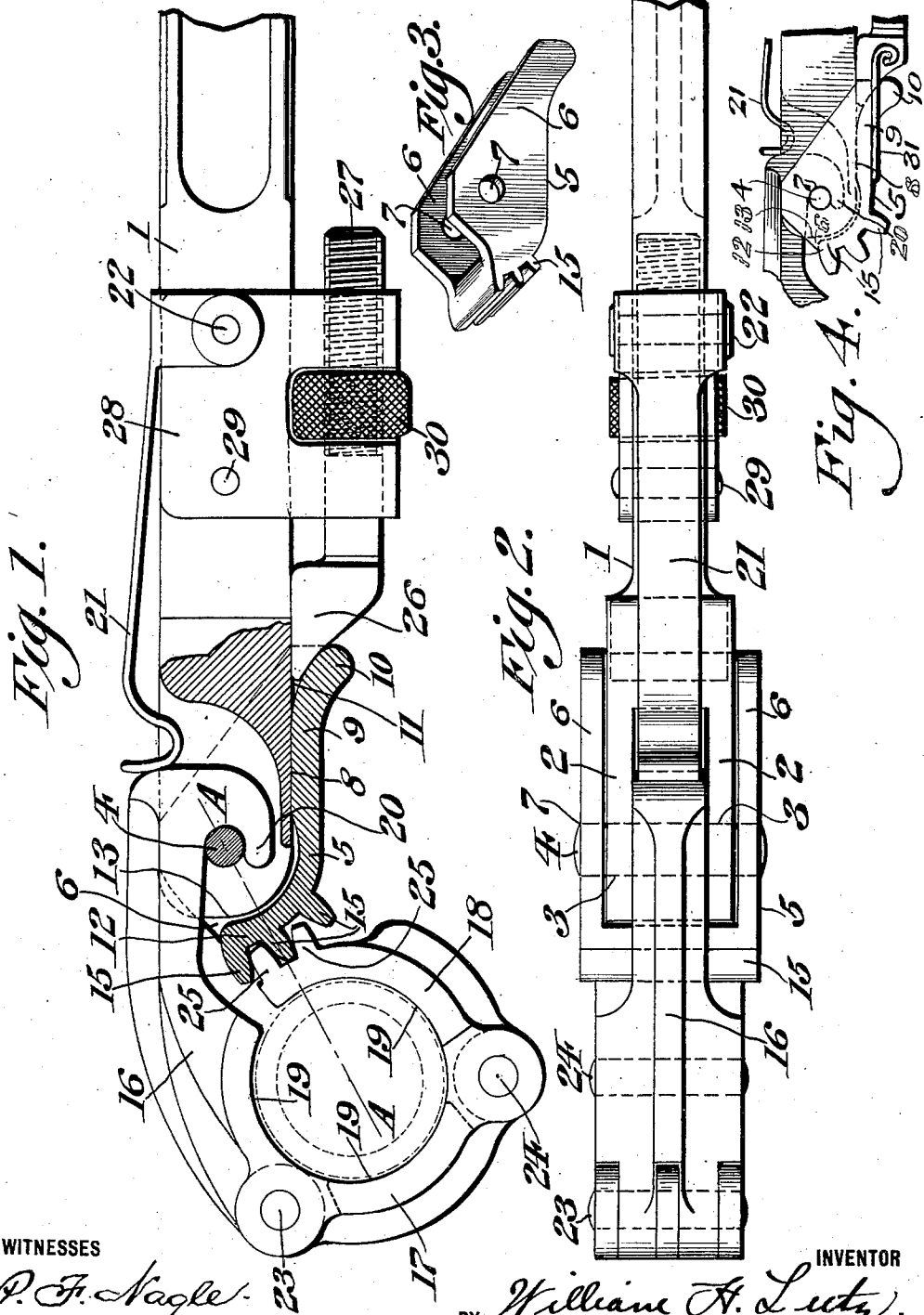


W. H. LUTZ.
COMPRESSION WRENCH.
APPLICATION FILED OCT. 13, 1911.

1,054,700.

Patented Mar. 4, 1913.



WITNESSES

P. F. Nagle.
L. Douville.

INVENTOR

BY William H. Lutz.
Hedersheim & Gaubert.

ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM H. LUTZ, OF PHILADELPHIA, PENNSYLVANIA.

COMPRESSION-WRENCH.

1,054,700.

Specification of Letters Patent.

Patented Mar. 4, 1913.

Application filed October 13, 1911. Serial No. 654,474.

To all whom it may concern:

Be it known that I, WILLIAM H. LUTZ, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Compression-Wrench, of which the following is a specification.

