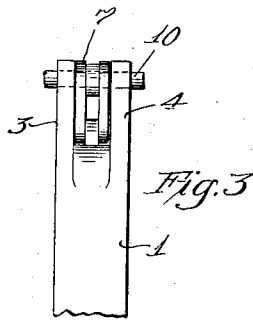
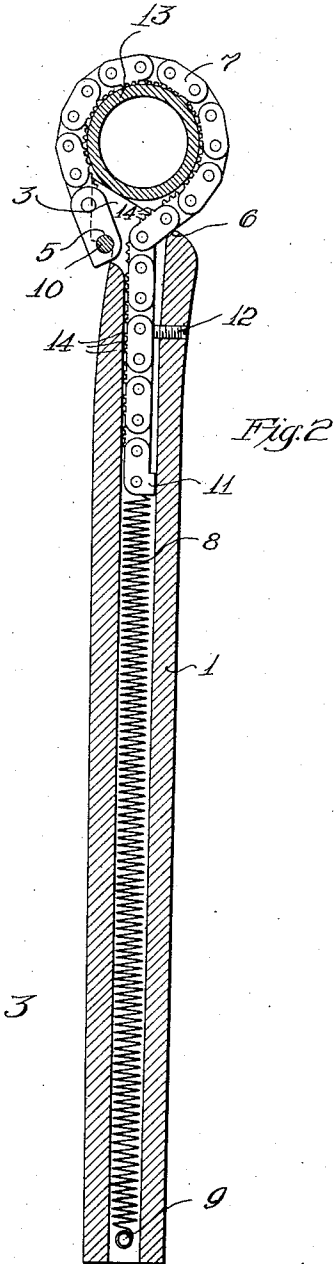
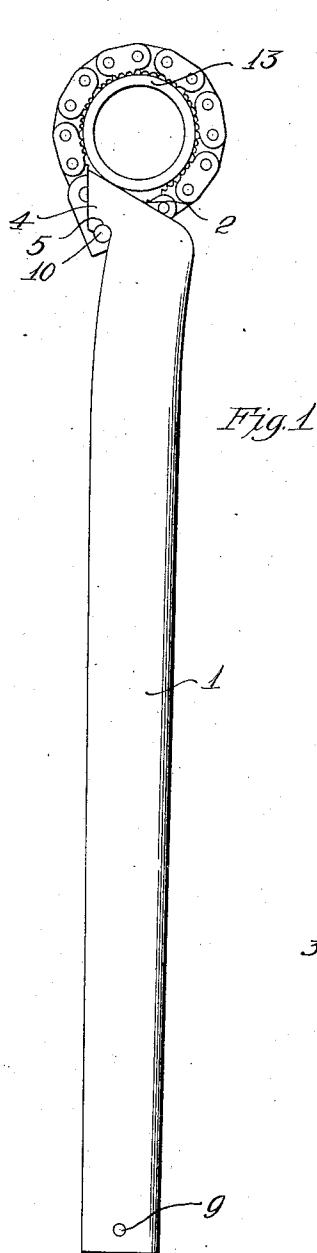


L. D. BENEDICT.
PIPE WRENCH.
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1,063,153.

Patented May 27, 1913.



Witnesses:

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UNITED STATES PATENT OFFICE.

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PIPE-WRENCH.

1,063,153.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LAURANCE D. BENEDICT, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented a certain new and useful Improvement in Pipe-Wrenches, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object to produce a strong, simple and compact pipe wrench which will securely grip pipes of various sizes; which will not mutilate the surface of the pipes or strain them.

A further object of my invention is to produce a wrench of the character specified which will take a grip on a pipe instantaneously; which may be used on a pipe lying close to a floor or wall or in a corner.

A further object of my invention is to produce a novel pipe wrench in which the gripping member will automatically conceal itself in the handle when free to do so, so that when the wrench is not in use there is no loose chain or other flexible member to become entangled or get in the way of other tools or devices.

The various features of novelty whereby my invention is characterized will hereinafter be pointed out with particularity in the claims; but for a full understanding of my invention and of its objects and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawing, wherein:

Figure 1 is a side elevation of my improved wrench positioned on a pipe; Fig. 2 is a longitudinal central section through the parts shown in Fig. 1 along a plane parallel with the plane of Fig. 1; and Fig. 3 is a side view of the head of the wrench looking from the left toward the right in Fig. 1, with the gripping member withdrawn into the handle.

