No. 762,335. PATENTED JUNE 14, 1904.

A. D. MORRIS.

DETACHABLE LINK CHAIN.

APPLICATION FILED JULY 28, 1903.

NO MODEL.

Fig. 1.

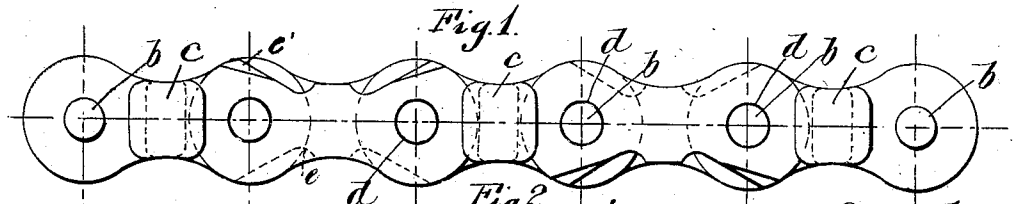


Fig. 2.

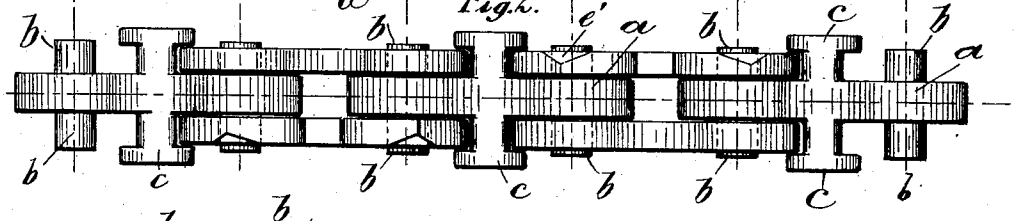


Fig. 3.

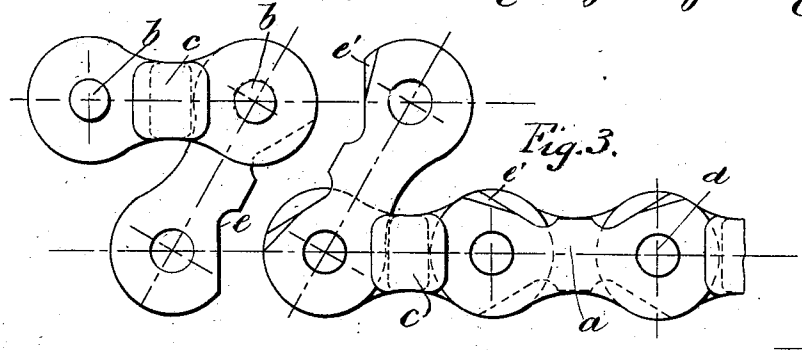


Fig. 4.

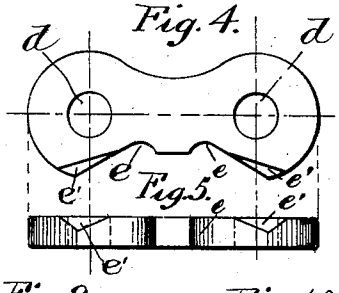


Fig. 5.



Fig. 6.

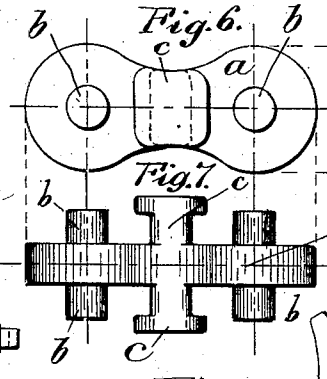


Fig. 7.



Fig. 8.

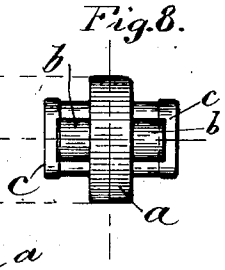


Fig. 9.

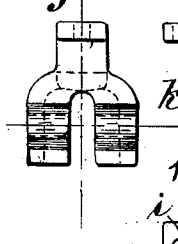


Fig. 10.

