

(No Model.)

M. GARLAND.

DRIVE CHAIN.

No. 365,123.

Patented June 21, 1887.

FIG. 1.

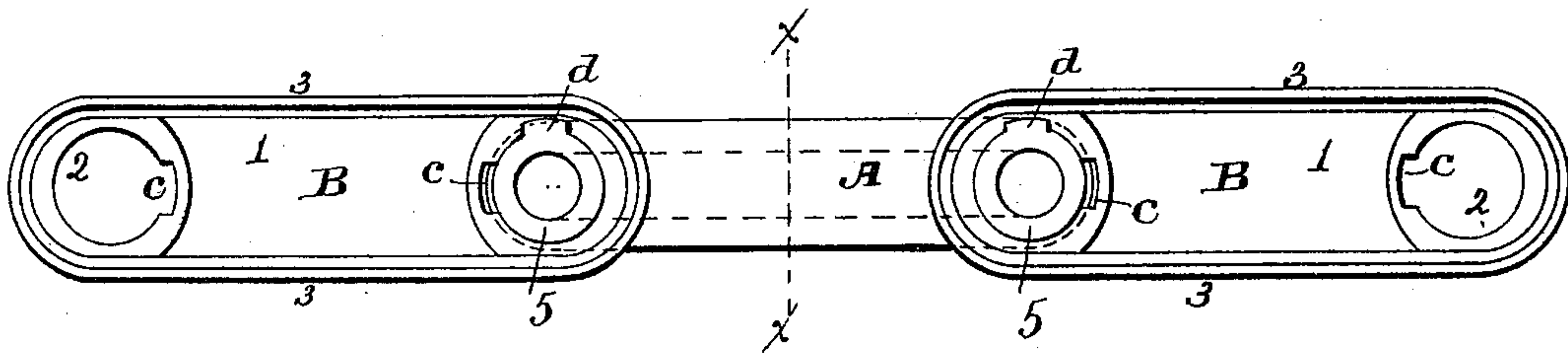


FIG. 2.

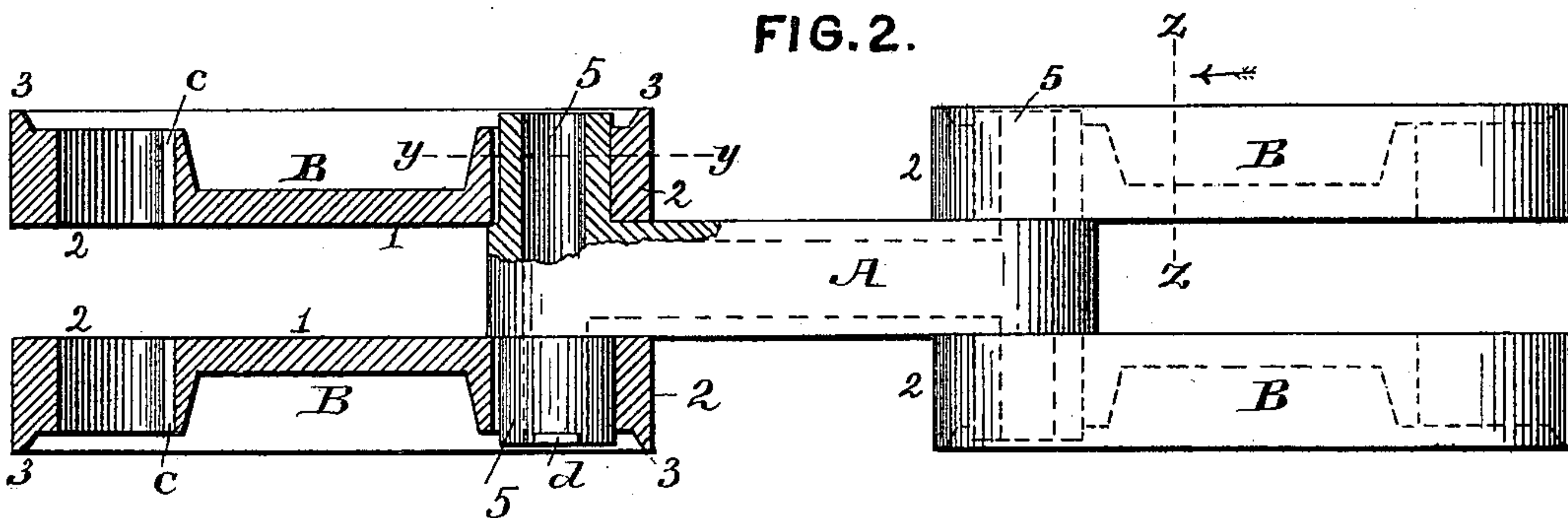


FIG. 3.



