

(No Model.)

W. D. EWART.  
METHOD OF TESTING CHAINS.

No. 371,744.

Patented Oct. 18, 1887.

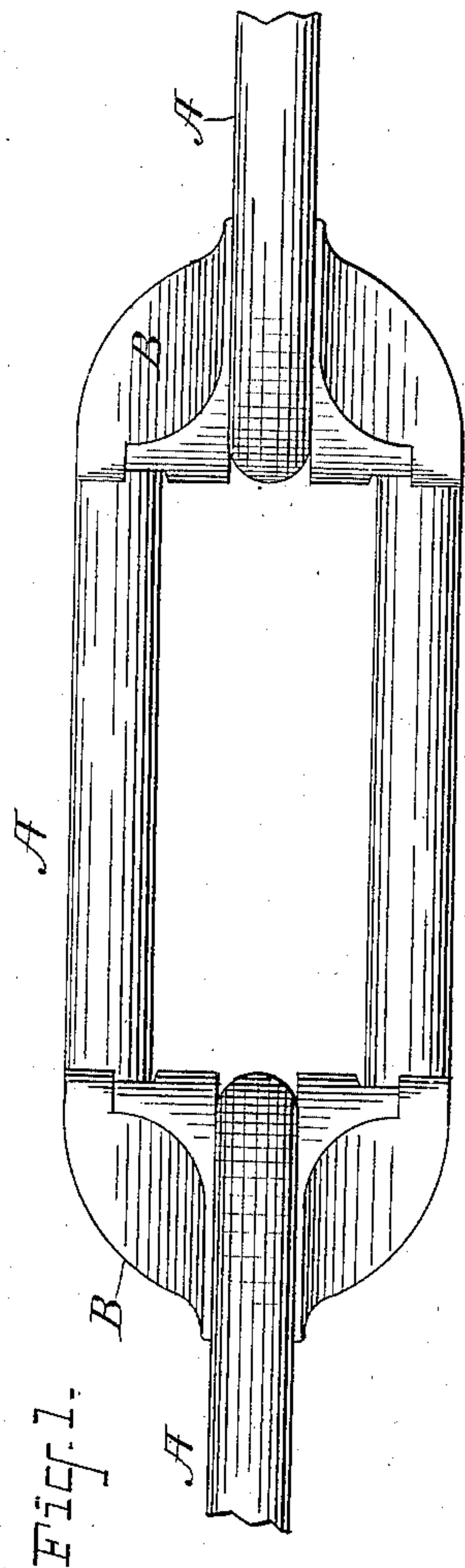


Fig. 1.

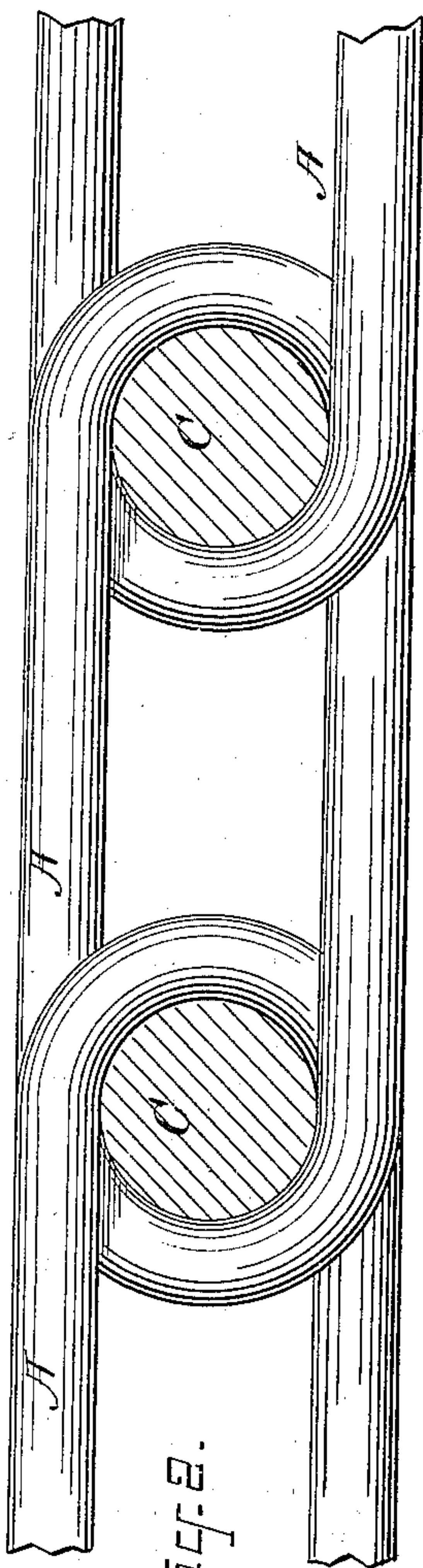


Fig. 2.

