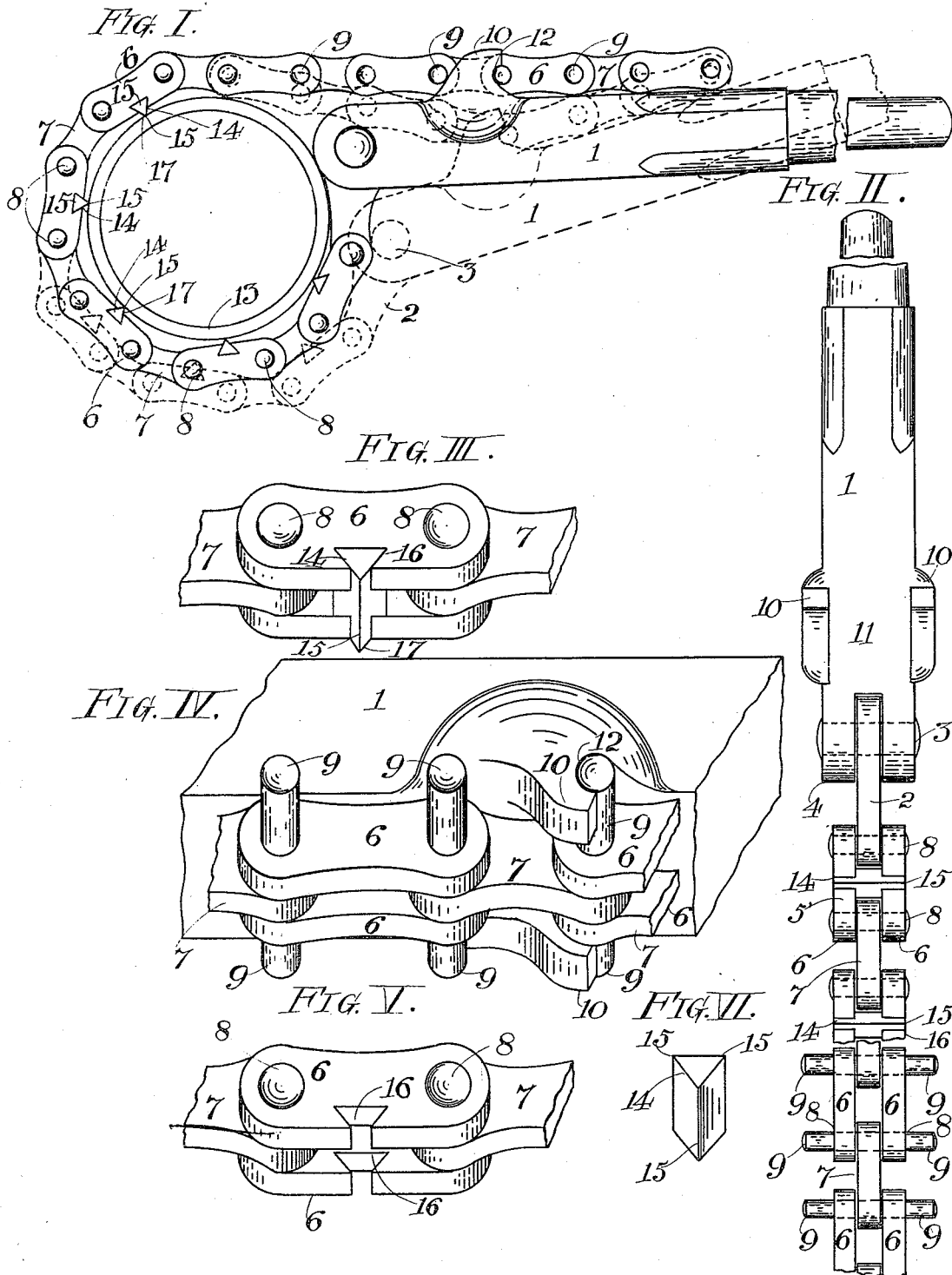


R. MACKAY.  
PIPE WRENCH.

(Application filed Nov. 23, 1899.)

(No Model.)



Witnesses:  
 Robt. Train  
 J. A. Rolloff  
 by King & Co. Attorneys.  
 Invention.  
 Frederick Mac Kay.

# UNITED STATES PATENT OFFICE.

RODERICK MACKAY, OF LOS ANGELES, CALIFORNIA.

## PIPE-WRENCH.

SPECIFICATION forming part of Letters Patent No. 648,766, dated May 1, 1900.

Application filed November 23, 1899. Serial No. 738,060. (No model.)

*To all whom it may concern:*

Be it known that I, RODERICK MACKAY, a citizen of the United States, with residence and post-office address at Los Angeles, in the  
5 county of Los Angeles and State of California, have invented certain new and useful Improvements in Pipe-Wrenches, of which the following is a full, clear, and exact description, reference being had to the accompanying  
10 drawings, which form a part of this specification.