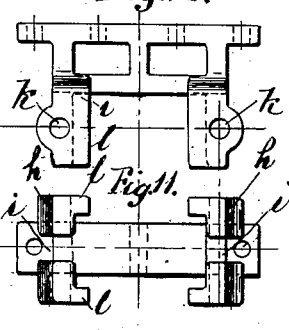


Fig. 11.



Fig. 12.

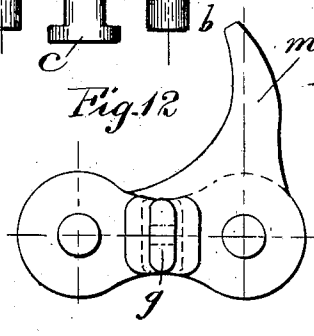
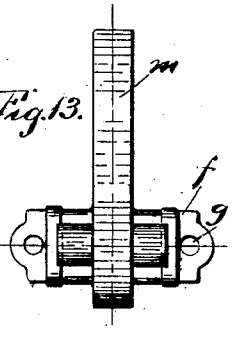


Fig. 13.



Witnesses

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No. 762,335. Patented June 14, 1904.

# UNITED STATES PATENT OFFICE.

ARCHIBALD D. MORRIS, OF NEW ROCHELLE, NEW YORK.

## DETACHABLE-LINK CHAIN.

SPECIFICATION forming part of Letters Patent No. 762,335, dated June 14, 1904.

Application filed July 28, 1903. Serial No. 167,328. (No model.)

*To all whom it may concern:*

Be it known that I, ARCHIBALD D. MORRIS, a citizen of the United States, residing at New Rochelle, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Detachable-Link Chains, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to that class of detachable-link chains which, in conjunction with suitable sprockets, are employed for transmission of power and are also adapted as a bucket-conveyer belt or chain; and the object of the invention, primarily, is to provide a chain of superior strength and flexibility secured against lateral displacement when used as a driver and secure against detachment while in motion, cheap in cost of construction, and yet efficient in use; further, to produce a chain adapted for use as a conveyer belt or chain.

The improved chain is made up of pin-links and eye-links. Each pin-link is formed with two pairs of journal-pins projecting from its faces adjacent to its ends and oppositely-projecting undercut or shouldered heads projecting from the link-faces centrally between the journal-pins. Each eye-link is formed with journal-openings to fit and oscillate on the journal-pins of the pin-link and a recess cut into one edge corresponding in shape to a portion of the shouldered head of the pin-link to allow the ready attachment and removal of the link members.

In the accompanying drawings, Figure 1 is a side elevation of a series of links which form my improved detachable-link chain. Fig. 2 is a plan view of the same. Fig. 3 is a side elevation showing a series of links partly detached. Figs. 4, 5, 6, 7, and 8 show in different positions the links of the chain. Figs. 9, 10, and 11 are different views of the detachable bracket adapted for use with conveyer-buckets. Figs. 12 and 13 are side and end views of a pin-link having a lug adapting it for conveying or lifting purposes.

The detailed construction of the links can be best explained by reference to Figs. 4, 5, 6, and 7.

The body of the pin-link *a* is formed with journal-pins *b* projecting from its faces adjacent to its ends. Laterally from the center of the pin-link are projecting undercut or shouldered heads *c*, which serve as guides and also keep the eye-links in operative position, but which at the same time allow of removal of the eye-links.

The pin-link *a* may be cast integrally with pins of cast metal or chilled rolled steel, which are placed into the mold and the metal of the link cast around them, thus insuring pins of great strength and durability.

The body of the eye-link is provided with two journal-bearings *d*, this eye-link being cut out at *e* and chamfered or cut away at *e'*, so as to allow of easy attachment to the pin-link when it is moved at an angle of one hundred and twenty degrees from the center line of the chain.

While the chain lies horizontally the eye is secured in its position upon the pin by the shouldered head *c* of the pin-link, thus preventing the chain from becoming detached while in operation.

