No. 640,643. Patented Jan. 2, 1900.

J. J. FAHRNEY.

WRENCH.

(Application filed Oct. 2, 1899.)

(No Model.)

Fig. 1.

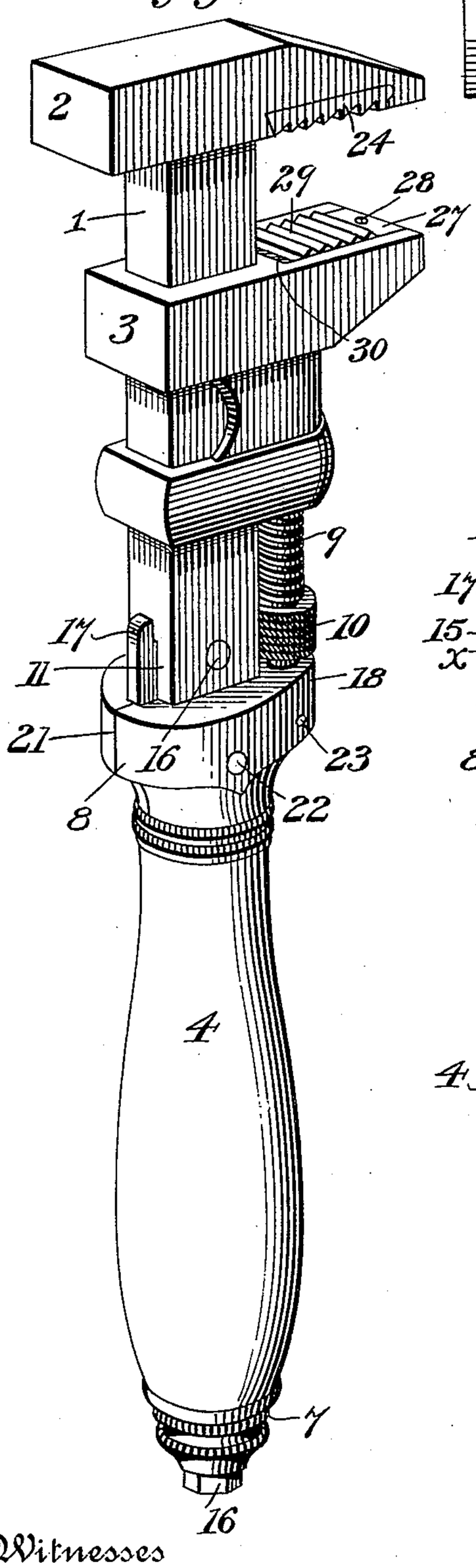


Fig. 2.

