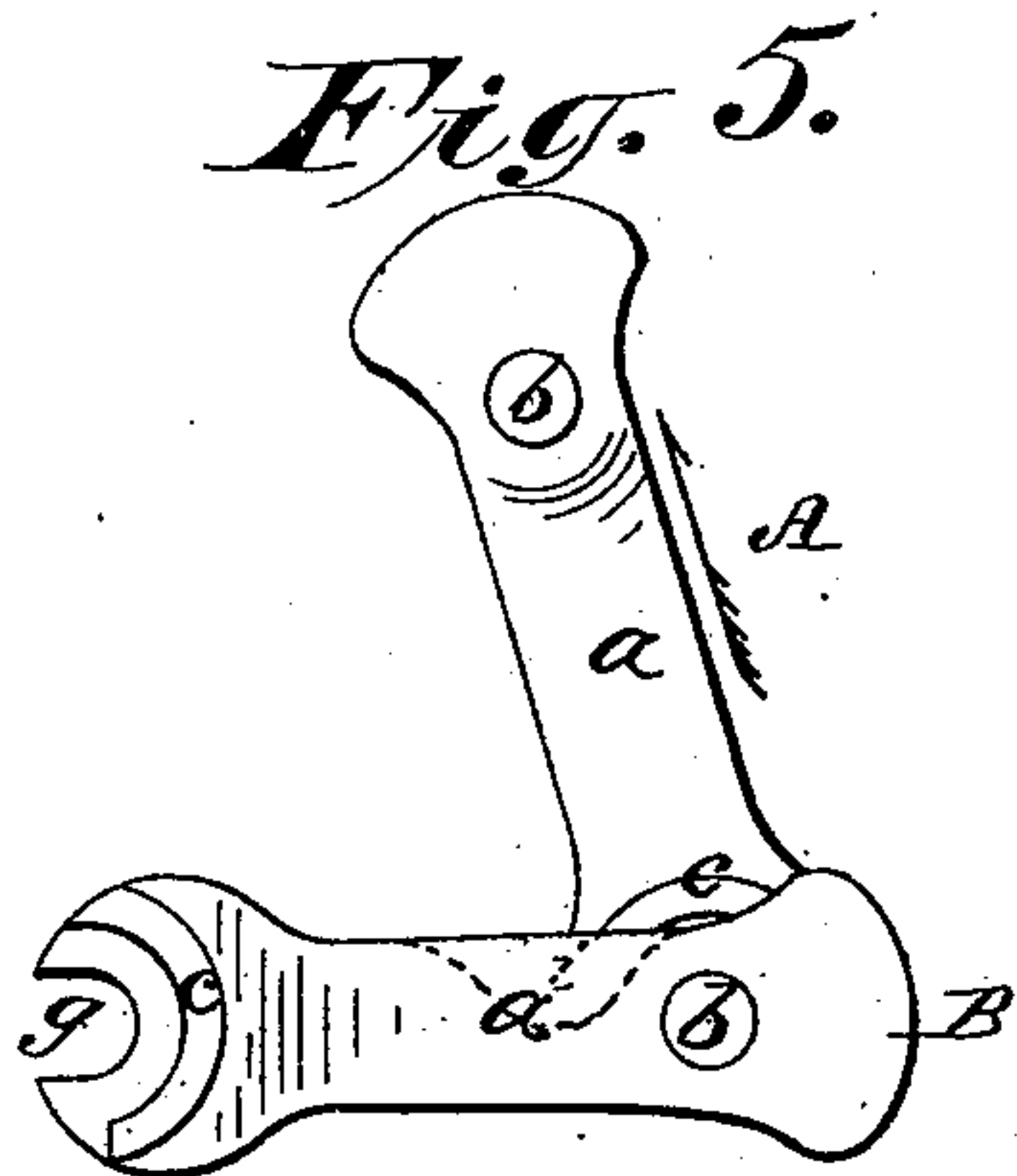
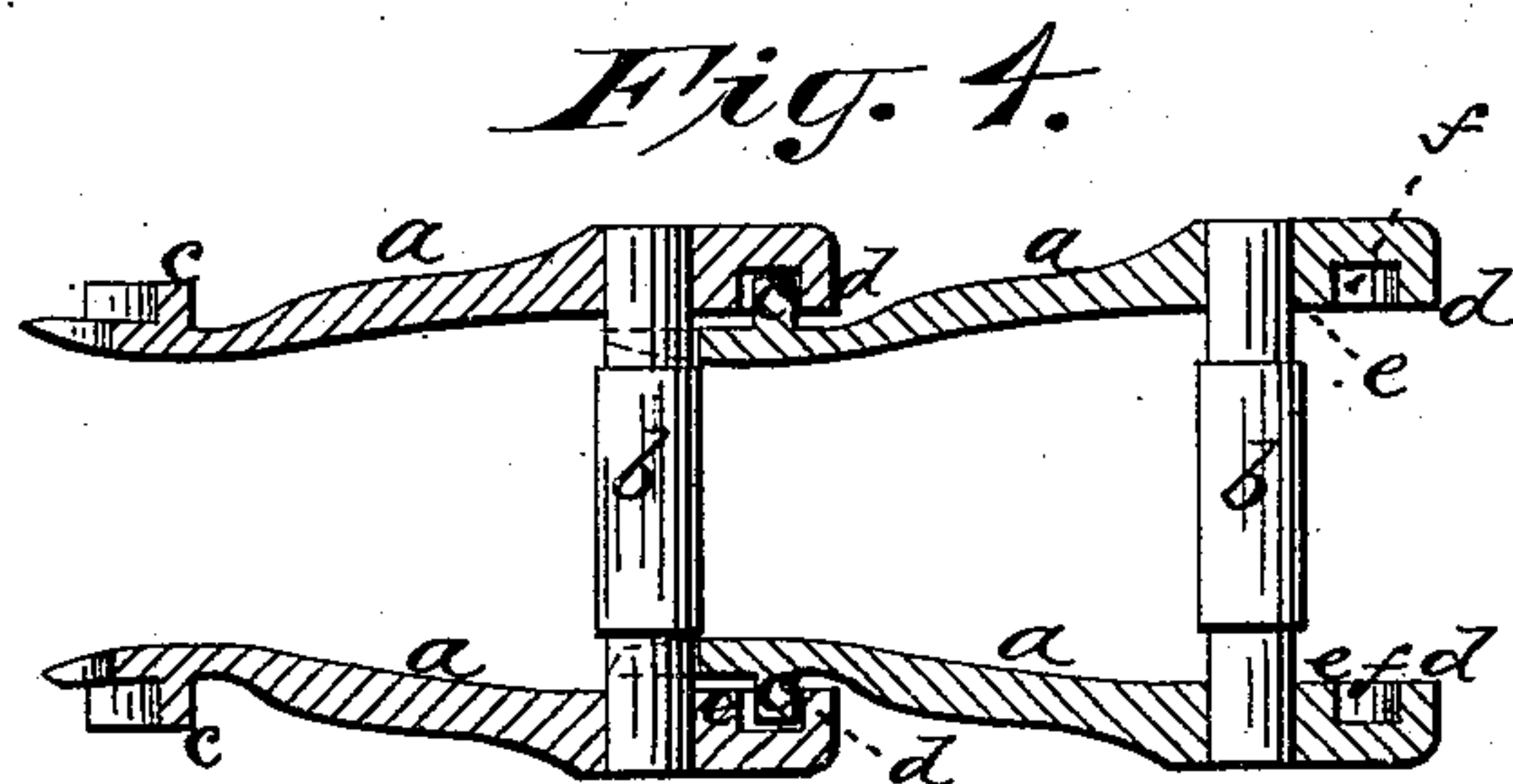