This invention relates to wrenches, and more particularly to the type known as a compression wrench adapted for grasping articles such as pipe, cylindrical or otherwise, shafting, studs, piston rods, socket wrenches, ratchets, drills, reamers or the like, and has for its object to provide a means whereby the article may be securely gripped for the particular operation desired, and embodying also features making it possible to adapt the wrench for articles of different diameters and sizes. It has heretofore been proposed to utilize wrenches for this purpose by constructing them with jaws or gripping loops, either of chain construction or of segments, and which are adapted to encircle a pipe and be drawn tightly about the same by grasping the handle or lever and shifting the same to accomplish the desired end. In practice it has been found that wrenches embodying such a construction are defective in the mechanism for causing the gripping pressure and for operating them since such structures limit the change of an effective working diameter, and furthermore are cumbersome and complicated in the parts which permit interchangeability of gripping loops.

In my present invention I have devised a wrench of the compression type which overcomes the defects and disadvantages inherent in existing wrenches, and have devised an operating structure which regulates the gripping action of the jaw members, distributes the strain and prevents the application of such a force as to crush the pipe or other article operated upon.

It is a further object of my invention to provide a means whereby the fulcrum member of the operating mechanism may be shifted to vary the point where the force is applied, whereby the pressure may be either greater or less as desired and to materially increase the ratio of the working diameter.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

For the purpose of illustrating my invention, I have shown in the accompanying drawings one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Referring to the drawings, Figure 1 represents a side elevation of a compression wrench embodying my invention, certain of the parts being broken away for the sake of clearness of illustration and a portion of the handle being omitted as an unnecessary showing. Fig. 2 represents a plan of the same. Fig. 3 represents a detail of the fulcrum shoe. Fig. 4 represents a detail of a modification used in connection with the fulcrum shoe.

Similar numerals of reference indicate corresponding parts in the figures.

1 designates the handle or operating lever which in the present instance, is provided with a bifurcated or forked end 2, having openings 3 in each member thereof adapted to receive a pin 4 which performs the double function of a pivot and a fulcrum point. The handle or lever 1 may be of any suitable shape to provide an effective means for grasping it, and the length of the same may of course be proportioned to the size of the operating parts of the wrench and may be made long or short, as desired.

5 designates a fulcrum shoe having side wings 6, preferably formed integral therewith, and each provided with an opening 7, which openings are adapted to aline with the openings 3 in order to receive the fulcrum pin 4, since, as will be apparent from Fig. 1, this member 5 is carried by the pin 4 and partially incloses the bifurcated ends 2 of the handle 1. It will further be noted that the fulcrum or shoe 5 is provided with a face 8 which in operative position preferably abuts the lower side of the lever 1, and further that the body portion 9 on which this surface 8 is formed is extended to form a lip 10, which, in the present instance, diverges from the lever 1, thereby providing a space 11 for a purpose presently to be described.

The outer end of the fulcrum shoe 5 is

preferably curved as indicated at 12, and conforms to the forked ends 2 of the lever 1, which it will be noted are also rounded, as shown at 13. This construction, as will be apparent, permits the fulcrum shoe 5 to swing freely about the pivot 4 through a certain arc without interfering with other adjacent parts. The curved portion 12 of the shoe 5, as here shown, is provided with a plurality of teeth 15 outwardly disposed and forming a gear segment with which certain adjuncts, presently to be described, are adapted to cooperate.

The jaws or clamping mechanism for engaging the pipe or like article, comprise in the present instance, the body member 16, the link 17 and the arm 18, each of which is provided with a jaw 19, preferably formed on the arc of a circle and adapted to engage the surface of the article. The body member 16 is preferably detachably secured to the handle 1 by forming one end thereof with a hook 20 which is adapted to pass over the pin 4, and with which it is normally held in engagement by means of a spring arm 21, the latter being secured by a bolt 22 to the lever 1. It will be noted that the arm 21 bears against the body member 16 at such a point as to normally tend to rotate this member about the pin 4 so that the adjacent parts of the gripping mechanism are maintained or held in correct position and create sufficient, initial friction to insure immediate, positive action when the operating pressure is applied to the lever 1. The link 17 is pivotally secured to the body member 16 by means of a pin 23, and to the arm 18 by a pin 24, these two pins forming pivots about which the respective parts may be turned.

25 designates gear teeth preferably formed integral with the arm 18 and juxtaposed with respect to the teeth 15, with which they are normally in mesh. In connection with this gear or toothed construction, it will be noted, for the purpose of obtaining the maximum gripping action, that the fulcrum shoe 5 should be so adjusted as to bring the point of contact between the two gears behind the line of centers (indicated by A—A, Fig. 1) of the pivot 4 and the pipe or article in the wrench. Adjustment of the fulcrum shoe 5 is accomplished, in the present instance, by means of a wedge 26 secured to or integral with a threaded rod 27 carried by a block 28, the latter being suitably secured to the handle 1 by a cotter pin 29, or the like. In the present instance it will be noted that the bolt 22 also serves as a support for the block 28. The rod 27 may be moved in either direction as desired by means of the usual leader nut 30, in order to position the wedge member 26 properly with respect to the lip 10 of the fulcrum shoe 5, it being noted that the nose

of this wedge member 26 enters the space 11 heretofore referred to.