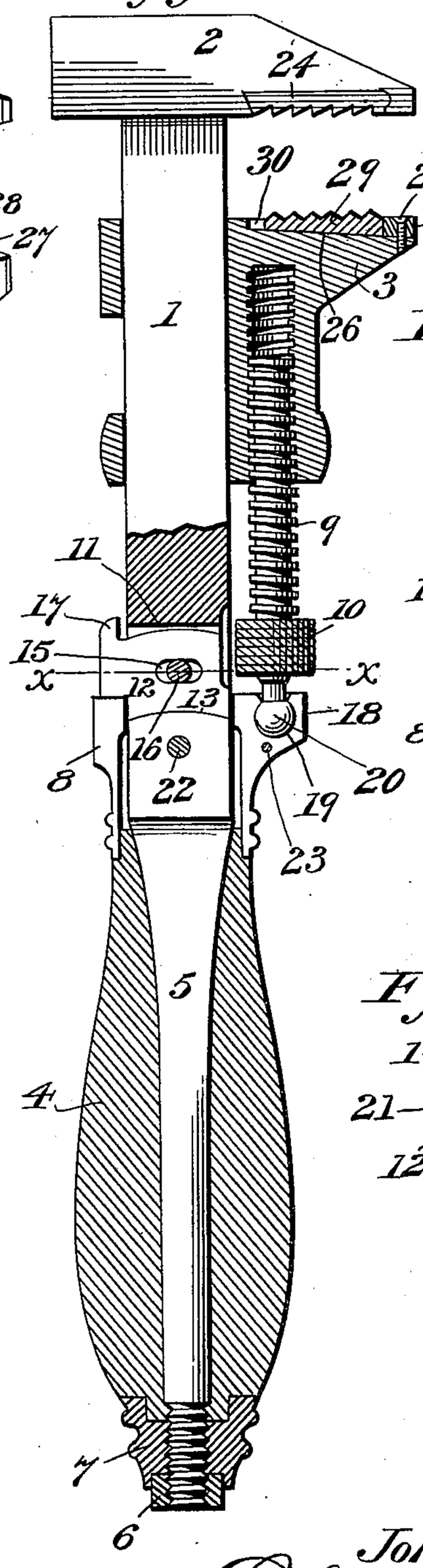


Fig. 5.

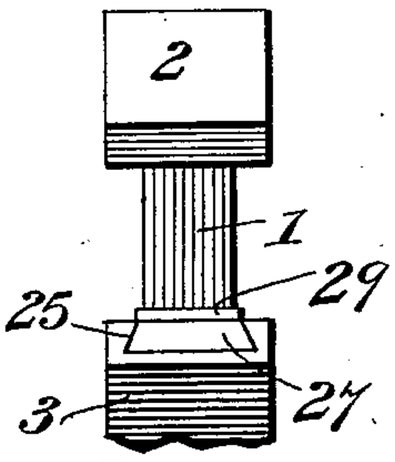


Fig. 3.

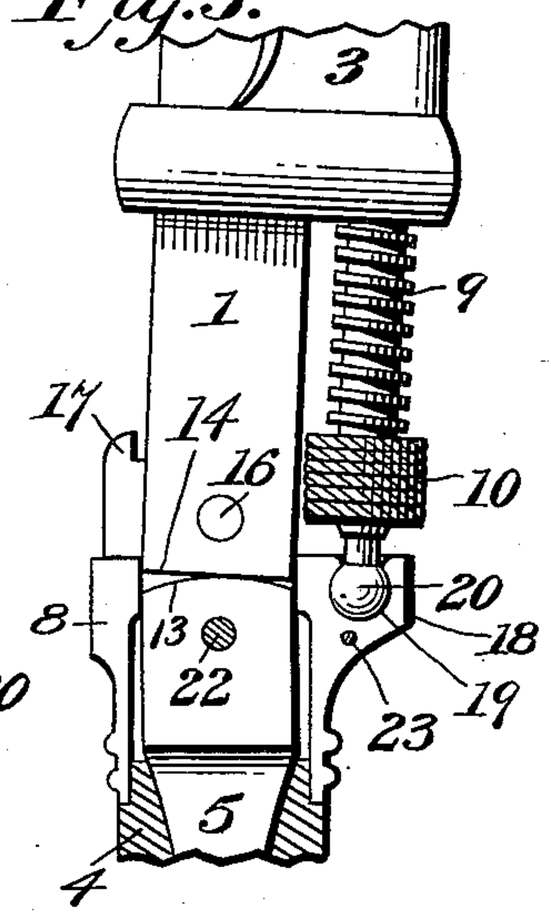
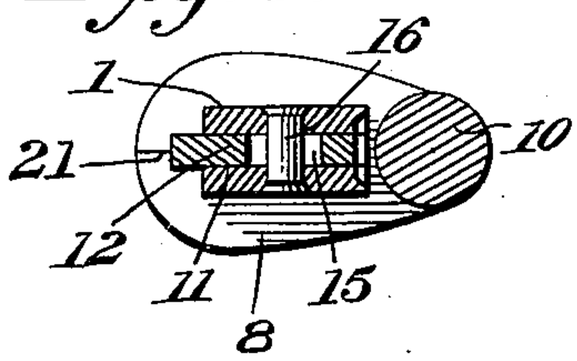


Fig. 4.