My invention relates to an improved wrench intended more particularly for screwing sections of pipe together or unscrewing the same,  
15 but which may be used for analogous purposes, such as a nut-wrench, &c.; and my invention consists in certain features of novelty hereinafter described and claimed.

Figure I represents the end of a pipe, showing a side elevation of my improved wrench in position for turning the pipe or holding the same, according to circumstances, and which  
20 shows in dotted lines the method for releasing the wrench from the pipe. Fig. II is a detail top view of my improved wrench. Fig. III is a detail perspective of the chain, showing gripping-teeth in position. Fig. IV is a detail perspective of the lever or handle, showing  
25 manner of connecting the chain therewith. Fig. V is a detail perspective view showing mortise for the reception of the gripping-tooth. Fig. VI is a perspective of one of the gripping-teeth detached from the chain.

Referring to the drawings, 1 represents the  
35 handle or lever, which the operator grasps in operating the wrench.

2 represents a single link having its inner end pivoted to the inner end of the lever by means of a pin 3, there being a recess 4  
40 formed in the end of the lever for the reception of the link.

5 represents a chain which passes around the object to be operated upon, said chain consisting of a series of double links 6 and a  
45 series of single links 7, having each of their ends pivoted to the double links by a series of pins 8, a portion of said pins 8 being practically flush with the outside of the links, and a portion of the pins projecting beyond the  
50 outer face of the links, forming studs 9, said studs 9 being adapted to engage lugs 10 upon the lever, there being a recess 11 between the

lugs 10, in which the links rest when the wrench is in position for use.

12 represents curved recesses in the lugs 10, 55 in which the studs 9 rest when the device is in operation, there being a number of the studs 9 in order to lengthen or shorten the chain, according to the size of the pipe being operated upon.

13 represents the pipe, around which the chain 5 is passed and secured to the lugs 10  
60 in order to obtain a grip upon the pipe.

One feature of my invention as distinguished from other wrenches is to form a series of bearings extending across the inner  
65 edges of the double links midway between their ends for gripping the pipe independently of the said edges substantially throughout its entire circumference. In order to accom-  
70 plish this, I provide a series of removable teeth 14, preferably made of hardened steel and also preferably made in triangular shape, so as to form a series of bearing-points 15,  
75 projecting inwardly from and located centrally between the ends of the double links.

16 represents a dovetail mortise cut in the double links 6, this being made to conform to the shape of the triangular teeth 14, the edge  
80 of the tooth 15 extending beyond the faces of the double link, as shown at 17, in order to provide a grasping-point upon the pipe 13 when the wrench is placed in position. In forming the teeth 14 I provide a series of bearing edges which permit a series of bear-  
85 ing-faces to be presented to the pipe simply by driving the tooth out of the mortises 16 and giving it a partial rotation and then reinserting it in said mortises.

Although I have shown my tooth made in 90 the form of a triangle, I do not desire to confine myself to said shape, as other contours might be used, if found desirable. By the use of a removable tooth I am enabled to construct a wrench-chain in which all the bear-  
95 ing-points are made of specially-hardened material, while the body of the chain may be made of an inferior quality of metal, and at the same time the operator of the wrench is provided with a tool which he can readily re-  
100 pair in case of breakage to the points of the teeth by simply reversing the tooth, and at the same time it obviates the withdrawing of the temper of the bearing parts in order to

repair the same and again hardening the wrench, as in the wrenches now used for analogous purposes.

In Fig. 1, I have shown the application of my improved wrench, showing the manner in which the chain is tightened around the pipe, with the removable gripping-teeth engaging the same at a series of points on the periphery of the pipe, and have also shown in dotted lines how the wrench may be readily loosened from the pipe in order to take a fresh hold or for the removal of the same without having to resort to the use of hammers or other tools for loosening the wrench, as is commonly done with wrenches now in use.

I claim as my invention—

1. A wrench comprising a handle, a chain having a series of connecting-links and a series of double links formed with mortises midway of the ends thereof, a series of angular

removable teeth located in the mortises and extending across the double links, and means whereby the ends of the chain are connected with the handle.

2. A wrench comprising a handle, having lugs, and a recess at its inner end, a link pivoted in the recess of the lug, a chain connected with the link and having a series of connecting-links, a series of double links, a series of projecting pivot-pins with which the lugs are adapted to engage, and a series of double links formed with mortises midway of the ends thereof, and a series of angular removable teeth located in the mortises and extending across the double links.

RODERICK MACKAY.

Witnesses:

J. W. KEMP,  
JAS. E. KNIGHT.