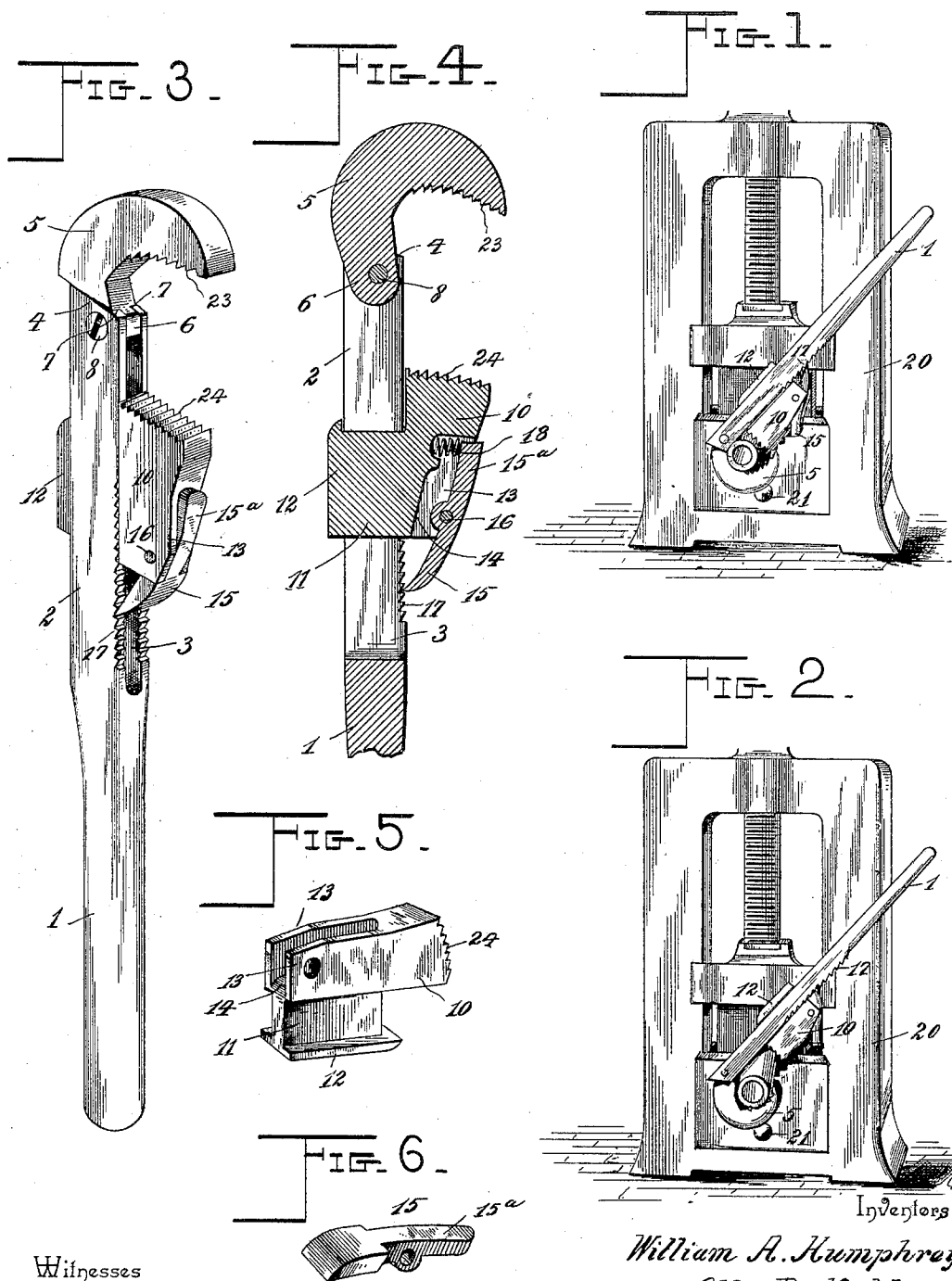


(No Model.)

W. A HUMPHREY & O. D. KAHL.
WRENCH.

No. 599,334.

Patented Feb. 22, 1898.



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WRENCH.

SPECIFICATION forming part of Letters Patent No. 599,334, dated February 22, 1898.

Application filed August 31, 1897. Serial No. 650,168. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM A. HUMPHREY and OTTO D. KAHL, citizens of the United States, residing at Barron, in the county of Barron and State of Wisconsin, have invented a new and useful Wrench, of which the following is a specification.