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UNITED STATES PATENT OFFICE.

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WRENCH.

SPECIFICATION forming part of Letters Patent No. 640,643, dated January 2, 1900.

Application filed October 2, 1899. Serial No. 732,372. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. FAHRNEY, a citizen of the United States, residing at Timberville, in the county of Rockingham and State of Virginia, have invented a new and useful Wrench, of which the following is a specification.

This invention relates to wrenches; and the primary object of the invention is to provide an article in the nature of a combined nut and pipe wrench, being equally efficient under both uses.

Another object of the invention is to so mount and connect the sliding jaw and handle of the wrench as to enable the sliding jaw to be automatically reciprocated when the handle of the wrench is vibrated in use upon a nut, pipe, or other object, whereby the hold of the jaw is released and a fresh grip obtained without attention on the part of the operator.

Other objects and advantages of the invention will appear in the course of the ensuing description.

The invention consists in a wrench embodying certain novel features and details of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawings, and incorporated in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a wrench constructed in accordance with the present invention. Fig. 2 is a longitudinal section through the same. Fig. 3 is a detail longitudinal section showing the rocker-bearing between the shank of the wrench and the handle-stem. Fig. 4 is a detail cross-section through the wrench, taken on the line X X of Fig. 2. Fig. 5 is a detail elevation showing the wrench-jaws in end view.

Similar numerals of reference designate corresponding parts in all the figures of the drawings.

Referring to the drawings, 1 designates the shank or stock of an ordinary monkey-wrench equipped at one end with the usual rigid jaw 2, and also provided with a sliding jaw 3 of the ordinary pattern. The wrench also comprises a handle 4, secured upon a handle-stem 5 by means of a nut 6 and collar or ferrule 7. At the inner end of the handle 4 is a head 8, between which and the sliding jaw 3 is interposed the usual adjusting-screw 9, which is operated by means of a knurled or milled enlargement 10, the said screw being employed to adjust the sliding jaw longitudinally of the shank 1.

In carrying out the present invention the end of the shank 1 is bifurcated or slotted, as shown at 11 in Fig. 2 and also in the cross-sectional view of Fig. 4, to form parallel ears. The handle-stem 5 is reduced at its inner end to form an ear 12, which is received between the ears formed by the slot 11 of the shank, and in reducing the stem to form said ear curved shoulders 13 are provided at opposite sides of the ear 12, which form rocker-bearing surfaces, the said surfaces coming in contact with the edges 14 of the shank 1 on opposite sides of the slot 11. The ear 12 is also provided with a slot 15, which extends transversely of the wrench, and passing through said slot is a pin 16, connected at its ends to the bifurcated portions of the shank 1. The ear 12 is also provided at one side and preferably at the back of the shank with a longitudinal projection 17, forming a stop-shoulder, which is adapted to come in contact with the rear surface of the shank 1 for limiting the rocking movement of the handle 4.

The head 8 is provided at one side with a lateral extension or fulcrum-step 18, hollowed out to form a spherical socket 19, in which is received a ball 20, formed on the inner or lower extremity of the adjusting-screw 9. This fulcrum-step forms the support for the adjusting-screw 9, which in turn supports the sliding jaw. At the same time the shank and handle-stem of the wrench are pivotally connected, the fulcrum of said parts being at one side of the fulcrum between the head and the adjusting-screw. Therefore as the handle 4 is rocked with relation to the shank 1 the fulcrum-step 18 has a slight swinging movement, and by reason of this engagement between the ball 20 and socket 19 the adjusting-screw 9, together with the sliding jaw 3, is moved longitudinally of the shank 1, which of course has the effect of alternately increasing and diminishing the distance between the fixed and movable jaws of the wrench, thus providing for releasing and renewing the grip of the jaws upon a nut, pipe, or other article. It will be observed also that this is accomplished by the ordinary vibration of the wrench-handle and requires no at-

tention on the part of the operator. The head 8 is preferably divided centrally on the line 21 and the two parts connected to the handle by means of a screw or other fastener 22, and also by an auxiliary pin 23, if necessary, the said pin passing through the divided portions of the fulcrum-step.

