(No Model.)

F. B. IDE.

CHAIN WRENCH.

No. 457,535. Patented Aug. 11, 1891.

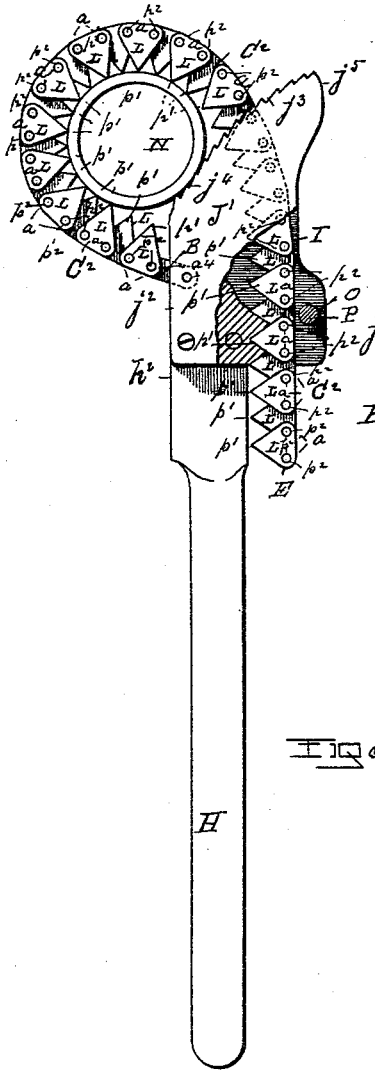

Fig 3

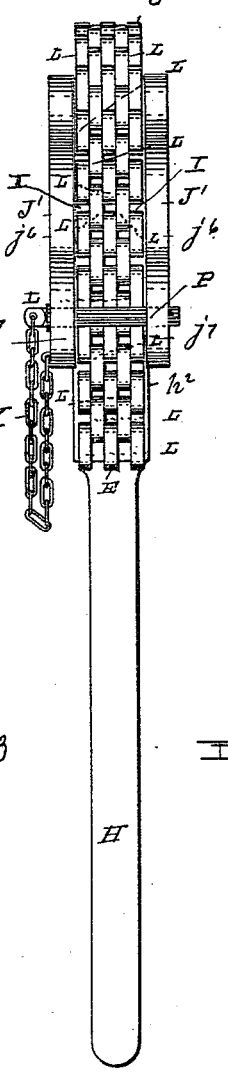

Fig 2

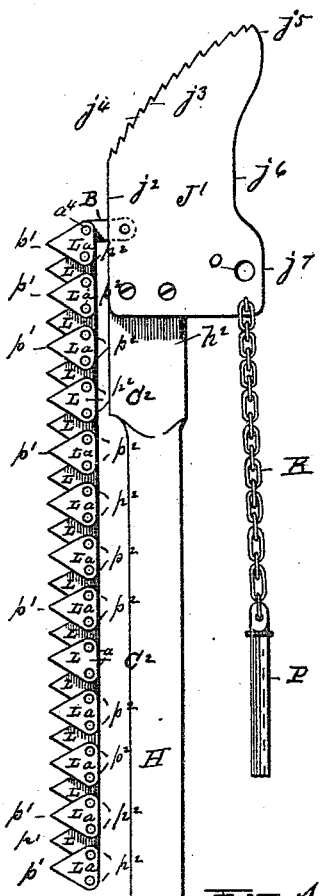

Fig 1

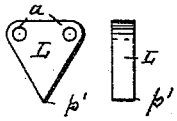

Fig 4

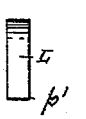

Fig 5

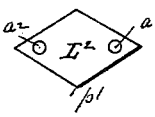

Fig 6

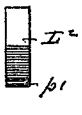

Fig 7

WITNESSES

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UNITED STATES PATENT OFFICE.

FREDERICK B. IDE, OF TROY, ASSIGNOR TO NATHAN D. IDE, OF CORINTH, NEW YORK.

CHAIN-WRENCH.