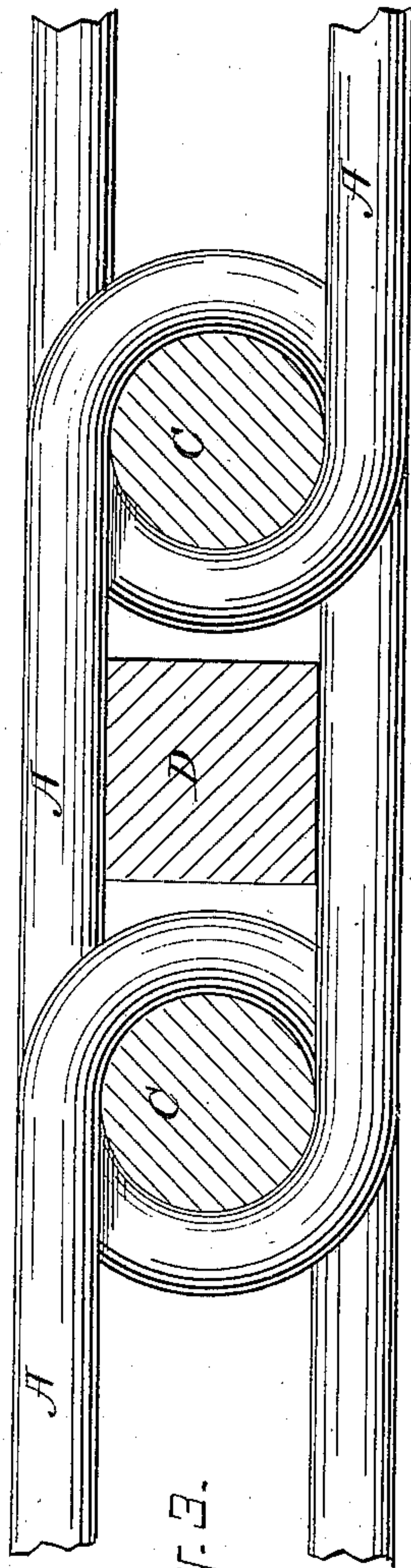


Fig. 3.

ATTEST:

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# UNITED STATES PATENT OFFICE.

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## METHOD OF TESTING CHAINS.

SPECIFICATION forming part of Letters Patent No. 371,744, dated October 18, 1887.

Application filed April 27, 1887. Serial No. 236,322. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM D. EWART, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Testing the Strength of 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 a new and useful improvement in the art of testing chains, and is especially applicable to the manufacture of that species of cable-chains in which the links are indirectly coupled together through the media of interposed bearer-blocks or wearing-blocks, which species of chain was patented on the 12th of September, 1882, to James M. Dodge, No. 264,139. In the manufacture of cable-chain of this species (which manufacture of course includes the necessary process of testing the strength of the chain after the parts shall have been put together) it is not only impossible to test the strength of the chain by the usual modes to any extent greater than about one-third of the intended maximum strength of the finished article without risk of distorting the contour of the links, but, furthermore, even in applying this comparatively inadequate test the semicircular or nearly semicircular ends of the links are liable to be clamped round about the saddle-like portions of the bearing-blocks to such an extent as to impair the subsequent perfect freedom of movement which the blocks and links are designed to have relatively to each other in the working of the chain.

I have devised an improvement in the art of testing chains, which is made the subject of another application by me filed simultaneously with this, (Serial No. 236,321,) in which this difficulty may be overcome to a certain extent. The object, however, of my present invention is to provide a way for not only wholly obviating this difficulty, but for stretching this species of chain up to almost its maximum capacity of tensile strength, and for at the same time giving final and uniform shape or contour to the ends of all of the links, so that in subsequently adding to the enchainment the bearer-block devices (which are usually cast

and all of a uniform size and shape) the saddle portions or bearing-grooves of said blocks will all match perfectly with the bearing-surface of the semicircular end portions of all the links of the chain.

To this main end and object my invention may be said to consist, essentially, in subjecting the links of a chain of that species referred to to the testing strain with the bearer-blocks or intermediate devices removed and with the cylindrical or nearly cylindrical metallic keys placed intermediate of the semicircular interior end portions of each pair of intertwined links, the said key-pieces operating not only to prevent the collapse or distortion of the end portions of the links during the testing of the chain, but also acting as formers from which all of the links receive a uniform final conformation at the end portions during the severe draft-strain to which the links are subjected during the testing operation, all as will be hereinafter more fully explained, and as will be most particularly pointed out and defined in the claim of this specification.

