No. 610,583. Patented Sept. 13, 1898.

G. W. FOX.

DETACHABLE LINK CHAIN.

(Application filed Apr. 20, 1898.)

(No Model.)

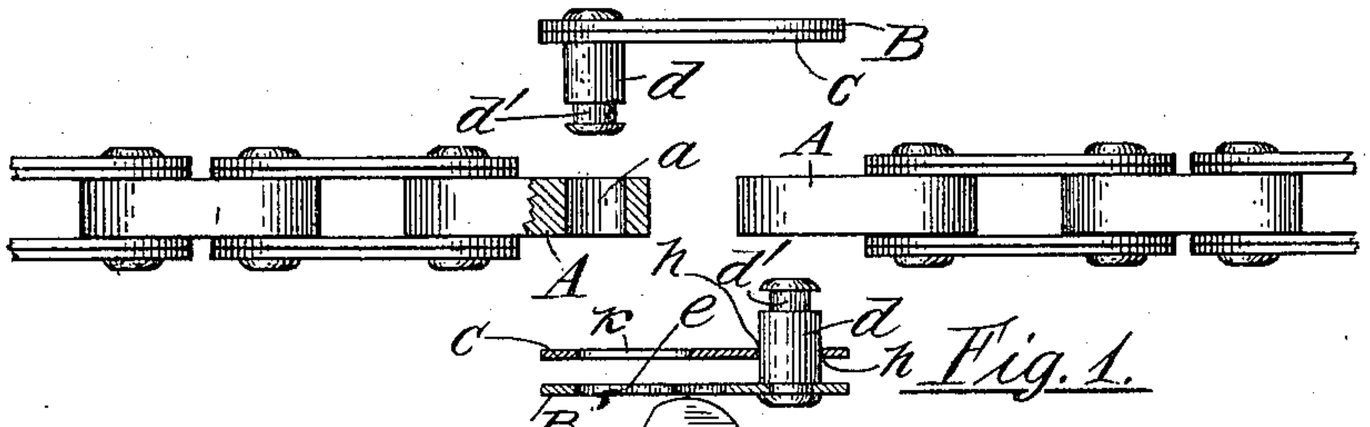

Fig. 1.

Fig. 2.