SPECIFICATION forming part of Letters Patent No. 457,535, dated August 11, 1891.

Application filed April 1, 1891. Serial No. 387,210. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK B. IDE, of the city of Troy, county of Rensselaer, and State of New York, have invented a new and useful Improvement in Chain-Wrenches, of which the following is a specification.

My invention relates to improvements upon that class of wrenches which are made with two jaws that are projected from the end at the sides of an operating-handle, so as to leave an intermediate chain-passage between the jaws, and a chain made of links, which chain at one end is connected to the jaws at the handle-head, where it can be passed around the pipe to be turned, and from where in part encircling the latter, so as to hold it against the face of the jaws, the chain is carried backward between the latter, so as to draw it against the jaw-faces when the handle is operated. This class of wrenches are mainly used for screwing pipes, cylinders, or rods into a threaded connection, and are termed "chain-wrenches."

My invention consists (as will be more fully described hereinafter in connection with its illustration) of a chain-wrench made of links having each on what is its inner edge when in use an angular form and a grip-point produced by the latter, and which links to produce the chain are arranged in connected series of links, each of which series of links alternatingly contains an odd and even number of links with the links of each series parallel to each other, and with the opposite ends of each series having an even number of links arranged to tongue into and between the ends of the links of a series containing an odd number of links and be pivoted thereat.

Accompanying this specification to form a part of it there is a sheet of drawings containing seven figures illustrating my invention, with the same designation of parts by letter reference used in all of them.

Of the illustrations, Figure 1 is a side view of the wrench with the chain pendent therefrom. Fig. 2 is a top view of the wrench with the chain within the chain-passage and beneath the steady-pin. Fig. 3 is a side view of the wrench shown as applied to grasp a pipe with one of the jaws shown as broken out and part shown in section. Fig. 4 shows a side elevation of one of the chain-links. Fig. 5 shows an edge elevation of the form of link shown at Fig. 4. Fig. 6 shows a modified form of link, and Fig. 7 an edge elevation of the link shown at Fig. 6.

The several parts of the wrench thus illustrated are designated by letter reference, and the function of the parts is described as follows:

The letter H designates the handle; h^2, the head of the handle; J′ J′, the jaws, each made with a straight side part j^2, curved jaw grip-face j^3, having the serrated edges j^4, the beak j^5, the recess j^6, and the projection j^7.

The letter P designates the steady-pin, which is connected to the projection j^7 by means of the chain K. The function of this pin when inserted in the holes o is to keep the chain from falling away from its encircling grip of what it surrounds and to keep its free end where beyond its grip from falling down. These jaws are each attached to the handle-head h^2 at each of the outer sides of the latter, so as to leave the intermediate chain-passage I.

The letter C^2 designates the grip-chain, which is made of links L, each of which is constructed with an angular grip-point p' and two pivot-holes $a\,a$. These links are arranged in parallel series of two and three links each, each series of two being arranged at each of their opposite pivot ends to tongue in between the adjacent pivot ends of a series of three links, so as to be connected thereat by pivots p^2, with such series of two and three links alternatingly connecting to produce the chain C^2. In the modification shown at Figs. 6 and 7 the links L^2 have an angular top and bottom and the pivot-holes are arranged in the angular ends a^2 a^2. When the angular links shown at Figs. 6 and 7 are used, the chain has less vertical depth.

The letter B designates a bar projected from

the inside of each of the jaw parts J′, the outer end of which makes a pivotal connection at a^4 with the adjacent link of the chain at each side of the latter.

The device thus made is used as follows: When it is desired to turn a cylinder or pipe, as shown at Fig. 3, the chain is passed around the pipe N with the free end E carried back through the opening I, so as to be beneath the pin P, inserted through the holes *o*, made in line oppositely through the projection j^7 of each of the jaw parts, with the chain and parts so placed that when the handle is operated to turn the pipe the angular points of the links engage with the surface of the pipe, so as to make a strong grip on the latter and to hold the pipe so grasped firmly against the jaws, so that the pipe is turned by the combined action of the chain points, the jaw, and the handle.