Referring to the drawing, 1 represents a hollow handle open at the head and having the working face of the head upon the end of the handle inclined as at 2. The longer side of the handle is cut away at the head so as to produce two separated parallel ears, 3 and 4, these ears preferably projecting

outwardly somewhat and being under-cut as indicated at 5 so as to shape them into hooks. The opposite side of the handle is continued to the end of the handle so as to provide a transverse inwardly-directed corner or shoulder, 6, opposite the space between the two ears or hooks. 7 represents a flexible gripping member preferably in the form of a link chain so proportioned that it will slide freely in the chamber within the handle. The inner end of the flexible member is connected to one end of a tension spring, 8, whose opposite end is connected to the handle by means of a pin or the like, 9. The parts are so proportioned that when the wrench is not in use, the spring draws the flexible member down into the handle so that it is housed by the handle. The free end of the flexible member is provided with a transverse pin, 10, which is long enough to extend across the open mouth in the head of the wrench and prevent the extreme free end of the flexible member from being drawn down into the handle; the pin 10 acting as a stop to limit the inward movement of the flexible gripping member into the handle. In order to prevent the flexible gripping member from being withdrawn entirely from the handle, it may be provided at its inner end with a lateral projection, 11, which engages with a pin or screw, 12, carried by the handle and projecting into the chamber within the same just far enough to lie in the path of the projection. When the parts are assembled, the pin or screw 12 is removed so that the inner end of the flexible member may be inserted into the handle and then, when the screw or pin is adjusted, accidental withdrawal of the gripping member is prevented. Since the hooks or ears form continuations of two of the walls of the chamber within the hollow handle, the distance between them is sufficient to permit the free end of the gripping member to lie between them, with the transverse pin, 10, engaged in the under-cut portions.

In using the wrench, the gripping member is drawn partially out of the handle, the inclined end of the handle is placed against the pipe or other member 13, and the free end of the gripping member is then looped around the pipe and attached to the hooks as shown in Figs. 1 and 2. Assuming that the pipe, 13, is stationary, it will be

seen that if the handle, as viewed in Figs. 1 and 2, is turned in a counter-clockwise direction, the inclined end of the wrench will rock on the pipe so that the heel or corner, 6, will press the gripping member 5 firmly against the pipe. At the same time the end of the gripping member which is engaged in the hooks, is drawn away from the pipe, or there is a tendency to draw this end of the member away, so that the result is to draw the entire loop of the flexible member which surrounds the pipe firmly into contact with the pipe and therefore a uniform gripping pressure is applied around 15 substantially the entire circumference of the pipe, a tight, instantaneous grip is obtained, and there is no tendency to distort the pipe. Consequently the pipe may be turned quickly and surely. It will be seen that by 20 turning the handle in the opposite direction, namely in the clockwise direction, the grip of the flexible member on the pipe is released; so that the wrench may be used as a ratchet wrench without requiring any special attention or adjustment to be given to the flexible gripping member. This characteristic permits the wrench to be used upon pipes close to the floor or a wall, or a pipe lying within a corner, because, if there is 30 room between the pipe and an adjacent member to permit the flexible member to be looped around the pipe, the wrench may be used as a ratchet wrench, that is, it may be oscillated back and forth without requiring any additional space behind the pipe into 35 which some part of the handle may enter.

To disconnect the wrench from the pipe, the handle is turned slightly in the clockwise direction, so as to loosen the grip of the 40 flexible member on the pipe, and the pin 10 is unhooked from the ears; whereupon the spring in the handle draws the flexible member inwardly until the pin 10 strikes upon the end of the handle and brings the flexible 45 member to rest as indicated in Fig. 3.

Where the gripping member is in the form of a chain, I prefer to provide each link of the chain with three teeth, 14, distributed along the same on the side which forms the 50 inside of the loop when the chain is looped around a pipe, the parts being so proportioned that upon certain sizes of pipe, the appearance of the chain, viewed from the side, is that of a saw having internal teeth, 55 while for pipes of any other size, there will always be a considerable number of teeth distributed around the pipe and engaging with the same for the purpose of giving a firm hold upon the pipe. Consequently the 60 first action, when the handle is turned to cause the chain to take a grip, is to press a comparatively large number of teeth firmly against the pipe so that there can be no slipping; and, because of the number of teeth, 65 no single tooth will bite into the pipe deeply

enough to mar the same; nor, because of the absence of slip, will the pipe be scratched or gashed.