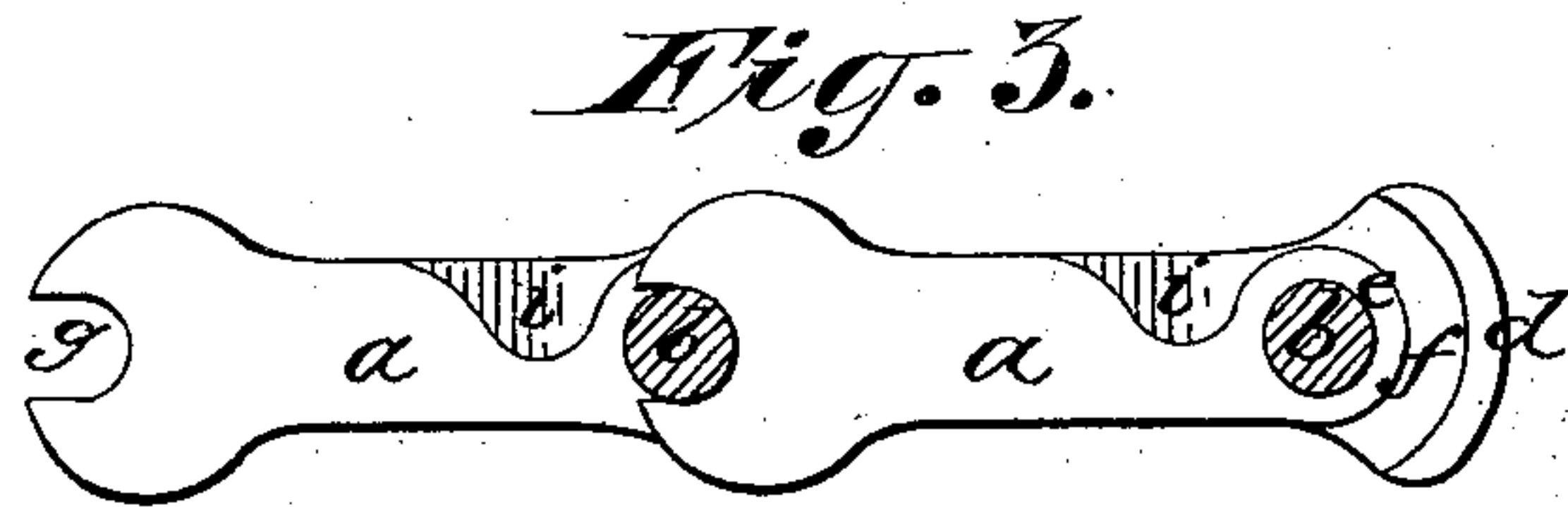