Our invention relates to improvements in wrenches especially designed for service as pipe-wrenches or for turning cylindrical objects; and the object that we have in view is to provide an improved wrench which shall be simple in construction, easy of application to or removal from the object to be manipulated, capable of exerting great leverage on the object, and which shall be cheap of manufacture.

A further object of the invention is to provide an improved construction of the wrench which under certain conditions may be used without the aid of the adjustable jaw forming a part of the implement, whereby the device may be employed to turn objects which do not require the application of any considerable leverage.

With these ends in view and such others as will appear from the annexed detailed description, the first part of our invention consists in the combination, with a shank or bar, of a swinging jaw pivoted to the shank or bar, and a slidable jaw provided with means for holding it in position on the shank or bar either in operative relation to the swinging jaw or adjusted out of the way of the said pivoted jaw and the object grasped thereby; and the invention further consists in the novel combination of elements and in the construction and arrangement of parts, which will be hereinafter fully described and claimed.

To enable others to understand our invention, we have illustrated the preferred embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a perspective view illustrating the improved wrench applied or fitted to a pipe. Fig. 2 is a similar view showing the implement adjusted for service in connection with a vise and a pipe, showing the slidable jaw moved out of operative relation to the hinged jaw and the work. Fig. 3 is a perspective view of the implement on an en-

larged scale. Fig. 4 is a longitudinal sectional view thereof. Figs. 5 and 6 are detail views of the slidable jaw and the locking-dog respectively detached from the implement.

Like numerals of reference denote corresponding parts in all the figures of the drawings.

1 designates the handle-bar of our improved wrench. This bar is solid for a part of its length, and at one end it is slotted longitudinally for a suitable distance to produce a shank 2, the slot which divides or separates the members of the shank being indicated by the numeral 3 in the drawings. The extremities of the parallel member of the shank are beveled or inclined, as at 4, to provide seats against which may abut the shouldered faces of the swinging jaw 5. This swinging jaw is peculiarly formed to enable it to operate under certain conditions independently of the slidable jaw. This swinging jaw has a segmental outer edge, as shown, and the inner working face extends in an inclined direction to a line drawn through the handle-bar and shank of the implement. This working face of the pivoted jaw merges into a curved face at the front side of the jaw, and the heel of the jaw is prolonged to provide the central pivotal lug or ear 6. This lug or ear is of reduced width or thickness as compared with the thickness of the pivoted or swinging jaw, and thus shoulders 7 are formed between the jaw and the reduced ear or lug 6. These shoulders 7 are inclined or beveled on angles different from the inclination of the terminals of the members of the shank to enable the jaw to have a free swinging movement in a forward direction. This forward-swinging movement of the hinged jaw is only limited by the shoulders 7 abutting against the front edge of the shank 2, so that the hinged jaw may swing forward almost until the beak or outer front extremity of the jaw nearly touches the front edge of the slotted shank; but the rearward-swinging movement of the hinged jaw is limited by its shoulders abutting against the shoulders or inclined terminals of the slotted shank. The ear or lug 6 of the jaw 5 is fitted snugly between the terminals of the slotted shank, and through the shank and the lug or ear passes a screw, pin,

or bolt 8, that serves to pivotally attach the jaw 5 to the shank.

The movable jaw 10 is applied against the front edge of the slotted shank, and this jaw is thus arranged to project laterally from said shank, so as to have its working edge or face opposed to that of the swinging jaw 5. The movable or slidable jaw 10 is formed in a single piece with a guide-stem 11 and with a head 12, the width of the stem being equal to the width of the slot in the shank, while the width of the guide-head 12 is equal to the width of the shank 2. The stem and head of the slidable jaw are thus adapted to fit snugly in the slot and against the rear edge, respectively, of the shank 2, and thus the slidable jaw is operatively connected with the shank to move freely in an endwise direction thereon. The front face or edge of the slidable jaw is recessed to provide the lugs 13 at the lower corner thereof and to form the seat or socket 14 between said ears or lugs. Between the ears 13 is arranged a holding-dog 15, and said dog is attached to the slidable jaw 10 by a pivot pin or screw 16, which passes through the ears 13 and the shank of the dog. This dog is made quite wide at its heel, where it is adapted to engage with one of the teeth or serrations 17 formed on the front edge of the slotted shank 2, and this widened heel of the holding-dog forms a relatively narrow shank 15^a, which fits between the ears 13 and in the recessed part of the slidable jaw. This shank of the holding-dog does not lie flush with the front edge of the slidable jaw, but said shank is normally forced outward a limited distance by means of a pressure-spring 18, one end of which is seated against the shank of the dog, while its other end is seated in the socket 14, provided for its reception in the slidable jaw. The spring is thus housed within the jaw and the dog to be protected from injury thereby, and the protruding free end of the shank enables the operator to readily press on the dog for the purpose of releasing the heel of said dog from the serrated edge of the shank, whereby the slidable jaw may be adjusted with ease and freedom on the shank.