The fixed jaw is provided with a grip-block 24, set into a recess therein and provided with the usual gripping-teeth. The sliding jaw 3 is provided in its working face with a longitudinal recess 25, which is of dovetail shape in cross-section and which also has an inclined floor or base 26. The deepest portion of the recess is toward the outer end of the jaw 3, and the recess opens out at the outer end of the jaw. The outer end of the recess is, however, closed by means of a stop-block 27, as shown in Fig. 2 of the drawings, which block is held in place by means of a screw or other suitable fastener 28. Within the recess 25 is placed a grip-block 29, having the usual gripping-teeth on its active side and having an inclined inner side which corresponds to the tapering of the floor of the recess. The block 29 is of dovetail shape in cross-section corresponding to the shape of the recess in which it fits, and said block is made somewhat shorter than the recess in order to leave at one end a space 30, by means of which the grip-block is adapted to slide lengthwise of the working face of the movable jaw for the purpose of alternately increasing and diminishing the distance between the working or gripping faces of the two jaws. The sliding action of the gripping-block is automatic, being effected by the pipe or other object with which the gripping-block comes in contact as the handle of the wrench is vibrated. The sliding action of the gripping-block 29, taken in connection with the reciprocation of the sliding jaw, effected by the rocking or vibration of the wrench-handle, gives considerable latitude to the relative movement between the gripping-surface of the two jaws of the wrench, thus admirably adapting the wrench for use upon pipes and various other objects not provided with the usual flat or wrench-engaging surface.

From the foregoing description it will be seen that I have provided a wrench which is adapted to be used both as a nut and pipe wrench, and when used as a pipe-wrench the pipe will be automatically gripped and released upon the simple vibration of the wrench-handle without requiring any additional attention on the part of the operator. Not only is the sliding jaw reciprocated automatically in a direction lengthwise of the shank for effecting the gripping and ungripping action, but in addition to such movement the distance between the fixed and movable jaws is automatically increased and diminished by the sliding movement of the grip-block which is carried by the movable jaw. This gives an amplitude of movement which will insure the proper gripping of the pipe or other article between the jaws. The parts of the wrench may be readily disassociated by removing the screw or fastener 22 and the pin 23. This enables the parts to be cleaned and adjusted should it become necessary.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. A wrench comprising a shank having a fixed jaw, a handle, overlapping ears on the shank and handle, one having a transversely-elongated slot and the other a pin passing through and working in the slot, a movable jaw on the shank, a fulcrum-step on the handle, and an adjusting-screw interposed between said step and the movable jaw, substantially as set forth.

2. In a combined nut and pipe wrench, the combination with a shank having a fixed jaw at one end and provided at its opposite end with an open slot, of a sliding jaw mounted on said shank, a handle having a jointed connection with said shank, an ear on said handle fitting in the end slot of the shank and provided itself with a transverse slot, a pin connected with the slotted end of the shank and passing through said slotted ear, a stop-shoulder on the ear coöperating with the shank, a fulcrum-step on the handle provided with a spherical socket, and an adjusting-screw connected with the sliding jaw and having a terminal ball fitted in the spherical socket of the fulcrum-step, substantially as described.

3. A combined nut and pipe wrench comprising a shank having a fixed jaw at one end and a terminal slot at its other end, a sliding jaw on said shank, a handle, a handle-stem, provided with a slotted ear slidingly fitted in the terminal slot of the shank, and held by a pin connected with the shank and passing through the slot in the ear, rocker-surfaces on the handle-stem engaging the shank, a fulcrum-step on the handle, and an adjusting-screw connected with the sliding jaw, and having a ball-and-socket connection with the fulcrum-step, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN J. FAHRNEY.

Witnesses:
J. W. GRIM,
M. MINNICK.