I am aware that a chain-wrench has been patented in which the links composing the chain were elliptical in form, having a serrated edge, and were pivotally connected at their ends, with each of the links made with a pin-passage, so that when the chain was passed around a pipe and then carried up through an opening made in the shank between the jaws and handle a pin could be passed through the hole made in the link where beyond the shank-passage to keep the chain in place around the pipe while the wrench was being operated. This construction of the chain necessitated the use of wrenches constructed for different sizes of pipes, from the fact that the elliptical form of the links having their serrated edges nearly in line with their pivots did not allow of much range in adjustment to different sizes of pipes. With my improved chain the links, by means of their angular form, produce grip-points, while the links by lapping past one another more or less adjust in their gripping contact radially around the circumference of the pipe, as shown at Fig. 3, so that the same wrench may be used upon a one-inch pipe or a six-inch pipe.

By my improvement in the form of the links and in making them angular in their shape, so that when connected at opposite corners to form a chain the angle of the links where projected inwardly from their pivotal attachment will produce a grip-point, by which the links radially adjust to engage with different sizes of pipe, which result cannot be had where the links pivotally connected are elliptical in form, with serrated engaging edges, and which latter construction requires a wrench for differing sizes of pipe, this improvement being due to the new form of link which I use.

While I have shown the series of links composing the chain to consist, alternatingly, of two and three links, yet, if desired, they may consist of alternating series of three and four each.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a chain-wrench having two jaws made with an up-curve and each projected from each side at the end of an operating-handle, so as to produce an intermediate chain-recess, a chain made of links having an angular form and pivotally connected to each other at opposite corners with the angle of each of the chain-links where projected inwardly from their pivotal connections, adapted to produce a grip-point, with said chain connected to the under side of the handle and adapted to be passed back between said jaws, substantially in the manner as and for the purposes set forth.

2. A chain for a chain-wrench, made of links having an angular form and pivotally connected at their opposite corners with the angle of each of the links where projected inwardly, adapted to form a grip-point, substantially in the manner as and for the purposes set forth.

3. A chain for a chain-wrench, made of links having an angular form and pivotally connected at their opposite corners with the angle of each of the links where projected inwardly, adapted to form a grip-point with said links so formed connected in series, so that each has alternatingly an odd and an even number of links that lap past each other at their ends for pivotal connection, substantially in the manner as and for the purposes set forth.

4. The combination, with the handle H, having the jaws J′ J′ arranged upon one of its ends at the opposite sides thereof, so as to form the intermediate chain-passage I, each of said jaws being made with the projection j^7 upon its outer side, substantially as described, of the chain C^2, pivotally connected at its end a^4 to said jaws and made of links L, each having an angular form and pivotally connected in series at their opposite corners, and between where thus connected made with the inwardly-projected grip-angle p', and the steady-pin P, constructed to be passed through the projection j^7 of the jaws above the chain in the passage I, substantially in the manner as and for the purposes set forth.

5. A chain for a chain-wrench, made of links, each having an angular grip-point with said links arranged in series, each having alternatingly an odd and even number of links, with the ends of each of the links of an even-number series at each of their opposite ends made to enter between and be pivoted to the ends of the links of an odd-number series, substantially in the manner as and for the purposes set forth.

6. The combination, with the handle H, having the jaws J′ J′ arranged upon one of its ends at the opposite sides thereof, so as to leave the intermediate chain-passage I, each of said jaws being made with the projection j^7 upon its outer side, substantially as de-

scribed, of the chain C^2, pivotally connected at one of its ends at a^4 to said jaws and made of links L, having the angular grip parts p', and the steady-pin P, constructed to be passed through the projection j^7 of the jaws above the chain in the passage I, substantially in the manner as and for the purposes set forth.

Signed at Troy, New York, this 28th day of March, 1891, and in the presence of the two witnesses whose names are hereto written.

FRED. B. IDE.

Witnesses:
CHARLES S. BRINTNALL,
W. E. HAGAN.