While I have illustrated and described 70 with particularity only a single preferred embodiment of my invention, I do not desire to be limited to the exact structural details thus illustrated and described; but intend to cover all forms and arrangements 75 which fall within the terms employed in the definitions of my invention constituting the appended claims.

I claim:

1. In a pipe wrench, a hollow handle, a flexible gripping member short enough to 80 be housed in the handle, a spring within the handle connected at its ends respectively to the handle and to one end of said flexible member and adapted normally to withdraw said flexible member into the handle, and 85 parts arranged respectively on the handle and on the free end of said flexible member for detachably connecting the free end of the flexible member to the handle.

2. In a pipe wrench, a hollow handle having at one end separated ears in the form 90 of hooks, a flexible gripping member short enough to be housed in the handle, a spring within the handle connected at its ends respectively to the handle and to one end of 95 said flexible member and adapted normally to withdraw said flexible member into the handle, and a transverse pin on the free end of said flexible member adapted to be engaged with the hooked ears. 100

3. In a pipe wrench, a hollow handle having on one end a face inclined to the longitudinal axis of the handle, a flexible gripping member extending at one end into the 105 handle, a spring housed within the handle and connected at its ends respectively to the handle and to the inner end of said flexible member, and means near the end of the handle on the longer side thereof for detachably engaging the free end of said flexible 140 member. 140

4. In a pipe wrench, a hollow handle having a portion of one side removed therefrom near one end thereof to form two 115 separated ears, said ears having portions cut away to shape them into hooks, a flexible gripping member having one end projecting into the handle, a spring within the handle connected at its ends respectively to the handle and to one end of said flexible 120 member, said ears being far enough apart to receive between them the free end of said flexible member, and lateral projections on the free end of said member adapted to be engaged with said hooks. 125

5. In a pipe wrench, a hollow handle open at one end, a flexible gripping member in said handle and adapted to project out of said open end, a spring lying within the handle and connected at its ends respec- 130

tively to the handle and to one end of said flexible member, means on one side of the handle adjacent to the said end thereof for detachably engaging the free end of said member, and there being an inwardly facing shoulder on the opposite side at the aforesaid end of the handle for engaging with the side of said member.

6. In a pipe wrench, a hollow handle open at one end, a portion of one side of the handle being cut away adjacent to said end to form two separated ears, said ears having undercut portions, the opposite side of the handle at said end having an inwardly facing shoulder, a flexible gripping member extending into said handle and having the free end projecting beyond the open end of the handle, means on the free end of said member for engaging with the under-cut portions of said ears, and a spring housed within the handle and connected at its ends respectively with the inner end of said member and with the handle.

7. In a pipe wrench, a hollow handle, a link chain lying within the handle, a spring housed within the handle and connected at its ends respectively with the inner end of the chain and with the handle, the outer end of the chain and the handle having members adapted to be detachably engaged with each other, each link of said chain being provided with separated teeth projecting therefrom on the side which is the inner side of a loop formed by partially withdrawing the chain from the handle and connecting its free end to the handle.

8. In a pipe wrench, a single hollow

handle open at one end, a flexible gripping member lying loosely in said handle and adapted to project out of said open end, parts on the handle and on the free end of said flexible member for detachably connecting the projecting end of said flexible member to the handle, and a shoulder at said end of the handle engaging with the outer side of said flexible member at the point where it leaves the handle and adapted to clamp said flexible member firmly between said shoulder, and a pipe lying against said end of the handle with the flexible member looped about it.

9. In a pipe wrench, a single handle provided with a chamber opening out of one end of the handle, a flexible gripping member lying loosely in said chamber and having one end projecting out of the open end thereof, parts arranged respectively on the handle and on the projecting end of said flexible member for detachably connecting the projecting end of the flexible member to the handle, the end of one of the walls of said chamber being in a position to engage with the outer side of a loop formed by partially withdrawing the chain from the handle and connecting its projecting end to the handle and serve as a heel or fulcrum for the handle to press the loop against a part surrounded thereby.

In testimony whereof, I sign this specification in the presence of two witnesses.

LAURANCE D. BENEDICT.

Witnesses:

WM. F. FREUDENREICH,
RUTH E. ZETTERWALL.