No. 615,285. Patented Dec. 6, 1898.

C. W. LEVALLEY.

CHAIN.

(Application filed Aug. 6, 1898.)

(No Model.)

Fig. 1.

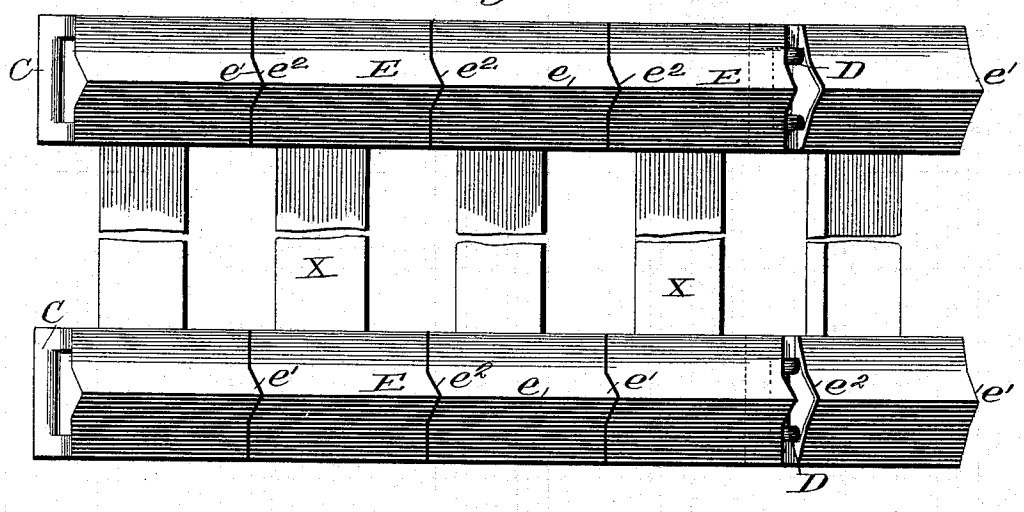


Fig. 2.

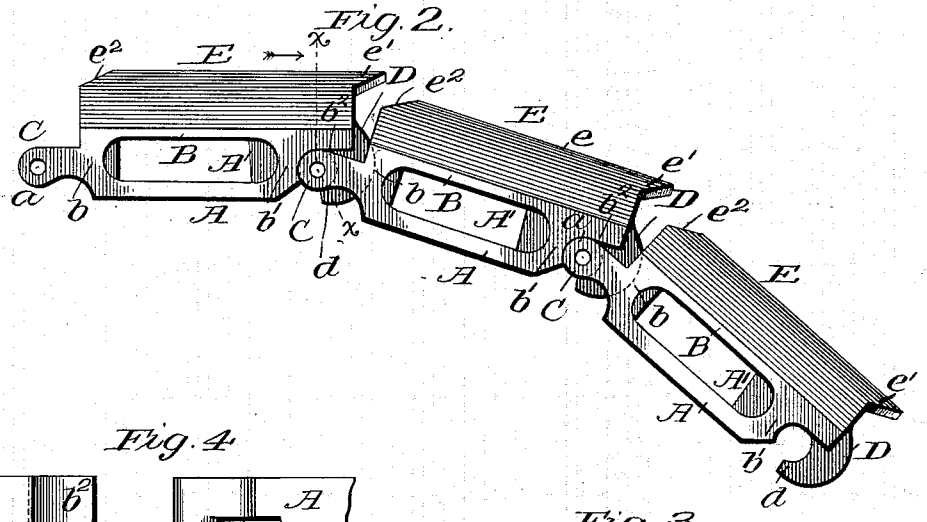


Fig. 4.

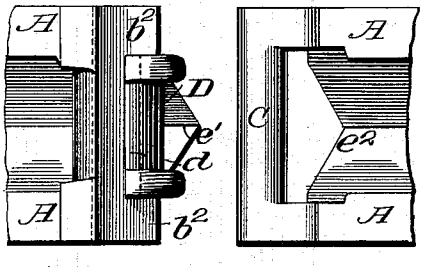
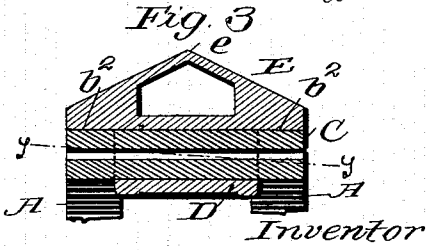


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

CHRISTOPHER W. LEVALLEY, OF MILWAUKEE, WISCONSIN.

CHAIN.

SPECIFICATION forming part of Letters Patent No. 615,285, dated December 6, 1898.

Application filed August 6, 1898. Serial No. 687,978. (No model.)

To all whom it may concern:

Be it known that I, CHRISTOPHER W. LEVALLEY, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Chains, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a plan view illustrating a carrier composed of two parallel lines of my improved chain connected by transverse ties. Fig. 2 is an edge view of three links of the chain traversing a sprocket-wheel. Fig. 3 is a vertical section taken on line *x x*, Fig. 2.

Like reference-letters indicate similar parts in all the figures.

A A are the lower side bars of the link. These bars are straight on their lower faces, which are quite wide and as smooth as it is practicable to make them in order that they may run over their supporting-surfaces with as little friction as is possible.

B B are the upper side bars connected with the lower side bars by the upright parts *b b'*, thus forming rectangular openings A' A' on either side of each link adapted for the reception of the ends of ties or stretchers X X, as will be hereinafter explained.