FIG. 4.

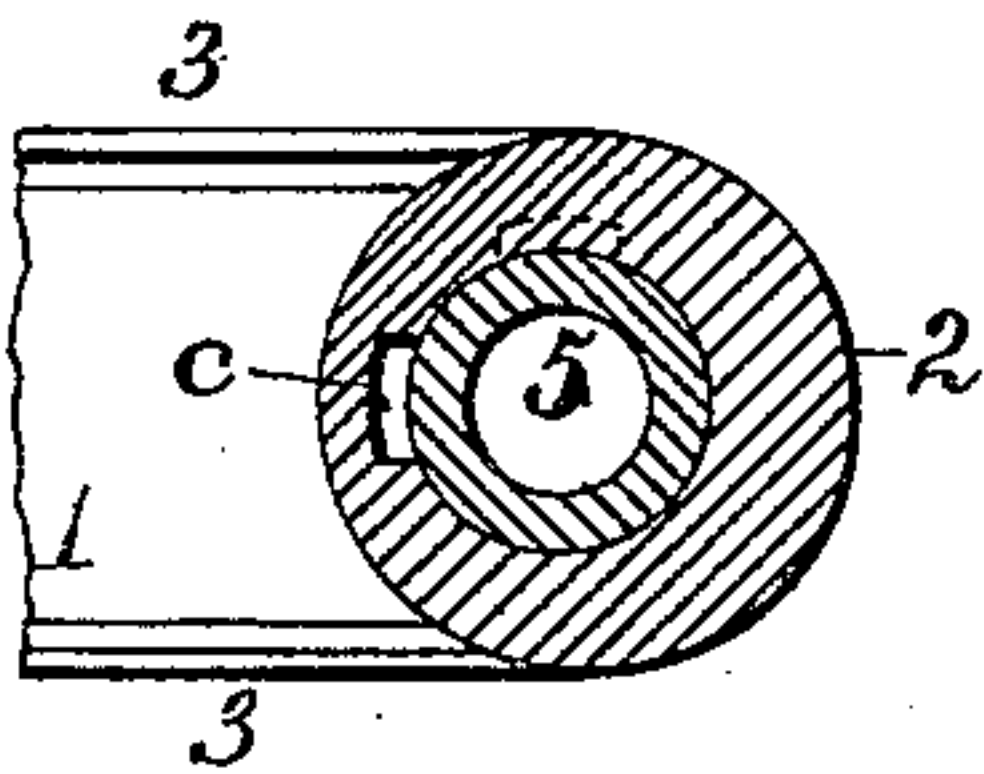
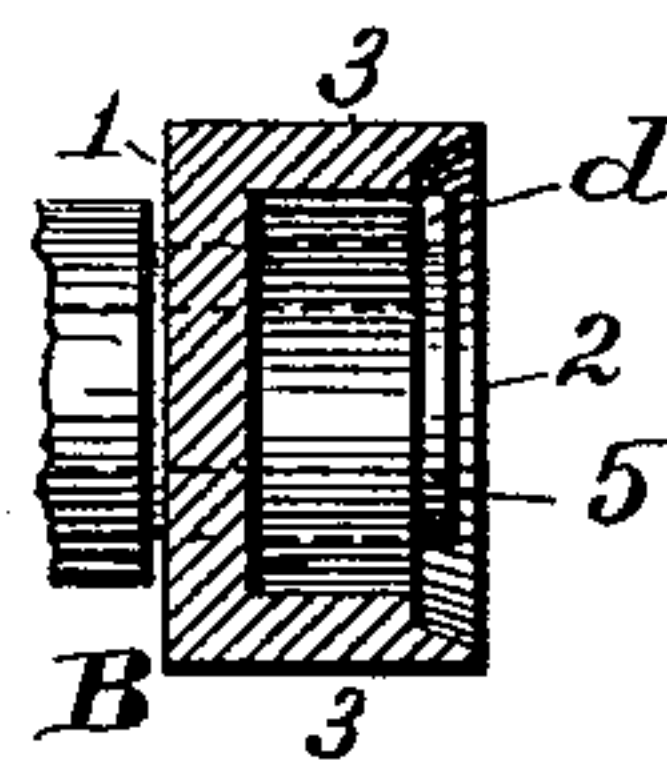


FIG. 5.