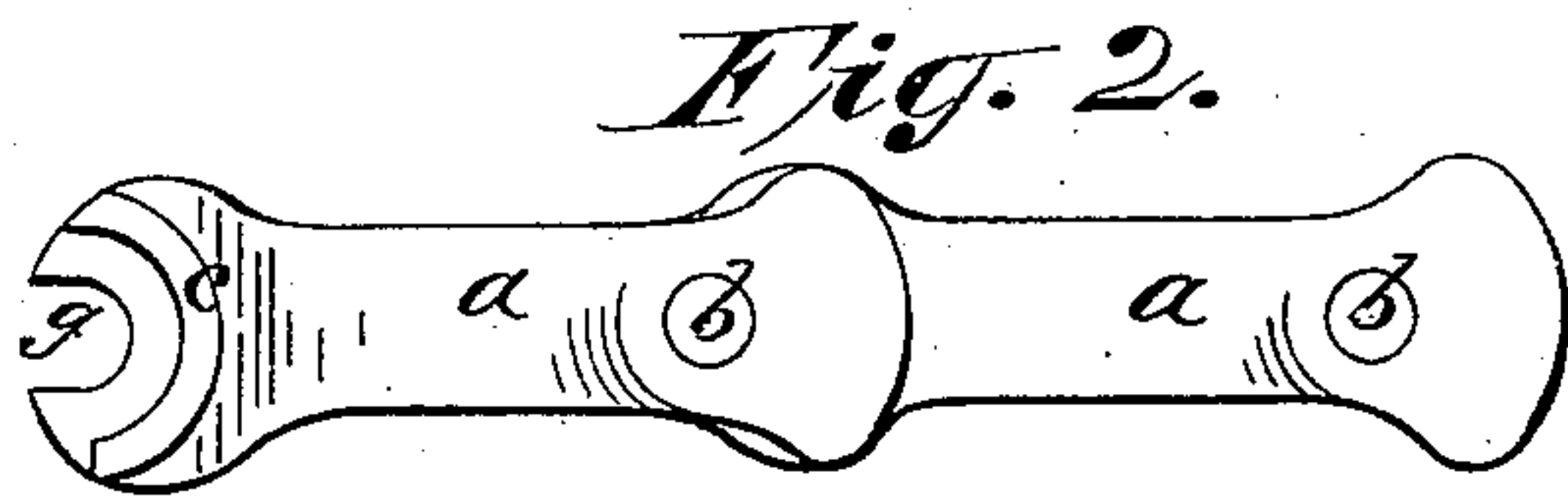
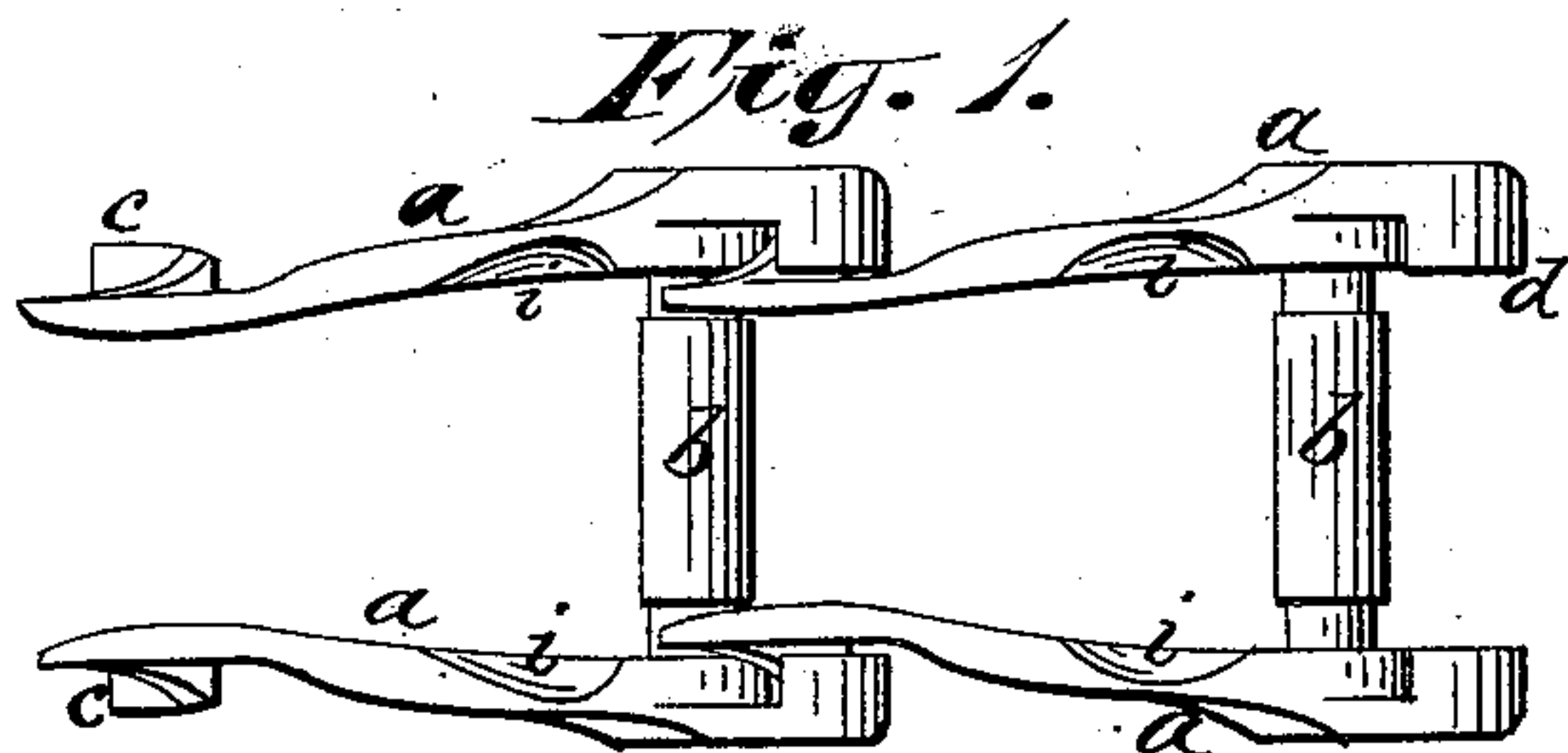


