycle-chains, but may be used for larger sprocket-chains—as, for example, for automobile-chains or for those in use on various kinds of machinery where such chains may be employed.

In the drawings forming part of this application, Figure 1 is a top plan view of the end portions of a sprocket-chain, showing one form of my securing means for the end links thereof. Fig. 2 is a side elevation of the same, showing the toggle-links in their extended and locking position. Fig. 3 is a plan view of a portion of a sprocket-chain, showing the initial movement of the parts in unlocking the toggle-links, with the handle portion thereof sprung away from its locking engagement with the chain-pin. Fig. 4 is a side elevation of Fig. 3, showing the position of the parts as they appear in that figure. Fig. 5 is a plan view of the connecting end portions of the sprocket-chain, showing a modified form of my connector in locking position. Fig. 6 is a side elevation of the parts shown in Fig. 5. Fig. 7 is a side elevation of the securing means in the position the parts occupy during the initial movements of the same in the act of removing the toggle-links from the pins.

Referring to these drawings in detail, *a* and *b* designate the outer series of links, while *c* and *d* designate the inner series of links composing the sprocket-chain.

e designates the connecting-pins for the end links of the chain and having the reduced end portions *f*, that pass through the

holes in the two outer series of links and forming the shoulder portions *g* between them. One end of the two adjacent end pins *e e* is provided with an annular groove *h*, engaging which grooves are two links *i* and *j*, preferably stamped from thin sheet-steel, the link *j* being extended so as to provide a handle and locking part which has an overlapping position in relation to the link *i*, as shown in Fig. 1, when in locking position. This extended portion is designated by the letter *k* and is pivotally secured to the link *i* by means of the rivet *m*. The link portions *i* and *j* are each provided at their outer end with a slot or passage-way *n* and *o* and fitting into the annular portion *h* of the pins *e e*.

p designates a conical-shaped depression in one of the outer connecting-links *b* for receiving the head of the rivet *m* when in locking position, as shown in Fig. 1.

The extended portion *k* has, near its outer end, a hole *q* for receiving the outer end *f* of one of the pins *e*, as shown in Fig. 4.

In use the slots or passage-ways *n* and *o* in the link portions *i* and *j* are slipped into the annular grooves *h* of the pins *e*, as shown in Fig. 4, the extended portion *k* lying at one side of the link *i*, as shown in Fig. 4. The operator then presses the extended portion *k* in the direction of the arrow *r*, forcing the toggle-links tightly against the bottom of the groove *h* on the pins *e e* until the portion *k* is carried over the end *f* of the pins *e*, which is then in position to pass through the hole *q*, thus locking the toggle-links firmly in place. At the same time the head of the rivet *m* drops into the depression *p* in the outer link *b*. The portion *k* being made of resilient spring-steel will firmly retain its position on the pin *e*. To remove the fastening device for disconnecting the chain, the reverse operations are necessary.

Referring to the form shown in Figs. 5, 6, and 7, the same construction is used as far as the elements *a*, *b*, *c*, *d*, *e*, *f*, *g*, and *h* are concerned. The fastening device shown in these figures is, however, somewhat modified in that instead of an extended portion for operating the locking-links I pivot them together, as shown clearly in Figs. 6 and 7, by means of the rivet *s* at their inner ends *t* and *u* of the links *v* and *w*, the outer end of each link being provided with a slot or passage-way *x* and *y* for engaging the annular groove

5 h in one end of the connecting-pin, it being understood that the width of this passage-way is practically of the same dimension as the diameter of the annular groove. z designates a depression in one of the outer links for receiving the inner end of the rivet s in the same manner as in the form described above. The toggle-link shown in these figures is used by inserting the slots or passage-ways x and y over the pins e and in engagement with the annular grooves h , then by forcing the same into alinement by exerting an inward pressure at the point 2 on the links, so that the rivet snaps into the depression p , the toggle-links then being firmly locked in place on the pins e , and any danger of the chain separating by the loss of parts is entirely prevented.

What I claim is—

20 1. In a sprocket-chain of the class described, means for securing certain links of the same together, said means including a toggle-link for engaging the adjacent chain-pins, and means for locking the toggle-link in place on said pins.

25 2. An improvement in sprocket-chain-fastening devices, the same consisting of toggle-links provided with passage-ways at their outer ends, pivotal means for securing the

same together, there being means on one of the links of the chain for receiving the inner end of the pivot, as described.

3. An improvement in fastening means for sprocket-chains the same including toggle-links, the outer ends of the same having passage-ways, the adjacent chain-pins having an annular groove for receiving the passage-ways of the links, and means for holding the links in extended position, as described.

4. A sprocket-chain connector comprising a toggle-link having means to engage portions of the chain.

5. A sprocket-chain connector comprising pivoted toggle-links having means to engage portions of the chain.

6. A sprocket-chain connector comprising toggle-links, the ends of which are slotted to engage portions of the chain.

7. A sprocket-chain connector comprising toggle-links, the ends of which are provided with means for engaging the connecting-pins of the chain.

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