ATTEST—
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UNITED STATES PATENT OFFICE.

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DRIVE-CHAIN.

SPECIFICATION forming part of Letters Patent No. 365,123, dated June 21, 1887.

Application filed January 20, 1887. Serial No. 224,911. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL GARLAND, of Bay City, in the county of Bay and State of Michigan, have invented a new and useful Improvement in Chains; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this application.

My invention relates to that type or genus of chain which is made up of alternately-arranged single-bar and double-bar links, and used, according to its detail structure, for the purposes of a carrier-chain or a mere drive-chain.

Previous to my invention it has been customary in the construction or manufacture of this type of chain (of various sizes and under numerous modifications as to the precise details of its structure) to have the adjacent ends of both the single-bar and the double-bar links perforated and a pintle-like device or stud arranged within the perforations of said parts to hinge them together, the said pintle-like device being usually either riveted (or upset) at both ends, (in the formation of a tight or non-detachable chain,) or provided with a head at one end and threaded at the other end for the reception of a nut, (in the manufacture of a detachable chain,) all in a manner well known to those skilled in the art. In practice there are serious objections to such mode of construction, chief among which are the liability of the pintles or rivets to get crooked and worn out of round, and to then get out of proper working position (the pintles being free to turn in the holes of both the double-bar and the single-bar links) relatively to the holes in the links, the rapid wearing away of the holes in both the double and single links into an elliptical shape, and the consequent weakening of both links at the vicinities of their eyes, and the aggregation of these (serious) difficulties by reason of the necessarily small amount of bearing-surface between the wearing parts of the chain. I propose to overcome these objections to the type of chains alluded to, and to provide for use chain of this type that shall be more durable, and at the same time to improve this kind of chain by such formations of the parts as will render them capable of presenting at the ar-

ticulations of the chain extensive bearing-surface, hence capable of long wear, while at the same time the stock of both the single-bar and the double-bar links may be easily malleable-ized and possess sufficient draft strength.

To these main ends and objects my invention consists, essentially, in, first, the novel construction comprising the use of alternately-arranged perforated double-bar links and single-bar links formed with laterally-projecting hollow cylindrical lugs or pintle-like devices, to be hereinafter more fully described, and which will be more specifically pointed out in the claims of this specification, and, second, the novel conformation of the bars composing the links, so as to furnish the necessary tensile strength, and at the same time possess the capacity to be easily and thoroughly annealed by the usual process for making malleable castings of iron, all as will be hereinafter more fully explained, and as will be more specifically pointed out in the claims of this specification.

To enable those skilled in the art to which my invention relates to understand and practice the same, I will now proceed to more fully describe it, referring by letters to the accompanying drawings, in which I have illustrated my invention carried out in that particular form in which I have so far successfully practiced it, and which is about the best now known to me.

In the drawings, Figure 1 is an edge view of a chain made according to my invention. Fig. 2 is a face view of the same, showing a portion of the chain in horizontal central section. Fig. 3 is a detail cross-section at the line *x x* of Fig. 1. Fig. 4 is a detail sectional view at the line *y y* of Fig. 2, and Fig. 5 is a detail cross-section at the line *z z* of Fig. 2.

In the several figures the same part will be found designated by the same letter of reference.

As usual in the type of chain to which my invention relates, the links are alternately single-bar and double-bar, as seen, respectively, at A and B. The two bars of each double-bar link B are duplicates of each other, though turned into reverse positions in the assemblings of the parts comprising the chain, and the single-bar links A are of course all alike.

Therefore a description of one of the links or bars A will answer for all of them, and in like manner the structure of one only of the bars B need be explained.

