

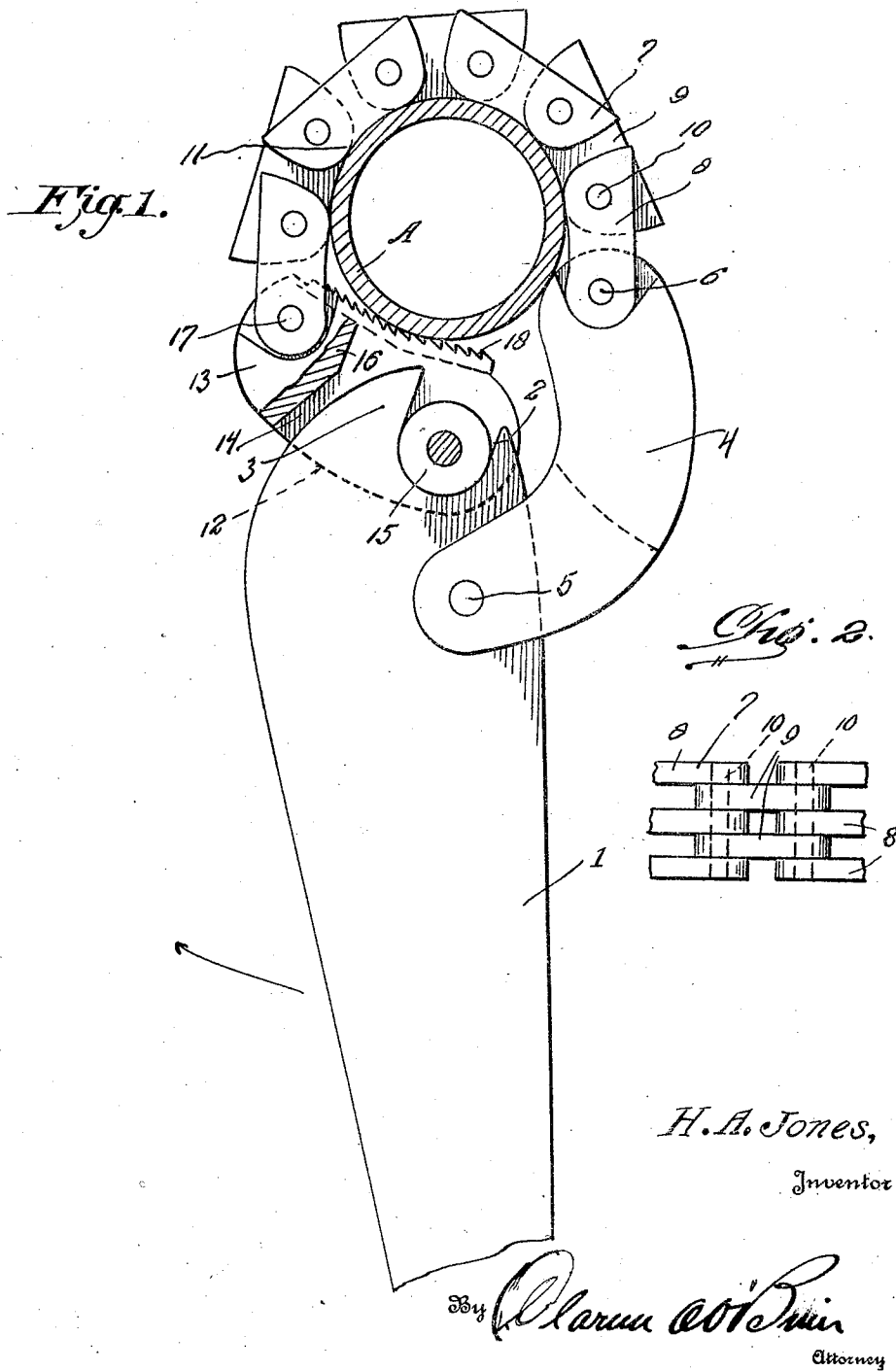
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H. A. JONES

FLEXIBLE WRENCH

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# UNITED STATES PATENT OFFICE.

HOMER A. JONES, OF OKEMAH, OKLAHOMA.

## FLEXIBLE WRENCH.

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This invention relates to new and useful improvements in flexible wrenches which are adapted principally for use in connection with pipes or other cylindrical objects.

6 One of the important objects of the present invention is to provide a pipe wrench of the above-mentioned character, which is of such a construction as to enable the gripping jaws to be easily and quickly placed in position around the object to be turned, means being further provided for securely holding the wrench in position on the object so as to prevent the accidental displacement therefrom while the same is in use.

15 A still further object of the invention is to provide a pipe wrench of the above-mentioned character, wherein the lever or handle has provided at its upper end, means for detachable engagement with one of the gripping jaws when the flexible wrench encircles the object to be turned, the action of the lever forcing the jaws connected thereto into engagement with the object so as to facilitate the quick and easy turning of the object.

20 A further object of the invention is to provide a device of the above-mentioned character, which is simple in construction, inexpensive, strong and durable, and further well adapted for the purposes for which it is designed.