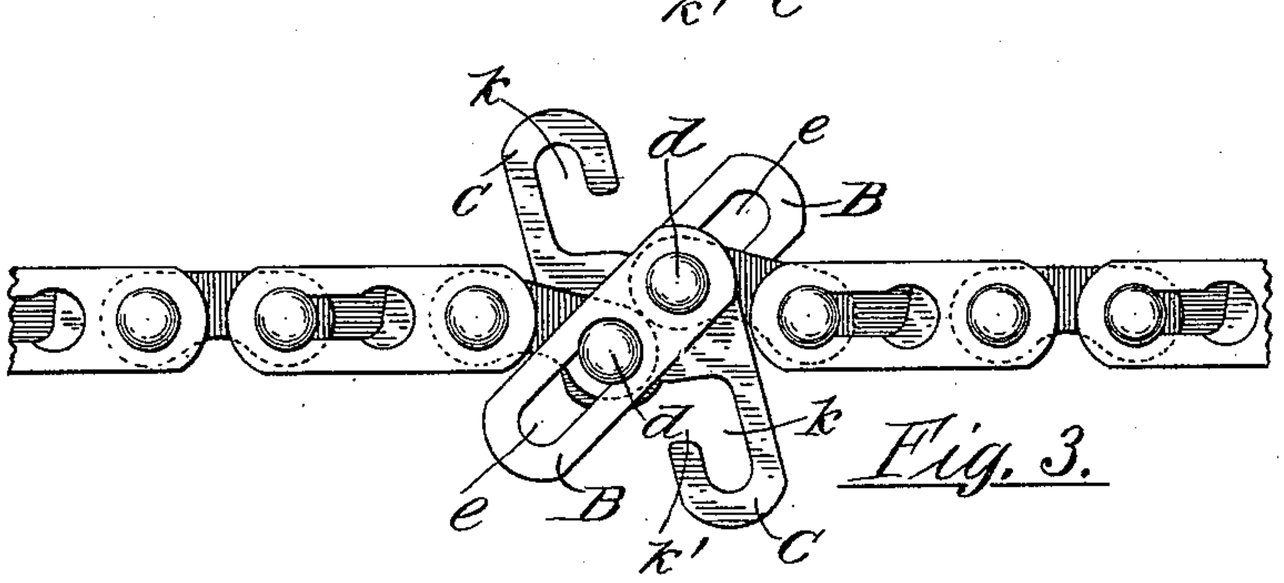

Fig. 3.

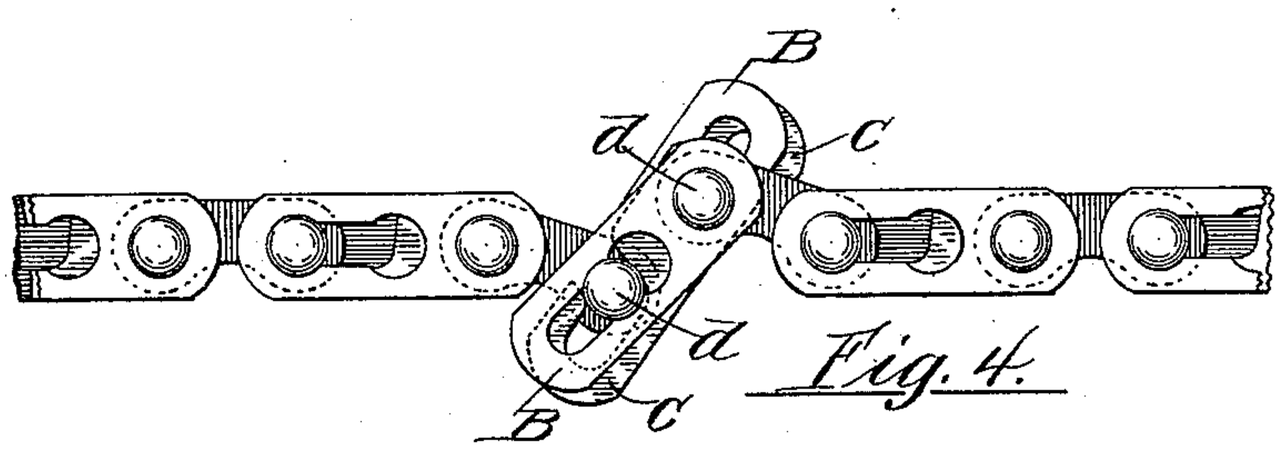

Fig. 4.

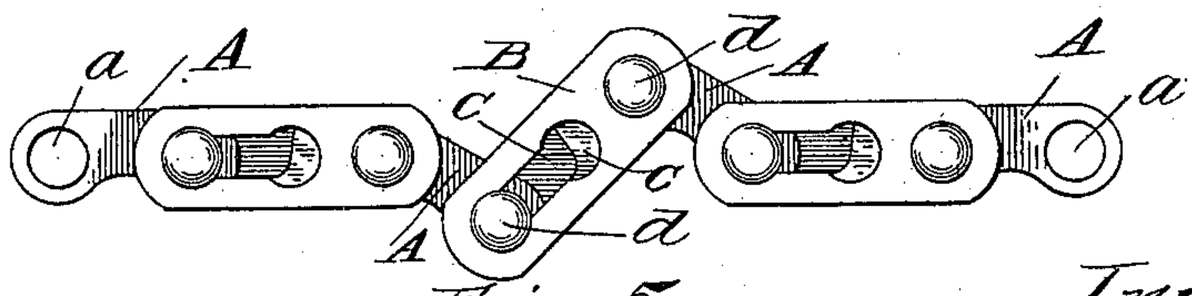

Fig. 5.