5 Each of the bars B is composed of a plate-like body portion, 1, two hub-like parts, 2 2, and a surrounding rib-like part, 3, while each link or bar A is formed of a hollow or cored-out body portion, 4, the ends of which are
10 about semi-cylindrical, and four laterally-projecting pintle-like devices, 5, two at each end of the bar and axially in line with each other, all as clearly shown.

Each of the hub-like portions of the bar B
15 has a groove or spline, *c*, cut in its bore, and parallel with the axis of the latter, while each of the tubular pintle-like devices of the bar A is provided near its outer end, and so as to project radially from its periphery, with a lug,
20 *d*, the said grooves *c* of one set of bars and the said lugs *d* of the other set constituting the preferable means by which the articulated parts are held together (in a hinged condition) while in working condition, but permitted to
25 be easily uncoupled by simply turning any two links into a given relative position and then moving them sidewise relatively to each other, after a fashion well known to those familiar with the construction and operation of
30 other forms of detachable chain embodying analogous means for permitting the ready coupling and uncoupling of the parts when turned out of a working position.

It will be seen that by the construction of the
35 bars A with the pintle-like devices 5, and the combination of these devices with the hub-like devices 2 of the bars B, as shown, articulations or hinge-like joints are produced in which the bearing-surfaces of the devices 2 and 5 are
40 very extensive in proportion of the weight of stock composing these parts of the links, and that therefore these bearing-surfaces will endure much or wear much longer than those of joints as heretofore made.

45 The parts of the chain are readily detachable, though not liable to any accidental uncoupling of the parts, while at the same time the joints will remain in perfect working condition for a long time.

50 By making the pintle-like devices hollow, as shown, not only is the hinge-like joint made more enduring, by reason of the increased wearing-surfaces, and all liability of the pintles getting out of alignment avoided, but the
55 thickness of stock of the pintles is such at all points, notwithstanding the large journals afforded, that the metal may be perfectly and easily annealed throughout the whole extent of the mass.

60 By making the body portion of the link A hollow, as shown and described, great strength and sufficient rigidity are given to the link, while at the same time the distribution of the metal is such that the link-body has no por-
65 tion so thick as to impair the perfection of

the malleableizing process to which the castings have to be subjected in the manufacture of chain of that type to which my improvements are to be applied.

In lieu of the precise form of hollow body
70 seen at A, the single-bar links may be differently cored out, or otherwise formed to get the desired effects or results, and should it be deemed expedient or advisable to lend greater strength to the hinge-joints of the chain, this
75 may be done by supplementing such joints with cylindrical bars of iron driven fast into the core-holes of the pintles.

The bars of the links B are made exceedingly strong, and at the same time light and
80 capable of being perfectly annealed by shaping them, as shown, with the band-like or rib-like portion 3, embracing the transversely-arranged plate-like part 1, while by the formation of the bearing-surfaces for the pintles of
85 the other links within the hub-like portions 2, in the manner shown, great wearing capacity is attained without the presence in the link B of any part or portion so thick as to interfere with a perfect annealment of the iron
90 composing the casting.

The described advantages due to my novel construction of the parts are of course most important in the manufacture of chain (of the type shown) of comparatively large sizes and
95 for heavy work, either as drive-chain or carrier (or conveyer) chain.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a chain composed of alternately ar-
100 ranged single-bar links and double-bar links, the combination, with the double-bar links B, provided with the hub-like devices 2, of single-bar links A, formed or provided with the pintle-like devices 5, projecting laterally
105 from both sides of the link and near either end thereof, all in the manner specified, for the purposes set forth.

2. In a chain of the type shown and described, single-bar links having cylindrical
110 pintle-like laterally-projecting devices 5, and also having its body portion made hollow, as specified, to possess the requisite tensile strength, and at the same time present only comparatively thin metallic portions, which
115 are easy of malleableization, all substantially as hereinbefore set forth.

3. In a chain composed of single-bar and double-bar links, bars B, (for the double-bar links,) each composed of a rib-like portion, 3,
120 a transverse plate-like part, 1, and perforated hub-like portions 2, all in substantially the manner and for the purposes hereinbefore set forth.

In witness whereof I have hereunto set my
125 hand this 7th day of January, 1887.

MICHAEL GARLAND.

In presence of—

HEZEKIAH M. GILLET,
MORRIS L. COURTRIGHT.