In Fig. 4, I have shown a modification wherein a spring 31 is employed for the purpose of preventing the fulcrum shoe 5 from hanging loose on its pivot when the device is not in use and the same is preferably secured at its ends to the wedge member 26 and passes in front of the body of the shoe 5 thereby performing the function of maintaining the latter normally in contact with the front of the lever 1. It will be apparent that this construction will readily permit the movement of the wedge member 26 since the U-shaped spring will slide along the under surface of the shoe whenever an adjustment is necessary.

In the operation of the device, the jaw or clamping members are brought around a pipe or similar article and the gear teeth brought into mesh whereupon the handle 1 may be grasped and moved in a manner readily apparent to produce a gripping and binding action of the jaws on the article, and of course the more the handle 1 is moved the tighter will be such binding action.

It will now be apparent that I have devised a complete unitary structure, particularly well adapted for the purpose intended, one that is efficient, practical and successful in operation and wherein the construction is simple, the parts few and the arrangement such that the mechanism may be assembled or dissembled in a minimum of time whereby the wrench may be converted from one size to another according as the diameters of the different articles vary.

I am aware that it has heretofore been proposed in the patent to Fisher, No. 773,933, November 1, 1904, and Wiegand No. 626,401, June 6, 1899, to employ segmental types of gripping loops in which a spring structure is utilized to actuate certain of the many parts. It is, however, desirable in the commercial manufacture and practical use of devices of this character that the parts be made simple and strong, and constructed in such a manner that they may be readily operated by unskilled labor without undue manipulation of a multiplicity of parts.

My present invention is clearly differentiated from the Fisher and Wiegand devices aforesaid, as will be apparent to those skilled in the art, since the same employs an extremely simple and effective spring arm, and a fulcrum member embodying an effective device for transmitting power and compressing the gripping members of the wrench. It will also be apparent that the fulcrum member embodies an adjusting feature whereby the point of application of the force which operates the wrench may be shifted as desired to vary the compressive effect.

Having thus described my invention, 130

what I claim as new and desire to secure by Letters Patent, is:—

1. In a device of the character stated, a handle, a pin carried thereby forming a pivot, a gripping device detachably carried by said pin, a spring normally holding said device in operative position, a fulcrum member movably mounted on said pin, and gear teeth formed respectively on said fulcrum member and said gripping device and adapted to intermesh.

2. In a device of the character stated, a handle, a gripping device detachably secured thereto, means to normally hold said device in operative position, a fulcrum member movably mounted on said handle, gear teeth formed respectively on said fulcrum member and said gripping device, and adapted to intermesh, and means to vary the position of said fulcrum member relative to said handle whereby the compressive action of said gripping device is increased or diminished.

3. In a device of the character stated, a handle, a gripping device detachably carried thereby, means for normally holding said gripping device in operative position, a fulcrum member movably mounted on said handle, a lip extending from said fulcrum member, a wedge adapted to contact with said handle and said lip, means for operating said wedge to shift said fulcrum member from one position to another and gear teeth formed respectively on said fulcrum member and said gripping device and adapted to intermesh.

4. In a device of the character stated, a

handle, a pin carried thereby forming a pivot, a gripping device detachably carried by said pin, a spring normally holding said device in operative position, a fulcrum member, gear teeth formed on said fulcrum member and radially disposed with respect to said pivot pin and gear teeth formed on said gripping device radially disposed with respect to the arc of said gripping device, said gear teeth being adapted to intermesh with said fulcrum gear teeth.

5. In a device of the character stated, a handle, a pin carried thereby forming a pivot, a gripping device detachably carried by said pin, means for normally holding said gripping device in operative position, gear teeth formed adjacent one end of said gripping device and outwardly disposed, means swingingly mounted on said pivot to vary the compressive action of said gripping device, and gear teeth carried by said means for engagement with said gripping device gear teeth.

6. In a device of the character stated, a handle, a gripping device pivotally carried by said handle, means to normally hold said device in operative position, gear teeth formed on said gripping device, and gear teeth carried by said handle adapted to mesh with said gripping device gear teeth, said handle carried gear teeth being formed on a pitch line having as a center the pivot point of said gripping device.

WILLIAM H. LUTZ.

Witnesses:

ROBERT M. BARR,

C. D. McVAY.