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DETACHABLE-LINK CHAIN.

SPECIFICATION forming part of Letters Patent No. 610,583, dated September 13, 1898.

Application filed April 20, 1898. Serial No. 678,214. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. FOX, a citizen of the United States, and a resident of Chicago, Cook county, Illinois, have invented a certain new and useful Improvement in Detachable-Link Chains, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

My invention relates to a detachable-link chain which is particularly applicable as the drive-chain of bicycles; and its object is to permit the chain to be quickly separated and, if need be, a section of the same removed and then reunited by the employment of a simple and comparatively inexpensive departure from the detachable-link chains now in use. This I accomplish by the means hereinafter fully described, and as particularly pointed out in the claims.

In the drawings, Figure 1 is a plan view of a section of my improved chain, showing the same separated at about its center of length, the parts of the divisible links removed to one side and one set of the side plates thereof shown in longitudinal section. Fig. 2 is a side view of a section of said chain separated at about its center of length and showing the first position of the side plates of the adjacent ends of said chain preparatory to the union thereof. Fig. 3 is a similar view showing a second position of said side plates, in which an imperfect uniting of said adjacent ends is accomplished. Fig. 4 is a similar view showing a third position, in which said side plates are nearly in their final position previous to being moved into conterminous relation. Fig. 5 is a side view of a section of completed chain.

In the drawings, A represents a solid metal link with flat sides, rounded ends conforming substantially to a segment of a circle struck from the center of the articulating-pin openings *a*, so as to form end knuckles, and preferably having one of its longitudinal edges between its said knuckles concaved, as shown. These links A alternate with divisible links, by which they are connected at such distance apart that the sprockets of a sprocket-wheel may enter the space between them. These divisible links consist of two sets of twin side plates B and C, one set of which lap against and connect one side of links A with their fellows, and the other set of which lap against and connect the other side thereof.

Plates B and C, which correspond in length, breadth, and thickness, are preferably made of thin sheet-steel, and they are about one and one-third times the length and of a width slightly exceeding the thickness of links A. The outer twin plate B of each of these sets has one end of a pintle or pivotal pin *d* secured to and projecting at right angles from one of its ends, and it has an elongated opening *e* in its other end, which extends in longitudinal alinement with the axial center of said pin *d*. The end of this elongated opening nearest pin *d* is struck from a circle the center of which is located at about the center of length of said plate and is of a diameter corresponding to that of the unsecured head and the major portion of the barrel of said pin, (which is adapted to pass therethrough,) and the other end of this elongated opening describes a circle of less diameter than the head of pin *d*, which is struck from a point removed from the adjacent end of the plate a distance corresponding to that between the center of pin *d* and the end of the plate nearest which it is located. The width of all that part of the elongated opening *e* except its centrally-located terminus corresponds to the diameter of the neck *d'* of the free or unsecured end of pin *d*, which neck is of a length corresponding to slightly more than the thickness of the two twin plates B C. The inner twin plate C of each set has an opening *h* in one end of such diameter as to enable it to be slipped laterally over the pin *d* until it is flat against the outer plate B and so that it can be removable on said pin independent of said outer plate. It is provided with an elongated opening *k* in the end opposite that pivoted on said pin *d*, the end of which contiguous to the end of the plate corresponds exactly to the dimensions of the corresponding portion of the elongated opening *e* in the plate B. This elongated opening *k*, however, terminates at a point in the same transverse plane as the center from which the centrally-located terminus of the elongated opening *e* of plate B, and at its inner end this opening *k* is provided with an offset opening *k'*, extending therefrom at right angles and afford-

ing an entrance to said opening *k*, the width of which corresponds to the width of the outer end of the same, (opening *k*.)