Our improved implement may be used with great ease, because the hinged jaw enables the implement to be applied very quickly and readily around a pipe or other cylindrical object, after which the slidable jaw may be quickly adjusted to bear against the opposite side of the pipe to that engaged by the hinged jaw, and thus provide three gripping-surfaces on the pipe. The jaws may be arranged to firmly grip the pipe or other object, and the greater the leverage exerted on the implement the tighter will the jaws grip and hold the object. This is a very important feature of our wrench, because it enables us to apply the leverage to the best advantage and to turn the object instead of crushing it between the jaws when the leverage is applied to the implement.

It will be understood that the implement

is used by releasing the dog and sliding the jaw 10 away from the hinged jaw, after which the hinged jaw is adjusted around the implement. Under certain conditions the implement may be used without bringing into service the slidable jaw; but when great leverage is desired the slidable jaw is adjusted on the shank to engage with the work. The two jaws thus coöperate in holding the work firmly between themselves, and thus the leverage may be applied to the best advantage. In case the work is light it may be placed in a vise, (represented at 20 in Fig. 2,) the bed of said vise having a protuberance 21 below the work, such as a pipe or other cylindrical object. Under these circumstances the slidable jaw is moved away from the hinged jaw, and the implement is applied by fitting the hinged jaw around the object and having its segmental outer edge engage with the projection 21. Under these conditions it is not necessary to bring the movable jaw into service, because the hinged jaw will engage the work sufficiently to turn the same.

We construct the working faces of the two jaws with serrations or teeth to enable the jaws to grip the work to the best advantage. The teeth 23 of the hinged jaw are slanted or inclined toward the pivot which attaches the jaw 5 to the shank; but the teeth or serrations 24 are arranged at a different angle to the teeth on the hinged jaw, said teeth 24 of the slidable jaw being inclined in a reverse direction to the inclination of the teeth on the hinged jaw.

It is thought that the operation and advantages of our improvement will be readily understood from the foregoing description, taken in connection with the drawings.

We are aware that changes in the form and proportion of parts and in the details of construction may be made by a skilled mechanic without departing from the spirit or sacrificing the advantages of our invention.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A pipe-wrench comprising a shank provided with a longitudinal slot which extends through the outer extremity thereof and with the beveled extremities, a jaw having a lug or ear pivoted within the slotted extremity of, and attached directly to, the slotted shank, and also having lateral shoulders arranged to bear against the beveled extremities of said shank to limit the rearward movement of said jaw and permitting an unrestrained forward movement thereof, and an adjustable jaw fitted slidably to the shank, substantially as and for the purpose described.

2. A pipe-wrench comprising a slotted serrated shank having a jaw at one end thereof, a slidable jaw having a rearwardly-extending shank fitted in said slotted shank and with a head to ride against the smooth rear edge of the shank, a holding-dog pivoted to, and carried wholly by, the slidable jaw, and a spring

housed within the slidable jaw and bearing against the dog to normally force the latter into engagement with the serrated face of the shank, substantially as described.

5 3. The combination of a shank provided in its front edge with the teeth or serrations, a slidable jaw recessed to form the ears and the spring-seat and provided with the stem and the head to fit in the slot and against the rear edge of the shank, the dog fitted in the ears to have its heel engaged with the serrated edge of the shank and the other end thereof projected beyond the front edge of

the jaw, a spring fitted in the seat and acting against the free end of the dog, and another jaw carried by the shank, as and for the purposes described. 15

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

WILLIAM A. HUMPHREY.
OTTO D. KAHL.

Witnesses:

W. A. COE,
F. B. KINSLEY.