(Model.)

J. M. DODGE.  
Chain.

No. 229,979.

Patented July 13, 1880.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

JAMES M. DODGE, OF NEW YORK, N. Y.

## CHAIN.

SPECIFICATION forming part of Letters Patent No. 229,979, dated July 13, 1880.

Application filed June 2, 1880. (Model.)

*To all whom it may concern:*

Be it known that I, JAMES MAPES DODGE, of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Chains, (Case D;) and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

10 In another application for Letters Patent filed by me is shown and described a construction of chain-links adapted particularly to that kind of chains composed of alternate single and double bars running in the direction of the  
15 length of the chain, the peculiarity of which construction is that the parts are so formed at the joints or articulations that the strain and frictional wear are borne by curved projections on the outer surfaces of the single bar near its  
20 end and similar projections on the inner faces of the double bars, and, as shown in said other application, such principle of construction may be carried out or embodied in various forms of the links; but in all forms shown the result of  
25 the invention is an improved chain of the class alluded to.

My present invention relates to that other class of chains composed of a series of open links adapted to run on sprocket-wheels having teeth that enter the links, and known as  
30 "rag" chains; and has for its object to produce a chain of this class of such construction that the end bars will not be subjected to any serious strain or frictional wear, and so that such strain and wear will come on curved bearing-surfaces of greater size than it would be possible to make the hinge-like joints according to the heretofore practiced modes of construction; and, also, so that the jointed links may  
40 be readily taken apart when turned out of their working position, as in the case of what are known in the art as "detachable" drive-chains.