To enable those skilled in the art to which my invention relates to understand and practice my said invention, I will now proceed to more fully describe the same, referring by letter to the accompanying drawings, which make part of this specification, and in which I have illustrated my improved novel mode of testing the species of chain referred to.

At Figure 1 I have shown in elevation a piece of chain of the species to which my improvement specially relates—viz., that type of cable-chain in which there are used some sort of intermediate bearing or wearing blocks with which the adjacent ends of every pair of links is directly coupled. At Fig. 2 I have shown the links of the same chain without the removable bearer-blocks and with nearly cylindrical keys or formers substituted therefor to operate in a manner and for a purpose to be presently explained, while at Fig. 3 I have represented the same devices seen at Fig. 2 supplemented with additional keys or stays adapted to support laterally the side bars of the links according to a mode of chain-stretching made the subject of another application by me filed simultaneously with this one.



In Fig. 1, A represents a series of chain-links, which, as shown, are indirectly coupled together through the media of intermediately-arranged bearer-blocks B, the parts being arranged and operating together according to a plan well known to those skilled in the art and covered by certain Letters Patent to James M. Dodge, hereinbefore referred to.

In the manufacture of this species of chain (either in the form shown or in any other form in which intermediate bearing-blocks are combined with centrally-open links) I take the chain after the interlocking of the links and completion of the latter and before assembling with it the bearer-blocks B, which are usually all exactly alike, and first back the links toward each other sufficiently to permit the insertion between the semicircular adjacent ends of every two links when the latter are turned as nearly into the same plane as possible of nearly cylindrical keys or formers, such as shown at C, Figs. 2 and 3, that fit tight within the end portions of the links, and with these keys or formers C in place, as shown, I then subject the chain, by means of any of the usual chain-testing machines or appliances, to the necessary or desired draft-strain, which testing operation or draft-strain on the chain-links, with their combined keys C, will operate to take out of the curved end portions of the links any irregularities of configuration which may have been left by the chain-maker and cause the ends of all of the links to be shaped in perfect conformity to the nearly semicircular external surfaces of the keys or formers C. It will be understood that by this mode of treatment or this manner of testing the chain-links, in combination with the keys or formers C, a perfect uniformity in shape of all the curved link ends will result, so that when the tested links shall subsequently have combined with them or be assembled with a series of the similarly-cast bearer-blocks B the curved ends of the links will all perfectly fit to and work easily on the bearing-surfaces of said blocks in precisely the desired and predetermined manner.

Of course it will be understood that the formers C are made almost imperceptibly larger than the bearer-blocks designed for use in connection with the links of the completed tested chain.

In cases where it is desirable to subject the

chain in testing to a severe strain—such as might operate to belly in or distort the side bars of the links A—I prefer and propose to supplement the links and formers C with intermediately-arranged keys or stay-pieces D, which, according to the subject of another application by me, operate to support and sustain the side bars of the links and keep the links in perfect contour during the testing of the links and the final shaping of their ends, (by the formers C,) all as will be fully understood from the foregoing description, taken in connection with the accompanying illustrations.

Of course it will be understood that in practicing my present invention or improvement it will be optional as to the use of the supplemental stay-pieces D, which constitute no part of this case, and that my described novel mode of procedure by which I am enabled not only to prevent any distortion of the ends of the links, but to actually give perfection and uniformity of shape to them, may be practiced in connection with links of various sizes and proportions and having ends of different configurations, which are adapted to finally, in the completed chain, work in conjunction with a series of similarly-shaped intermediately-arranged devices.

Having now so fully explained the character of my improvement in the art of testing chain, by which improvement I at the same time perfect and so shape certain portions of the links, what I claim, broadly, as of my invention, and desire to secure by Letters Patent, is—

As an improvement in the art of testing that species of chain which comprises centrally-open links and intermediately-arranged bearer-blocks, subjecting given lengths of the enchain links to the testing pull or draft strain while combined, in the manner specified, with keys or formers, substantially such as shown at C, which perform the double function of preventing any collapse of the end portions of the links' central openings and of giving final and uniform shape to said portions, all as hereinbefore set forth.

In witness whereof I have hereunto set my hand this 22d day of April, 1887.

WILLIAM D. EWART.

In presence of—

GEO. LAWRENCE, Jr.,  
J. G. MARSH.