C is the cylindrical end bar, the metal which connects the end bar with the side bars being of reduced width vertically, as is indicated at *a*, Fig. 2.

At the opposite end of the link there is a hook D, in which there is a throat between the point *d* and the adjacent part of the hook-shank of such width as will permit the passage of the reduced part at *a* when two links are placed in an unusual position, as is customary in this general class of chains and need not be further referred to.

In order to more fully adapt this chain for transportation purposes, I provide each link with what I term a "roof-top," (indicated generally by E E, which represent two sections slanting inward and upward from the upper side bars B B and uniting to form a ridge or apex *e*, extending longitudinally and centrally of the link at considerable height above the said side bars.) At the hook end of the link the roof extends, preferably, to about the outer or front line of the pintle-seat, with an angular central part *e'* projecting still farther forward. At the opposite or end-bar end of the link the roof stops at about the ends of the side bars and is at its central portion cut away upon angular lines to correspond with the projecting end of the next link of the series, substantially as is indicated at e^2. (See Fig. 1.)

All who are familiar with the practical operation of drive-chains and of this general class of chains, whether they are employed for the transmission of power or as carriers in some of the many ways in which they are used for such purposes, are aware of the difficulties attending such use of them arising from wear upon the opposing surfaces of the hook and end bar when the chain is under tension, which wear results frequently in such lengthening of the chain as to seriously interfere with its properly traversing the sprocket-wheels, the chain climbing the sprockets at times and sometimes doing serious injury to various parts of the appliance.

Two features of construction in my invention are adapted to overcome, in great measure at any rate, the above-referred-to wear of the articulating parts, as follows: By referring to Fig. 3 it will be understood that the full lines represent the articulating parts fitting closely throughout practically their entire engaging surfaces, as they ought to do always, and in order to avoid undue wear, and especially irregular wear, upon any particular part of such surfaces it is important that under all conditions the axes of both the end bar and the corresponding seat within the link connected thereto throughout the entire chain be at all times maintained parallel to the axis of the sprocket wheel or wheels which it traverses, it being readily understood from an examination of Fig. 3 that if from any cause there be produced a tendency to twist the hook member of the articulation—say in the direction indicated by dotted lines *y y*—the result will be an increased wear upon the upper side of the end bar at its left-hand end and a corresponding wear upon its lower side at the opposite end, with corresponding wear of the seat within the hook, so that when such tendency is removed there will be a disproportionate wear upon the central portions of the articulation, particu-

larly when the chain is traversing a wheel. Such tendency to twist one member of the articulation may be produced in chains as heretofore made by a shifting of the weight of the load from one side of the link to the opposite side thereof, resulting, for instance, from some irregularity in the contour of the under surface of the load, by reason of which it rests more heavily upon one of the side bars than it does upon the other one of the same link, and to reduce the unequal wear as much as is possible in links which are otherwise of the ordinary construction I provide each of the upper side bars B with an arm b^2, which in a chain embodying all of my improvements, as shown, is or may be continuous with the roof and extends over the portion of the end bar which projects out beyond the hook, (see Figs. 1 and 2,) so that in case there be produced any tendency to twist the chain, as above indicated, the arm b^2 will engage with the end bar, and thus prevent such wear upon the articulating parts as would be liable to occur in the absence of these arms; but in the preferred form of my link the load will rest upon the apex of the roof and the weight will be distributed with practical uniformity upon both side bars, and by reason of the angular form in cross-section of the roof the apex will be so high above the plane of the upper faces of the ties that no part of the load—such, for instance, as the bulge of a barrel or the sagged center of a board—will rest upon any of the ties, whereby all tendency to twist the chain by such condition is avoided.

Another advantage which is incident to the hook end of the roof extended beyond the center of the end bar is this: As is plainly shown in Fig. 2, when each of the links successively assumes an angular position to the horizontal plane of the links in rear of it in traversing a sprocket-wheel the rear end of its roof falls rapidly below the level of the roof of the link behind it, so that there is practically no possibility of any part of the load engaging with any portion of any of the tilting links, whereby all irregularity in the discharge of the load from such cause is prevented, as will be understood without further explanation.

Another advantage which is secured by the employment of the rigid roof is the uniformity in pressure of both side bars of the links upon the supports over which they are traveling and the consequent equalization of wear upon those parts.

Having thus set forth the best mode now known to me for carrying my invention into effect, I will say that I do not wish to be limited to the precise details of construction herein illustrated, because many modifications thereof will suggest themselves to a person skilled in the art without departing from the gist of my improvement or going outside of its scope.

What I claim is—

1. A chain-link comprising in combination, a series of parallel side bars, an end bar, a hook at the opposite end of the side bars, and arms projecting from side bars by the side of the hook, and in line or thereabout with the end-bar seat within the hook, substantially as set forth.

2. A chain-link comprising in combination, a series of parallel side bars, an end bar, a hook at the opposite end of the side bars, and a rigid roof connecting the side bars, substantially as set forth.

3. A chain-link comprising in combination, a series of parallel side bars, an end bar, a hook at the opposite end of the side bars, and a roof connecting the side bars, said roof extending to about the outer or front line of the end-bar seat within the hook, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHRISTOPHER W. LEVALLEY.

Witnesses:
A. G. NETTER,
R. KRETCHMAR, Jr.