30 Other objects and advantages of this invention will become apparent during the course of the following description.

35 In the accompanying drawing forming a part of this specification and in which like numerals designate like parts throughout the same—

40 Figure 1 is a side elevation of my improved flexible wrench showing the same in position on a pipe, with parts partly in section; and

45 Fig. 2 is a fragmentary view in elevation of the chain.

50 In the drawing wherein for the purpose of illustration is shown the preferred embodiment of my invention, the numeral 1 designates the lever which has its upper end provided with a notch 2 whereby a hook 3 is formed on the upper end of the lever for the purpose hereinafter to be more fully described. A curved link, such as is shown at 4 in the drawing, has its lower end bifurcated whereby means is provided for pivotally connecting the same by means of the

transversely extending pin 5 to the upper portion of the lever 1 directly below the notch 2 formed therein.

60 Extending transversely through the opposite end of the curved link 4, is the pin 6 which provides a means for pivotally connecting one end of the flexible gripping chain, designated generally by the numeral 7. The flexible gripping chain 7 is preferably constructed of a plurality of spaced overlapping links, such as are shown at 8 and 9, respectively, in the drawing, and suitable pins 10 extend through the adjacent ends of the overlapping links for pivotally connecting them together. Any number of these links may be provided as is desired, and as will be readily seen from Fig. 2 of the drawing, I have shown a plurality of links which are arranged in vertical spaced relation on the securing pins 10. The width of the gripping chain may be varied by removing or placing links, such as are shown at 8 and 9 in the drawing, on the connecting pins 10. The inner faces of the links 8 and 9 are slightly curved or concaved as is shown at 11, and the purpose of this construction is to provide a means whereby the flexible chain 7 will conform to the contour of the cylindrical object, which in the present instance is in the form of a pipe A.

80 Connected to the outer end or the opposite end of the gripping chain 7 at a point opposite the connection of the upper end of the curved link 4 at the first end of the gripping chain, is the gripping jaw 12. This gripping jaw 12 may be termed as an auxiliary gripping jaw in connection with the flexible gripping chain 7 when the device is in use.

95 The auxiliary gripping jaw 12 comprises the spaced plates 13 and 14, respectively, the forward end of the gripping jaw having a substantially circular stud 15 disposed between the forward ends of the plates 13 and 14 and bridging the space between the plates in the manner as shown in the drawing. A block or the like, such as is shown at 16, may be placed between the rear ends of the plates 13 and 14 and the rear portions of the plates and the block provided with registering apertures for receiving the transversely extending pin 17 whereby the gripping jaw 12 may be secured to the end of the flexible gripping chain 7. The inner faces of the plates of the gripping jaw 12 are provided with serrations pitched to-

wards the rear ends of the plates as is shown at 18 and this will provide a means for engagement with the outer surfaces of the pipe A so as to prevent the wrench from slipping around on the pipe when in use.

In use, the gripping chain, which has one end thereof connected to the lever 1 by means of the curved link 4, is passed around the object to be turned, such as a pipe or the like; and the opposite end of the gripping chain, which carries the gripping jaw 12 thereon, is then placed against the pipe so that the hook portion 3 of the lever 1 will extend into the forward end of the gripping jaw between the plates 13 and 14 thereof in such a manner as to have the notch 2 formed in the lever receiving or in engagement with the stud 15. By actuating the lever 1 in the direction indicated by the arrow, the gripping chain 7, will be drawn securely around the pipe in such a manner as to have the teeth or serrations 18 formed on the inner faces of the plates which comprise the gripping jaw 12 in engagement with the pipe and will thereby prevent the possibility of the gripping chain from slipping around on the pipe, thus permitting the pipe to be easily turned. As is obvious from the drawing, the outward movement of the lever 1 will also cause an outward movement of the curved link 4 and the portion of the gripping chain connected thereto, and simultaneously cause an inward movement of the opposite end of the gripping chain to which is connected the gripping jaw 12.

It will thus be seen from the foregoing description, that a flexible wrench has been provided for use in connection with cylindrical objects wherein the same may be readily and easily placed in position thereon

and the object may be turned in a positive manner. Furthermore, the simplicity of my device enables the same to be easily and quickly adjusted for use and to be readily disassembled without the necessity of having to employ additional tools in connection therewith. A wrench of the character above described may also be manufactured at a very low cost and the links which comprise the flexible chain may be increased or decreased in number according to the size of the object upon which the same is to be used.

While I have shown the preferred embodiment of my invention, it is to be understood that various changes in the size, shape, and arrangement of parts may be resorted to without departing from the spirit of the invention and the scope of the appended claim.

Having thus described my invention, what I claim is:

A wrench including a handle lever provided at its working end with a notch leading in from the end edge thereof and having opposite side walls, a curved link pivoted to an intermediate portion of the handle lever and adapted to extend around to the side of the notch, a train of links pivotally connected with each other and connected with the first-mentioned link, and spaced plates pivotally connected with the terminal link of the train of links and having a stud bridging the space between them and adapted to enter the notch of the handle lever, said plates being provided at their inner edges with work-engaging teeth pitched toward the ends of the plates pivoted to said train of links.

In testimony whereof I affix my signature.  
HOMER A. JONES.