In order to adapt the present device for conveying means, I have shown in Figs. 9, 10, and 11 brackets, which are attached to the shouldered heads *c* of the pin-link in the following manner: The shouldered heads *c* of the pin-link are formed with the lugs *f*, having drilled holes *g*, to which is attached the bracket for the conveyer-bucket. The bracket is made to fit transversely on the pin-link and is formed with projecting portions *h*, which envelop the shouldered heads *c* of the pin-link, the apertures *i* enveloping the lugs *f* of the shouldered heads *c*, and on either end are drilled holes *k*, so as to be when the bracket is affixed to the pin-link in alinement with the drilled holes *g* of the lug on the shouldered head *c* of the pin-link. The bracket then can be attached by suitable rivets or bolts passed through the holes of said lug and bracket. The projecting flanges *h* of the bracket envelop the vertical faces of the shouldered heads *c* of the pin-link, whose planes are at right angles to the line of the chain and serve the purpose of filling the space between the shouldered heads and pins of the pin-link, thereby forming locking means for the links, making them in-

separable one from another until the said bracket is removed. This portion of the bracket could be used without the part adapted to receive the conveyer-bucket when it is desired to make the chain undetachable. The bracket therefore serves the double purpose of supplying locking means for the links and an attachment for connecting conveyer-buckets thereto.

To adapt my invention for use as a conveyer-chain in lifting or drawing cars up inclined planes or for other similar operations, the link is formed with a lug or dog *m*. This lug may be modified into a suitable support for attachment to conveyer-buckets and cast the same way—in one with the link.

The detached portion of the chain (see Fig. 3) shows the angular position of the members preparatory to being linked.

The method of engaging or disengaging the links is as follows: An eye-link is first attached to the near pin of the pin-link shown at the end of the section of chain in Fig. 3 and turned into the position shown. This brings the straight edge or cut-out portion of the eye-link parallel to the edge of the shouldered head and permits of its being easily slipped on and past the pin of the pin-link. Then it is revolved into operative position. To the pin-link at the left another eye-link is attached and revolved to position shown, the eye-link being placed on the rear pin, with the straight edge or cut-out portion in a reversed position to that of its mate and parallel with the straight edge of the shouldered head, so that it may be slipped on and past the said pin and revolved into position.

Any tendency of the chain to bind if it is kinked through the extreme angle to which it is positioned by the sharp corner of the pin-link jamming the edges of the shouldered head is obviated by chamfering the edges of the eye-link at that point.

It will be noticed that to disengage the chain it is not only necessary to kink it to the extreme position, but also to apply simultaneously transverse strains, pulling out the opposite eye-links at their opposite ends.

The staggering of the eye-links does not interfere with the true bearing of the links upon the periphery of the sprocket-wheel, as the bases of the pin-links bear on the center of the sprocket-wheel between the teeth, and each alternate eye-link has a bearing on the periphery at the sides.

I do not limit myself to any specific construction as regards size of the links employed in carrying out my invention.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a detachable-link chain, the combination of a plurality of pin-links formed with laterally-projecting journal-pins and shouldered heads, said heads being arranged centrally between the pins and having their shoulders extending toward the pins, and a plurality of eye-links each formed with journal openings and recesses cut into one edge corresponding in shape to the shoulders of said heads, substantially as and for the purpose set forth.

2. In a detachable-link chain, the combination of a plurality of pin-links formed with laterally-projecting journal-pins and shouldered heads, said heads being arranged centrally between the pins and having their shoulders extending toward the pins, and a plurality of eye-links each formed with journal openings and recesses cut into one edge corresponding in shape to the shoulders of said heads and chamfered to enable the easy assembling and separation of the links, substantially as and for the purpose set forth.

3. In a chain the combination of a link member having a journal-pin, and a link member having an eye which is detachably journaled upon said pin, there being a shouldered head formed upon one of said link members and adapted to engage the other link member for normally holding said members in operative relation, said other link member having an external recess in its edge corresponding in shape to said shouldered head to enable the assembling and separation of the links, as set forth.

4. In a detachable-link chain the combination of a link member having a journal-pin, with a link member having an eye detachably pivoted upon said pin, there being a shouldered head formed on and projecting centrally from one of said members and engaging the adjacent ends of two other pivotally-connected members to normally hold the pivoted members in operative relation, as set forth.

5. In a detachable-link chain, the combination of a plurality of link members each having laterally-projecting journal-pins adjacent to its ends, with a plurality of link members, each formed with eyes adjacent to its ends, there being shouldered heads projecting laterally and centrally from some of said link members and adapted to engage and retain other of said members in operative relation, as set forth.

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Witnesses:
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HARRY E. KNIGHT.