The above is a complete description of the construction of my improved and detachable-link chains, the operation of which is substantially as follows: When it is desired to connect two links A A, the two sets of twin plates are arranged in substantially the position shown in Fig. 1, preparatory to inserting the pins *d*, held in one end of the plates B, through the knuckles of the links A. When thus inserted so that the necks *d'* of the pins extend beyond the side of links A opposite the plates B, from which they project, they are placed in the relative position shown in Fig. 2, and then links A are brought together in the position shown in Fig. 3, and the heads of the free end of the pins *d* are inserted laterally through the enlarged centrally-located terminus of the slots *e* of plates B. Said links A are then separated slightly, so as to bring the necks *d'* into the entrance of the narrower confines of said openings *e* and so that the inner part of the twin plates C can be swung until the necks of the pins enter the lateral offset of openings *k* thereof and until the centers of said necks are in longitudinal alinement with the center of said opening *k*, whereupon the links A are separated still farther apart, so as to bring both sets of twin plates into conterminous bounds and thereby complete the links by bringing the parts thereof into the same relative positions, as shown by the remaining links of the figures of the drawings.

When it is desired to separate the links of a chain, the reverse of the operation hereinbefore described is resorted to—namely, placing the links in the position shown in Fig. 5, then in Fig. 4, then Fig. 3, and then Fig. 2.

What I claim as new is—

1. In a detachable-link chain, the combination with a solid link having suitable knuckles at each end, of links consisting of two sets of independently-movable twin side plates, and a pivotal pin used in conjunction with each set of twin plates, to which corresponding ends of said twin plates are confined, and which are journaled in the knuckles of the solid links so that the free end can extend therefrom; one of the twin plates of a set having a longitudinal elongated opening in one end through which the free end of the pin of the other set of plates can be removably passed, and the other of the same set of twin plates locking and preventing the withdrawal of said pin from said elongated opening.

2. In a detachable-link chain, the combination with a solid link having a suitable knuckle at each end, of links consisting of two sets of independently-movable twin side plates, and pivotal pins having one end permanently secured to one end of the outermost of each set of twin plates and which are journaled in the contiguous knuckle of the solid link so that the unattached end thereof can extend beyond the same; one of the twin plates of each set having a longitudinally-elongated opening in the end opposite the pivotal pin the centrally-located terminus of which is wider than the remainder thereof, through which the free end of the pin of the other set can be removably passed, and the other of said set of twin plates adapted to lock and prevent the withdrawal of said pin from said elongated opening.

3. In a detachable-link chain, the combination with a solid link having a suitable knuckle at each end, of links consisting of two sets of independently-movable and separable twin side plates, and pivotal pins having one end permanently secured to one end of the outermost of each set of twin plates, and which are journaled in the contiguous knuckle of a solid link so that the unattached end thereof, which is provided with a neck of reduced diameter, can extend beyond the same; one of the twin plates of a set having a longitudinally-elongated opening in the end portion opposite the pivotal pin, the centrally-located terminus of which is wider than the remainder thereof, and is adapted to receive the initial insertion of the unattached end of the pin of the other set of twin plates, and the other plate of said set of twin plates adapted to lock and prevent the independent withdrawal of said pin from said elongated opening, as set forth.

4. In a detachable-link chain, the combination with a solid link having a suitable knuckle at each end, of links consisting of two sets of independently-movable and separable twin side plates, and pivotal pins having one end permanently secured to one end of the outermost of each set of twin plates, and which are journaled in the contiguous knuckle of a solid link so that the unattached end thereof, which is provided with a neck of reduced diameter, can extend beyond the same; one of the twin plates of each set having a longitudinally-elongated opening in the end portion opposite the pivotal pin the centrally-located terminus of which is wider than the remainder thereof, and receives the initial thrust of the unattached end of the other set when inserted therein, and the other plate of said pin having an elongated opening therein the innermost terminus of which is provided with a lateral offset or entrance thereto, which, together with said elongated opening of which it forms a part, is of a width corresponding to the diameter of the neck of the pins, as and for the purpose set forth.

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