To these ends and objects, principally, my invention consists in a chain composed of duplicate parts, each part consisting of two side bars and one end bar, each of said side bars being formed or provided with curved projecting bearing-ribs located on the inner faces of  
45 said bars at one end of the link, and on the outer faces of said bars at the other end of said link, the construction being such, as will be

presently more fully described, that when a series of such links are united by an interlocking of the outer and inner projections of each link, respectively, with inner and outer projections of two adjacent links, a chain will be  
55 formed in which, while the parts are free to articulate about axes of motion substantially coincident with the axes of the end bars, and while the parts are also capable of designed  
60 detachment when turned out of a working position, the bearing-surfaces will be much greater in size than it would be possible to have them according to any mode of construction in which the end bars should serve to perform the functions of journals to the joints or  
65 working points of the chain, all as will be hereinafter more fully set forth.

To enable those skilled in the art to which my invention relates to make and use the same, I will now more particularly describe it, referring by letters to the accompanying drawings, forming part of this specification, in which I have illustrated a chain made according to my invention.

Figure 1 is a top or face view. Fig. 2 is a side-edge view; Fig. 3, a central vertical section, and Fig. 4 a central horizontal section, of the chain; and in the several figures the same parts will be found designated by the  
75 same letter of reference.

Each link is composed, as shown, of two side bars, *a a*, and a connecting cross-bar, *b*, located near two immediately-opposite ends of the side bars, each cross-bar *b* serving in the  
85 chain as an end bar to each of two adjacent links. In other words, in a series of links forming a chain, though each link has apparently two side bars and two end bars, (as common to most rag-chains,) there are in reality  
90 only half as many end bars or cross-bars as there are side bars.

On the outer surfaces of the bars *a a*, near two immediately-opposite ends, are two curved projecting ribs or bearers, *c c*, and on the inner  
95 surfaces, near the other two ends of said side bars, are two curved projections, *d d*, between which and shoulder-like projections *e e* are occasioned recesses *f f*, and when the parts of the chain are united in a working condition  
100 the projections *c c* are accommodated within the recesses *f f*, and their convex surfaces bear



on and work against the concave surfaces of the rib-like projections *d d*.

The disconnected ends of the bars *a a* of the link have cut-outs of a sort of semi-cylindrical or U-shaped contour, as clearly illustrated at *g*, and these ends of said bars, it will be noticed, are somewhat nearer together than the opposite ends, which are connected by the cross-bar *b*.

10 This arrangement of the bars *a a* and this conformation of the link permit the disconnected ends of the side bars of each link to be placed within inner faces of the said bars, near their connected ends, in the manners shown, 15 with the cross-bar *b* partially within the cut-outs *g*, to prevent these cut ends of the side bars from backing out from the bearings, and with the curved bearing-projections *c c* in their respective recesses and in engagement with 20 the curved bearing-surfaces of the ribs *d d*.

At *i i*, on the inner faces of bars *a a*, near where these bars are connected by cross-bar *b*, are cut-aways or depressions, such as shown, the object of which is to permit the adjacent 25 disconnected ends of the side bars of the next link to be turned round far enough to effect an uncoupling of the links.

The necessary position of the parts for this uncoupling is illustrated at Fig. 5, where it 30 will be seen that the link A may be moved away from link B in the direction of the arrow, and that but for the depressions *i i*, to accommodate the projections *c c*, the links could not have been turned in the relative po- 35 sitions in which they are shown in this figure.

The detail shapes, proportions, and sizes of the links and their parts may, of course, be more or less varied without departing from the described principle of construction, by which, while the parts are capable of separation 40 when turned out of their working positions, and while they may turn relatively in the manner and to the extent of the usual articulated chains of the class to which my invention relates, said parts are so jointed that 45 at the turning-points they work with bearings of greater superficial surface and greater strength and durability than can possibly be attained to in detachable rag-chains such as heretofore made and used. 50

What I claim as new, and desire to secure by Letters Patent, without restricting my claim of invention to the precise forms of parts, is—

A detachable rag-chain, composed of links each having two side pieces and one cross-piece, 55 and having their joints or articulations composed of curved bearing-projections located on the outer faces of the side bars at one end and on the inner faces of said bars at the other end of each link, all substantially in 60 the manner shown and described.

In testimony whereof I have hereunto set my hand this 27th day of April, 1880.

JAMES M. DODGE.

In presence of—

B. M. SAUNDERS,  
ALBERT M. DAY.